

# School Inspections, Bureaucrats, and School Quality: Experimental Evidence from Tanzania

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## Abstract

The government of Tanzania has recently reformed its school inspection program, reframing the formerly punitive function as a friendly source of support to schools, now called the School Quality Assurance (SQA) program. A key part of the reform is to replace the traditional school inspections with Whole School Visits (WSVs), conducted by 3 – 4 School Quality Assurance Officers (SQAOs). Each SQA visit produces a set of diagnostics and recommendations across a range of domains that are shared with all stakeholders. The Ward Education Officers (WEOs) are then responsible for conducting follow-up visits to the schools to monitor compliance to these recommendations. We propose a randomized evaluation of the SQA program, as well as an additional treatment to increase monitoring and oversight by the WEOs. Out of a nationally representative sample of 397 schools we randomly assign 198 schools to receive the WSVs. Moreover, in half of these schools, also randomly assigned, WEOs are encouraged through text-based reminders to engage head teachers on how they are addressing the recommendations of the SQAOs. We collected baseline data in February-March 2019, midline data in February-March 2020, and plan to conduct endline data in November 2020. We estimate the impact of these interventions on the beliefs and behaviors of the Ward Education Officers, head teachers, teachers, and the school community, as well as the learning outcomes of a cohort of students who were in grade 2 and 3 at baseline.

## 1 Program description

The Government of Tanzania has recently reformed its school inspection process, now called School Quality Assurance (SQA). The broader motivation for the reform is to shift the emphasis of the inspections away from being seen as a form of accountability, towards being a source of diagnostic feedback and support to schools. A key part of the reform is to replace the traditional school inspections with Whole School Visits (WSVs), which consist of the following steps:

- **Prior to the visit.** Schools are required to fill in a school self-evaluation form (SSEF). The form includes basic information such as enrollment, but also subjective self-assessments on the school quality.
- **During the visit.** A group of 3-4 School Quality Assurance Officers (SQAOs) visit a school for 2-3 days (depending on the size of the school). During these visits the SQAOs interview school stakeholders (teachers, head teacher, subject leaders, school management, and learners), inspect documents, and observe teaching. They then provide an assessment of school quality along six domains: (i) learner achievement; (ii) teaching; (iii) curriculum; (iv) leadership and management; (v) school environment and its impact on welfare, health, and safety; (vi) and community engagement. They provide recommendations for each domain, as well as 3-4 main recommendations.

- **Exit meeting.** At the end of the visit, there is an exit meeting where the SQAOs outline the main strengths of the school, areas for improvement, and make some concrete recommendations for improvement. The school leadership and staff attend the exit meeting, and parents and community leaders (e.g. Ward Councilor and religious leaders) sometimes also attend.
- **Report writing and sharing.** The lead SQAo writes a short 4-5 page report outlining their assessment of quality and recommendations for improvement. This report is shared with the head of local government business, the District Executive Director (DED), who again shares this with the officer who manages public education services in the district, the District Education Officer (DEO). In some cases, a very high level summary of these reports is produced by the Directorate of School Quality Assurance and shared with the supervisors of the DED and DEOs. In addition, the central government collates some of this information and creates a School Summary Report Card, which is sent back to the schools. The School Summary Report Card also includes information such as performance on the national exams and the availability and quality of facilities.
- **Follow-up.** According to the new SQA framework, the SQAOs are also required to perform follow-up visits in a subset of the schools. This rarely happened during the period of the evaluation because they were under pressure to meet their target of conducting WSVs in half the schools by July 2019. An additional source of follow-up and ongoing support is the Ward Education Officer (WEO). There are roughly 4,000 WEOs in the country who are typically responsible for only 4 – 5 primary schools in their ward. The WEOs visit these schools on a regular basis, but they report to the DEO and not the Department of School Quality Assurance (see figure 1).<sup>1</sup> According to the new SQA framework, the WEOs are also supposed to follow up to see that schools are implementing the recommendations, but this depends on the directives that they receive from the DEOs.

The recommendations can apply to a wide set of school stakeholders: school leadership, teachers, parents, and community leaders. In fact, one of the most common recommendations is that the school leadership involves parents and community leaders in developing a new Whole School Development Plan (WSDP). The purpose of the WSDP is to crowd in community contributions in areas such as school lunch programs and infrastructure investments.

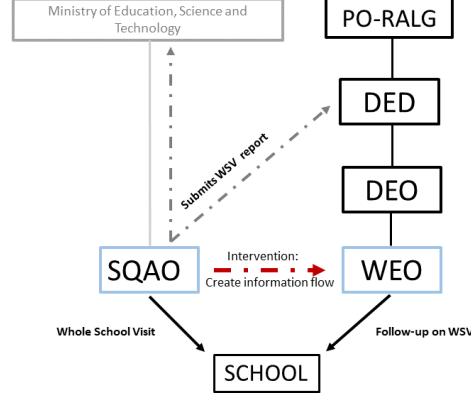
In addition to the Whole School Visits, we implemented a low-cost program aimed to improve the frequency and focus of follow-up visits from WEOs in half of the SQA sample. The purpose was to address a potential institutional constraint (see figure 1 where the WEOs are responsible for following up on the recommendations made by the SQAOs, but they do not report to the SQAOs, nor is there is an automatic mechanism for them to get access to the report from the SQAo. The Chief District SQAos in each of the 26 districts in our evaluation sample sent us the reports for all schools in our evaluation sample that had received a WSV. We then summarized and shortened the most important recommendations, and sent this summary to the WEOs over text messages. The WEOs also received multiple reminders over the course of the year.

It was important that the WEOs knew in advance about these messages, and that these messages were interpreted as directives from the DEO. We therefore held workshops, where we invited both the relevant WEOs and the DEOs from our evaluation sample. During these workshops we informed them of the program, and the DEOs expressed their official support and requested that the WEOs cooperate with us. The text messages were signed as coming from the District Office. In addition

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<sup>1</sup>The DED, DEO and WEOs are supervised by the President’s Office of Regional and Local Government (PO-RALG), while the SQAo directorate is under the Ministry of Education

Figure 1: Organizational structure of stakeholders of Whole School Visits



to the text messages, we endeavoured to survey all the WEOs participating in the program to learn from their experience in participating in the program. We surveyed 83 of the 90 possible WEOs.

## 2 Theoretical framework

Figure 2 provides a schematic overview of the theory of change for this program. Whole School Visits could induce a change in behavior from three possible stakeholders: (i) the school leadership, who improve their management practices, (ii) teachers, who improve the quality of their teaching, and (iii) the school community, who contribute resources to the school. But there are severe binding constraints for a Whole School Visit to induce behavioral change:

1. **Information.** The SQAQOs need to (i) accurately diagnose problems faced by the school, (ii) set realistic goals, and (iii) identify actions that school stakeholders can feasibly take to reach these goals.
2. **Updating of beliefs.** The information garnered from the WSVs need to be new or become more salient to the stakeholders, and they need agree with the diagnosis/recommendation.
3. **Actions.** The stakeholders need to have sufficient *capacity* and *motivation* to change their behavior in response to the updated beliefs.

It is possible that regular monitoring by the WEOs, who follow up to see if school stakeholders are implementing the recommendations, can address some constraints to behavioral change. But this relies crucially on the actions taken by the WEO, and how responsive head teachers are to monitoring and feedback from the WEO. Figure 3 provides a schematic summary of these necessary conditions.

## 3 Sampling and Experimental Design

The program is evaluated using a cluster randomized control trial, with a random phased-in design and randomization taking place at the ward level. Out of a nationally representative sample of 397

Figure 2: Theory of Change—Whole School Visits

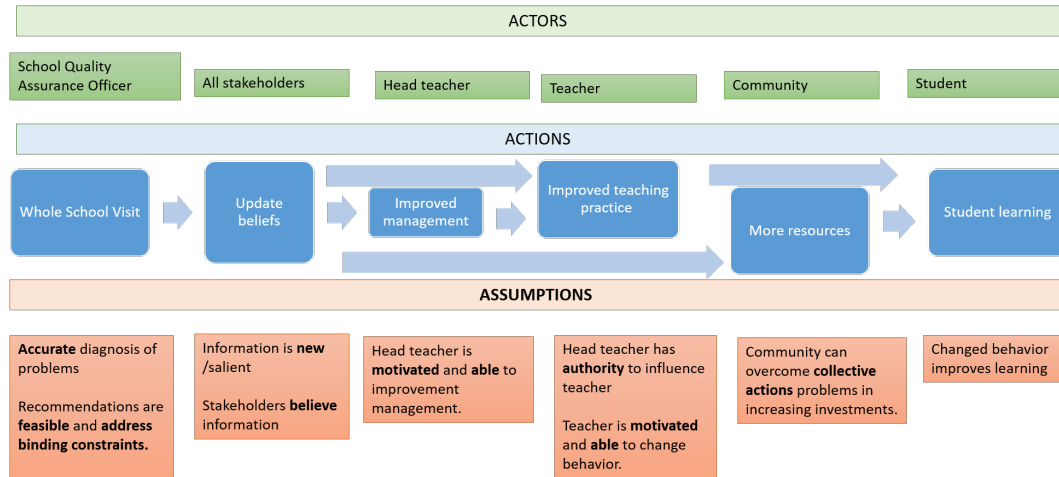
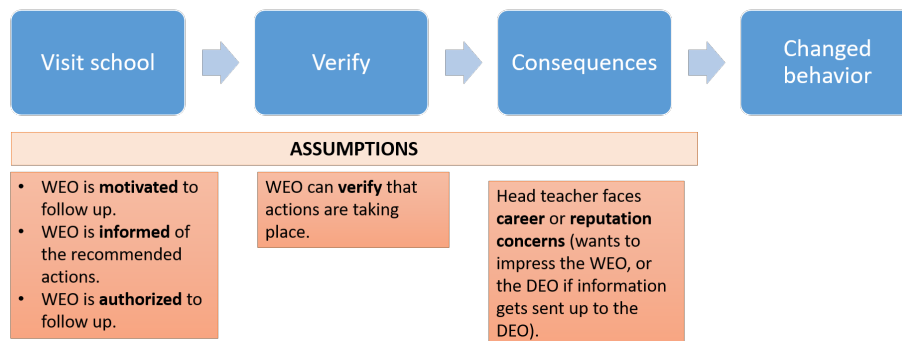


Figure 3: Theory of Change—follow-up by WEOs



wards, 198 wards are randomly assigned to treatment, and 199 wards are assigned to control. We then randomly sampled one school in each ward to participate in the study. The treatment schools are assigned to receive a Whole School Visit at some point between April and November 2019. In half of the treatment schools Ward Education Officers receive regular text messages informing them of the recommendations made at the WSV. The remaining 199 schools are assigned to only receive WSVs after the completion of the planned endline data collection in November 2020. We also cross-cut this evaluation with a teacher financial incentives experiment, which will be the focus of another paper.

To summarize, schools are randomly assigned to one of the following three experimental arms:

1. **Control:** 199 schools
2. **Visit:** Schools receive Whole School Visits. 99 schools
3. **Text:** Schools receive Whole School Visits, and WEOs receive text reminders. 99 schools.

We also conducted stratified random sampling to make sure that our evaluation sample is representative of the country as a whole. In particular, we took the following steps:

1. Randomly selected one region in each of the six zones in the country. The sampled regions are: Kigoma, Pwani, Simiyu, Singida, Songwe, and Tanga.
2. Randomly selected 48% – 50% of the districts within each region, yielding a sample of 22 districts, 413 Wards and 1,640 primary schools.
3. Excluded all primary schools in these wards that have already received WSVs, yielding a sample of 397 wards.<sup>2</sup>
4. Within each district, randomly assigned half the wards to the control and a quarter of wards to each of the treatment arms.
5. Randomly selected one School per Ward.

We shared this sample of schools with the School Quality Assurance Division (SQAD) and they agreed to comply with the treatment assignment. However, compliance to the randomized phase-in design was imperfect. Figure 4 shows the proportion of schools in our sample that received the Whole School Visits over time, broken down by evaluation arm. By the end of December 2019, 85% of schools in our treatment arms received a WSV, compared to 12% in the control. The majority of visits took place over May and July 2019. The first red dotted line indicates the date that baseline data collection started (February 2019).

## 4 Data

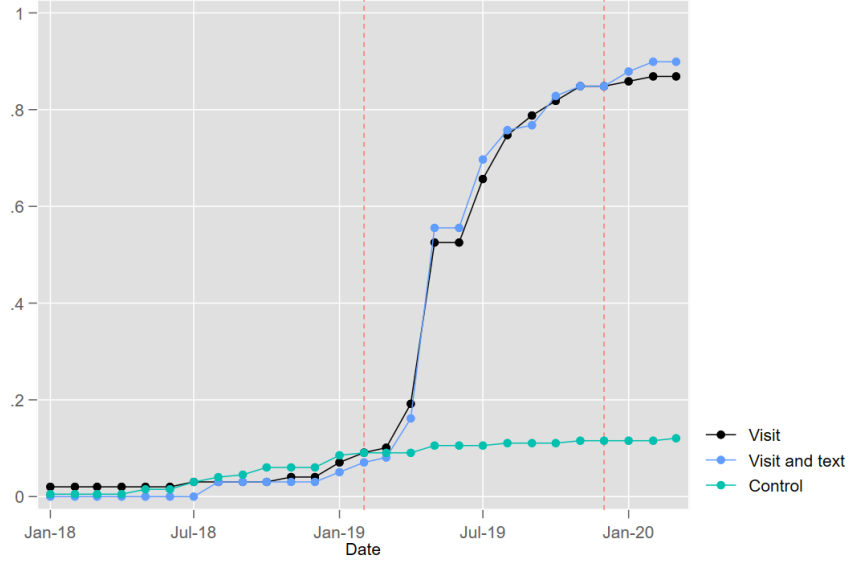
We collected baseline data in each of the 397 schools in our sample in February/March 2019, and revisited these schools in Feb/March 2020 to perform midline data collection. We plan to conduct a third and final round of data collection, endline, in November 2020.

Our data collection consists of the following instruments:

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<sup>2</sup>The WSVs were phased in, with some regions starting earlier than others. Very few schools had received visits by the time that we started the evaluation.

Figure 4: Proportion of schools that received a Whole School Visit - by treatment arm



1. **Student assessments** conducted on a random sample of 10 standard two and 10 standard three students selected at baseline. The grade two students were assessed in Math and Kiswahili, whereas the standard three students were assessed in Math, Kiswahili, and English. We assessed these same students at midline, provided they were still at school.
2. **Document inspection** to capture the number of pages completed in the sampled students' exercise books.
3. **Head teacher and teacher questionnaire** for a sample of all standard two and three teachers teaching the focal subjects of Kiswahili, Math, and English. We then randomly sampled additional teachers until we reached a total of ten teachers per school.
4. **Teacher assessment** conducted on the same sample of teachers as above.
5. **Classroom observations** conducted on two teachers per school (one standard two and one standard three teacher) using the World Bank's TEACH instrument.
6. In addition, surveys were also administered to all 26 **District Education Officers** and all 397 **Ward Education Officers** in our sample, as well as two **School Quality Assurance Officers** in each of the 26 districts in our sample. The DEO survey was only administered at baseline, and the SQAQ survey was only administered at midline.

## 5 Empirical strategy

Our main estimating equation is an Intent-to-Treat specification that estimates the effect of being assigned to any of the two treatment arms:

$$y_{t,s,b} = \beta_0 + \beta_1(\text{Visit})_s + \beta_2(\text{Visit\&Text})_s + \gamma_d + X'_{t,s}\Gamma + \epsilon_{s,b}, \quad (1)$$

where the dummy variables,  $(\text{Visit})_s$  and  $(\text{Visit\&Text})_s$ , indicate the two treatment arms,  $\gamma_d$  refers to strata fixed effects,<sup>3</sup>  $X_{t,s}$  is a vector of controls (measured at baseline) included to improve precision, and  $y_{t,s,b}$  is the relevant outcome variable for teacher,  $t$ , in school,  $b$ . Our main outcomes at midline are at a teacher or school level. At endline we will also examine student-level outcomes. The error term,  $\epsilon_{s,b}$ , is clustered at the school level.

Since there was non-compliance, both in the treatment and control groups, as secondary analysis we will also estimate the Local Average Treatment Effect (LATE), to get an estimate of the impact of receiving a Whole School Visit. Our first-stage equation is:

$$\text{WSV}_{s,b} = \beta_0 + \beta_1(\text{Visit})_s + \beta_2(\text{Visit\&Text})_s + \gamma_b + X'_{t,s}\Gamma + \epsilon_{s,b} \quad (2)$$

and our second-stage equation is:

$$y_{t,s,b} = \alpha_0 + \alpha_1 \text{WSV}_{s,b} + \alpha_2(\text{WSV} \times \text{Visit\&Text})_{s,b} + \gamma_b + X'_{t,s}\Gamma + \epsilon_{s,b}, \quad (3)$$

where  $\text{WSV}_{s,b}$  is a dummy variable equal to one if a school received a Whole School Visit by the end of 2019.

For some outcomes the relevant comparisons are only between the two treatments, and so we restrict data to the 84 schools in each of the treatment arms that had received a Whole School Visit by the end of 2019, and estimate the following equation:

$$y_{t,s,b} = \beta_0 + \beta_1(\text{Visit\&Text})_s + \gamma_b + X'_{t,s}\Gamma + \epsilon_{s,b} \quad (4)$$

If there is evidence that there is imbalance between these two sub-samples (i.e. schools where the WSVs took place), then we will also estimate the Local Average Treatment Effect with the following set of equations:

$$\text{WSV}_{s,b} = \beta_0 + \beta_1(\text{Visit\&Text})_s + \gamma_b + X'_{t,s}\Gamma + \epsilon_{s,b} \quad (5)$$

$$y_{t,s,d} = \alpha_0 + \alpha_2 \text{WSV}_{s,d} + \gamma_d + X'_{t,s}\Gamma + \epsilon_{s,d}, \quad (6)$$

Finally, as secondary analysis we will also calculate heterogeneous treatment effects:

$$y_{t,s,b} = \beta_0 + \beta_1(\text{Visit})_s + \beta_2(\text{Visit\&Text})_s + \beta_3(\text{Visit} \times G)_s + \beta_4(\text{Visit\&Text} \times G)_s + \gamma_b + X'_{t,s}\Gamma + \epsilon_{s,b}, \quad (7)$$

where  $G$  is the sub-group of interest and is also included in the vector of controls.

## 6 Primary Hypotheses

Our primary hypotheses will be tested using equation (1), with the main coefficients of interests being  $\hat{\beta}_1$  and  $\hat{\beta}_2$ . For each indicator, we also show [in brackets] the corresponding module and question number from the surveys.<sup>4</sup>

**Inference.** Unless otherwise specified, for each hypothesis we will run a separate regression on each listed indicator, and then present adjusted  $p$ -values, using sharpened  $q$ -values that control the false discovery rate, as in Anderson (2008). In addition, in some cases we will combine related indicators into one index by taking the mean of the z-score of these indicators, following Kling et al. (2007). In these cases we will run a separate regression on every index, rather than every indicator.

<sup>3</sup>We stratified by both district and assignment to the teacher incentives program.

<sup>4</sup>HT1 = Head teacher survey #1 HT2 = Head teacher survey #2; T=Teacher survey; P=Pupil survey; W=WEO survey

### **Hypothesis 1: Head teacher and teacher beliefs.**

As a starting point, we are interested in knowing if the WSVs lead to a shift in teachers' and head teachers' beliefs. It is theoretically ambiguous how beliefs would change, depending on the accuracy and possible direction of bias of their baseline beliefs.

#### **Hypothesis 1a: WSVs change head teachers' beliefs over the school quality.**

1. The head teachers' perception on the amount of "room for improvement" prior to the intervention (Jan/Feb 2019), in the following areas: [HT2,M2.3,Q1]
  - (a) Management quality
  - (b) Teaching quality
  - (c) School environment
  - (d) Community engagement.
2. Proportion of children that the head teacher believes can do addition and read. [HT2,M2.3,Q2-3]

#### **Hypothesis 1b: WSVs change teachers' beliefs on student learning.**

1. "What is the approximate share of pupils in your class that can do grade 2 level addition, for example  $26+32$ ?" [T,M6,Q12]
2. "What is the approximate share of pupils in your class that can read Kiswahili at a grade 2 level, for example a short story of five sentences; and answer comprehension questions?" [T,M6,Q13]
3. "After which grade would you expect the average pupil to be able to read a short story?" [T,M4,Q7]

#### **Hypothesis 1c: WSVs change head teachers' prioritization of learning.**

In a series of vignettes, we elicit the head teachers' beliefs on the relative importance of the following domains:

1. Prioritizing early vs late grade levels. [HT2,M2.3,Q4-Q6]
2. Teaching quality vs classroom functionality. [HT2,M2.3,Q7]
3. Curriculum coverage vs students' ability to read. [HT2,M2.3,Q8]
4. Teaching using (potentially disruptive) participatory vs traditional methods. [HT2,M2.3,Q9]

### **Hypothesis 2: Behavior of school stakeholders.**

A next step in the theory of change is that the head teacher, teachers, or the school community make investments to improve school quality.



**Hypothesis 2a: WSVs change the management practices of the school leadership.**

1. **Monitor.** An index of the following indicators:

- (a) The last time that someone in school management asked the teacher to see a record of pupils homework. [T,M6,Q5-Q6]
- (b) The last time that someone in school management asked to see a record of pupils continuous assessment. [T,M6,Q8]
- (c) The teacher has a class journal that was recently inspected by school leadership, and it was signed daily. [T,M7,Q3-4]
- (d) Head teacher has an up-to-date pupil and teacher attendance record. [HT1,M7,Q2-Q4]
- (e) Teachers have student skill targets that are set by the head teacher or academic teacher. [T,M7,Q1-5]

2. **Curriculum guidance.** An index of the following indicators:

- (a) Teacher received teaching support from the head teacher, or colleagues. [T,M4,Q11-13]
- (b) School leadership recently spoke to the teacher about lesson plans, made recommendations, and followed up on recommendations. [T,M8,Q10-13]
- (c) School leadership recently spoke to the teacher about the scheme of work, made specific recommendations, and followed up on them. [T,M8,Q18-22]
- (d) School leadership recently observed the teacher teaching in the classroom, provided feedback, and followed up to make sure that the recommendations were implemented. [T,M8,Q24 & Q27-28]
- (e) Teacher agrees strongly with the statement: "The school leadership provides a high level of curriculum guidance, feedback and professional support". [T,M8,Q34]
- (f) Teacher does not agree with the statement: "I would like to receive more feedback about my teaching from my Head Teacher". [T,M8,Q39]

**Hypothesis 2b: WSVs change the quality of teaching.**

1. An index of overall teaching quality, based on the **classroom observations**, including the following three domains in the World Bank's TEACH instrument Molina et al. (2018):

- (a) **Time on task:** proportion of students who are "on task".
- (b) **Classroom culture:** supportive learning environment and positive behavioral expectations.
- (c) **Instruction:** lesson facilitation, checks for understanding, feedback, and critical thinking.

2. **Preparation.** An index of the following teacher documents directly observed by the enumerator:

- (a) An up-to-date lesson plan. [T,M6,Q6-Q8]
- (b) A lesson plan that has a different lesson for every day. [T,M6,Q6-Q8]
- (c) An up-to-date scheme of work. [T,M8,Q14]
- (d) Class journal. [T,M7,Q1&2],

3. **Assessment.** An index of the following questions:
  - (a) In the last 5 school days has the teacher assessed curriculum skill levels of his/her students? [T,M6, Q11]
  - (b) The teacher has a record of pupils' continuous assessment. [T,M6,Q7]
4. **Homework.** Number of exercises completed by pupils in the past week. [P,M6,Q8]
5. **Attendance.** Proportion of non-empty classrooms that have a teacher. [HT1,M5.1,Q1-3]

**Hypothesis 2c: WSVs change parental engagement.**

1. School has an up-to-date Whole School Development Plan (WSDP) (observed). [HT2,M3.1,Q12]
2. The number of goals in the WSDP that require investments from the school community. These include: school construction, renovation of facilities, set up school lunch program, and purchase of learning aids. [HT2,M3.1,Q13]
3. There is a school lunch program. [HT1, M3.2, Q20]
4. Pupil attendance. [HT1,M7, Q3]
5. The school has a Parent Teacher Association, and it met within the past three months. [HT2,M3.1,Q5-7]
6. Whether parents contributed to the following: construction/rehabilitation, examination, and instructional material. [HT1,M3.2,Q5]
7. Number of times that the School Management Committee met in the past 6 months. [HT2,M3.1,Q3]

**Hypothesis 3: WSVs Improve Student Learning.**

Our primary outcome at endline will be overall student learning. Data will be pooled by grade and subject. As secondary tests we will also estimate the impacts for each grade and subject separately. We do not expect this outcome to shift at midline.

## 7 Secondary Outcomes

**Hypothesis 4: WSVs change the quality of the school environment.**

We include hypothesis 4, since the school environment is one of the domains that the schools are assessed on during the Whole School Visit. Some of the recommendations relate to the school environment. The main coefficients of interests are  $\hat{\beta}_1$  and  $\hat{\beta}_2$ , estimated using equation (1).

1. The number of functional toilets/pit latrines (on a per pupil basis). [HT1, M6.1,Q2-3]
2. Overall cleanliness of the toilet facilities. [HT1,M,Q6]
3. Number of permanent classes that are in sufficient physical condition so they can be used (on a per pupil basis). [HT1,M5,Q2-6]

## **Hypothesis 5: Sending text messages to WEOs changes their knowledge and behavior.**

We also examine the impact of the text message program on WEOs' knowledge and behavior. The coefficient of interest,  $\hat{\beta}_1$ , is estimated using equation (4). The data is restricted to the 168 schools in the two treatment arms (84 in each treatment arm) that had received a WSV by the end of 2020.

1. **Knowledge.** An index of the following indicators
  - (a) WEO can correctly recall that a WSV had taken place in the school. [W,M4,Q7]
  - (b) The proportion of recommendations that the WEO can recall. [W,M4,Q15]
2. **Monitoring.** An index of the following indicators:
  - (a) The number of days since the most recent visit from a WEO. [HT2,M2.2,Q2]
  - (b) The number of days since the head teacher received a phone call or text message from the WEO. [HT2,M2.2,Q4]
  - (c) Whether the WEO did any of the following, during the most recent visit. [HT2,M2.2,Q5]
    - i. Check that teachers are present and teaching.
    - ii. Observe teaching in the classroom.
    - iii. Assess students.
3. **Actions** taken by WEO to support schools. An index of the following indicators:
  - (a) Whether the WEO followed up on recommendations from the School Quality Assurance Officer, to make sure that the school is implementing them. [HT2,M4,Q26]
  - (b) Whether the WEO took actions (according to the head teacher) to help the school implement the recommendations. [HT2,M4,Q27]
  - (c) Whether the WEO had organized a workshop or training (according to the head teacher) for teachers for his/her ward in the past six months. [HT2,M2.2,Q6-7]
  - (d) The last time that the WEO had met with a representative of the: (i) Village Authority, (ii) Village Council, (iii) Ward Council. [W,M5,Q9]
4. Overall **contribution** of the WEOs to help schools implement the recommendations.
  - (a) The number of recommendations that have been implemented, where the WEO played an important role to make sure it was implemented. [HT2,M4,Q23]

## **8 Descriptive analysis**

We also plan to perform descriptive analysis to document the quality of the Whole School Visit process. We will report the mean value of the each of the following outcomes, broken by treatment arm, restricted to the sample of schools where the WSV took place.

1. **High quality visit.**
  - (a) WSV lasted at least two days. [HT2,M4,Q4]
  - (b) Number of days that the WEO was also present. [HT2,M4,Q6]

- (c) Head teacher filled in the School Self-Evaluation Form, and was able to show us the School Self-Evaluation Form. [HT2, M4,Q8]
  - (d) Head teacher found the School Self-Evaluation Form useful. [HT2,M4, Q9]
  - (e) It was easy to understand the School Self-Evaluation Form. [HT2,M4, Q10]
  - (f) SQAOs did the following: (i) talked to teachers, (ii) observed teaching, (iii) assessed students, (iv) talked to students, (v) talked to parents, (vi) reviewed school documents. [HT2,M4,Q7]
  - (g) There was an exit meeting. [HT2,M4,Q11]
  - (h) The number of people who attended the exit meeting, broken down by the following categories: (i) Teachers, (ii) members of the School Management Committee, (iii) parents, (iv) Ward Education Officers, (v) students, (vi) community representatives, (vii) District Education Officer. [HT2,M4,Q12]
  - (i) The head teacher learnt something new in each of the six domains of the WSV report. [HT2,M4,Q14]
  - (j) Schools received the Whole School Visit report. [HT2,M4,Q15]
  - (k) For each recommendation, the head teacher answered whether: [HT2,M4,Q19-Q25]
    - i. Students will learn more if the recommendation is implemented.
    - ii. The recommendations require the head teacher to do something differently than before.
    - iii. Recommendations have been implemented, or will be implemented within the next 12 months.
    - iv. The head teacher lacks resources to implement the recommendations.
  - (l) The school received the report card. [HT2,M4,Q28]
  - (m) The school displayed the report card in the school. [HT2,M4,Q29]
2. **Accuracy of information.** We will correlate the SQA assessment for three domains —pupil learning, management, and teaching— with our own index of the quality in those domains. We will perform a Spearman rank correlation.
3. **School compliance.** Schools set up an Internal School Quality Assurance Team. [HT2,M3.1,Q11]
4. Ward Education Officers' exposure to the program:
- (a) WEO is familiar with the new SQA framework. [W,M4,Q1]
  - (b) WEO received training in the new SQA framework. [W,M4,Q2]
  - (c) WEO can correctly recall which schools received a WSV in his/her ward. [W,M4,Q6]
  - (d) WEO has received phone calls or text messages reminding them of the recommendations of the WSV. [W,M4,19]
5. Ward Education Officers' perception of the program:
- (a) In your opinion, has the Whole School Visits performed by SQAOs made your work easier, harder, or about the same? [W,M4,Q17]
  - (b) In your opinion, will students learn more in this school as a result of the Whole School Visit? [W,M4,Q18]
  - (c) How useful did you find the text messages in helping you improve your work? (For Text treatment arm only). [W,M4,Q23]

## **8.1 Dropping variables with limited variation**

In order to limit noise caused by variables with minimal variation, questions for which 90 percent or more of observations have the same value within the relevant sample will be omitted from the analysis and will not be included in any indicators or hypothesis tests. In the event that omission decisions result in the exclusion of all constituent variables for an indicator, the indicator will be not be calculated.

## **8.2 Heterogeneity**

We will also investigate heterogeneous treatment effects across the following dimensions:

1. Whether the school is in a region that was part of the donor-funded Equip-T program.
2. Whether the school also participated in the teacher incentives program.
3. Head teacher characteristics (age, gender, tenure, experience).

## References

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