

State management of education and educational performance in Zambia



In brief

- This brief examines the relationship between management quality in the local public administration of schools and students' educational performance in Zambia.
- The researchers find that:
 - Management practices vary widely across District Education Offices in Zambia.
 - The quality of management at the district level is positively correlated with student test scores.
 - Variation in average class size between schools within districts is negatively correlated with quality of teacher allocation management, indicating that better allocation management at the district level may help address staffing inequalities across schools.
- Further research is necessary to understand under which circumstances improvements in management quality at the district level can lead to better learning outcomes, and how large these effects can be.

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Overview of the research

Management matters for the performance of organisations, not only in the private sector, but also in the public sector. Recent research highlights a positive correlation between student performance and management quality in schools. This brief focuses on the correlation between student performance and management quality in the local public administration of schools. More specifically, it examines the relationship between management practices at District Education Offices and test scores of students across districts in Zambia.

In Zambia, District Education Offices (DEOs) manage education at the district level. They are responsible for implementing education policies, monitoring school performance and managing human resources, infrastructure and learning materials. To understand the importance of management quality at DEOs for student outcomes, the researchers make use of the recent adaptation of the World Management Survey (WMS) to the public sector context in developing countries, the Development WMS and adjust it to fit the context of the Zambian education sector. In connection with earlier work on staffing inequalities across schools, the researchers also extend the Development WMS to include questions on teacher workforce management. The researchers conduct the adapted survey with the District Education Board Secretaries of all Zambian districts via telephone. Finally, the researchers correlate the revealed management scores with measures of student performance and examine the relationship between workforce management and staffing inequalities.

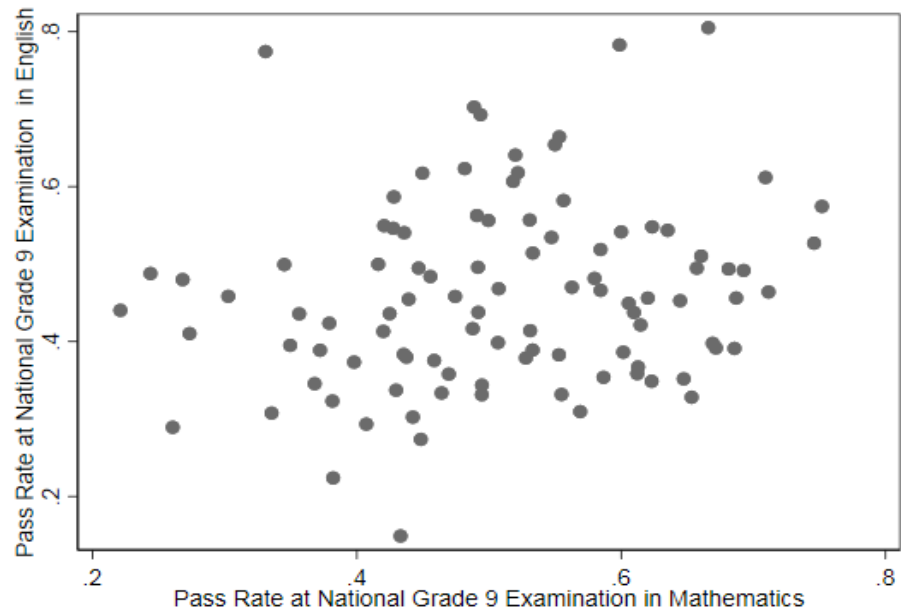
Background

Educational performance in Zambia

In Zambia, performance of students at national examinations varies significantly across districts. National examinations take place in grades 7, 9 and 12, and cover several subjects. This brief focuses on student achievement in two core subjects, Mathematics and English, in grade 9. More specifically, it looks at the exam pass rate, i.e. the share of students who pass the exam out of those who entered the exam, for each of the two subjects.

As *Figure 1* shows, student performance in English and Mathematics is positively correlated across districts. Moreover, there is substantial variation in pass rates across districts. Pass rates in English vary between 15% and 81%, pass rates in Mathematics between 22% and 75%.

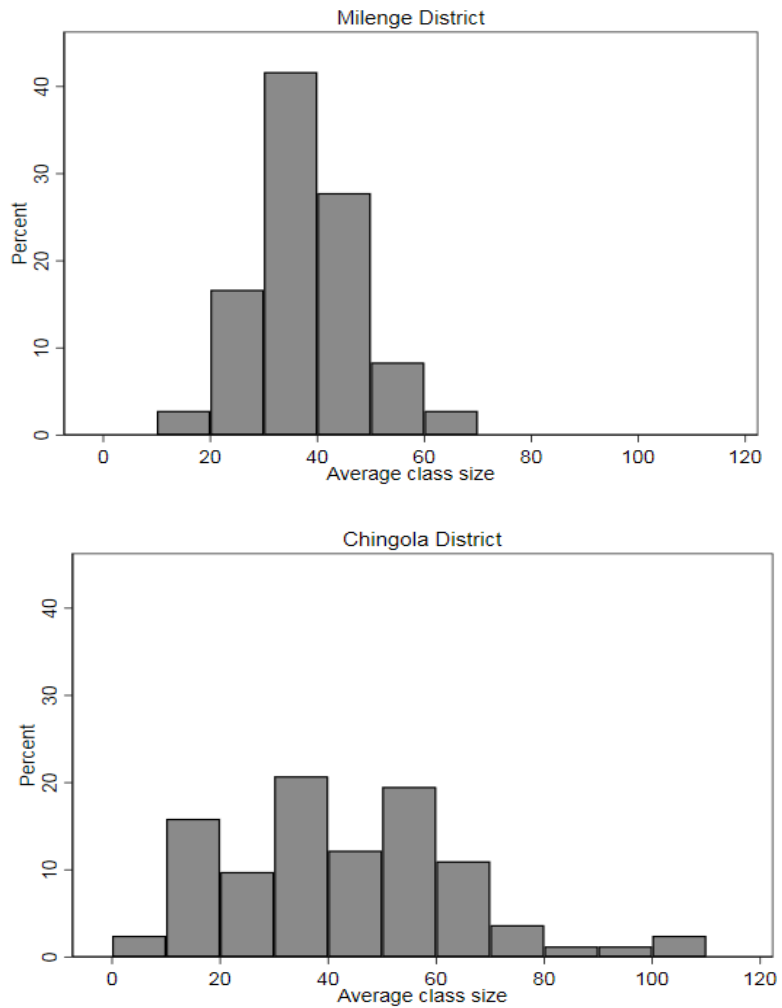
Figure 1: Pass rates at national grade 9 examinations across districts (2017)



Teacher allocation and inequalities in class size

In addition to differences in student performance, there are large differences in average class size between public schools in Zambia, even when schools are in the same district. How large these differences across schools are varies between districts. *Figure 2* provides an example. It shows the distribution of average class size across public schools in Milenge District and Chingola District. Evidently, average class size varies significantly more between schools in the latter.

Figure 2: Distribution of average class size across public schools



The role of District Education Offices

District Education Offices (DEOs) manage education within districts. They are officially tasked with the following:

- Manage the implementation of education policies and programs, and intervene as necessary
- Monitor school performance
- Coordinate with various stakeholders to enhance the quality of education
- Provide relevant teaching and learning materials in schools
- Maintain and manage school infrastructure development
- Facilitate the recruitment and deployment of teachers

On average, a DEO oversees 123 primary and 10 secondary schools, corresponding to responsibility for 1,076 teachers and 39,388 pupils.

However, there are large differences in the quantity of schools across districts. In urban districts like Lusaka or Ndola, DEOs manage several hundred primary schools and many more secondary schools than the average DEO. In rural districts, there is typically less than a hundred primary schools and a handful of secondary schools.

Management survey

Methodology

The survey was based on the Developing World Management Survey (DWMS), an internationally and academically recognised management survey tool for the study of public sector management in developing countries (Lemus and Scur 2016). The DWMS uses a series of open-ended questions on various management practices. To obtain quantitative results, each question is associated with a scoring grid from one to five (in half-point intervals), where five indicates best practices, and one indicates worst practices. The original intention of the DWMS is to be a double-blind study, where the interviewer doesn't know who they are speaking to, and the interviewee doesn't know that their responses are being scored.

For logistical reasons, it was not feasible to ensure the former measure, so the study was only single-blind. Hence, interviewers knew which District Education Board Secretaries (DEBS) they were talking to when conducting interviews, but DEBS did not know their answers were being scored. Moreover, interviews were confidential, and DEBS were assured that their answers would not be linked back to them, but only used in cross-district analyses.

Following the DWMS model, the survey contained questions on five dimensions of management, which are operations, monitoring, people, targets and leadership. Each dimension consisted of between one and three categories of questions with three broad questions per category, and a set of scoring criteria for each question. Both questions and scoring grids are based on the DWMS but adapted to the context of district-level administration of schools in Zambia. In addition, two sets of questions on human resource management were added about teacher deployment and transfers. In total, each interview consisted of 30 questions.

Implementation

The management survey was undertaken in January and February 2018. The sample for the interviews included all DEBS in Zambia. As of January 2018, there were 109 DEBS. In total, 102 interviews were conducted (100 telephone interview and two in person interviews).

To determine DEO management scores, scores are aggregated stepwise by first, taking means across questions within categories, second, taking means across categories within dimensions, and finally, taking means across dimensions. Hence, the aggregate score is the average score across the five management dimensions included in the DWMS, which are operations, monitoring, people, targets and leadership. Teacher allocation management is considered separately below.

Results

Management scores and student performance

The main objective of this study was to understand the importance of management quality at DEOs for student performance. The main findings of this study are the following:

1. Aggregate scores vary between 2.2 and 3.6, with the majority of DEOs scoring close to 3. Across the five dimensions of management, scores are positively correlated. That is, districts that obtain better scores in one management dimension also tend to perform better along the other dimensions.
2. Aggregate management scores are positively correlated with the pass rate at national grade 9 exams. An increase in the aggregate management score by 1 point is associated with an increase in the pass rate by 5 percentage points in Mathematics and 6 percentage points in English. While these magnitudes are substantial, corresponding to 9% and 14% percent increases over the mean respectively, the positive correlation is only statistically significant in the case of English.
3. Among the five management dimensions, operations management is most significantly linked to student performance. None of the other scores is individually statistically significantly correlated with pass rates.

Teacher allocation management and inequalities in class size

A secondary objective of this study was to explore the extent to which differences in teacher allocation management at DEOs can explain differences in class size between schools. The researchers find that inequality in average class size between schools within districts is negatively correlated with quality of teacher allocation management. This suggests that better allocation management at the district level may help address staffing inequalities across schools. However, this positive association does not imply a causal link, and further research is necessary to assess whether improvements in teacher allocation management can indeed reduce staffing inequalities.

Moreover, it is unclear how a more equal distribution of class sizes across

schools would affect aggregate learning. If schools with large classes do not only lack teachers but also other learning inputs, and class size and these other inputs are complements, implementing a more equal distribution of class size through teacher reallocation could actually lead to a decrease in exam pass rates.

Conclusions and next steps

In this study, the researchers find that management practices vary widely in Zambia, and the quality of management at District Education Offices in Zambia, as measured by a context-specific adaptation of the Development WMS, positively correlated with pupil performance across districts. This suggests that not only management quality at the school level, but also management quality at the superseding administrative level, is an important input into education systems. Further research will be necessary to understand under which circumstances improvements in management quality at District Education Offices can lead to better learning outcomes among students, and how large these effects can be. Additionally, systematic approaches to improving management quality need to be designed and tested.