

# Improving Literacy and Numeracy in Tanzania

## Tanzania Randomized Evaluation in Education 2013/4

COSTECH / EDI / JPAL-MIT / Twaweza  
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## 1. Introduction

Tanzania has dramatically expanded primary schooling, achieving close to universal enrolment. But too many children fail to attain proficiency in early grade reading and math, e.g. only one in five children in Grade 3 can read at the Grade 2 level (Uwezo, 2010). Providing trained teachers and capitation grants are the main instruments to improve quality. But studies show that teachers are spending less than two hours/day in class (Service Delivery Indicators Survey, 2010) and well below half of the capitation grant is reaching schools (United Republic of Tanzania—Ministry of Education and Vocational Training, 2011).

The recent advances in the use of Randomized Evaluations (RE) in social science research offer policy makers useful new ways to obtain high quality evidence on important policy questions they face (Banerjee and Duflo, 2011). For example, education policy can now be informed by Randomized Evaluations on the effects on learning outcomes of alternative education policies (see e.g. Michael Kremer, *Randomized Evaluations of Educational Programs in Developing Countries: Some Lessons*). As one of the stakeholders in the field of education, Twaweza and

partners will in 2013/4 undertake two experimental interventions that seek to compare effects on early grade learning of:

- transfer payments for inputs (capitation grant) directly to school accounts, and
- paying teachers a bonus for every child who is able to read and count, plus a bonus for school based on children’s pass rates

In order to inform policy makers these interventions are organized as a Randomized Evaluation or Randomized Controlled Trial, as is done in Medical Science to test the effectiveness of medication. This design allows us to compare the impact of paying for inputs (current policy) with paying an incentive for outputs (innovation). There will also be a combination intervention that will seek to measure the interaction effect of providing both the capitation grant and paying teachers for performance.

The study design has been developed after extensive consultations over the past 12 months with government, the teachers’ union, think tanks, researchers and donors. An Advisory Panel consisting of these representatives and other independent experts will continue to review and guide the study.

## 2. Interventions

To be able to finance and manage the project, and so as to test the effectiveness of the idea before proposing that it go to scale, the interventions and study will be implemented in 11 districts only. The sample has been chosen *randomly* from the list of districts, with probability of district selection proportional to the number of primary school students. That is, districts with a higher number of primary school students had a higher chance of being in the sample. The selected sample includes the following 11 districts:

Geita	Kinondoni	Mbozi
Kahama	Kondoa	Sumbawanga Rural
Karagwa	Korogwe Rural	Mbinga
Kigoma	Lushoto	

In each district all primary government schools will be *eligible* to participate; but only 21 schools will be selected for the intervention. These schools will be randomly selected and assigned to the different interventions (seven each for Capitation grant only; Cash on Delivery only; and Capitation Grant + Cash on Delivery). In each district 14 other randomly selected schools will be monitored to provide *counterfactual evidence* with which to compare the intervention. This will be a “control arm”, consisting of current practice, that will not receive any financial flows and no effort will be made by us to alter government provision of funds and information.

### Intervention 1 – Making Capitation Grants Flow (CGF):

According to policy and plans, the government is to disburse a capitation grant of TZS 10,000 per primary school pupil per year to schools, which the school leadership, with guidance from the school governance committees, may use for improving quality of education. However, in the past decade the funds sent to schools have been well below policy levels and, in fact, are

declining (URT 2010/11); disbursements have been unpredictable and uneven; and levels of information at district and community levels have been inadequate. The situation has been compounded by the fact that the capitation grant is funded out of different budget lines, and at times districts fail to release funds meant for schools.

Our CGF intervention seeks to:

- demonstrate an effective way to transfer capitation grants (CG) to reach schools in full (as per current government plan at TZS 10,000 per pupil/per year) in an equitable, timely and predictable manner;
- test the impact of providing capitation grants (while providing the community with information on these grants) on improving basic literacy and numeracy.

Implementation:

- The intervention will be implemented in a total of 77 schools (7 schools per district in 11 districts)
- The capitation grants will be provided by Twaweza in two disbursements per year (at TZS 5,000 each per pupil) on set, predictable dates towards the beginning of each school term.
- After obtaining cooperation and information from the district councils, funds will be transferred by electronic transfer directly into already established school bank accounts. Schools may only use the funds, consistent with present policy, for improving quality such as purchasing books, examinations, etc. but not for salaries or major construction.
- Twaweza will not establish any special systems for the planning, use, accounting and reporting of these funds but will insist that schools be transparent and inform communities, consistent with government disclosure policy. Accountability of these funds will be as per existing government policy and mechanisms.
- The local school leadership and communities in the intervention schools will be well informed of the project and how it works, including through use of popular materials.

### **Intervention 2 – Local Cash on Delivery (COD):**

Several studies suggest that incentivizing schools and particularly teachers to perform better may be more effective than increasing national budgets (Glewwe, Holla and Kremer, 2008; Muralidharan and Sundararaman 2011). Indeed cash incentives are also likely to be more effective when targeted at those most at stake and where the payment amounts are likely to be considered significant. The Center for Global Development (CGD) has developed a concept of cash on delivery that suggests that performance may be more effective should it be designed to pay for results rather than micromanage provision of inputs and elaborate processes; an idea that has been supported by President Kikwete and Bank of Tanzania Governor Ndulu. Our ‘Local Cash on Delivery’ pay for performance intervention builds on these ideas and evidence and seeks to test the extent to which paying individual teachers and schools for performance improves early grade literacy and numeracy.

Implementation:

- The intervention will be implemented in a total of 77 schools (7 schools per district in 11 districts)

- For every child in Grades 1, 2 and 3 who passes the proven Uwezo literacy (English and Kiswahili) and numeracy (Mathematics) assessment at the end of the school year, the child's teacher will be paid TZS 5,000 per subject the child passes (or up to TZS. 15,000 per each child who is able to pass all three literacy and numeracy tests). Note this pays for absolute levels of learning, not gains in learning
- This incentive 'offer' will be publicized at the beginning of the school year (around March), followed up through in person visits and/or phone calls, and children will be independently assessed towards the end of the school year (around November)
- The intervention will be conducted with all pupils in chosen schools in Grade 1, 2, and 3. Effects on other grades will be tracked using results of national Grade 4 and 7 examinations
- Local authorities will be kept fully informed (both district leadership and MPs)

### **Intervention 3 – Combination of CGF and COD Interventions 1 and 2**

- Both capitation grants and local cash on delivery payments will be made. The COD approach is designed to be 'additional' or 'on top of' existing programs and budgets, and in effect create an incentive to make better use of those resources. But if existing resources are significantly inadequate or not disbursed, particularly at the school level, schools and teachers may simply be unable to take the actions necessary to achieve results for which they will be rewarded later. In other words, that a COD intervention can only reasonably be expected to work after one has ensured basic inputs have been provided for. This idea was emphasized by several officials from the Ministry of Education and Vocational Training in a meeting between the Education Minister and CGD President, and in a workshop organized by the Ministry of Education and Embassy of Sweden in Dar es Salaam in April 2012.
- The intervention will be implemented in a total of 77 schools (7 schools per district in 11 districts)
- All the engagement with local authorities and communication to school communities will be as per above

## **3. General Research Aspects**

The study design is informed by policy and political considerations, by a keen reading of what it takes to gain engagement and buy-in. Accordingly, the design seeks to:

- Test and compare effects on learning of the existing policy of an input based grant efficiently implemented (CGF) with a new innovation of performance based pay (COD), as well as the combined effect of both interventions
- Engage teachers, pupils and parents as well as politicians/policy makers with the project. This requires keeping the design extremely simple, so that it can be easily communicated and grasped, so as to avoid confusion
- Keep implementation thresholds and administrative costs low, by keeping the learning measures simple and easy to implement by ordinary secondary school graduates
- Ensure a simple design that, if found to effectively improve early grade literacy and

numeracy, can be implemented nationwide by the government; the more complex the design the less likely that a weak bureaucracy could manage it

- The costs of the intervention have been kept to a level that can be reasonably implemented and sustained at nationwide scale
- Keep simplicity to avoid creating grounds for quibbling on details and distract from the overall focus
- Build on a tested and proven model of using the Uwezo assessment tools and infrastructure of district coordinators and volunteers

In our view, our design of paying a fixed amount for *absolute achievement* per child in class levels compared to Uwezo district average most elegantly reflects the simplicity we need as well as a workable solution for spurring learning improvements and equity.

We see the value of paying for improvements rather than absolute levels of achievement. Implementing a payment for improvement (and particular any use of a points system) risks undermining simplicity, both in administrative and communication terms. While we recognize the potential ‘unfairness’ of teachers getting ‘free’ payments for pupils who are already literate/numerate, we believe that our model still provides an incentive for teachers to seek increased pass rates (and to assure likely pass rates). Our model does not create any incentive to exclude any child, since one is not penalized for a child who does not pass.

Financially, from both a research as well as scaled national budget standpoint, even if current pass rates on Uwezo tests were to double (from 20% to 40%) the total payments are affordable/ sustainable within current government and donor resources and represent high value for money.

This study has benefited from over one year of consultations with key local actors in government, teachers, the teachers’ union, renowned researchers, donors and think tanks such as CGD, who have all contributed to the final design. The rigorous RCT approach will provide solid evidence on the validity of this approach. Should the findings show success, we will work closely with government partners to propose appropriate policy changes; over the years we also plan to engage in related randomized experiments so as to provide solid basis for evidence based policy making in Tanzania.

### Surveys and monitoring plan

The RCT will make use of data from three types of survey during 2013:

- February 2013: Baseline survey with limited scale pupil testing
- April – October: monitoring of teacher and pupil behavior, attendance, pedagogy changes; school visits
- November: “endline” survey, including testing of full Grades 1, 2 and 3
- The research team will conduct qualitative/process studies in parallel to the RCT to ensure results can be explained in the local context and to help unpack the ‘black box’ of why something happened or not. Potential issues include effects of an influx of financial support for only certain teachers, barriers from existing local power structures, and movement of teachers to where there are incentives, effects on time

on task, and how teachers learn about and adopt effective teaching techniques. This would also investigate two kinds of substitution of funds concerns: 1) the amount of money parents usually contribute to the school or use for their children's education may decrease, thus reducing the total amount of money used for school. 2) As the capitation grant intervention from Twaweza is in addition to the CG from the government, local districts may attempt to 'even out' the money each school receives in total by disbursing less to treatment schools. This would reduce the control effect of the RCT.

- Tracking how COD and capitation grant money is spent: while the disbursements are meant to be 'hands off' regarding how it should be spent, we will promote full disclosure and public transparency at the school/village level and to compile this information in school visits.
- Given Twaweza's interest in communication and agency, tracking how the offer is understood and communicated, how information travels, who is influential, who inspires change and innovation/who resists it, etc.
- Escalated format for inquiries: any questions parents or participants have regarding the intervention can be directed to different actors in escalated priority – school, district, education officer, and finally Twaweza. Twaweza will hire a staff person to answer such questions and conduct phone check-ins. We expect to face many questions and considerable skepticism about the local COD idea since it is very different, therefore a prompt, reliable and professional phone service is important.

#### 4. Potential for scaling up

Pilot projects carry the inherent risk of failing to be scaled up or sustained over time. We have identified five aspects, which we consider to be the most important, that could affect this intervention's potential and this design takes each into account as follows:

- *Interventions are parachuted in from up above, without participation of relevant actors:* We have sought and will continue to seek to involve all key actors throughout the process, from national and local government, the teachers' union, civil society, think tanks, researchers, and donors to ensure contextual issues are appropriately addressed. Recognizing the important legislative, oversight and political roles of parliamentarians, we will also engage MPs from study districts from the outset.
- *Unit costs are too high to be scaled up and sustained over time:* Nationwide full coverage of the capitation grant intervention (about USD 90-95 million per year) is in fact existing policy and could be paid from reprioritizing existing budgets. The local COD if scaled up for each Grade 1, 2 or 3 child nationwide would cost about USD 45 million per year, *if every child were to pass*, or more realistically USD 27 million estimating about 60% would pass initially. The elegance of the COD also is that one only pays for results. No results = no payment.
- *Interventions remain technocratic and findings sit on shelves:* We will publicize findings and lessons widely in accessible language, including through the media, so as to stimulate public debate. In addition, we will focus in on district and community level actors, including MPs, who are well placed to motivate local action as well as create 'middle-down' and 'middle-up' pressures for change.

- *Intervention design is too elaborate; requires skills that are too high level and unrealistic commitment:* Both the capitation grant and local COD designs are simple in design, and can be implemented nationwide with limited additional preparation of capacity; the independent Uwezo assessment has already demonstrated it can be scaled up nationwide.
- *Interventions are not properly evaluated and lack sufficient independence and rigor:* From the outset we have engaged globally renowned, independent experts, the The Abdul Latif Jameel Poverty Action Lab (J-PAL) team at MIT, who will use RCT methodology complemented by other qualitative methods, so as to ensure generation of high quality evidence. We will also seek to engage closely with COSTECH to advise on the research design and on translating research into policy.

## 5. Research and Implementation partners

Twaweza will provide the overall leadership and coordination of these interventions, working in close cooperation with the partners noted below. A staff member will be recruited to manage the different aspects and partners of the exercise, and various Twaweza units will provide support on both implementation and learning aspects in accordance with their comparative advantage. The key partners to be involved are:

Government of Tanzania: supports the idea in principle. The government is exploring the best way to disburse full capitation grant to schools and is open to exploring the Cash on Delivery innovation. President Kikwete has personally engaged with CGD and Twaweza on COD and encouraged its implementation in Tanzania.

Prime Minister's Office (Regional Administration and Local Government): PMO-RALG oversees management of schools, including flow of information and use and monitoring of funds.

Ministry of Education and Vocational Training: MOEVT and its key institutions will be engaged on policy implications.

Ministry of Finance and Economic Affairs: MOFEA is responsible for overall allocation of funds and to ensure alignment with policy goals and value for money

COSTECH: COSTECH will review research design to ensure scientific rigor, issue research permit and help promote evidence based policy making.

Tanzania Teachers' Union (TTU): TTU will provide important inputs from the teachers' perspective, in research design, participation in the study and dissemination of results.

Centre for Global Development (CGD): CGD, the original developer of the COD idea, will support concept development and learning, and support policy engagement globally and in Tanzania.

Abdul Latif Jameel Poverty Action Lab (J-PAL)/ Innovations for Poverty Action (IPA), based at MIT, will lead the research design and impact evaluation under the guidance of Professor Abhijit Banerjee, with Professor Karthik Muralidharan (University of California, San Diego, UCSD) as lead researcher and Professor Isaac Mbiti as Co-Principal Investigator. We will

also seek to engage with Professor Ted Miguel (University of California Center for Effective Global Action, CEGA), Annie Duflo (IPA) and others to advise on key steps of the project. J-PAL will develop a fuller research design and budget, and help disseminate results.

Uwezo: Uwezo, a semi-autonomous initiative of Twaweza, will provide the tools to assess literacy and numeracy that will be used to measure impact, under guidance of independent researchers.

Donors: Various donors, including DFID, SIDA, CIDA and the World Bank, are interested in strengthening public service provision transparency and accountability, especially in improving learning outcomes. In addition to policy engagement and providing core support to Twaweza, donors may provide additional support to Twaweza, the government and/or research partners as needed.

Economic Development Initiatives (EDI): EDI, a well-established Kagera based survey firm, will undertake the baseline and follow-up surveys required in the project.

An Advisory Panel, consisting of senior representatives of the partners above and independent experts will review and guide the study.

## 6. Key References

Abhijit V. Banerjee and Esther Duflo (2012), *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*. Public Affairs.

Birdsall, Nancy and Savedoff, William (2011), *Cash on Delivery: A New Approach to Foreign Aid*, Center for Global Development.

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Uwezo (2011), *Are our Children Learning? Annual Learning Assessment Report*. Available at [www.uwezo.net](http://www.uwezo.net)

Fuller set of references available on request