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guide

on Innovation, Development and Evaluation

Monitoring the Big Results Now in Education Program

RISE Tanzania Country Research Team

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1 Executive Summary

Between October 2016 and February 2017, the RISE Tanzania Country Research Team conducted a survey of 74 District Education Officers (DEOs), 639 Head Teachers (HTs) and 431 School Management Committee and Board of Governors (BOG) Chairs¹ across six regions in Tanzania. District Education Officers were surveyed in person while other respondents were surveyed over the phone. The aim of the survey was to generate evidence on the degree and fidelity of implementation of key components of the Big Results Now in Education (BRNEd) reform, initiated by the Government of Tanzania in 2012.

Survey findings point to a very mixed picture on the quality of implementation across the components of BRN.

On a positive note, the timely dispersal of capitation grant funding and the delivery of instructional materials is high. Virtually all public schools report receiving the capitation grant, and almost all schools received the grant within the three months preceding the survey. In addition, primary schools report receiving more textbooks than they requested.

Moreover, the implementation of two components of BRN - the Reading, Writing and Arithmetic (3R) training, and training in remedial education called the Student Teacher Enrichment Program (STEP) - surpassed government targets. Almost all primary schools report to have received 3R training; and the proportion of schools that received STEP training in our sample is higher than government's initial targets.

However, very few schools received the School Management Toolkit, and far fewer received the training that was supposed to accompany it. (Although, a separate study found that 71% of head teachers received management training in regions where the DFID-funded EQUIP-T project operates.)

A key component of the BRN reform was the publicizing of school performance so that key actors could exert pressure on schools to raise learning outcomes. Our survey results suggest that knowledge of school performance is poor amongst some of the key actors in the education system. A very small share of DEOs, Head Teachers and especially School Management Committee know their school's national ranking. Knowledge of a coarser form of school ranking - the traffic light color bands - is a little better. An emerging finding is that providing direct access to information will likely address the leakages inherent in the chain of information from the Regional Education Officers (REOs) to SMC/BOGs. It is encouraging to note that a majority of head teachers have made use of the official government website that displays the performance rankings.

Our survey reveals that many DEOs share information on within-district school rankings (district rankings) that may generate more bureaucratic pressure to raise learning outcomes. While this was not a formal component of BRN, a large share of DEOs report organizing dedicated meetings with head teachers in order to share district-level school performance rankings. Head Teachers are also far more informed of their district rankings than national rankings: for example, 29% of primary school head teachers know their district ranking and 32% know their color bands; while only know 7% their national

¹ The Board of Governors (BOG) is the secondary school equivalent of the School Management Committee. Given that both institutions serve the same function, we use the term "School Management Committee" to refer to both governing bodies in this report.

ranking.

The survey revealed a persistent gap in the number of teachers requested and the number actually received. Our survey suggests that lower-performing primary schools were more likely to request additional teachers, however; the allocation of teachers was not correlated with school performance. This suggests that school performance is not a primary factor in determining teacher allocations. Both the wedge between demand and supply and the uniform allocation of teachers has important implications for learning outcomes, especially in the worst-performing schools.

2 BACKGROUND

In 2012, The Tanzania Government introduced the Big Results Now (BRN) initiative. Modelled on Malaysia's Fast Results Now initiative, the BRN initiative is a policy delivery methodology focusing on achieving specific goals within a stipulated timeline in an attempt to accelerate the realization of the Tanzania Development Vision 2025. The BRN is based on three principles, namely: (i) prioritization with clear performance targets; (ii) rigorous implementation supported by detailed monitoring of performance data by dedicated delivery staff; and (iii) transparent performance management. Six sectors or areas have been prioritized in BRN, namely: agriculture, education, energy, resource mobilization, transport and water.

The Big Results Now in Education (BRNEd) initiative focuses on four main areas, namely: "creating performance transparency; motivating through incentives; providing support where needed the most; and improving teacher conditions." The ultimate goal of BRNEd is to improve student academic achievement, by re-orienting the education system from an input-based system to one guided by learning outcomes. Table 1 summarizes these reform efforts.

The RISE Tanzania Country Research Team (CRT) is examining these specific reform efforts, with a view towards understanding the wider impact of BRNEd on the Tanzanian education system. Even though BRNEd is officially being phased out, many of its key components will likely be retained in the new government's program. Furthermore, by better understanding the successes and failures - and the reasons for these - we can help improve the design of future programs aimed at improving learning in Tanzania.

As a starting point in this effort, we conducted a survey of key school stakeholders - district education officials, head teachers and active parents - in the Tanzanian education sector in order to ascertain the extent to which the government's stated reform efforts were implemented and the effectiveness of those implementation efforts. For this purpose, we interviewed 74 District Education Officers (DEOs), 639 Head Teachers (HTs), and 431 School Management Committees or Board of Governors (SMC) Chairs across six regions in Tanzania.² The primary objective of the surveys was to measure the degree to which BRNEd reforms were implemented as stated in policy, as well as to document the knowledge and perceptions of these important stakeholders in the education sector.

This report complements many of the RISE Tanzania Country Research Team's planned papers. These include, but are not limited to, papers that will examine the political economy of coalition building and implementation of reform, the political consequences of specific reform initiatives, and the bureaucratic and administrative reactions to the government's attempt to shift the education system away from

inputs to a focus on relatively easily verifiable results. In addition, we plan to exploit a quasi-experiment to evaluate the impact of certain aspects of the reform on pupil learning outcomes. This document should be viewed as providing a foundation for our ongoing observational analyses and proposed future experimental work, as it provides insights into both the incentives that animated various stakeholders in the Tanzanian education sector, as well as the possible “stumbling blocks” to full implementation of the proposed reforms under BRNEd.

Table 1. Taxonomy of the different components of BRNEd.

1. Pressure to Perform	Official school ranking	Ranks all government primary and secondary schools by pass rates in PSLE and CSEE, respectively. Each exam has 10 performance bands, which are classified as green, yellow, or red. Results are publicly posted and widely disseminated.
	School incentive scheme	Annual monetary and non-monetary incentives for primary and secondary schools that have most improved their performance in the national exams (PSLE & CSEE). The goal is to motivate teachers and school administrators to invest more on improving learning outcomes.
2. Teacher motivation	Teacher motivation	Providing both non-monetary incentives as well as clearing all outstanding claims for primary and secondary school teachers.
3. Back to Basics	National 3R Assessment	Early learning assessments (Standard 2) under the 3R assessment program involving randomly selected schools will provide data to measure system performance as well enable teachers identify and help weak students. Currently, only two high stakes examinations provide a national assessment of student achievement -- the PSLE and CSEE. Nevertheless, recently, some organisations have introduced assessment surveys which test specific competencies in children. These include, for example, Uwezo assessments and EGRA and EGMA.
	3R Teacher training	Teacher training program for Standard 1 and 2 teachers on how to teach reading, writing and arithmetic most effectively to this age group. Through a cascade model 37.5% of schools in 40 (out of 136) low-performing districts would be trained.
	Student Teacher Enrichment Programme (STEP)	STEP aims to train primary and secondary school teachers on how to identify and support low performing students. Teachers will be trained on how to conduct diagnostic tests to determine which students need extra coaching, as well as how to develop curriculum and conduct classes for low-performing students.
4. School Management and Finance.	School improvement toolkit	The Government of Tanzania, through the Agency for the Development of Education Management (ADEM) and other programs, aims to train head teachers of primary and secondary schools on best practices in the management of schools. A practical toolkit of these practices will be distributed to each school head. Over 19,000 teachers are projected to receive training from ADEM.
	Capitation grants	Timely disbursement of sufficient capitation grants for primary and secondary schools; as well as equalization of funding per student per district (about \$4.6 per primary student and \$11.6 per secondary student). This is tied to greater revenue maximization as well as monitoring to ensure accurate implementation of equal per-student financing.

Note: A ninth component of BRN was school construction, which will not be addressed in this report but will be examined in at least one CRT publication.

3 DATA COLLECTION

Between October 2016 and February 2017, the RISE Tanzania Country Research Team surveyed District Education Officers (DEOs), Head Teachers (HTs), and School Management Committee (SMC) or Board of Governors (BOG) Chairs across six regions of Tanzania. At the outset, we conducted in-person interviews with all of the DEOs. At this meeting, the DEOs also granted permission to survey head teachers and SMCs and provided their contact details. In early November 2016, the team launched the HT and SMC Chair phone surveys.

We chose to conduct phone surveys as a relatively low-cost “snapshot” of BRN implementation. This will inform future detailed data collection exercises, where we plan to visit schools to conduct in-person interviews and also assess pupil learning. The added benefit of low-cost phone surveys is that we can conduct high-frequency surveys to measure how beliefs and knowledge of school performance vary over time.

The first round of Head Teacher and School Management Committee Chairs surveys continued until early December 2016. The primary schools were surveyed first, since secondary schools were in the process of writing exams³ in early November 2016. Due to challenges in obtaining official permission to survey in Dar es Salaam,³ DEOs in Dar es Salaam were interviewed in late November and early December 2016. Furthermore, due to lower initial success rates among secondary schools and all schools in Dar es Salaam, the team commissioned a short follow-up round in January and February 2017. In this round, the survey firm targeted all secondary schools that had not been surveyed as well as primary schools in Dar es Salaam.

The research team hired a survey firm, IPSOS Tanzania Limited, to lead the data collection exercise, under the close supervision (in-person and remote) of the DC-based research team.

Enumerators conducted the DEO surveys in person (i.e. face-to-face) using computer assisted personal interviewing (CAPI). The Head Teacher and School Management Committee Chair surveys were conducted over the phone using CAPI. The enumerators used phones equipped with a CAPI application called Survey-to-Go.

At the end of each day of data collection, data was downloaded from each enumerator’s phones onto a secure server at IPSOS and transmitted back to the DC-based Program Coordinator at Georgetown in Stata compatible format for checking and analysis.

Data Quality

Below, the CRT details its approach to ensuring data quality on the surveys:

³ The team requested permission to survey in all study regions from the Permanent Secretary, Ministry of Education, Science, and Technology (MOEST). The Permanent Secretary, MOEST granted permission in the form of a letter, which was delivered to the Regional Education Officer in each of the study regions. However, the Regional Education Officer in Dar es Salaam requested additional clearance from the Ministry of Local Government in Dodoma. The research team obtained a letter from the Ministry of Local Government in which it deferred to the Ministry of Education, Science and Technology as the appropriate authority on such matters. Once presented with this letter and after a conversation with Country Research Team member and University of Dar es Salaam researcher Aneth Komba, the REO agreed that the team could proceed.

Supervision Structure – The team deployed several staff members to supervise enumerators and check the quality of their work. The Georgetown-based Program Coordinator travelled to Tanzania to supervise ongoing data collection for the DEO survey and the launch of the HT and SMC surveys. The PC worked closely with IPSOS’ Research Executive to prepare for and supervise enumerator training on the instruments. During the training, the Research Executive reviewed each question in the instrument with enumerators to ensure they understood the question’s content and intent and guided them on correct probing techniques. The PC liaised with the Primary Investigators of the study to confirm the aim of questions and to resolve any conceptual ambiguity.

Programming – We leveraged the modality of CAPI software by establishing value ranges for potential responses (hard constraints) and softer, automated checks for possible but irregular values. This helped prevent incorrect values sourced from enumerator or respondent error from being recorded.

The programmed instruments were tested by IPSOS’ Research Executive and the DC-based Program Coordinator extensively prior to launch.

Observations and De-briefs – A dedicated IPSOS survey supervisor (who reports to the IPSOS Research Executive) observed enumerator interviews and provided corrective feedback to them, when necessary. The Research Executive and Supervisor held daily debriefs with the enumeration team to review problematic questions and irregular responses (as detected by data checks).

Data-checks – IPSOS’s Research Executive conducted initial checks of the data to verify completeness and correct formatting on a daily basis. In addition, the Research Executive checked for discrepancies previously identified by RA-written STATA code.

Research Analysts based at Georgetown, under supervision of the Primary Investigators, coded data quality checks in STATA that were run every day for the week of data collection and every several days thereafter. The data checks were aimed at picking up entry errors as well as conceptual errors on the part of enumerators (for instance on the scale for Grade Point Average) that could impact analysis. Problematic cases were outputted – and IPSOS communicated corrective feedback on particular questions and responses back to enumerators during the daily debrief. The research team believes that providing this feedback in a timely manner reduced frequency of enumerator errors and enhanced the quality of collection.

Sampling strategy. We randomly sampled 600 primary and 300 secondary schools in 45 districts across six regions (Mbeya, Dar es Salaam, Arusha, Morogoro, Mtwara and Mwanza) in Tanzania, stratifying by 2015 exam performance and the school’s ranking in their district.⁴ This stratification assured that the sampled schools come from a range of different performance levels, both in absolute score and in their

⁴ In particular, we used the Coarsened Exact Matching method proposed by Iacus King and Porro (2011) to split schools into strata based on their 2015 exam performance. Next, we stratified schools by their *relative* exam performance in their *district*: top 10% vs middle 80% vs top 10%. We then drew a random sample of schools assuring that we have representation across *both* the absolute national score and within-district rank. For primary schools we randomly sampled 25% schools in the top decile, 50% of schools in the middle eight deciles, and 25% of schools from the bottom decile. For secondary schools, we randomly sampled a third of schools from each category. This sampling method did not assure balance in the number of schools across districts. A balanced number of schools per districts will improve statistical power when making comparisons between districts. So, as a final step, we reran the random sampling multiple times and choose the seed that would minimize the variance of number of schools sampled per district. The sampling procedure was required for the identification strategy that will be discussed in a subsequent paper.

ranking within their districts. Due to this complicated sampling strategy we construct sample weights that we used in all analysis.⁵

These six regions were chosen, because of related data collection exercises taking place in these regions that will facilitate a deeper analysis of education service delivery. These regions were originally selected using a stratified random sampling procedure, stratifying by location (urban/rural). Figures 1 and 2 show that the districts surveyed in each region represent a wide spectrum of exam performance, ranging from the top to one of the worst-performing regions.⁶ Between the sampling and the eventual data collection, one of the administrative regions became split into two (Mbeya and Songwe). We maintained the original sample for data collection, which eventually took place in seven regions. Throughout this report we refer to the six regions that we originally sampled.

Tables 2a and 2b show a breakdown of schools surveyed, by stakeholder. We sampled 45 districts in total: in 44 of these districts we conducted primary school surveys, in 36 of these districts we conducted secondary school surveys, and in 34 we conducted both.

In total, we conducted 74 DEO surveys. We were able to survey 38 out of 44 sampled primary school DEOs and all 36 sampled secondary school DEOs. We were unable to survey five primary school DEOs in Dar Es Salaam and one primary school DEO in Mwanza. The former reflects the challenges we had in obtaining support for data collection in that region. In the end, we only surveyed three secondary school DEOs and one primary school DEO in the Dar Es Salaam region. Consequently, any DEO-level results for Dar Es Salaam should be interpreted with caution.

We conducted surveys for 639 HTs and 431 SMC chairs - response rates of 71% and 48% respectively. 831 schools come from districts where a DEO was also surveyed, and therefore also include DEO-level data. Overall, 400 of the 900 sampled schools were in all three surveys, and 871 were in at least one of the surveys - a response rate of 97%.

Table 2a. Districts Sampled and DEOs Surveyed

Region	Districts Sampled			DEOs Surveyed	
	Total	Primary	Secondary	Primary	Secondary
Arusha	7	7	7	7	7
Dar Es Salaam	6	6	3	1	3
Mbeya	10	10	8	10	8
Morogoro	7	7	6	7	6
Mtwara	7	7	5	7	5
Mwanza	8	7	7	6	7
Total	45	44	36	38	36

⁵ The sampling weights cannot account for roughly 13% of primary schools (6% worst-performers and 7% best-performers) that had zero chance of being included in our sample, because these schools could not be matched for the purpose of the subsequent paper. It is therefore important to note the sample cannot be perfectly representative, since it excludes any of the best-performing and worst-performing schools.

⁶ We note here that the regions selected do not include areas where the DFID-funded education programs (EQUIP-T) were active, although all the sampled regions overlap with regions where SIDA implemented the Literacy and Numeracy Education Support (LANES) programs.

Table 2b. Total Schools Sampled, and Surveyed in the Different Surveys

Region	Schools Selected for Survey	DEO surveyed	HT surveyed	SMC surveyed	All three surveyed
Arusha	123	123	81	55	55
Dar Es Salaam	113	57	57	28	8
Mbeya	199	199	171	115	114
Morogoro	175	175	131	93	92
Mtwara	97	97	75	55	55
Mwanza	193	180	124	85	76
Total	900	831	639	431	400

Note: There are 29 schools for which we were unable to collect any survey data.

Table 3 also shows the ranking of our sampled regions in terms of the average school performance in 2015 end-year Primary School Leaving Exam (PSLE) and Certificate of Secondary Education Exam (CSEE). Figures 1 and 2 show visually the performance of all the districts.

Tables 4 and 5 below provide some more description of sampled schools and the surveyed school stakeholders. The majority of the schools (84%) are public. Consistent with their populations, the proportion of private schools is higher for secondary than primary schools. DEOs typically have over 10 years' experience as a teacher or head teacher and have around 5 years' experience as a DEO.

Table 3. Region Rank on Primary and Secondary Exam Performance

	PSLE rank	CSEE rank
Arusha	6	2
Dar Es Salaam	1	1
Mbeya	23	14
Morogoro	18	20
Mtwara	10	24
Mwanza	2	4

Note: 25 regions included in the ranking. Regions outside of mainland Tanzania were excluded.

Threats to sample representativeness. It is important to emphasize two aspects of survey and sampling design that could undermine the degree with which we can generalize results from our study to the population as a whole. First, our sampling strategy excluded 6% of worst performing schools and 7% of best-performing schools in the country. Second, there was non-random non-response from the phone survey: only 71% of head teachers sampled agreed to participate in the interview (see Table A.1 in the appendix). Nonetheless, we are still confident that the main results outlined below are broadly generalizable since our sample still includes schools drawn from a wide distribution of exam performance. Moreover, it is highly unlikely that any of our main the qualitative conclusions will change even if the excluded sample of schools behaved very differently, given to the large and consistent trends we discuss below.

Summary of Survey Questions - In the DEO survey, we asked DEOs to provide information on exam performance (color band, and district and national ranking) of every sampled school in their district. We also asked how they obtained ranking information and how they distributed this information to schools.

In addition we asked about implementation of the other BRNEd programs - 3Rs, STEP and the School Management Toolkit. Finally, we asked general questions about their interaction with schools (for example, whether they set goals and targets for schools in their district).

Similarly, in the head teacher survey, we asked a series of questions about knowledge of school exam performance (color bands, national ranks, and district ranks). We also asked how they obtained access to this information and if they distributed it to parents. In addition, we asked whether they had participated in different BRN projects: 3Rs, STEP and the School Management Toolkit. Finally, we also asked about the extent of interaction between regional district officials (for example, number of visits from a DEO) and request for and receipt of instructional resources.

The SMC survey was very similar to the head teacher survey, except that we also asked about parents' involvement in school (for example, number of visits to their child's school) and interaction with elected and appointed government officials.

Table 4. Types of Schools Surveyed

	Primary School	Secondary School	Total
Public School	531 (61%)	198 (23%)	729 (84%)
Private School	40 (5%)	102 (11%)	142 (16%)
Total	571 (66%)	300 (34%)	871

Table 5. Experience of School Stakeholders (years worked in this position)

	Primary School	Secondary School
District Education Officer	4.46 (n=38)	5.58 (n=35)
Head Teacher	6.32 (n=435)	5.35 (n=204)
School Management Committee Chair	1.33 (n=290)	2.53 (n=121)

Note: There was one secondary school DEO and 20 SMC chairs who did not respond to these questions

4 RESULTS

Below we discuss the main findings on the degree of implementation of BRN initiatives. The first subsection discusses the ranking and publicizing of school performance in the end-of-year exam. The following subsection discusses jointly the other components of the reform. The final subsection shows results on resource allocation and interaction between schools and regional officials.

In all figures the standard error bars indicate the 95% confidence interval.

4.1 PUBLICIZING OF RANKINGS AND COLOR BANDS OF EXAM PERFORMANCE

This subsection measures knowledge of school exam performance, in terms of the school's color band, national ranking, and district ranking. A key feature of the BRN was publicizing of exam performance, publicizing of school rankings, and also classifying schools into different color bands of performance. Although national rankings are listed on the NECTA website, we learned that DEOs also distribute information of schools' district ranking. Clearly, this information can only increase the pressure to perform if the different stakeholders are aware of it and crucially that actors in the hierarchy know that their supervisors have the same information.

4.1.1 Knowledge of School Performance

Figures 3 to 11 below show stakeholders' (DEO, HT, or SMC chair) awareness of national and district-level school ranking, as well as schools' color code. We then compared the self-reported rankings and color bands with the actual national and district rankings and color bands, based on the NECTA data found on their website.

In each of the figures below, the blue bar indicates the proportion of schools where the stakeholder accurately stated the ranking of the school. The stand error bars indicate the 95% confidence interval for this proportion. The overall size of the bar indicates the proportion of schools for which a stakeholder indicated they know the ranking.⁷ (Recall that for the DEO survey we asked the DEO to answer the question for every sampled school in his/her district, so we can also report this data at a school level).

Based on these figures, it is clear that knowledge of actual school performance is poor and especially so for the SMC chairs.

Below we discuss the main takeaways from the survey results.

District Ranking (Figures 3 to 5)

- Self-reported knowledge of rankings is high for DEOs and HTs. For roughly 80% of schools, DEOs claim that they know the school's district ranking, and roughly 72% of primary school head teachers and 57% of secondary school head teachers claim to know their district ranking (Figure 3).
- Head teachers and SMC chairs, in general, have poor knowledge of their district ranking. Only 29% of primary school head teachers and 10% of secondary school head teachers know their true district ranking. Close to no SMCs know their school's district ranking (Figure 3).
- Knowledge of DEOs, HTs, and SMCs is considerably better for primary schools. Secondary school DEOs were only able to provide the correct district ranking for 20% of secondary schools, compared to 72% of primary schools ($p < 0.001$). Only 10% of secondary school HTs were able to provide the correct district ranking, compared to 29% of primary school HTs ($p < 0.001$). This suggests that DEOs do not distribute district-level rankings to secondary schools (Figure 3).
- Surprisingly, we find no differences between public and private school head teachers vis-a-vis the accuracy of their knowledge about district rankings (Figures A1 in Appendix 2).
- Figure 5 shows that in primary schools, the best-performing schools within their district (top

⁷ Note: There were 39 schools for which a ranking of "99" was reported by the DEO. Most districts contain >99 primary schools but <99 secondary schools. In all instances, the rank of 99 was converted to a missing value indicating that the DEO did not know the ranking

10%) are far more likely to know their ranking compared to schools in the middle or bottom rankings: 63% of HTs in the top schools knew their rankings, compared to 24% in the middle and bottom schools ($t=6.06$; $p<0.001$). This trend is reversed for secondary schools, where the worst-performing schools (bottom 10% of schools in the district) are far more likely to know their ranking relative to schools in middle or top ranking ($t=6.68$; $p<0.001$).

National Rankings (Figures 6 to 8)

- DEOs mostly have access to this information, but HTs and SMCs are far less informed of their school's national ranking. This suggests that, even though all DEOs receive the national rankings, the within-district rankings are more salient for schools and are more widely distributed.
- Figure 7 shows that HTs in private schools are far more informed of their national rankings compared (22%) to public schools (8%) ($t=2.56$; $p=0.011$).

Color Bands (Figures 9 - 11)

- By comparing Figure 9 with Figure 3, we see that head teachers' knowledge of color bands is roughly the same as their knowledge of district rankings for primary schools (32% vs 29%), but secondary school head teachers are far better informed of their color bands (46%) than their district rankings (10%) ($t=6.53$; $p<0.001$).
- Figure 10 shows that head teachers from private schools are 24 percentage points more likely to know their color ranking, relative to public schools.

4.1.2 How do Stakeholders Learn about School Performance?

Next, we examine how the stakeholders obtained access to information on school rankings and the corresponding color bands and how they shared it with each other. Note that survey respondents were able to select more than one source, so the options are not mutually exclusive.

Figure 12 indicates that a smaller than expected fraction of DEOs received the information from official government channels (either from the Regional Education Officer, or directly from the Ministry).

Figure 14 shows that just over half of DEOs report that they shared this information with schools, whereas Figure 15 documents substantial regional variation. In general, more than half of primary school DEOs (except for Morogoro and Mbeya) claim to have shared this information with schools through a deliberate convening of school managers to disseminate ranking information. The proportion of primary school DEOs in Mbeya that held ranking/color band meetings is very small (21%), and the difference to the other regions combined is statistically significant ($t=8.9$; $p<0.001$). However, it is important to emphasize that we were only able to survey one primary school DEO in Dar Es Salaam, so results should be interpreted with caution.

Contrary to the findings from the DEO survey above, Figure 16 shows that a small fraction of HTs (28%) claim to have received a printout of school ranking or color band from the DEOs. It is encouraging that the NECTA website is widely used: almost all the HTs (89%) report to have received information of ranking and/or color band from the website. Figure 17 shows that the majority of HTs report to have shared this information with teachers (80% of all HTs), SMC members (66% of all HTs), and other parents (71% of all HTs).

Figure 18 shows that the SMC chairs, in turn, are most likely to get the information from the HT,

although the proportion of SMC that received this information from the HT is low (44%).

Appendix 2 Figures A4 to A7 examine if HTs (SMCs) are better-informed if they come from a district (school) where the DEO (HT) reports having shared the information. Here, we see no evidence of a systematic association.

4.2 SCHOOL IMPROVEMENT TOOLKIT, 3R TRAINING, AND STEP TRAINING

Next, we examine the degree of implementation of three different BRN initiatives: the provision of school improvement toolkit, training in 3R, and training in the Student Teacher Enrichment Programme (STEP). Each of these initiatives addresses management challenges and opportunities to raise learning outcomes.

According to official records,⁸ the government planned to train 12,300 Standard I and II teachers in 3R teaching skills. It also included a curriculum reform where Grade 1 and 2 students would only focus on the 3Rs and additional subjects such as social science and English were removed from Grades 1 and 2.

At higher grade levels, the Student Teacher Enrichment Program (STEP) provided teacher training for remedial education. Government planned to train 17,000 primary school teachers (in roughly 5,750 schools - 35% of all primary schools) and 8,000 secondary school teachers (in roughly 1,900 schools - 40% of all secondary schools) in techniques aimed at promoting learning among low-performing students. Government reported good implementation: The 2013/2014 annual BRN report claims that STEP training was conducted in 4,103 primary schools and 1,325 secondary schools; and the Ministry of Education and Vocational Training (MOEVT) reported that in 2015 5,459 primary schools and 1,139 secondary schools conducted enrichment classes.

The School Management Toolkit, which was planned to be distributed to all schools, provides management tips and strategies for head teachers to help them to motivate teacher effort and parental engagement, potentially amplifying the effect of the school accountability initiatives. In particular, the kit included guidance on the allocation of time across management activities; the provision of instructional materials when faced with funding challenges; strategies to motivate teacher effort and parental engagement; and the meaning of the NECTA school ranking.

In the DEO survey, we asked how many schools (none, some, most or all) in their district received the specific program. In the HT survey, we asked if the school participated in the program, and in which year it took place. We also asked about specific strategies that should have been employed due to the program: for those who received STEP training, we asked about strategies to identify and support low-performing pupils; for those who received the school management toolkit, we ask if they also received training.

Figure 19 shows that the majority of DEOs report that these programs were implemented in all the schools. For example, 85% of primary schools DEOs argue that all schools in their district received the 3R training. This is higher than the initial government target.

Turning to results from the HT survey, we see that almost all primary school HTs in our sample claim that at least one teacher in their school received 3R training. We further find that 51% of secondary schools and 33% of primary schools received STEP training. This is close to the initial government objective of

⁸ The “Education lab storyline”, a summary of goals agreed upon for the BRNEd.

~36% of primary schools and ~40% of secondary schools.⁹ The higher reach of STEP training in secondary schools relative to the initial government target is also consistent with an audit conducted by the World Bank in a random sample of 201 schools in seven regions (six of which do not overlap with our sample): the audit found that STEP training was conducted in 78% of secondary schools in the one overlapping region, Mwanza, compared to 64% of public secondary schools in our sample.¹⁰

However, figures 20 and 21 also shows that very few schools report having received the school improvement toolkit (26% of primary schools; 24% of public schools), even though universal rollout was planned (although, data from a separate impact evaluation conducted by Oxford Policy Management found that the the proportion of HTs that received training in school management was far higher (71%) in the regions where the DFID-funded EQUIP-T project operates).

Unsurprisingly, then, there is large disagreement between HTs and DEOs on the degree of implementation of these components of the BRN. Figure A12 in Appendix 2 shows that only 29% of primary schools in districts where the DEOs stated that all schools received the program, actually received it.

4.3 RESOURCE DISTRIBUTION BY DISTRICT RANKING

As a final set of analyses, we also look at the distribution of school resources, and whether this depends on schools’ district rankings. In particular, we want to examine the hypothesis that schools at different points in the district distribution either demand or get a different degree of support from the government.

Funding. From Figures 23 and 24 we see that almost all public schools report having received the capitation grant. Moreover, Figure 25 shows that in almost all the cases, the largest share of funding comes from capitation grant (median response of 80% for primary schools, and over 90% for secondary schools). It is encouraging to see from Table 6 that disbursements to the 96% of schools that received a capitation grant took place within the past three months prior to the survey date.

Figures 23 and 24 further show that although there is no difference in resource allocation to primary schools based on their district ranking, it is encouraging to see that secondary schools in the bottom 10% of their district are 26 percentage points more likely to receive infrastructure development grants, compared to schools in the middle and top of their district ($t=2.16$; $p=0.032$)

Table 6. Months since Last Capitation Grant was Distributed

	Primary Schools	Secondary Schools
3 months or less	402 (98%)	131 (91%)
More than 3 months	7 (2%)	13 (9%)
Total	409	144
Observations	553	

Note: There was one school which reported receiving a capitation grant but the date of the survey was not available.

⁹ The most common strategy schools employed in response to the training was to test the students (Figure 20). Self-reported additional afternoon or weekend classes are very rare.

¹⁰ The independent World Bank audits were done in the following regions: Dodoma, Geita, Mara, Mwanza, Shinyanga, Simiyu, and Tanga.

New Teachers. An interesting result (Figure 26) is that in primary schools, the worst-performing schools are more likely to request more teachers ($t=1.68$; $p=0.094$). They are, however, no more likely to receive teachers than higher-ranked schools. In contrast, the allocation and request for teachers were similar across the school performance distribution. There is no evidence of different probability of receiving teachers across regions (Figure A14 in Appendix 2).

Books (textbooks and exercise books). We see from Figure 27 that more books were typically received than requested for primary schools. The reverse is true for secondary schools. Again, we see that worst-performing primary schools are more likely to state they requested more textbooks, but the differences are small and statistically insignificant.

5 BEHAVIOR OF KEY STAKEHOLDERS

In the final analytical section, we also look at the behavior of DEOs, HTs, and SMCs. In particular, we examine the frequency of interaction (number of visits in the past year) and the nature of strategies used to motivate key actors in the system.

We asked the DEOs whether they set goals for schools in their district, and if so, what those goals are. We also asked DEOs if they take actions to motivate schools. In the HT survey, we asked how many times they were visited by the DEO or a Ward Education Officer (WEO). Finally, in the SMC Chair survey, we also asked how often the SMC Chairs visits the school and interacts with their teacher or with government representatives.

We find that there is large variance in the number of visits that HTs report to have received from the WEOs or DEOs office in the past year (Figure 28). For example, the median number of visits is 8, but many received no visit, and some claim to have received over 40 visits. There is also no strong evidence that worst-performing schools in their districts receive fewer or more visits from government representatives (Figure 29).

Almost all DEOs (Figure 30) report that they set goals for the schools in their district, and the most common goal is learning outcomes, followed by infrastructure. The majority (79% in primary schools and 55% in secondary schools) report that they reward well-performing schools with a school certificate.

Turning to the HT survey (Figures 32 and Figure 33), we see there is a large difference between private and public schools in whether they set goals and how they reward teachers. Most notably, private schools are far more likely to report to set goals (79% vs 45%; $t=5.60$; $p<0.001$), and to set goals for teacher attendance (62% vs 18%; $t=6.20$; $p<0.001$). Moreover, they are more likely to report rewarding teachers (97% vs 69%; $t=9.08$; $p<0.001$) and providing bonuses (83% vs 25%; $t=8.38$; $p<0.001$). There is no large difference between primary and secondary schools in this behavior (not shown), and there is no evidence of regional variation in whether DEOs/HTs set goals (not shown).

Table 7. Frequency of Key Stakeholder Meetings in Past Year, Primary Schools, DEO Survey

	Mean	Minimum	Maximum
Num. of Prim. Schools in Dist. Visited by Govt Rep	66.03	18	143
Prop. of Prim. Schools in Dist. Visited by Govt Rep	0.68	0.22	1.61
Num. of Meetings Held with HTs	6.97	0	63
Num. of Meetings Held with WEOs	5.00	1	12
Num. of Schools Requesting Support	16.18	0	75
Observations	38		

Table 8. Frequency of Key Stakeholder Meetings in Past Year, Secondary Schools, DEO Survey

	Mean	Minimum	Maximum
Num. of Second. Schools in Dist. Visited by Govt Rep	23.20	2	89
Prop. of Second. Schools in Dist. Visited by Govt Rep	0.78	0.1	2.12
Num. of Meetings Held with HTs	5.91	1	18
Num. of Meetings Held with WEOs	1.97	0	8
Num. of Schools Requesting Support	12.32	0	49
Observations	35		

6 CONCLUSIONS

To summarize, we find variable knowledge of the school ranking information that was at the heart of BRNEd as well as a key innovation in the way that knowledge is shaped and transmitted across actors. In particular, within-district rankings not originally intended as part of the BRNEd suite of initiatives is considerably more salient to both DEOs and head teachers. This contrasts with much of national-level ranking information, which seems to get stuck at district level. Even in the case of district rankings, however, stakeholder knowledge is limited within school communities with poor knowledge of this information amongst active parents. Roll-out of inputs-based components at school level appears strongest for 3R and STEP training, for which cases schools report participation rates above national targets, and less strong for School Improvement Toolkits. Finally, we see modest evidence of the skewing of resource allocations toward low-performing schools, particularly in the domains of school inspection visits and secondary-school infrastructure investments.

While highlighting potential weak points in the last-mile delivery of BRNEd reforms, these findings do provide the first insight into potential future interventions that might strengthen this output-oriented reform effort as it continues to evolve. Activities such as raising awareness of national and sub-national school performance among school-level stakeholders may both empower the current parents of a school to hold providers to account, and may inform better school application decisions by prospective secondary school entrants. It also appears that there is scope to better target human and physical resources to schools in order to maximize the impact on learning outcomes. These and related ideas regarding possible ways to renew and strengthen reform momentum will continue to be a focus for the RISE Tanzania research program.

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“EQUIP-Tanzania Impact Evaluation. Midline Technical Report, Volume I: Results and Discussion” *Oxford Policy Management*.

APPENDIX 1

Testing for Random Non-Response in the Phone Survey

In this section we test if schools that answered the phone survey (from our sampling frame of 900 schools) perform any different from the school survey. In particular, we regress key performance measures on a variable indicating if the head-teacher answered the phone survey or not, also controlling for district fixed effects. The first row shows the regression coefficient, reported in terms of standard deviations.

We see from columns (1) and (2) in Table 9 that schools performed better compared to the sampling frame for secondary schools, but performed worse for primary schools; but columns (3) to (5) shows that schools are no more/less likely to be the top/middle/bottom performers in their district.

The implication is that our surveyed schools are not fully representative of the full evaluation sample. This is a shortcoming we acknowledge and discuss in the data collection section.

Table 9

VARIABLES	(1)	(2)	(3)	(4)	(5)
	NECTA 2015 Exam performance		Within-district rank		
	Primary	Secondary	Top 10%	Middle 80%	Bottom 10%
Phone survey	-0.201** (0.0730)	0.339** (0.117)	-0.0248 (0.0188)	0.0539 (0.0472)	-0.0291 (0.0424)
District fixed effects	Y	Y	Y	Y	Y
Observations	600	300	900	900	900
R-squared	0.198	0.148	0.083	0.087	0.095

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 2: Accompanying Figures

Figure 1: Average Marks by Region

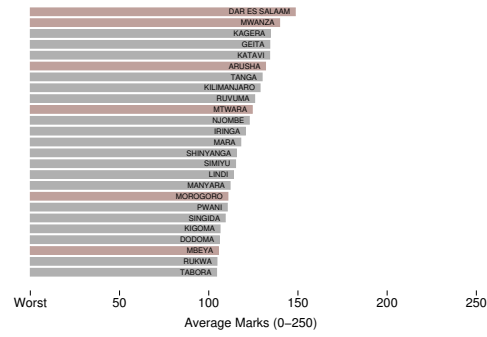


Figure 2: Average GPA by Region

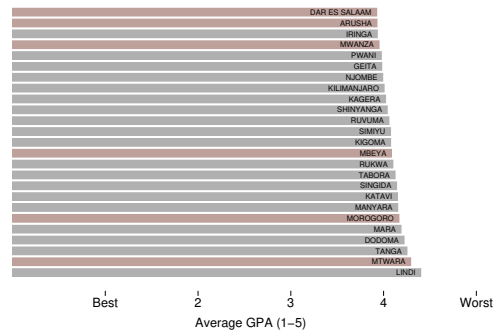
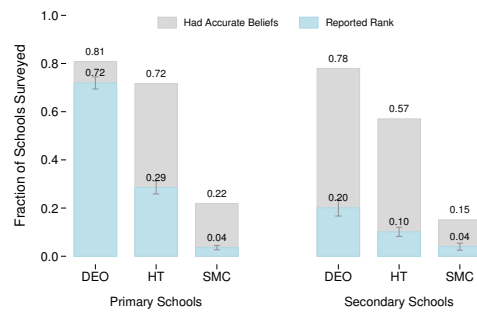


Figure 3: Fraction of Schools with Accurate Beliefs on District Ranking



831 DEO surveys (primary, n=531; secondary, n=300).
 639 head teacher surveys (primary, n=435; secondary, n=204).
 431 SMC surveys (primary, n=306; secondary, n=125).

Figure 4: Fraction of Schools with Accurate Beliefs on District Ranking

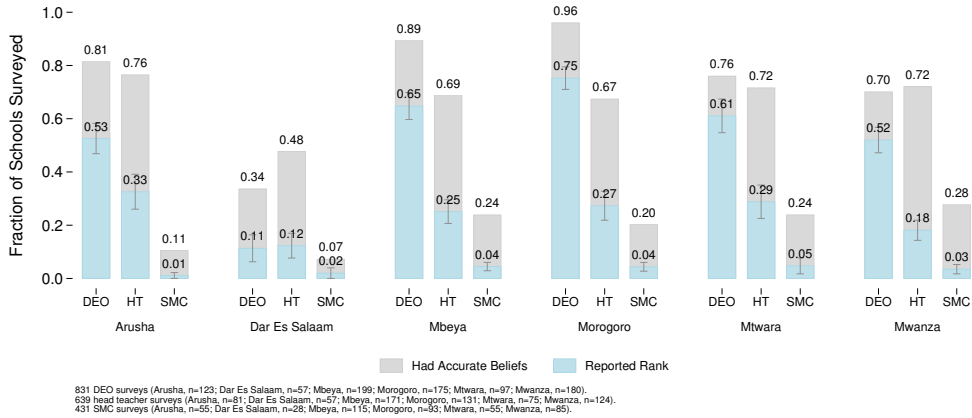


Figure 5: Fraction of Head Teachers with Accurate Beliefs on School's District Ranking Based on School Performance

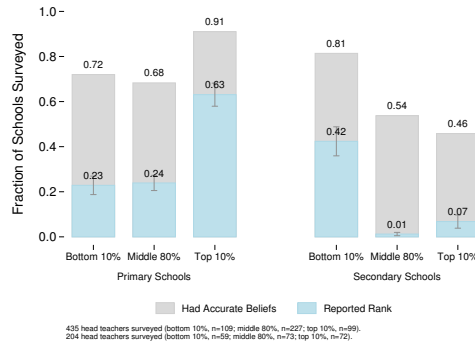


Figure 6: Fraction of Schools with Accurate Beliefs on National Ranking

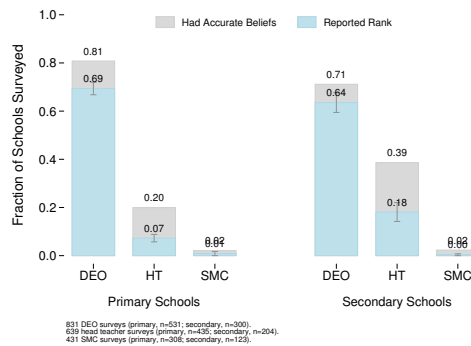


Figure 7: Fraction of Schools with Accurate Beliefs on National Ranking



Figure 8: Fraction of Schools with Accurate Beliefs on National Ranking

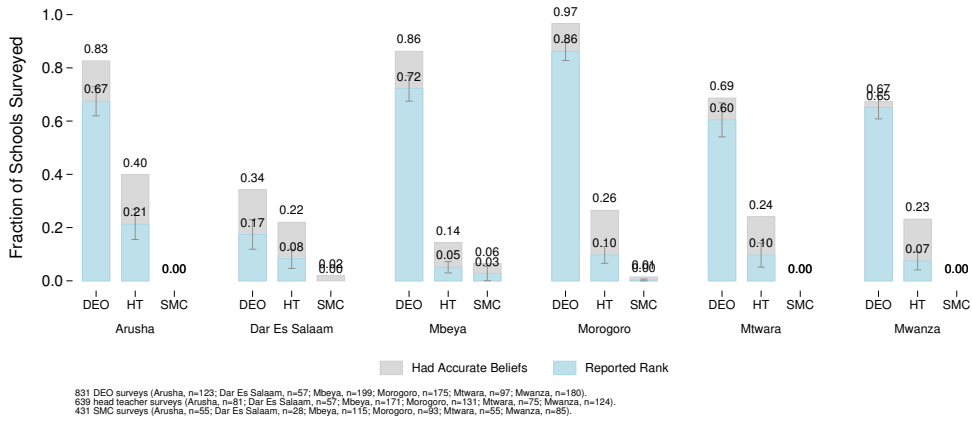


Figure 9: Fraction of Schools with Accurate Beliefs on Colour Bands

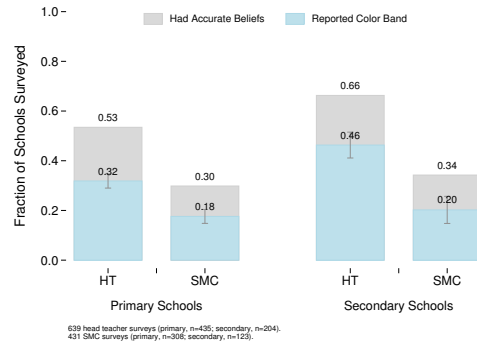


Figure 10: Fraction of Schools with Accurate Beliefs on Colour Bands

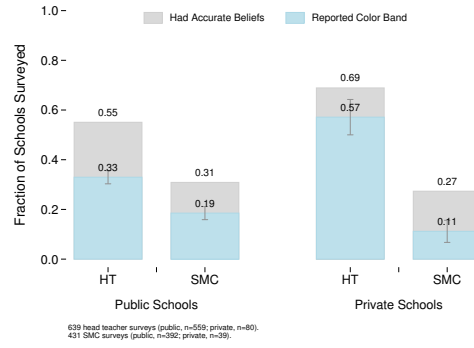


Figure 11: Fraction of Schools with Accurate Beliefs on Colour Bands

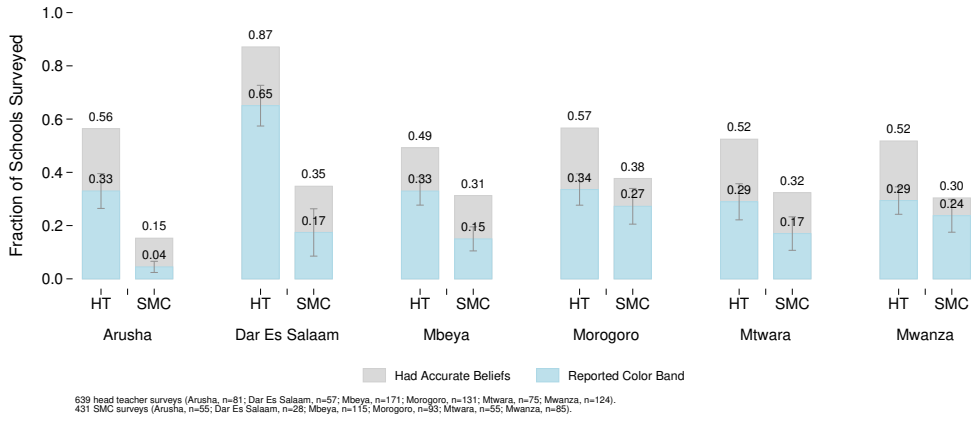


Figure 12: Fraction Who Learned via Listed Source: DEO Survey

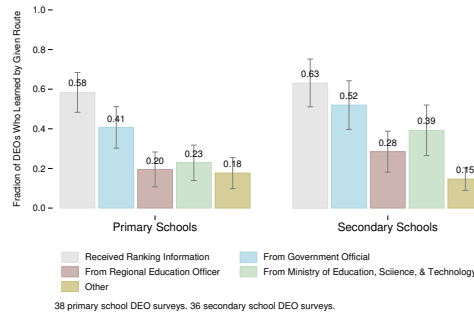


Figure 13: Fraction Who Learned via Listed Source: DEO Survey

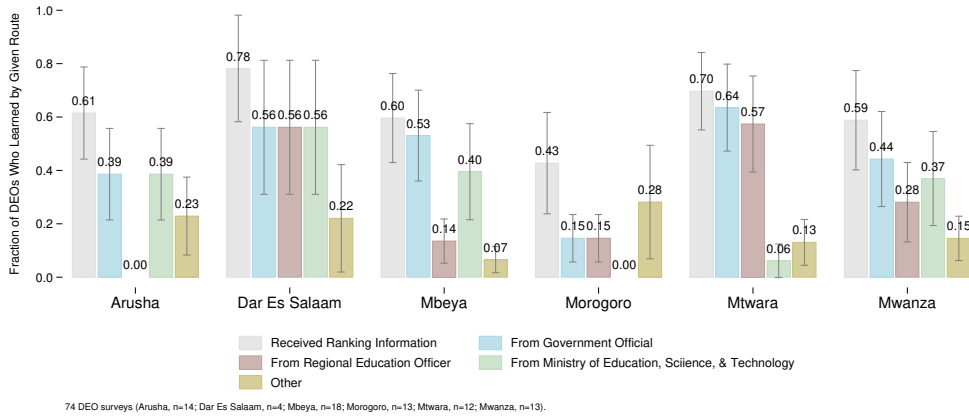
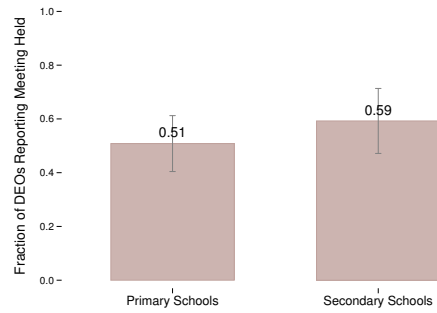


Figure 14: Fraction of Districts Which Held Ranking/Colour Band Meetings: DEO Survey



38 primary school DEO surveys. 36 secondary school DEO surveys.

Figure 15: Fraction of Districts Which Held Ranking/Colour Band Meetings: DEO Survey

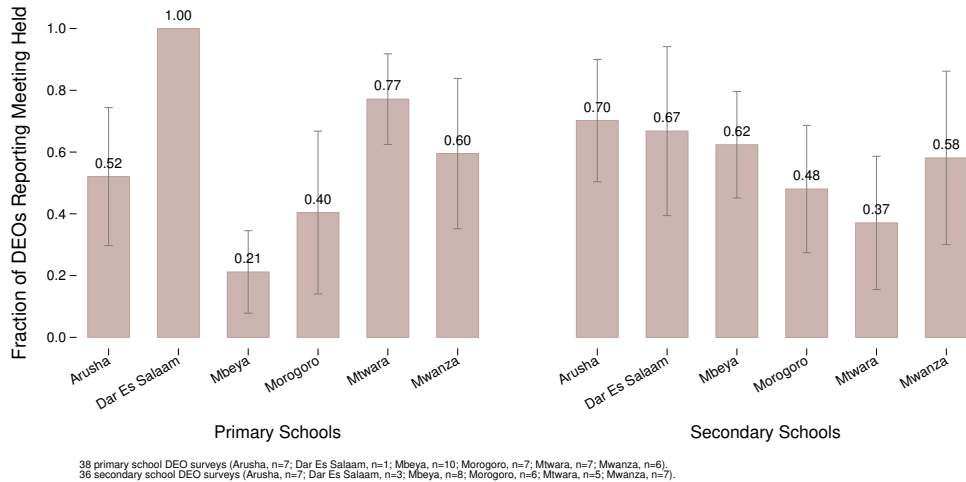


Figure 16: Fraction Who Learned via Listed Source: Head Teacher Survey

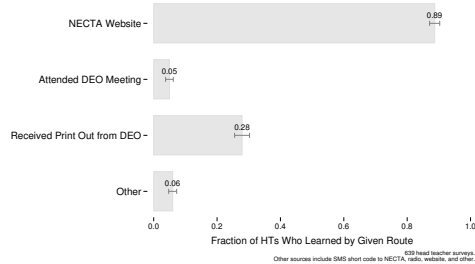


Figure 17: Fraction Who Shared with Listed Recipient: Head Teacher Survey

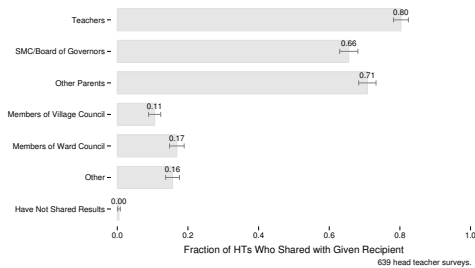


Figure 18: Fraction Who Learned via Listed Source: SMC Survey

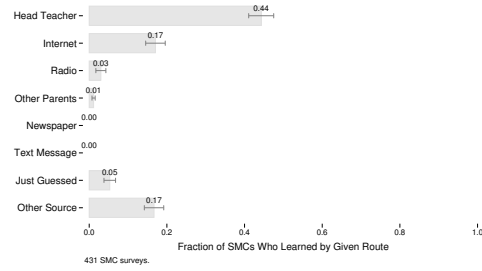


Figure 19: BRN Program Implementation Expectations: DEO Survey

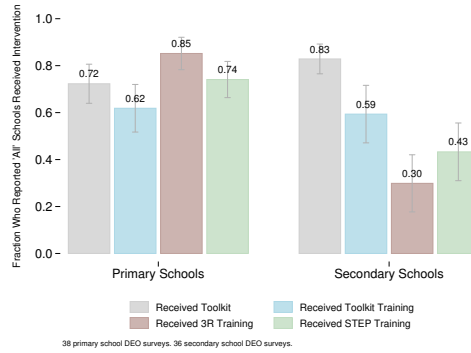


Figure 20: BRN Program Implementation: Head Teacher Survey

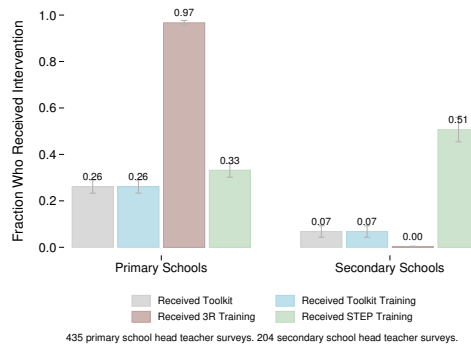


Figure 21: BRN Program Implementation: Head Teacher Survey

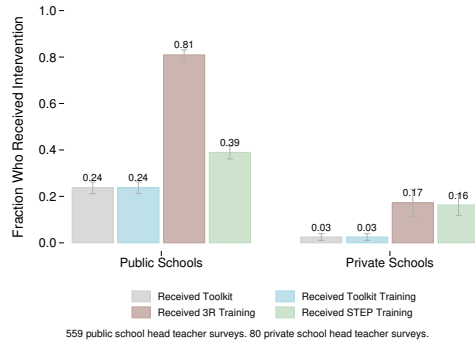


Figure 22: Strategies for Low-Performing Students: Head Teacher Survey

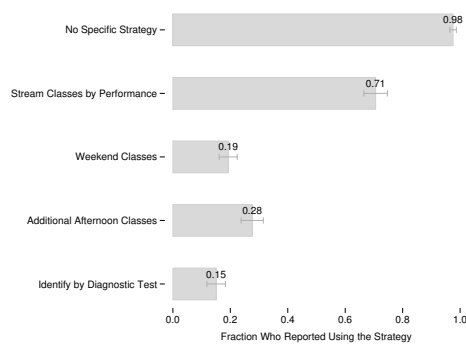


Figure 23: External Funding; Head Teacher Survey, Public Primary Schools

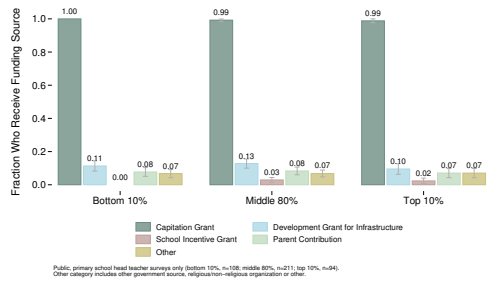


Figure 24: External Funding; Head Teacher Survey, Public Secondary Schools

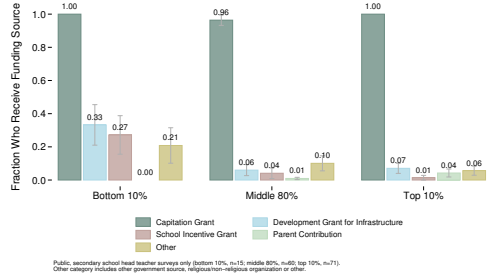


Figure 25: Fraction of Total Funds Provided by Funding Source: Head Teacher Survey, Public Schools

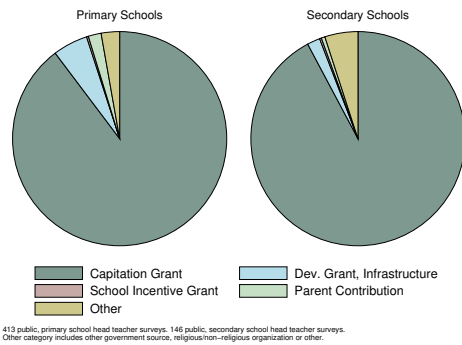


Figure 26: New Teachers: Head Teacher Survey, Public Schools

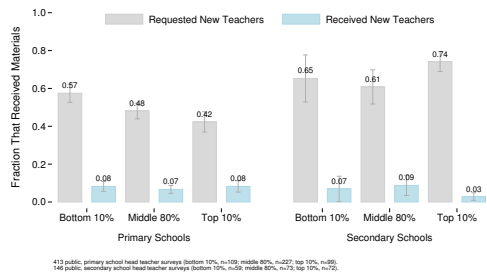


Figure 27: Textbooks: Head Teacher Survey, Public Schools

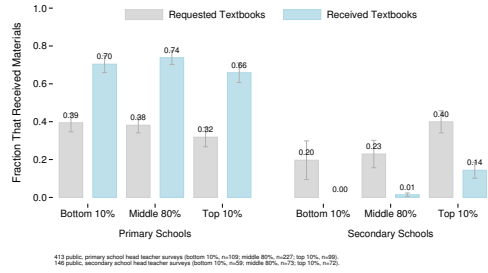


Figure 28: Number of Visits from the WEO's or DEO's Office: Head Teacher Survey

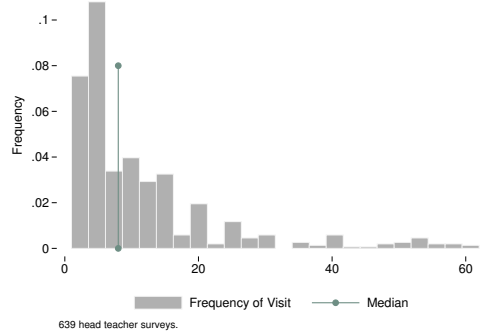


Figure 29: Number of Visits from the WEO's or DEO's Office According to District Ranking: Head Teacher Survey

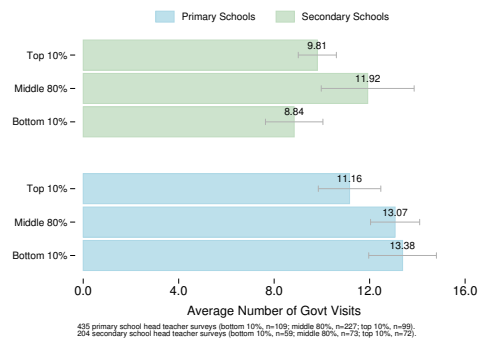


Figure 30: Goals and Targets for Schools: DEO Survey

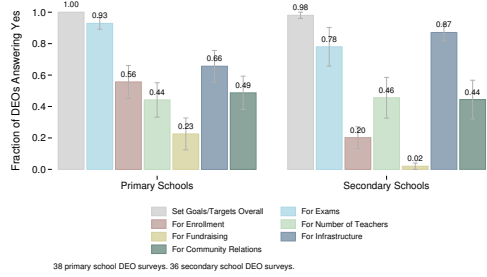


Figure 31: Strategies to Motivate HTs and WEOs: DEO Survey

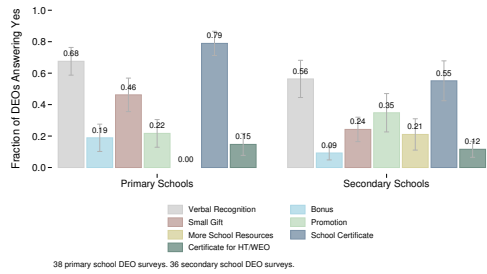


Figure 32: Goals and Targets for Schools: Head Teacher Survey

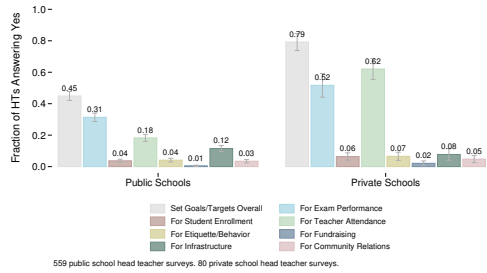
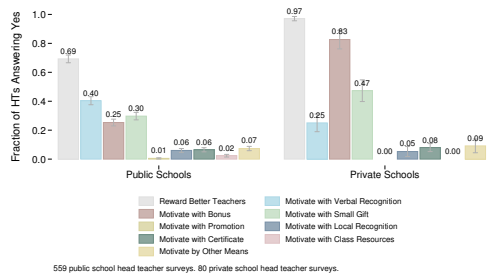


Figure 33: Strategies for Incentivizing Teachers: Head Teacher Survey



A Appendix

4.1 Publicising of Rankings and Color Bands of Exam Performance

4.1.1 Knowledge of school performance

Figure A1: Fraction of Schools with Accurate Beliefs on District Ranking

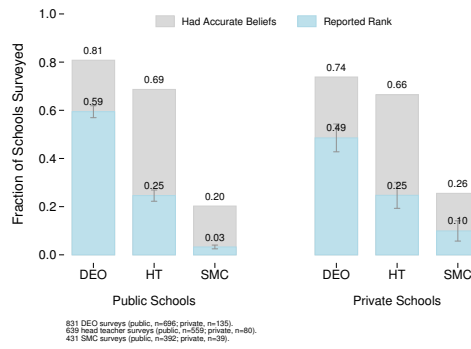


Figure A2: Fraction of Schools with Accurate Beliefs on District Ranking: Public, Primary Schools

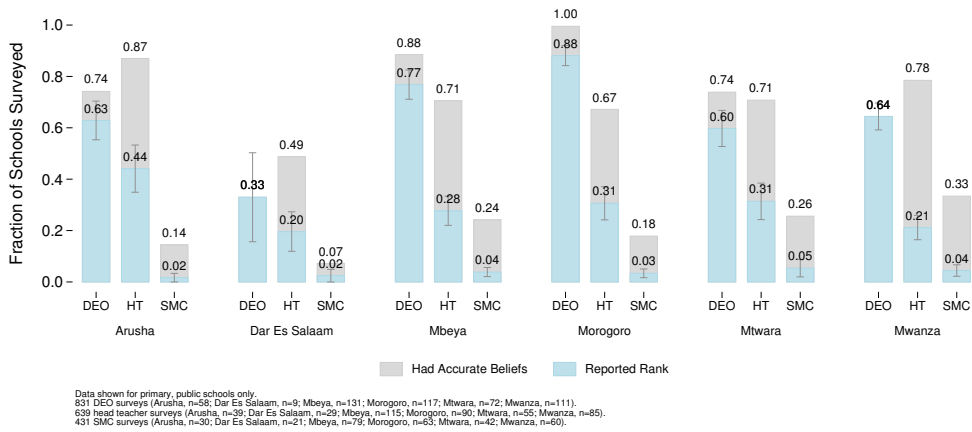
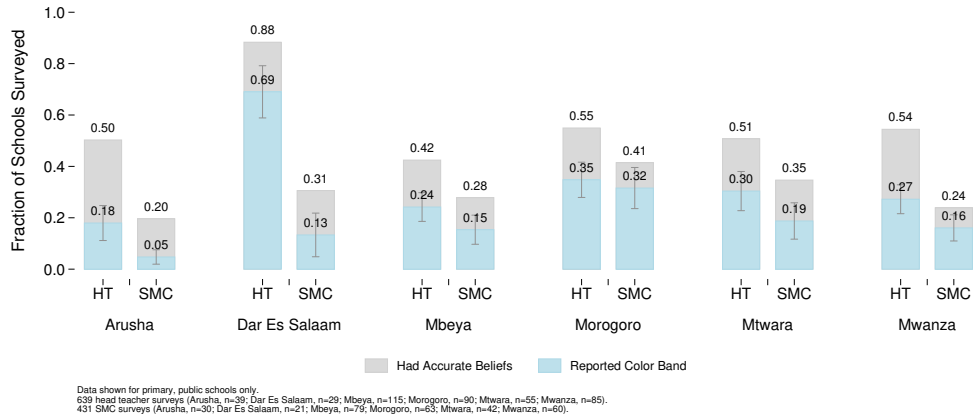


Figure A3: Fraction of Schools with Accurate Beliefs on Colour Bands



4.1.2 How do Stakeholders Learn about School Performance?

Figure A4: Fraction of Schools with Accurate Beliefs on Colour Bands: Head Teacher Survey

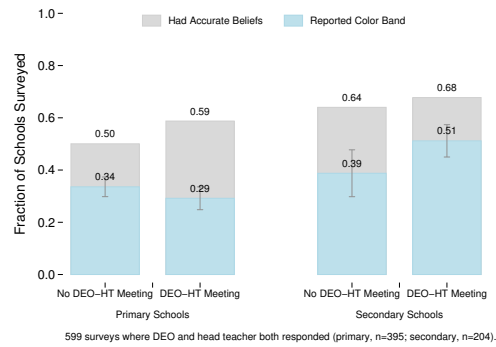


Figure A5: Fraction of Schools with Accurate Beliefs on District Ranking: Head Teacher Survey

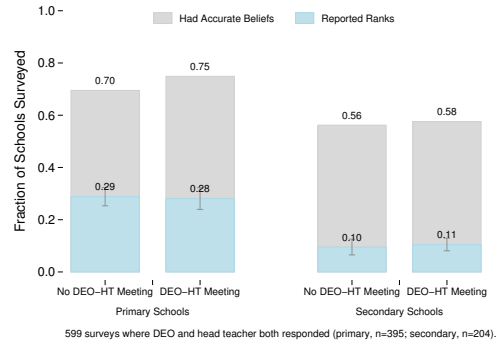


Figure A6: Fraction of Schools with Accurate Beliefs on Colour Band: SMC Survey

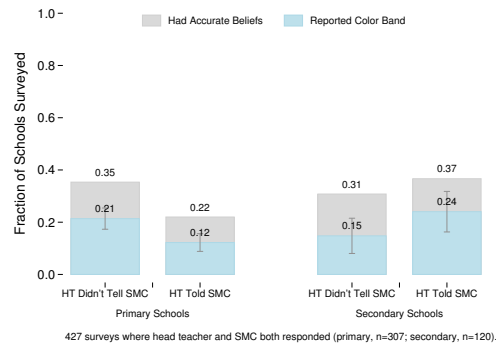
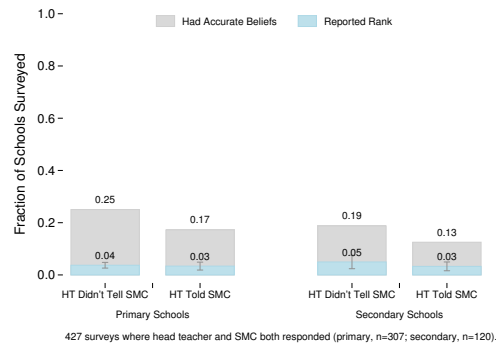


Figure A7: Fraction of Schools with Accurate Beliefs on District Ranking: SMC Survey



4.2 School Improvement Toolkit, 3R Training, and STEP Training

Figure A8: BRN Program Implementation Expectations: DEO Survey, Primary Schools

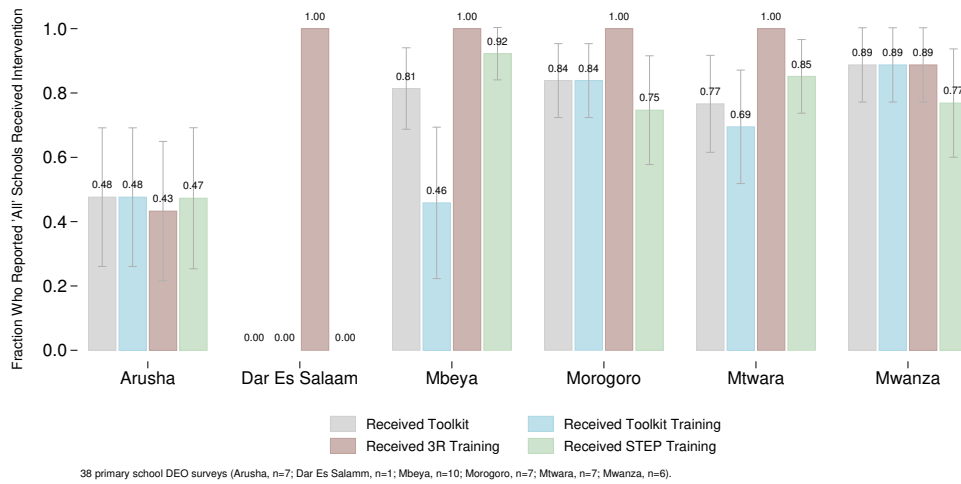


Figure A9: BRN Program Implementation Expectations: DEO Survey, Secondary Schools

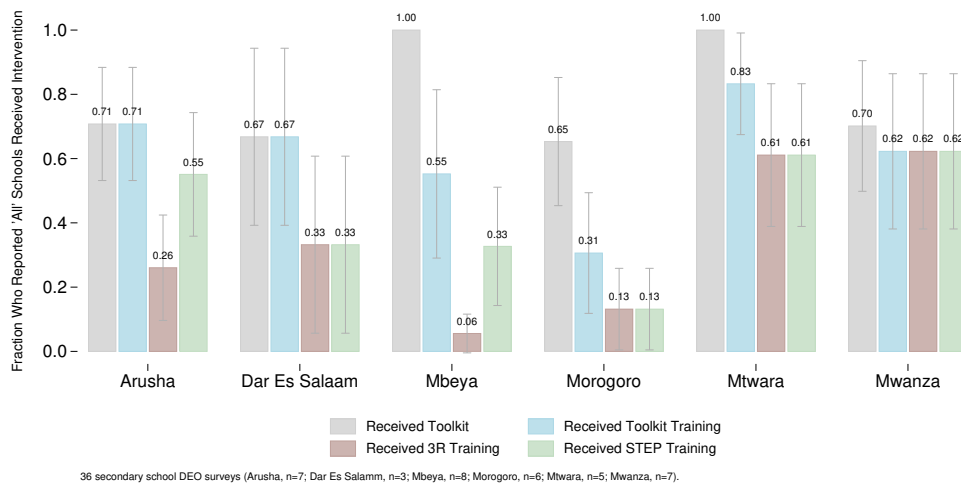
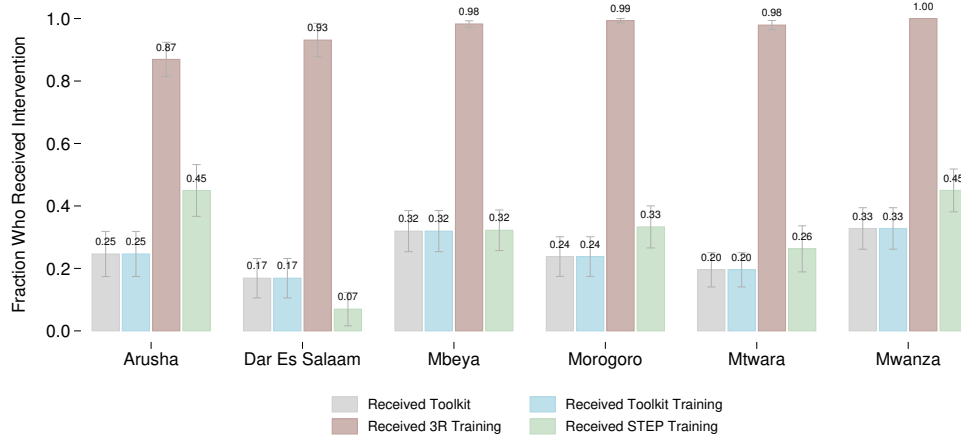
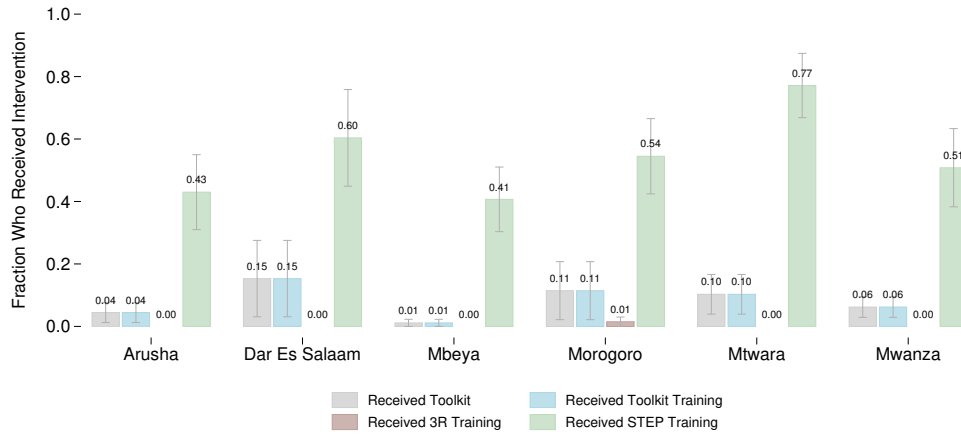


Figure A10: BRN Program Implementation: Head Teacher Survey, Primary Schools



435 primary school head teacher surveys.
 Arusha, n=81; Dar Es Salaam, n=57; Mbeya, n=171; Morogoro, n=131; Mtwara, n=5; Mwanza, n=124.

Figure A11: BRN Program Implementation: Head Teacher Survey, Secondary Schools



204 secondary school head teacher surveys.
 Arusha, n=81; Dar Es Salaam, n=57; Mbeya, n=171; Morogoro, n=131; Mtwara, n=5; Mwanza, n=124.

Figure A12: BRN Interventions; View on Implementation, DEO vs. Head Teacher

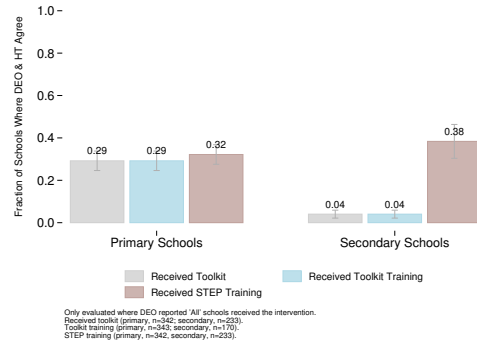
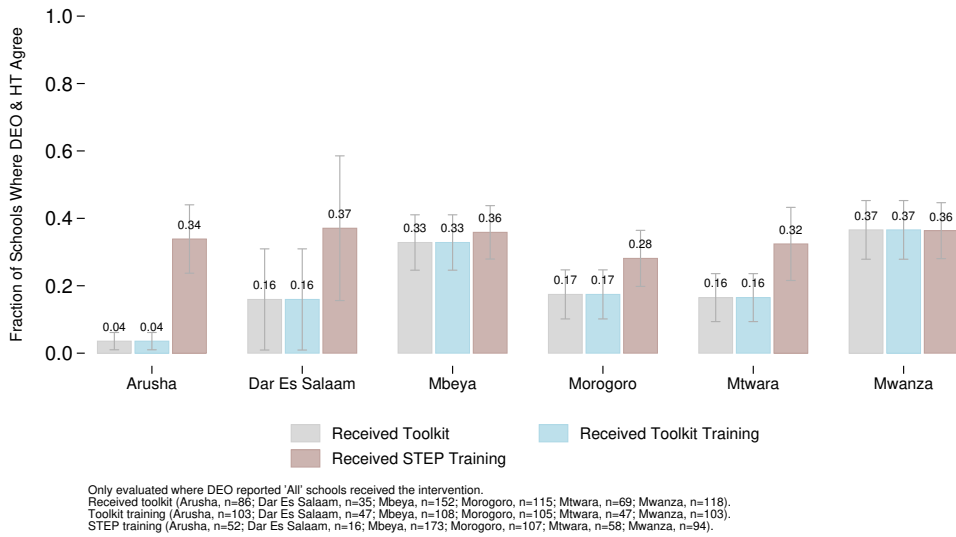
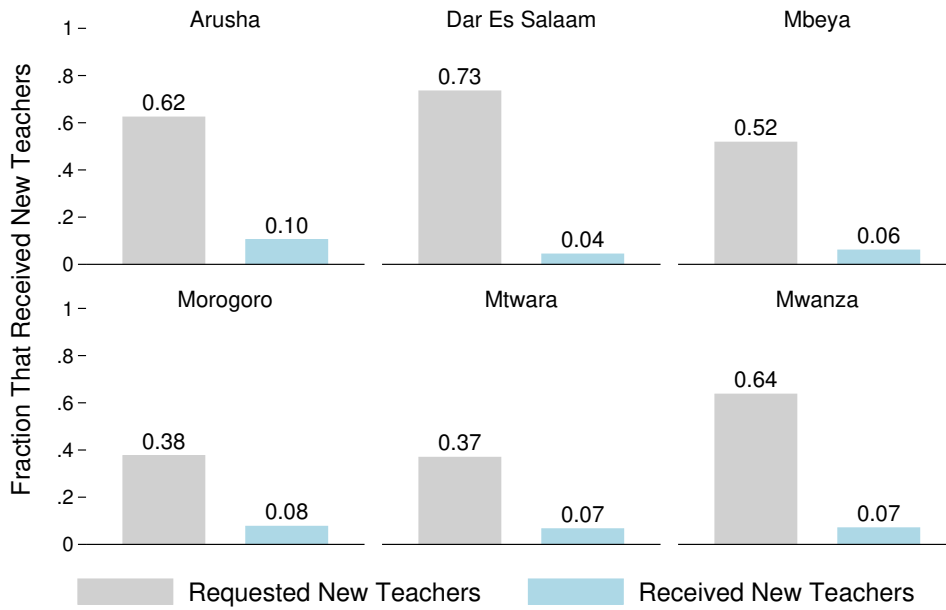


Figure A13: BRN Interventions; View on Implementation, DEO vs. Head Teacher



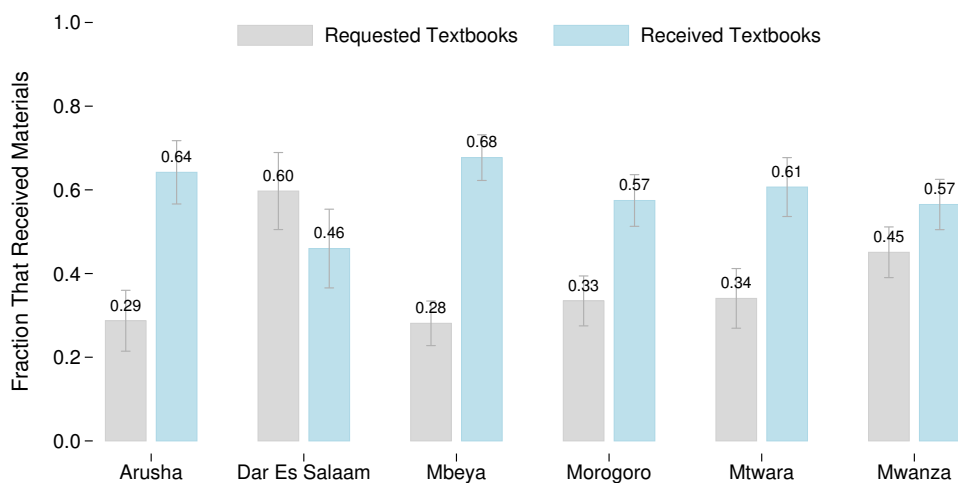
4.3 Resource Distribution by District Ranking

Figure A14: New Teachers: Head Teacher Survey, Public Schools



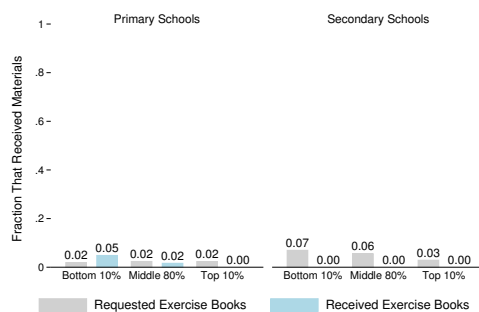
559 public school head teacher surveys.
Arusha, n=81; Dar Es Salaam, n=57; Mbeya, n=171; Morogoro, n=131; Mtwara, n=75; Mwanza, n=124.

Figure A15: Textbooks: Head Teacher Survey, Public Schools



559 public school head teacher surveys.
 Arusha, n=81; Dar Es Salaam, n=57; Mbeya, n=171; Morogoro, n=131; Mtwara, n=75; Mwanza, n=124.

Figure A16: Exercise Books: Head Teacher Survey, Public Schools



413 public, primary school head teacher surveys (bottom 10%, n=109; middle 80%, n=227; top 10%, n=99).
 146 public, secondary school head teacher surveys (bottom 10%, n=59; middle 80%, n=73; top 10%, n=72).