Policy brief
June 2018

Andrew Zeitlin & Jonathan Bower

International Growth Centre

Improving teacher management and professional development

A survey of the policy landscape in Rwanda

In brief

- An important policy question in Rwanda is how can schools attract, motivate, develop, and retain skilled teachers who will deliver positive learning outcomes.
- The centralisation of the hiring and teacher allocation process, proposed to take place in the 2018/19 school years, provides an opportunity to address the challenges associated with this policy question.
- This brief highlights three policy ideas with the possibility to deliver large gains relative to their costs to improve the management and professional development of teachers in Rwanda.

DIRECTED BY LSE UNIVERSITY OF OXFORD
FUNDED BY UKaid from the British people

Background: The challenge of teacher management policy

How can Rwandan schools attract, motivate, develop, and retain teachers whose skills and professional motivation will deliver good learning outcomes?

This is an important policy question at all levels of education, from pre-primary through to basic and secondary education, but has the most impact at the primary level. We highlight four key features of this policy challenge.

1. There is tremendous **variation in teacher effectiveness** at improving student scores in mathematics and literacy. Teachers' knowledge of the core curriculum varies, a common challenge in neighbouring countries,[12] and that variation matters for both educational and labour market outcomes.[34]
2. **Teacher effectiveness is hard to screen for:** formal qualifications and written tests do not necessarily ensure selection of those applicants most likely to be effective teachers and to remain in post.
3. Teacher effectiveness typically grows over the first few years of experience, but there is **substantial turnover, which may result in an excess of short-term teachers** whose effectiveness is limited by their lack of experience.
4. **Schools frequently have to adjust their staffing plans to address staffing shortages** because the costs of teacher resignations – even when they transfer rather than drop out of the teaching workforce – have historically been exacerbated by the fact that District Education Offices have been slow to replace lost teachers.

The centralisation of teacher human-resource management under the Rwanda Education Board (REB), proposed to take place in the 2018/19 school years, provides a platform and an opportunity to address these challenges.

1. Tessa Bold, Deon Filmer, Gayle Martin, Ezequiel Molina, Brian Stacy, Christophe Rockmore, Jakob Svensson, and Waly Wane. Enrollment witwith learning: Teacher effeort, knowledge, and skill in primary schools in Africa. Journal of Economic Perspectives, 31(4):185–204, Summer 2017.
2. Julie Buhl-Wiggers, Jason T Kerwin, Jeffrey A Smith, and Rebecca Thornton. The impact of teacher effectiveness on student learning in Africa. Unpublished, September 2016.
3. Raj Chetty, John N Friedman, and Jonah E Rockoff. Measuring the impacts of teachers I: Evaluating bias in teacher value-added estimates. American Economic Review, 2014.
4. Raj Chetty, John N Friedman, and Jonah E Rockoff. Measuring the impacts of teachers II: Teacher value-added and student outcomes in adulthood. American Economic Review, 104(9):2633–2679, September 2014.

Proposed policy reforms and rationale

In this brief[5], we highlight three policy ideas with the possibility to deliver large gains relative to their costs. While there are many important aspects of teacher management and professional development, such as Teacher Training College (TTC) standards and curricula, this note will focus on those to which the IGC can provide evidence on the basis of its ongoing research.

1. Invest in better screening of teachers.

One mechanism to improve teacher quality is to ensure that those applicants selected for teaching positions are of the highest possible skill levels. Two conditions are necessary for this to be an effective policy.

First, there must be an excess of qualified applicants for teaching positions. Even within the existing applicant pool, there does seem to be scope for such choice; for example, in the 2016 hiring round, there were more than 1,600 applications in the six STARS study districts for a total of just over 600 positions. This creates scope for hiring policies that select on the basis of TTC exam scores or other measures of applicants' likely effectiveness as teachers.

Second, the Government must be able to design and administer an assessment exercise that effectively discriminates between potential teachers who are likely or unlikely to be effective. This is notoriously hard, and for a long time received wisdom has been that written assessments and measurable qualifications in particular are ineffective predictors of the learning outcomes that teachers will go on to deliver.[6][7][8] However, recent evidence suggests cause for optimism: studies of changes to hiring procedures in schools in the US show that a detailed screening assessment, featuring sample lessons taught by applicants, are predictive of their students' subsequent achievement.[9][10]

Teacher assessments administered to newly recruited teachers at the start of their placement in the STARS study in Rwanda may be predictive of those

5. In this brief, we highlight policy ideas that arise in part from IGC engagement, with Innovations for Poverty Action, in a study of the Supporting Teachers Through Assessment in Rwandan Schools (STARS) experiment, that has addressed the question of whether performance contracts can help to recruit, motivate, and retain effective teachers -- a theme to which we return below.
6. Erica A Hanushek and Steven G Rivkin. Teacher quality. In Eric Hanushek and Finis Welch, editors, Handbook of the Economics of Education, volume 2, pages 1051–1078. Elselvier B. V., Amsterdam, 2006
7. Thomas J Kane, Jonah E Rockoff, and Douglas O Staiger. What does certification tell us about teacher effectiveness? evidence from New York City. Economics of Education Review, 27, 2008.
8. Jonah E Rockoff, Brian A Jacob, Thomas J Kane, and Douglas O Staiger. Can you recognize an effective teacher when you hire one? Education Finance and Policy, 6(1):43–74, 2011.
9. Paul Bruno and Katharine O Strunk. Making the cut: The effectiveness of teacher screening and hiring in the Los Angeles Unified School District. CALDER Working Paper no. 184, January 2018.
10. Brian Jacob, Jonah Rockoff, Eric Taylor, Ben Lindy, and Rachel Rosen. Teacher applicant hiring and teacher performance: Evidence from DC public schools. Working paper, April 2015.

teachers' subsequent value add, although our results will confirm this. If this is the case, it suggests a starting point for an assessment protocol that could be used to screen potential teachers. And perhaps most importantly, since recent successes in screening teachers hinge on the use of sample lessons taught by applicant teachers, the combination of two Ministry of Education (MINEDUC) proposals -- moving to centralised hiring and freeing TTCs from the normal examination protocols of typical secondary schools -- creates an opportunity to strengthen the pre-service measurement of teacher quality.

This suggests that a strengthened system of teacher screening could be built and put into place. The first step in this process would be a comprehensive study of the extent to which teachers' value add and duration of service are predictable using pre-service measures in Rwanda.

To the extent that such measures can be built, MINEDUC may also consider a **'fast-track' hiring stream**, to which selected applicants would be hired for a limited number of positions with a steeper growth in pay, to attract candidates likely to be effective teachers, and to give them incentives to remain in post.

2. Use performance-based incentives, which may include annual awards and systems of promotion, to attract, motivate, and retain the best teachers.

Rewarding effective teaching – whether through nonmonetary or monetary rewards, and whether with annual awards or with systems of promotion linked to measured performance -- can have three important effects. First, it can provide existing teachers with a clear indication that their profession should be oriented toward student learning, as well as an added incentive to strive toward this goal.[11] Second, performance awards can improve the composition of the applicant pool at lower cost, relative to across-the-board, unconditional wage increases, because these awards raise the expected wages of potential teachers who have reason to believe they will be effective in the classroom. And third, performance award systems can contribute to the retention of highly effective teachers because these systems provide teachers with feedback about their effectiveness and supplement the salaries of effective teachers.

The STARS study, funded by IGC and implemented by Innovations for

---

This study measures teachers' curricular knowledge, effective pedagogy in the classroom and student learning attainment in all core-curricular subjects of P4 - P6. In our recommendations below, we draw on insights from this engagement, and propose further uses of STARS data to inform policy design.

11.Studies have shown positive incentive effects of individual-level performance-based awards in India [1] and Israel [2], as well as in several US school districts. [3, 4, 5, 6] In Tanzania [7] and Uganda [8], such schemes have been demonstrated effective when schools have adequate, complementary physical resources. Results for team-based incentives are more mixed, in developing and developed countries. [9, 10]

Poverty Action (IPA), has been testing such a mechanism in six districts in Rwanda since 2016. Preliminary results are due to be submitted to the government at the time of writing, and can inform the merits of this strategy and potential design issues therein.

The design of such a reward scheme is key to its potential for sustained impact on these margins. It must be sufficiently transparent, must not expose teachers to excessive random variation in scores, and must align well with curricular goals, while not being susceptible to excessive 'gaming', among other key features. As one example, the STARS study uses a hybrid metric of teacher performance, combining measures of individual teachers' professional conduct (presence, preparation, and pedagogy) with measures of the learning outcomes they deliver.

"MINEDUC might consider taking a large-scale pilot of this scheme to scale in 'hardship' districts, where districts have traditionally struggled to hire and to maintain teachers in post, before progressively scaling such a policy nationwide."

Should the STARS study suggest positive impacts of this approach, a next step for researchers and policymakers would be to develop a model that can take this 'proof of concept' to scale. This would need to address, for example, limitations in available student assessments (and so might need to be built on school-level rather than teacher-level awards). MINEDUC might consider taking a large-scale pilot of this scheme to scale in 'hardship' districts, where districts have traditionally struggled to hire and to maintain teachers in post, before progressively scaling such a policy nationwide.

3. Place teachers to match schools' needs and teachers' preferences to increase motivation and retention.

REB reports that 1,000 primary school teachers leave the profession on a monthly basis, out of a total workforce of approximately 40,000. This high rate of turnover is most severe in particular rural districts, and is compounded by teacher transfers within and across districts that make it difficult for schools to maintain steady staffing, particularly in rural areas. Typical national teacher placement systems take little account of teachers' preferences when deciding on their placements; consequently, teachers often fail to take up their posts, or transfer from initial placements at the first opportunity.

As MINEDUC moves to centralise the hiring and teacher allocation process, **there is an opportunity to improve outcomes by better accounting for the preferences of both teachers and schools in the placement process.** This proposal would build on solutions to similar problems; for example, an initiative to place 20,000 medical students into residency programs in the US annually.[12] This approach tends to improve staff retention and the resulting choice of medical staff tends to also be preferred by the host institution.

12. Alvin E Roth. The origins, history, and design of the resident match. Journal of the American Medical Association, 289(7):909–912, February 2003.

This could be undertaken at comparatively low cost, since a teacher placement process will be required by MINEDUC in any case. It has two types of benefits: it may reduce teacher turnover and increase teacher motivation as teachers may have stronger feelings of altruism toward the local school population; if they are placed near their own homes, the burden of seeking accommodation in their new teaching post may be reduced; and they may be less burdened by the need to travel to see family, allowing greater focus.

Conclusion and recommendations

This note has suggested three policy dimensions for further exploration:

1. investments in better screening of teachers;
2. investments in the incentivisation of teacher performance; and
3. adoption of a two-sided matching approach to teacher placement that takes account of teacher preferences.

Each of these options take advantage of potential synergies with other reforms under discussion. Taken together, the above suite of proposals provides potential policy levers to recruit, motivate, and retain effective teachers at relatively low cost in ways that improve the pool of applicant teachers; to improve the learning outcomes delivered by existing teachers, and to improve teacher retention.

Should MINEDUC wish to explore these policy options further, a natural next step would be a corresponding scoping study, which provides more detail both on experiences from related contexts, as well as evidence from the STARS study, REB administrative data, or other sources. The IGC would be pleased to undertake this work under its Learning Evidence Advisory Panel facility for providing evidence to education policymakers.

Following such a scoping study, a full-scale pilot, using government systems and adapting designs to suit the policymaking context, would be a natural next step. IGC-affiliated researchers could play a role in both informing the design of these at-scale trials and in analysing their results.

References from footnotes

[1] Karthik Muralidharan and Venkatesh Sundararaman. Teacher performance pay: Experimental evidence from India. Journal of Political Economy, 119(1):39–77, February 2011.

[2] Victor Lavy. Performance pay and teachers' effort, productivity, and grading ethics. American Economic Review, 99(5):1979–2011, 2009.

[3] Thomas Dee and James Wyckoff. Incentives, selection, and teacher performance: Evidence from IMPACT. Journal of Policy, 34(2):267–297, 2015.

[4] Roland G Fryer, Steven D Levitt, John List, and Sally Sadoff. Enhancing the efficacy of teachher incentives through loss aversion: A field experiment. NBER WOrking Paper no. 18237, 2012.

[5] Scott A Imberman and Michael F Lovenheim. Incentive strength and teacher productivity: Evidence from a group-based teacher incentive system. Review of Economics and Statistics, 97(2):364–386, 2015.

[6] Aaron J Sojourner, Elton Mykerezi, and Kristine L West. Teacher pay reform and productivity: Panel data evidence from adoptions of Q-Comp in Minnesota. Journal of Human Resources, 49(4):945–981, 2014.

[7] Isaac Mbiti, Karthik Muralidharan, Mauricio Romero, Youdi Schipper, Rakesh Rajani, and Constantine Manda. Inputs, incentives, and complementarities in primary education: Experimental evidence from Tanzania. Working paper, University of Virginia, 2018.

[8] Daniel O Gilligan, Naureen Karachiwalla, Ibrahim Kasirye, Adrienne Lucas, and Derek A Neal. Educator incentives and educational triage in rural primary schools. IZA Discussion Paper no. 11516, May 2018.

[9] Roland G Fryer. Teacher incentives and student achievement: Evidence from New York City public schools. Journal of Labor Economics, 31(2):409–420, 2013.

[10] Paul Glewwe, Nauman Ilias, and Michael Kremer. Teacher incentives. American Economic Journal: Applied Economics, 2(3):205–227, July 2010.