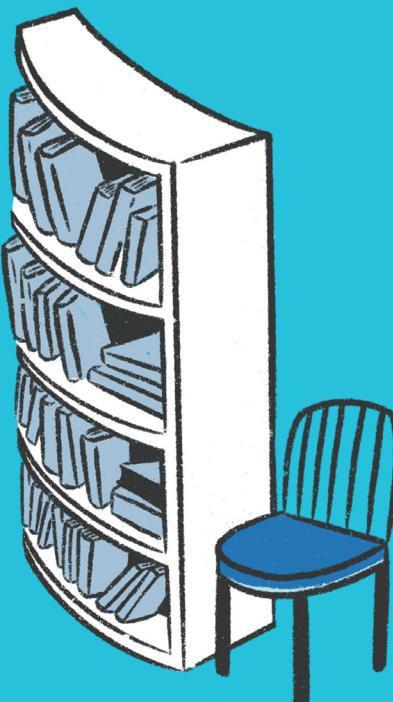


# GLOBAL EDUCATION POLICY DASHBOARD

Reference  
Guide





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## FOREWORD

**Before Covid-19, the world was facing a learning crisis: more than half of 10-year-old children in low- and middle-income countries could not read and understand a simple text. These children were in Learning Poverty. Additionally, 258 million children and youth of primary- and secondary-school age were out of school. This was a tragedy that had been building up over the years and that had gained attention because we are able to measure it. It is one of the most urgent crises of our times. To galvanize action, the World Bank launched a global learning target: to decrease, by 2030, the share of children in Learning Poverty by at least half.**

With Covid-19, the world now faces a crisis within a crisis. The pandemic has brought twin shocks to education—massive school closures and a subsequent deep economic recession—that threaten to exacerbate the learning crisis, especially for the poor. To combat the virus, schools were closed in more than 180 countries, leaving—at its peak in early April—close to 1.6 billion children and youth out of school. According to our initial estimates, the economic recession could result in close to 7 million students dropping out of school. In the absence of appropriate response, children's learning, nutrition, and mental health will be dramatically affected. Early estimates indicate that each young person in this generation might lose US\$16,000 (in net present value) in foregone earnings.

Achieving the global learning target is now even more challenging and will require substantial ramping-up of efforts. Each country must define its own path and its own actions, taking into account what is politically acceptable, operationally feasible, and technically correct. And Ministers of Education do not have until 2030 to achieve a target. Ministers of Education have a short policy window in which they need to enact changes. And to generate changes and make evidence-based decisions, they need fast and affordable data.

When I was a Minister of Education in my home country, Peru, I used data as a compass to guide my decision-making. In fact, many data points traced the route towards critical changes to the education system. As a minister, I needed several data points. First, I required data on outcomes. Information on students' learning to understand the status of the education system, set goals around learning, measure progress towards these goals, and pinpoint schools and institutions that were excelling and others where we needed to intensify our efforts. Second, I required data on outputs. We needed to know what was happening inside classrooms to understand why learning was (or was not) taking place. And we needed to know if inputs were reaching schools with the right quality and at the right time. To collect this information, we created an instrument called Semaforo Escuela (which translates to "School Stoplight") that was nationally, regionally and locally representative and that allowed for inference at the different levels of education. With Semaforo Escuela, we were able to monitor if principals were in schools, if children and teachers were in the classrooms, how many hours were

spent in teaching, if books and other teaching supplies were getting to school before the start of the academic year, if students were receiving school meals on time, if there was school violence, and other critical variables that influenced learning outcomes. This was a crucial element of my tenure, and it helped guide not only national-level decisions, but those of the regional and local authorities.

While there are many instruments and initiatives that measure quality of education, in my experience and in conversations with ministers of education all over the globe, there is something still missing. There continues to be an unmet need for comprehensive and quality data to strengthen decision-making. And there are several reasons for this. First, the high cost of existing school survey instruments makes them unattainable to many countries that navigate very resource-constrained environments. Second, the limited scope of the existing surveys, which tend to focus on a subset of school-level factors, and thus provide (in isolation) an incomplete picture of the realities of the schools and the systems in which they operate. Third, the failure to contextualize the information within the broader education system. By this, I refer to the need to look beyond the schools, to also pay attention to the broader policy frameworks that determine the quality of service delivery as well as the political and bureaucratic system in which they are created. And lastly, the difficulty of getting access to information quickly to allow timely decisions, in the case of existing school survey instruments.

The 2018 WDR speaks of the need of measuring learning to make it a serious goal. It is our belief that if we want countries to reach such goal, we need to ensure that along with the measurement of learning, we also measure the elements that influence learning so that countries can see if they are moving in the right direction. That is the motivation behind the Global Education Policy Dashboard (GEPD): to address the problems with existing instruments, and offer countries much-needed, comprehensive, and timely information that could be used to strengthen the effectiveness of the decisions made to improve learning. And I think we have met that goal.

The GEPD offers timely, cost-effective, comprehensive, and contextualized information to shine a light on the main determinants of learning outcomes providing a full picture of how the system is working. To put this into perspective, in the first country where the GEPD was implemented, its indicators explained 78% of the between-school learning variation, which is more than existing instruments can explain.. Data collection cost about a third of the price of existing alternatives. Additionally, the time elapsed from data collection to the reporting of information averages three months, ensuring that insights can be a timely input into countries' policymaking. Beyond providing more and faster data at a lower cost, the GEPD makes the best use of all the evidence we have at our disposal to ensure efforts to improve learning are as effective as they can be. In looking at the GEPD and its indicators, one can easily notice that they integrate the latest cutting-edge research in the field by incorporating (and measuring) notions such as bureaucratic capacity, growth mindset among teachers, principals' management practices, and many others that represent the collaboration of multiple teams, units, and practices across the World Bank.

With the WDR18, we shone light on learning to highlight that there was a crisis. With the Global Education Policy Dashboard, we now have a tool to empower countries to identify the reasons behind the learning crisis in their territory. With this, we can work together on designing and implementing effective solutions to start fighting the learning crisis.

Jaime Saavedra  
Global Education Director, World Bank Group

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## INTRODUCTION

Policymakers in low- and middle-income countries who are working to improve student learning often find themselves flying blind. They see the budget that goes into education and (sometimes) the learning that students come out with, but they lack information on many of the crucial factors in between—the practices, policies, and politics—that drive those learning outcomes. The Global Education Policy Dashboard (GEPD) shines a light on those hidden drivers.

Many countries, despite having substantially increased access to education for their children and youth, now realize that they are facing a learning crisis (UIS 2017, World Bank 2018). In low- and middle-income countries, despite near universal enrollment in primary school, 53 percent of children could not read and understand a simple story by late primary age (World Bank 2019). This statistic underlined the reality that schooling is not the same as learning—even though education policy often assumes that it is (Pritchett 2013). It also showed just how far off track the world is from the aspiration embodied in Sustainable Development Goal 4, of providing quality education to all children at least through secondary school.

The learning crisis has only deepened with the extended school closures and the sharp economic recessions caused by the COVID-19 pandemic. Global Learning Poverty could rise from 53% to 63%, and the children affected by these learning losses stand to lose a collective US\$10 trillion in future lifetime earnings (World Bank 2020b). As the pandemic and its aftermath accentuate deficiencies in education systems around the world, a political window of opportunity for urgently needed policy reforms to improve quality and equity could open in many countries.

The World Development Report 2018 argued that the learning crisis has multiple causes: poor service delivery in schools and communities, policies that are not aligned toward learning for all, and unhealthy politics and low bureaucratic capacity. To tackle the crisis and improve learning for all children, countries need to know where they stand on these three key dimensions: practices (or service delivery), policies, and politics. But providing such a systemwide overview requires better measurement. Many of these drivers of learning are not captured by existing administrative systems. And although new measurement tools capture some of those aspects well, no single instrument pulls together data on all these areas. This gap leaves policymakers in the dark about what is working and what isn't.

To fill this gap, the World Bank, with support from the Bill and Melinda Gates Foundation, the UK's Department for International Development, and the Government of Japan, has launched a Global Education Policy Dashboard, which measures the drivers of learning outcomes in basic education around the world. In doing so, the GEPD highlights where systems are falling short in providing quality education for all children, identifies gaps between current practice and what evidence suggests would be most effective in promoting learning for all, and helps governments in setting priorities and tracking progress as they work to close those gaps.



## From Awareness to Action: Addressing the Learning Crisis

**THE HUMAN CAPITAL PROJECT (HCP)**, a WBG global initiative to accelerate investments in people for greater equity and economic growth, is building political commitment for reforms and investments that will transform human capital outcomes for the good of people and economies. As a first step under the HCP, the Bank in 2018 released a Human Capital Index (HCI) for 157 economies, attracting considerable attention to the challenge. The Index provides an easy-to-understand answer to the question “How much human capital will a child born today acquire by the end of secondary school, given the risks to health and education that prevail in the country where she was born?” The education component of the HCI is the learning-adjusted years of schooling measure, which combines quantity and quality of education into a single outcome metric. Because much of the HCI’s overall variation from country to country is due to differences in education outcomes, the Index makes countries keenly aware of how the learning crisis undermines their human capital and limits the lifetime opportunities of their children (Kraay 2018, Filmer et al 2018).

To shine the spotlight even more brightly on this crisis, in September 2019, the World Bank and the UNESCO Institute for Statistics (UIS) introduced the concept of **Learning Poverty (LP)**, drawing on a newly assembled data on learning and participation. Learning Poverty is defined as the percentage of 10-year-olds who cannot read and understand a simple story (with out-of-school primary-age children counted as not reading). Using these data, the Bank and UIS estimated that 53 percent of children in low- and middle-income countries could not read and understand a simple story by the end of primary school. Moreover, progress was slow: without significant acceleration in efforts, the global rate of learning poverty would still be 43% in 2030, making it impossible to reach the SDG 4 aspiration of quality secondary education for all (World Bank 2019). Beyond releasing the Learning Poverty indicator, the WBG launched a campaign focused on improving learning outcomes in client countries and established an ambitious new Learning Target, which aims to cut by at least half the global rate of Learning Poverty by 2030.

With the COVID-19 pandemic generating widespread learning losses, the world now faces an even direr scenario. Global Learning Poverty is projected to rise to 63%, making even more difficult to achieve the target of cutting Learning Poverty by half by 2030 (Azevedo 2020). But as the problem grows, so does the commitment from countries to do what’s needed to address the learning crisis. Around the world, among countries and development partners, we see an ever-greater call for action to protect and build the foundational skills that are central to human capital accumulation.

But awareness of the challenge is just a first step: while the Index and the Learning Target are designed to motivate action, other tools are needed to guide that action. Outcome indicators alone do not tell a country what steps are necessary for improvement. Similarly, the HCI and LP indicators are likely to change only

slowly, leaving countries in need of shorter-term metrics of progress. When countries act on the drivers of learning, they need indicators that can highlight areas to improve and provide useful feedback on whether they are moving in the right direction.

The **Global Education Policy Dashboard** fills those needs. It collects and presents data on the specific areas where countries need to act to improve learning outcomes, using indicators that can show progress relatively quickly (in 1 to 2 years, say). What are those areas? The WDR 2018 argues that struggling education systems lack one or more of four key school-level ingredients for learning: prepared learners, quality teaching, learning-focused inputs, and the skilled management that pulls them together. But the problems are not just at school level; these deficiencies in service delivery are typically signs of deeper systemic problems. They are driven by policies that are not well designed or implemented to promote learning for all children and youth, and these misalignments in turn reflect problems caused by unhealthy politics or a lack of bureaucratic capacity. To tackle the learning crisis, and to achieve and sustain learning gains at scale, countries therefore need to know where they stand on all these dimensions.

**The dashboard tracks progress in all three of these areas: practices (or service delivery), policies, and politics.** Its indicators are comprehensive (in that they holistically cover the most important drivers of learning at scale) but also focused (so that they can focus stakeholders’ attention on what really is most important). With these indicators, the dashboard (1) highlights gaps between what the evidence suggests is effective in promoting learning and what is happening in practice in each system; and (2) allows a way for governments to track progress as they act to close those gaps. It thereby helps countries to monitor how well they are oriented toward improving learning and attainment for all children—and thus ultimately toward improving the HCI as well. While every country needs to identify priorities for investment and policy reforms that are best suited to its own context, the dashboard can provide a much stronger evidence base for that work.





# Why These Indicators? Building on the WDR 2018

**THE STRUCTURE OF THE DASHBOARD BUILDS ON THE WDR 2018** conceptual framework outlined earlier (Figure 1). At the center are the outcome indicators capturing learning for all (meaning learning combined with access). These are ringed by indicators representing the four main school-level service-delivery factors, labeled as “practices”: prepared learners, capable teaching, appropriate inputs and infrastructure, and capable school management that brings the other factors together to produce learning. The next set of indicators proxy for the policies that affect each of these areas, and the final set captures the political context and bureaucratic capacity of the system. Sustained system-wide improvement in learning will likely depend on better performance in these policy and politics domains.

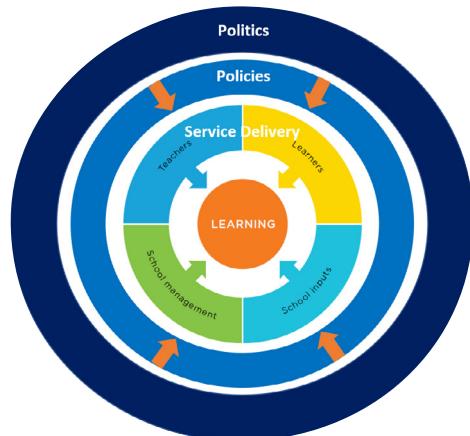
In selecting and developing the indicators for the dashboard, the team applied three main criteria:

1. First, each indicator should **predict better learning and access** outcomes (based on sound empirical evidence or a strong conceptual presumption to support the relationship).
2. Second, with concerted effort, it should be possible to **improve the indicator over a relatively brief period**—1 to 2 years, say—so that the indicator can serve as a marker of progress for a government committed to the longer-term challenge of improving learning.
3. And third, it should be possible to generate the data for the indicator every 2 years **at a reasonable cost**.

The list includes 39 indicators distributed among the four levels symbolized by Figure 1: 5 outcome measures, 11 indicators of practices (or service delivery), 18 policy levers, and 5 indicators for politics and bureaucratic capacity. Figure 2 provides a summary of all the indicators that are included. Please refer to Detailed Indicator Information for more information on each indicator, together with the rationales for and definitions of each.

The team defined these indicators based on extensive literature reviews and numerous discussions with experts inside and outside the World Bank. Many of the indicators are adapted or borrowed from existing initiatives, such as the Service Delivery Indicators (SDI) and the Systems Approach for Better Education Results (SABER) Policy Intent frameworks.

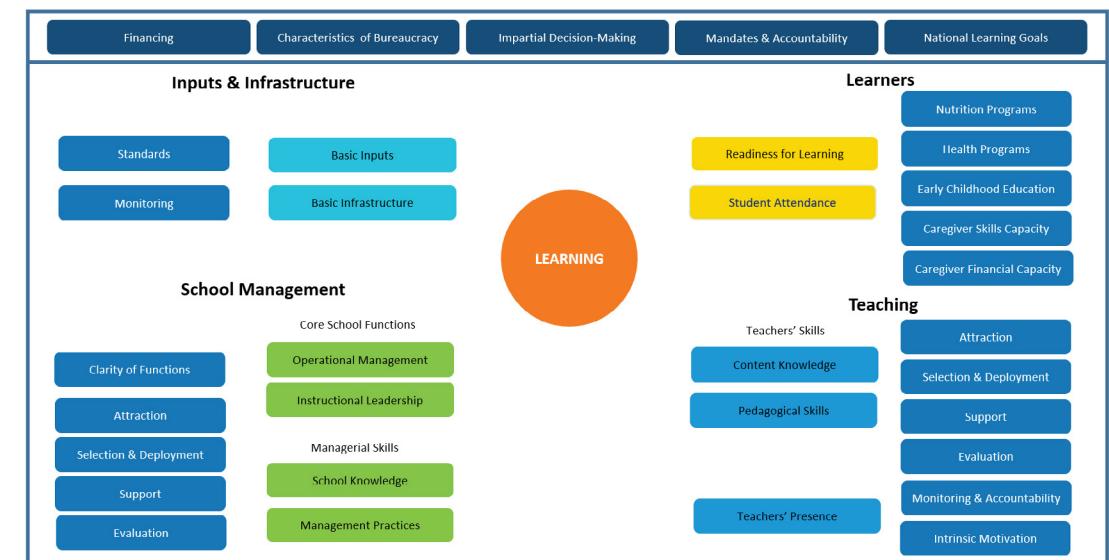
**FIGURE 1:  
STRUCTURE OF THE DASHBOARD**



# Instruments & Data Sources

**THE DASHBOARD PROJECT COLLECTS NEW DATA IN EACH COUNTRY** using three new instruments: a School Survey, a Policy Survey, and a Survey of Public Officials. Data collection involves school visits, classroom observations, legislative reviews, teacher and student assessments, and interviews with teachers, principals, and public officials. In addition, the project draws on some existing data sources to complement the new data it collects. A major objective of the GEPD project was to develop focused, cost-effective instruments and data-collection procedures, so that the dashboard can be inexpensive enough to be applied (and re-applied) in many countries. The team achieved this by streamlining and simplifying existing instruments, and thereby reducing the time required for data collection and training of enumerators.

**FIGURE 2: COMPREHENSIVE LIST OF DASHBOARD INDICATORS**



More information pertaining to each of the three instruments can be found below:

**SCHOOL SURVEY** The School Survey collects data primarily on practices (the quality of service delivery in schools), but also on some *de facto* policy indicators. It consists of streamlined versions of existing instruments—including Service Delivery Surveys on teachers and inputs/infrastructure, Teach on pedagogical practice, Global Early Child Development Database (GECDD) on school readiness of young children, and the Development World Management Survey (DWMS) on management quality—together with new questions to fill gaps in those instruments. Though the number of modules is similar to the full version of the Service Delivery Indicators (SDI) Survey, the number of items and the complexity of the questions within each module is significantly lower. The School Survey includes 8 short modules: School Information, Teacher Presence, Teacher Survey, Classroom Observation, Teacher Assessment, Early Learner Direct Assessment, School Management Survey, and 4th-grade Student Assessment. For a team of two enumerators, it takes on average about 4 hours to collect all information in a given school. For more information, refer to the Frequently Asked Questions.

**POLICY SURVEY** The Policy Survey collects information to feed into the policy *de jure* indicators. This survey is filled out by key informants in each country, drawing on their knowledge to identify key elements of the policy framework (as in the SABER approach to policy-data collection that the Bank has used over the past 7 years). The survey includes questions on policies related to teachers, school management, inputs and infrastructure, and learners. In total, there are 52 questions in the survey as of June 2020. The key informant is expected to spend 2-3 days gathering and analyzing the relevant information to answer the survey questions.

**SURVEY OF PUBLIC OFFICIALS** The Survey of Public Officials collects information about the capacity and orientation of the bureaucracy, as well as political factors affecting education outcomes. This survey is a streamlined and education-focused version of the civil-servant surveys that the Bureaucracy Lab (a joint initiative of the Governance Global Practice and the Development Impact Evaluation unit of the World Bank) has implemented in several countries. The survey includes questions about technical and leadership skills, work environment, stakeholder engagement, impartial decision-making, and attitudes and behaviors. The survey takes 30-45 minutes per public official and is used to interview Ministry of Education officials working at the central, regional, and district levels in each country.

While most dashboard indicators are derived from data collected using these instruments, the team also draws on existing data for a small number of indicators. This is particularly key for outcome data (school participation and learning), where the team reports existing data wherever possible. Similarly, because factors outside the education system also affect education outcomes, the dashboard also includes a few indicators based on existing data from other sectors. For example, many factors that affect whether children are in school and ready to learn lie outside the education system. Thus, policy levers for this practice area include indicators like the share of children that are well-nourished and the share of children that are fully immunized, among others; these indicators draw on non-dashboard data sources. Please refer to the Detailed Indicator Information for more details.



## Implementing the GEPD in a Country

**POPULATING THE DASHBOARD** **REQUIRES**, aside from the expert-filled Policy Survey, collecting nationally representative data from two field surveys, as noted above—the school and public official surveys. The sample sizes are as follows:

**Sample of Schools:** The sample size for the School Survey normally consists of 200 to 300 schools, a number that allows for the reporting of nationally representative estimates with a high level of precision for all the GEPD indicators. Within this sample of schools, the team interviews 200-300 school principals and 1,000-1,500 teachers, while also conducting assessments of 600-900 1st-graders and (depending on classroom size) 4,000-6,000 4th-graders.

**Sample of Public Officials:** The sample size for the Survey of Public Officials is 200. These public officials work in the Ministry of Education at either the central, regional, or district level. In the typical country, the breakdown of the sample is 60 officials at the central level, 70 at the regional level, and 70 at the district level. Other than the director(s) and the person in charge of human resources of each office, who are always interviewed, all public officials are randomly selected.

TABLE 1 – STEPS TO IMPLEMENT GEPD IN A COUNTRY

TEAM	NECESSARY ACTIONS
Government	<ul style="list-style-type: none"><li>• Confirm country's participation</li><li>• Provide information for sampling</li><li>• Establish technical working group to engage with WB on the project</li><li>• Pursue approvals to visit schools</li><li>• Provide WB with letter of support to use during fieldwork</li><li>• Attend a stakeholder validation meeting once data has been collected</li></ul>
GEPD	<ul style="list-style-type: none"><li>• Confirm country's participation</li><li>• Procure local survey firm (or support gov in doing so)</li><li>• Draw sample in collaboration with the government</li><li>• Translate all instruments into local language(s) [if not available already]</li><li>• Engage with local stakeholders to link GEPD with existing initiatives</li><li>• Supervise fieldwork</li><li>• Process data and compute indicators</li><li>• Validate data with the government counterparts</li></ul>

The implementation of the GEPD is always customized to the needs and context of each country. However, there are some steps that both the GEPD team and the country counterparts must follow for successful implementation; these are listed in Table 1.

While the actual start of the fieldwork might sometimes be timed to take advantage of other ongoing data collection efforts in a particular country, the actual implementation – from training of enumerators to reporting of the validated information – is expected to take three months.

Potential benefits of participating in the GEPD vary from country to country depending on the maturity of existing country data systems. In some countries, the School Survey may serve as the only source of data to identify problems in the education system, so the team may focus its efforts on guaranteeing that the GEPD can be regularly reapplied. Other countries may have strong data monitoring systems already; in these countries, the GEPD 1) helps verify the quality of the data already being collected, 2) helps identify gaps that could be filled in the data that are collected as part of the country's regular monitoring, and 3) offers a wealth of new data collection instruments, training materials, fieldwork methodologies, and other resources that these countries could use in their ongoing data collection and reporting efforts.

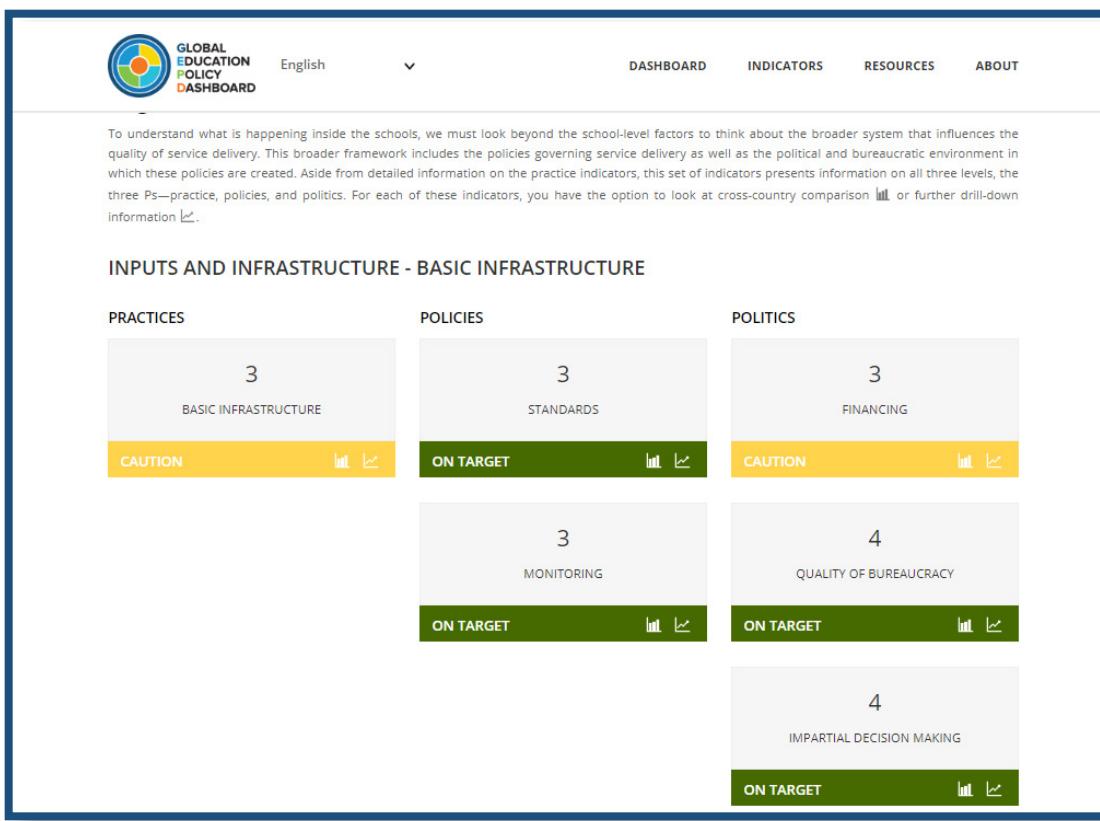


## Visualizing the GEPD Interface

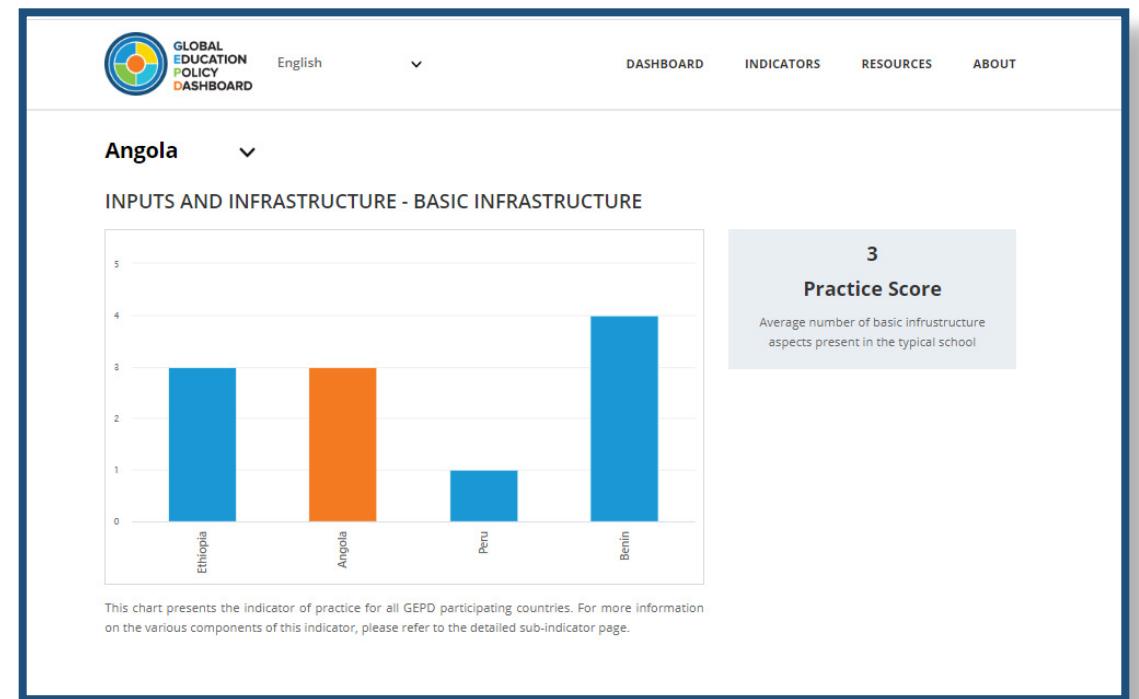
**EACH COUNTRY HAS ITS OWN LANDING PAGE** that shows the outcomes (learning indicators), and then all of the school level Practices that affect learning. The design is such in order to promote progress on the key drivers that could be driving low learning.

A screenshot of the Global Education Policy Dashboard (GEPD) landing page. The page features a dark header with the GEPD logo, language selection (English), and navigation links for DASHBOARD, INDICATORS, RESOURCES, and ABOUT. Below the header, a main text block explains the purpose of the dashboard: understanding learning and participation outcomes through outcome indicators and school-level service-delivery factors. The central content area is organized into four main sections: INPUTS AND INFRASTRUCTURE (Basic Inputs, Basic Infrastructure), TEACHING (Content Knowledge, Pedagogical Skills, Teachers' Presence), OUTCOMES (Student Attendance, Readiness for Learning, Learning Poverty Rate), and SCHOOL MANAGEMENT (Management Practices, Operational Management, Instructional Leadership, School Knowledge). Each section contains a brief description and a corresponding colored button.

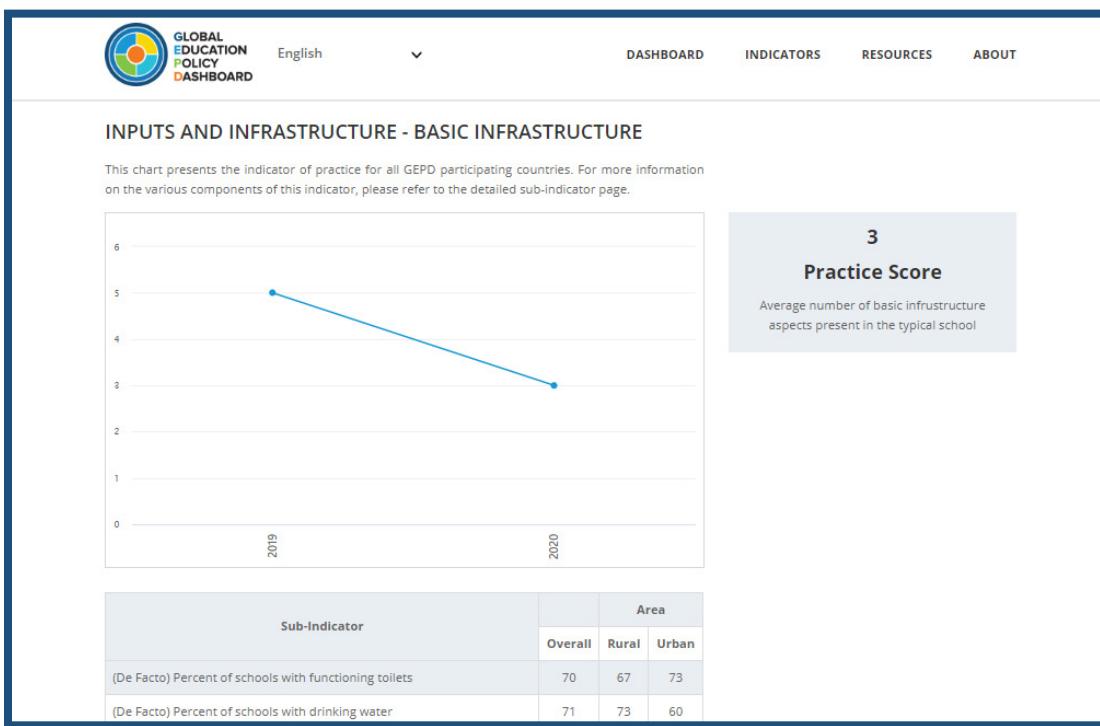
From there, the user will have the option to drill down on specific issues or areas that are relevant to the country. For instance, if the user clicks on Basic Infrastructure, the user will be sent to the following page with more information on the topic.



And see how they compare to other countries



And the GEPD interface is designed in such a way that countries can monitor progress over time



The data shown is fictional and used for illustration purposes only.

# Detailed Indicator Information





## Learning Poverty

### LEARNING & PARTICIPATION

This outcome indicator measures whether students are learning, by reporting on the combination of schooling and learning at the end of primary, building on the indicators of reading proficiency and school enrollment generated in the SDG 4 reporting process.

#### INDICATOR

Share of children that are not able to read a short age-appropriate text with comprehension around age 10. In cases where it is possible, this indicator will be disaggregated by gender.

#### BACKGROUND

The benefits of education stem not just from the number of years a student spends sitting in the classroom, but from the skills that a student acquires (Prichett 2013; World Bank 2018). For example, research suggests that it is the cumulative skills acquired, and not schooling, that serves as a predictor of economic growth (Hanushek & Woessmann 2012). In many studies, simple measures of foundational skills are able to explain wages even after controlling for the workers' years of schooling (Hanushek et al. 2015; Valerio et al. 2016). Because of this, it is important to report on indicators that speak to the acquiring of foundational skills that are central for other learning to take place and for the overall formation of productive workers; one of such skills is basic literacy (World Bank 2019). To address this need, the World Bank recently launched the Learning Poverty indicator, which combines shortfalls in school access and learning in one simple measure. It measures a straightforward concept: the share of children around the world who are not able to read a short age-appropriate text with comprehension around age 10. Because, as the SDGs emphasize, children should be both enrolled in school and learning, out-of-school children are counted as learning-poor.

#### MEASUREMENT

##### Instrument

EXISTING DATA SOURCE

##### Data Source

Global Learning Assessment Database (<https://github.com/worldbank/GLAD>)

##### Approach

Learning Poverty is the weighted average of the share of the population below the minimum proficiency level, adjusted by the out-of-school population.

$$LP = SD + [(1-SD) \times LD]$$

where:

LP = Learning poverty

SD = the schooling deprivation dimension, which captures the share of children of primary-school age who are out of school; this dimension is reflected by the indicator of Out-of-School children. This dimension is linked to the indicator 4.1.4 fthe SDG 4 thematic framework.

LD = the learning deprivation dimension, which captures the share of children at the end of primary who are below the minimum proficiency level (MPL) for reading, as defined by the Global Alliance to Monitor Learning (GAML) in the context of the SDG 4.1.b monitoring, and observed by the indicator BMP (for "below minimum proficiency")

For more information, refer to the detailed methodology description found in the report [Ending Learning Poverty: What will it take?](#)



## Proficiency by Grade 2/3

### LEARNING

This outcome indicator measures whether students are learning, by reporting data from well-designed student assessments of math and language abilities.

#### INDICATOR

Proportion of children in grades 2/3 achieving at least a minimum proficiency level in (i) reading and (ii) mathematics. Where data allows, this indicator will be disaggregated by gender, so that users can drill down on this variable.

#### BACKGROUND

Despite their great progress in increasing access to education for their children and youth, many countries now face a learning crisis: too often, schooling does not lead to much learning. As the WDR 2018 emphasized, realizing education's promise will require that countries place learning at the center of their education policies. The first step is to measure learning and highlight the challenge. This indicator therefore provides countries with a snapshot of how much learning is happening inside their classrooms, by reporting the results of well-designed student assessments and highlighting where there are no assessments available. This indicator will come directly from reporting by the UNESCO Institute of Statistics, the custodian of Sustainable Development Goal 4.

#### MEASUREMENT

##### Instrument

EXISTING DATA SOURCE

##### Data Source

UNESCO Institute of Statistics

##### Approach

For this learning measure, the dashboard team proposes to use indicator 4.1.1 of the SDGs: "Proportion of children in grades 2/3 . . . achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex." The team will coordinate closely with UNESCO UIS to include data validated for use in reporting under the SDG monitoring process. It will thus benefit from the UIS's current initiative to define minimum proficiency levels for domains, as well as the linking/alignment needed to put the different assessments (international, regional, national) on the same scale. Under the UIS definition of percentage of children achieving the pre-defined minimum proficiency level, the percentage will be calculated as follows:

$$MPL_{t,n,s} = MP_{t,n,s} / Pt,n$$

where:

$MPL_{t,n,s}$  = the number of children at stage of education n, in year t, who have achieved at least the minimum proficiency level in subject s.

$Pt,n$  = the number of children and young people at stage of education n, in year t, in any proficiency level in subject s.

In countries where learning data are not available, the current plan is for the dashboard to highlight this gap.



# Proficiency by End of Primary

LEARNING

This outcome indicator measures whether students are learning, by reporting data from well-designed math and language student assessments.

## INDICATOR

Proportion of children at the end of primary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics. Where data allows, this indicator will be disaggregated by gender, so that users can drill down on this variable.

## BACKGROUND

Despite their great progress in increasing access to education for their children and youth, many countries now face a learning crisis: too often, schooling does not lead to much learning. As the WDR 2018 emphasized, realizing education's promise will require that countries place learning at the center of their education policies. The first step is to measure learning and highlight the challenge. This indicator therefore provides countries with a snapshot of how much learning is happening inside their classrooms, by reporting the results of well-designed student assessments and highlighting where there are no assessments available. This indicator will come directly from reporting by the UNESCO Institute of Statistics, the custodian of Sustainable Development Goal 4.

## MEASUREMENT

### Instrument

EXISTING DATA SOURCE

### Data Source

UNESCO Institute of Statistics

### Approach

For this learning measure, the dashboard team proposes to use indicator 4.1.2 of the SDGs: "Proportion of children at the end of primary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex." The team will coordinate closely with UNESCO UIS to include validated data used for reporting under the SDG monitoring process. It will thus benefit from the UIS's current initiative to define minimum proficiency levels for domains, as well as the linking/alignment needed to put the different assessments on the same scale.

As noted in the UIS metadata for this indicator, the indicator is calculated as the percentage of children and/or young people at the relevant stage of education achieving or exceeding a pre-defined proficiency level in a given subject:

Performance above the minimum level,  $PL_{t,n,s}$ , above minimum = p

where p is the percentage of students in a learning assessment at stage of education n, in subject s in any year (t-i) where  $0 \leq i \leq 5$ , who has achieved the level of proficiency that is greater than a pre-defined minimum standard,  $S_{min}$ . The minimum standard is defined by the global education community, taking into consideration regional differences.

In countries where learning data are not available, the dashboard will highlight this gap.



# Proficiency on GEPD Assessment

LEARNING

This outcome indicator measures whether students are learning by reporting data collected as part of the 4th-grade Student Assessment that is part of the GEPD's School Survey. A strength of the learning data reported under this indicator is that, unlike the learning data generated for SDG monitoring, it can be matched directly to all other school-level GEPD indicators.

## INDICATOR

Proportion of children in 4th grade achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, based on the GEPD student assessment. This indicator will be disaggregated by the gender of the student as well as the type of area where the school is located (rural/urban).

## BACKGROUND

Despite their great progress in increasing access to education for their children and youth, many countries now face a learning crisis: too often, schooling does not lead to much learning. As the WDR 2018 emphasized, realizing education's promise will require that countries place learning at the center of their education policies. The first step is to measure learning and highlight the challenge. This indicator aims to provide countries with a snapshot of how much learning is happening inside their classrooms by reporting the results from a learning assessment directly collected as part of the GEPD School Survey. For some countries, this learning data will be the only internationally comparable data available. In those cases, the GEPD will highlight the lack of other learning data.

## MEASUREMENT

### Instrument

SCHOOL SURVEY

### Data Source

Based on Service Delivery Indicators (SDI) Student Assessment (with minor adaptations)

### Approach

For this learning measure, the dashboard team uses the learning data collected through the School Survey. The School Survey includes a 30-minute math and language assessment for 4th-grade students. The assessment is given to one randomly selected 4th-grade class in each school visited as part of the data collection effort.

The assessment is done in a group setting (rather than one-to-one), and it provides equal amounts of time to language and mathematics.

In countries where other learning data are not available, the dashboard will highlight this gap. In such cases, only the data collected through the School Survey Assessment will be reported.

# Participation

## PARTICIPATION

This indicator summarizes school participation by reporting the net enrollment rate among primary-age children.

### INDICATOR

Adjusted primary net enrollment rate, defined as the “number of pupils of the school age group for primary education, enrolled either in primary or secondary education, expressed as a percentage of the total population in that age group.” This indicator will be disaggregated by gender.

### BACKGROUND

Achieving learning for all requires that all children be in school. Schooling has expanded dramatically over the past 50 years, and previously marginalized groups, especially girls, are much more likely to start primary school and stay enrolled. However, access remains an issue in some areas and for certain vulnerable groups, even at the primary level. Conflict-affected countries remain a glaring exception to the global success in making primary school near universal, with primary enrollment rates as low as 35% (in South Sudan in 2015). Recent studies have also highlighted the fact that many school systems are not accessible to children with disabilities. A recent study on 19 developing countries found that less than 50% of children with disabilities were attending school (Male & Wodon 2017). Even internal threats such as gender-based violence continue to keep many girls out of school. At the same time, the extended school closures and the economic recessions associated with COVID-19 threaten to push millions of children out of school (World Bank 2020). All of this translates into a need to continue monitoring school participation.

The GEPD reports on the adjusted net enrollment rate, as opposed to other similar indicators, because it provides a precise measure of the participation of the official primary school age population to the education system. It reflects the actual level of achievement of the Universal Primary Education (UPE) goal. As reported by UIS, while the net enrollment rate shows the coverage of pupils in the official primary school age group in the primary education level only, the reported indicator counts as enrolled those of the official primary school age range who have reached secondary education (because they might have entered primary education early or skipped grades).

### MEASUREMENT

#### Instrument

EXISTING DATA SOURCE

#### Data Source

UNESCO Institute of Statistics

#### Approach

School participation will be measured by enrollment rates of children in the primary-school age group, using UIS reported Adjusted Net Primary Enrollment data, which is derived from household surveys.

The calculation method used by UIS is to (1) divide the total number of students in the official primary school age range who are enrolled in primary or secondary education by the population of the same age group and (2) multiply the result by 100.





## Teacher Presence TEACHING

This indicator measures teacher attendance among a randomly selected set of teachers (up to 10 per visited school).

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### INDICATOR

Percent of teachers who are present in the school during an unannounced visit. This indicator will be disaggregated by the teacher's gender and urban/rural location.

### BACKGROUND

The quality of teaching is a function of both a teacher's skills and a teacher's presence to ensure opportunities to use those skills to help students. To measure teacher presence, the GEPD collects and reports observational data on teacher attendance. Being present in the classroom is necessary (though not enough) for teaching and learning to happen. High levels of teacher absence severely impair students' ability to learn and result in significant losses of class time during the school year (Chaudhury et al. 2006; Bruns & Luque 2015; Lavy 2015). A recent study in seven Sub-Saharan African countries found that 44 percent of teachers were absent from class, either because they were absent from school, or because they were in the school but not in the classroom (Bold et al. 2017). And absence matters: experimental research in India has found that reducing teacher absence by 21 percent increased students' learning by 0.17 standard deviations (Duflo et al. 2012). Note that this indicator is meant to capture how well the system succeeds in getting teachers into the classroom—not to focus attention on the teachers themselves, but on the strengths or failings of the system that manages them.

### MEASUREMENT

**Instrument**  
SCHOOL SURVEY

**Data Sources**  
Based on the Service Delivery Indicators (SDI) Instrument

**Approach**

The methodology for collecting the needed information is the following: the principal will be notified that a visit will take place within a two-week window. On the day of the visit, the field team will collect the teacher roster and check for presence in the school of a random sample selected from the list of teachers who are normally supposed to be teaching at the time of the visit. The number of teachers that are part of the sample is up to 10, depending on the size of the school visited. This is an adaptation of Chaudhury et al. (2006) methodology that allows for the reduction of the number of school visits to just one per school. Teachers' presence in the classroom will also be measured, but presence in the school will be the indicator reported in the dashboard.



## Teacher Content Knowledge TEACHING

This indicator measures the teachers' mastery of the content that they currently teach or are supposed to teach.

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### INDICATOR

Percentage of 4th-grade teachers who have mastered the content knowledge covered in a 4th-grade curriculum. This determination is based on a global standard of minimum proficiency for 4th-grade teachers developed in consultation with outside experts. This indicator will be disaggregated by gender and urban/rural location.

### BACKGROUND

Teacher content knowledge is an important determinant of teaching quality. To be able to communicate and explain the curriculum, a teacher must have a good mastery of the material. When students in low- and middle-income countries are in classes led by teachers with higher content knowledge, they learn substantially more (Metzler & Woessmann 2012; Bietenbeck et al. 2017; Bold et al. 2018). But research shows that in many countries, teachers have not mastered the subject they are teaching (Bruns & Luque 2015; Tandon & Fukao 2015; World Bank 2016; Bold et al. 2017) and that their students learn little from attending school.

### MEASUREMENT

**Instrument**  
SCHOOL SURVEY

**Data Sources**  
Based on the Service Delivery Indicators (SDI) Instrument

**Approach**

This indicator is based on revised versions of teacher content-knowledge assessments developed for the Service Delivery Indicators (SDI) Surveys, where the revisions reflect the findings of extensive psychometric analyses carried out by the dashboard team. These assessments are 30-minute exams taken by randomly selected teachers on either mathematics or language, depending on the subject they teach. To measure their subject content knowledge, teachers are asked to mark (or "grade") mock student tests in language and in mathematics. This method of assessment, which has been widely used in recent surveys, has two advantages. First, it assesses teachers in a way that was consistent with their normal activities—namely, marking student work. Second, by not testing teachers in the same way as students are tested, it avoids directly challenging their professionalism.

*Example:*

Below is a test paper by a primary school student. Please mark the answers using a **✓** for those answers that are correct and a **X** for those answers that are not correct. For those answers that you mark **X**, you must write the correct answer in the space provided.

Complete the sentences with the correct words from the brackets.

a) Where (Does, Where, How long) does it take to walk to this school?	(a) <b>X</b>	(a) How long
b) When (Where, When, What) is your sister doing?	(b) <b>X</b>	(b) What

# Teacher Pedagogical Skills

This indicator measures the teachers' mastery of the pedagogical skills needed to properly teach the content.

## INDICATOR

Percentage of 4th-grade teachers who reach a certain level of proficiency in pedagogical skills. This indicator is disaggregated by teacher gender and urban/rural location.

## BACKGROUND

Good teaching skills are not just about subject content knowledge. They also require that teachers know how to translate their content knowledge into effective pedagogy in the classroom. Teachers must also know how to assess student capabilities and react appropriately, for example by asking questions that require various types of responses and by giving feedback on those responses, commonly referred to as "knowledge of the context of learning" (Johnson 2006; Danielsson 2007; Pianta et al. 2007; Coe, Aloisi, Higgins and Major 2014; Ko & Sammons 2013; Vieluf et al. 2012). While factors like curriculum and teacher qualifications explain a small fraction of the variation in student learning (Burchinal, Howes, and Kontos 2002), the quality of teacher-child interactions has been shown to explain a much larger share of student learning (Dobbie & Fryer 2013; Hamre 2014; Muijs et al. 2014).

## MEASUREMENT

**Instrument**

SCHOOL SURVEY

**Data Sources**

Teach

**Approach**

To measure teachers' pedagogical skills, the GEPD uses Teach, a World Bank-developed classroom observation tool. This is a new instrument designed to capture the quality of teaching in low- and middle-income countries (Molina et al. 2018). The tool captures (i) the time teachers spend teaching and the extent to which students are on task, and (ii) the quality of teaching practices that help develop students' socioemotional and cognitive skills. More specifically, it measures 1) Time on Task, 2) Classroom Culture (supportive learning environment, positive behavioral expectations), 3) Instruction (lesson facilitation, checks for understanding, feedback, critical thinking), and 4) Socioemotional skills (autonomy, perseverance, and social & collaborative skills). A randomly selected 4th-grade class is recorded during the school visit, and the video is then scored using the Teach tool. An example of how the tool scores the behaviors that comprises the score for each teacher is below.

SCORE							
1	LOW	2	MEDIUM	3	4	HIGH	5
<i>The teacher provides specific comments or prompts that help clarify students' misunderstandings</i>	Teacher either doesn't provide students with comments about their misunderstanding OR the comments provided are simple/evaluative	The teacher provides students with general or superficial comments/ prompts about their misunderstandings.	Teacher provides students with specific comments that contain substantive information that helps clarify students' misunderstandings				





## Basic Inputs

### INPUTS & INFRASTRUCTURE

This indicator measures the availability of basic inputs in the average school. These inputs, based on the literature and general expectations, are (i) functioning blackboard and chalk, (ii) pens, pencils, and exercise books in 4th-grade classrooms, (iii) textbooks, (iv) basic classroom furniture, and (v) access to ICT.

#### INDICATOR

Average number of basic inputs (0-5) available in schools. This indicator is disaggregated by urban/rural location.

#### BACKGROUND

Basic inputs for learning are an important element of school quality. They serve as teaching aids for the teacher and help create an environment conducive to learning. Functional blackboards and chalk may promote learning because students learn better by having information presented through multiple modalities, especially through visual means (Mayer 2003). Pens, pencils, textbooks, and exercise books provide students with the opportunity to engage with the material in a way that enhances learning. On this point, there is literature outlining the relationship between opportunities for practice (which require these inputs) and learning outcomes. Similarly, while research connecting classroom furniture to learning is limited, it is reasonable to assume that lack of basic furniture could hinder learning—and that in any event, in the minds of stakeholders, any education system should provide basic furniture for students and teachers. Over the past decades, with the tremendous growth in ICT, many studies have investigated the effects of integrating ICT into teaching and learning. When used by well-prepared teachers, technologies can create opportunities for learning because they allow learners to access, extend, transform and share ideas and information in multimodal communication styles and formats. They help the learner to share learning resources and spaces, promote learner-centered and collaborative learning principles and enhance critical thinking, creative thinking and problem-solving skills (Majumdar 2013).

#### MEASUREMENT

##### Instrument

SCHOOL SURVEY

##### Data Sources

Service Delivery Indicators (SDI) Instruments  
UNESCO - Guide to Measuring Information and Communications Technologies (ICT) in Education

##### Approach

Questions directed to teacher and/or principal AND direct observation. For each of the elements included in this indicator, the questions go beyond basic availability to better capture the actual user experience. Rather than just measuring the availability of an input, they measure whether the input is present at the time of the visit, functional, of quality, and being used. For example:

*How many PCs, laptops, and/or tablets are available at the school? [enumerator observes]*

*How many students had accessed to them over the past two weeks? [question to principal]*

*Are the PCs, laptops, and/or tablets functional? [enumerator turns on electronic to test]*

*Are they connected to the internet? [enumerator accesses internet to test]*

*Refer to FAQs for more ICT Questions*



## Basic Infrastructure

### INPUTS & INFRASTRUCTURE

This indicator measures the availability of basic infrastructure in the average school. The infrastructure aspects included, based on the literature and general expectations, are availability of (i) drinking water, (ii) functioning toilets, (iii) electricity, (iv) internet connectivity, and (v) accessibility for people with disabilities.

#### INDICATOR

Average number of basic infrastructure aspects (0-5) available in schools. This indicator will be disaggregated by urban/rural location.

#### BACKGROUND

A lack of critical infrastructure is likely to reduce learning. Provision of safe drinking water at schools has been linked to lower student school absenteeism and higher learning across the developing world, due to significant reductions in the diarrheal disease burden (O'Reilly et al. 2008; Barde et al. 2013). Functioning toilets make the school more attractive to attend and likely reduce absence caused by illness. Electricity and classroom visibility are also likely to improve the ability of the teacher to teach and students to learn. And as with the school inputs, many stakeholders see these types of infrastructure as basic elements of a quality learning environment, making them important to track in a dashboard. The Sustainable Development Goals (SDGs) call for inclusive and equitable quality education, with the aim of ensuring equal access to all levels of education for the vulnerable, including disabled children. Yet, a recent report by the World Bank and the Global Partnership for Education (GPE) found that in 19 developing countries, primary school completion for children with disabilities is just 48% (Male & Wodon 2017). The pervasiveness of this problem precipitates the need for governments to invest in adapting their infrastructure and materials for students with disabilities. For this reason, the dashboard captures the level of school and classroom accessibility to children with physical disabilities to shine a light on this important issue.

#### MEASUREMENT

##### Instrument

SCHOOL SURVEY

##### Data Sources

Service Delivery Indicators (SDI) instruments  
UNICEF Access to School and the Learning Environment I - Physical, Information and Communication  
WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply, Sanitation and Hygiene (WASH)

##### Approach

Questions directed to teacher and/or principal AND direct observation. For each of the elements included in this indicator, the questions go beyond basic availability to better capture the actual user experience. For instance, the questions on bathrooms go beyond checking whether there are bathrooms. They aim to capture the actual experience of the students in using this infrastructure by reporting on they are separate for boys/girls, whether they are functioning, whether they are clean, etc. Some of the actual questions include:

*Is the road leading to the school accessible to a student in wheelchair? [Enumerator observes]*

*What is the main source of drinking water provided by the school? [Enumerator observes]*



## Readiness for Learning

LEARNERS

This indicator measures the extent to which learners are prepared to learn, by assessing the cognitive and socioemotional skills they have when they first arrive at primary school.

### INDICATOR

Share of 1st grade students with basic skills to succeed in primary school. This indicator is disaggregated by gender and urban/rural location, as well as by type of skill (numeracy, literacy, executive function, and socio-emotional).

### BACKGROUND

One of the main drivers of low learning levels in primary is the fact that many children arrive at school without foundational skills (or capacities/abilities) to learn. Factors like malnutrition, illness, and lack of early childhood stimulation associated with poverty undermine early childhood learning (Lupien et al. 2000; McCoy et al. 2016; Walker et al. 2007). Deprivations in the early years have long-lasting effects because they impair infants' brain development (Coe et al. 2007; Garner et al. 2012; Nelson 2016). Even in a good school, deprived children learn less. Moreover, breaking out of lower learning trajectories becomes harder as these children age because the brain becomes less malleable (World Bank 2018). Thus, poor-quality education systems are likely to amplify these initial differences; in contrast, high-quality early childhood programming is a powerful tool to help most disadvantaged children catch up to peers.

Many outcome measures describe how prepared students are for learning by the time they first enroll in school. Two key domains are the cognitive and socio-emotional domains. Cognition refers to the processes by which knowledge is acquired and manipulated and includes abilities such as memory, problem-solving, and analytical skills (Damon, Kuhn, & Siegler 1998). Socio-emotional skills refer to the children's ability to regulate their social interactions and emotional reactions. Both sets of skills vary significantly within countries by household income levels, with significant developmental gaps between rich and poor children in high-income countries and low- and middle-income countries alike. Similarly, children in poverty are more likely to have their development of self-regulation and other important socio-emotional skills disrupted by unpredictable environments and sustained levels of stress.



### MEASUREMENT

**Instrument**  
SCHOOL SURVEY

**Data Sources**  
Global Early Child Development Database (GECDD)/MELQO Instrument

**Approach**

A short direct assessment is given to 3 randomly selected 1st-grade children in each school. Based on consultations with experts and psychometric analysis of GECDD/MELQO items, the GEPD team produced an assessment that includes a total of 16 exercises. These exercises include 7 for literacy, 5 for numeracy, 2 for executive function, and 2 for socio-emotional. For example, for literacy, children are asked:

- Name as many things that you can eat as you can
- Tell me the names of all the animals that you know



# Student Attendance

## LEARNERS

This indicator measures student attendance as one proxy for learner preparedness.

### INDICATOR

Percentage of students who are present in their classroom during an unannounced visit. This indicator is disaggregated by the student's gender and urban/rural location.

### BACKGROUND

It is fundamental that children arrive to school ready to learn for learning to take place. While the Readiness for Learning indicator captures an aspect of readiness by measuring skills of 1st-graders, this indicator takes a step back and reports on students' actual presence in the classroom. Not only are millions of children still not enrolled in primary school, but in some countries this is compounded by the problem of chronic absenteeism among the enrolled student body. A child absent from school is a child not able to learn. There could be a variety of reasons for student absenteeism, ranging from health and nutrition problems to safety concerns. What is certain is that student absenteeism is much higher among students of low socio-economic backgrounds, and that such absenteeism has an impact on learning outcomes even after controlling for socioeconomic status (OECD 2016; Garcia & Weiss 2018; Wilson et al. 2008).

The reported indicator therefore uses student presence as a proxy for students' readiness to learn.

### MEASUREMENT

#### Instrument

SCHOOL SURVEY

#### Data Sources

Newly developed

#### Approach

During the school survey visit, an enumerator visits a randomly selected 4th-grade class and calculates the share of students present by comparing the number of children present to the number of children on the roster.

The resulting number is an estimate, given that in some countries there will be inconsistencies between the number of children supposed to attend and the number of children enrolled. For instance, there might be cases where children who attend regularly are not actually officially enrolled, which could lead us to overestimate student attendance.



The aim of this indicator is to measure whether core operational management functions are carried out for each school, regardless of whether there is a school principal. The indicator measures two things: presence of functions and quality of functions (in terms of whether they are carried out in a timely manner).

#### INDICATOR

A score from 1 to 5 capturing presence and quality of core operational management functions. This score is built using the responses to the two vignettes outlined below. Each of the vignettes has an equal weight. The indicator is disaggregated by rural/urban location.

#### BACKGROUND

Recent studies have highlighted the importance of management quality for higher productivity in the public sector (Branch et al. 2012; Bloom, Propper, et al. 2015; McCormack et al. 2014; Rasul & Rogger 2013; Lavy & Boiko 2017). In many countries, poor management and governance undermine the quality of education. Though the allocation of responsibility differs from country to country and from school to school, there is a set of core functions that are within the purview of most of the world's systems of basic education. In the literature, these core functions have been categorized into three large dimensions: planning, implementation, and monitoring (Pritchett & Pande 2006). Together, these functions bring together teaching, inputs, infrastructure, and prepared learners in an environment where learning takes place. These functions range from the selecting and hiring of teachers to the implementation of school repairs. The aim of this indicator is to measure whether core operational functions are carried out for each school, regardless of whether there is a school principal. The indicator will measure two things: presence of functions and quality of functions.

#### MEASUREMENT

**Instrument**

SCHOOL SURVEY

**Data Sources**

Newly developed, but adapted from Development World Management Survey (DWMS)

**Approach**

The School Management module of the School Survey, which is directed to the principal, head teacher, or most senior teacher includes 2 vignettes describing hypothetical scenarios related to (i) infrastructure repair/maintenance, and (ii) school material availability. Other core functions – like teacher hiring, supervision, and training – are being captured through other indicators. Each vignette has 4-6 questions asking how the function would be handled or if handled at all.

The aim of this indicator is to measure the availability and quality of instructional leadership (or coaching) at each school, regardless of who is providing it.

#### INDICATOR

A score from 1 to 5 capturing presence and quality of instructional leadership based on the answers provided by the teachers at each school. The indicator is disaggregated by rural/urban location.

#### BACKGROUND

Good instructional leadership is important because it represents the prioritization of learning in a school system. The literature has highlighted the importance of having an instructional leader—usually the school principal or a district employee—to provide pedagogical support to teachers. One important aspect of instructional leadership involves identifying struggling teachers and students and providing them the support they need to improve. A common and effective way is to use classroom observations to diagnose teachers' strengths and weaknesses in order to provide targeted feedback on how to improve pedagogical skills (Beisiegel, Mitchell, & Hill 2018; McDuffie et al. 2014; Walkoe 2015). Interventions like classroom observations and frequent feedback can improve instructional quality and thus indirectly impact learning (Bruns et al. 2018; Fryer 2017), especially when complemented with incentives and/or student learning information to guide instruction (Fryer 2017; de Hoyos et al. 2017; Dee & Wyckoff 2015; Gitomer et al. 2015). Therefore, instructional leadership goes beyond the bureaucratic management of the school and instead provides support to the teacher-student relationship to ensure that learning takes place. Abundant evidence suggests that sustained provision of coaching and instructional leadership that is tailored to teachers' specific needs results in significant student learning gains (Evans & Popova 2016; Evans & Betaille 2019; Kraft et al. 2018; Murnane & Ganimian 2014a; Conn 2014; Darling-Hammond et al. 2017).

#### MEASUREMENT

**Instrument**

SCHOOL SURVEY

**Data Sources**

Newly developed, but based on SDI and SABER instruments

**Approach**

As part of the School Survey, the Teacher module inquires about the teachers' experience with classroom observations, pedagogical feedback, and support. For example, questions include:

*Has your classroom ever been observed?*

*What was the purpose of the classroom observation?*

*After the observation, did you have a meeting to discuss the results of your observation? If yes, how long did it last? Did s/he provide you any feedback?*

*Think about last week at school – did you have written lesson plans for last week?*

*Did you discuss the lesson plans for that week with anyone before teaching them? If yes, with whom?*



# School Knowledge

## SCHOOL MANAGEMENT

The aim of this indicator is to measure the extent to which principals have sufficient knowledge about their own schools to be effective managers.

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### INDICATOR

A score from 1 to 5 capturing the extent to which the principal is familiar with certain key aspects of the day-to-day workings of the school (in schools that have principals). The indicator is disaggregated by rural/urban location and by the gender of the principal.

### BACKGROUND

Principals are in a unique position to fulfill the operational and instructional leadership functions, but to do so effectively, they need to have sufficient knowledge about their own schools. Operationally, being aware of any problems with inputs and infrastructure in the school is necessary for creating and implementing an action plan to acquire them and maintain them. Similarly, to be able to act as instructional leaders and provide the necessary pedagogical support, principals must be familiar with the performance of the teachers working in their school. A principal who is not aware of the performance of the teachers and students or the availability of key inputs and infrastructure will be unable to effectively act as a school leader.

### MEASUREMENT

#### Instrument

SCHOOL SURVEY

#### Data Sources

Newly developed, but based on Service Delivery Indicators (SDI) Instrument

#### Approach

To measure this indicator, there are 7 questions in the School Management module of the School Survey inquiring about some key indicators that are being collected through the other modules of the school survey. The questionnaire will gauge principals' basic knowledge of their own school. Some examples include:

*Percentage of students who have their textbooks*

*Does class X have a functional blackboard?*

*Percentage of teachers who could solve a specific item from the teacher assessment*

Principals' knowledge will be scored based on how close each principal's answer is to the actual figure for his or her school (as derived from the school survey data).



# Management Skills

## SCHOOL MANAGEMENT

The aim of this indicator is to measure the extent to which principals have core managerial skills (such as problem-solving in the short-term, and goal-setting in the long-term) that will enable them to be better school leaders.

.....

### INDICATOR

A score from 1 to 5 capturing the principal's mastery of two key managerial skills: problem-solving in the short term, and goal-setting in the long term. The indicator is disaggregated by gender and rural/urban location.

### BACKGROUND

Poor management can undermine the quality of education. Principals need to have the right skills to manage their time effectively, to confront problems, and to create an environment where good teaching and learning goals are in place. Studies have shown that management practices are an important determinant of teacher effort and engagement as well as student achievement (Coelli & Green 2012; Dhuey & Smith 2014; Grissom, Kalogrides, and Loeb 2015; Crawfurd 2017; Dobbie & Fryer 2013; Angrist et al. 2013). For example, a study of school management data from 8 countries showed that a 1.0 standard deviation increase in an index of management capacity was associated with a 0.23-0.43 standard deviation increase in learning outcomes (Bloom et al. 2015). The index of management capacity is based on a list of 20 different practices grouped into four categories: operations, monitoring, target-setting, and people/talent management. They include practices such as adopting educational best practices and rewarding high performers. This dashboard indicator is meant to measure the principal's facility with using some of these key practices, which have been linked to other factors contributing to learning, such as quality teaching and a conducive learning environment.

### MEASUREMENT

#### Instrument

SCHOOL SURVEY

#### Data Sources

Newly developed, but based on Development World Management Survey (DWMS)

#### Approach

For this indicator, the principal (if the school has one) is asked a series of questions as part of the School Management module of the School Survey. For problem-solving, there are 3 questions related to a hypothetical scenario. These questions use root-cause analysis to analyze how the principal would react to a given situation. For goal-setting, the principal is asked a series of questions about the goals that he/she has set for the given academic year. The quantitative and qualitative responses gathered through these questions will then be scored according to a rubric to combine them into a single score. For instance, questions could include:

*Imagine that you conduct a school-wide student assessment, and while the performance is good overall, you notice that there is one class in particular that is lagging behind the others. What would be the first thing you would do? What actions would you take? How would you monitor progress?*

*Think about last week at school - did you have written lesson plans for last week?*

*Did you discuss the lesson plans for that week with anyone before teaching them? If yes, with whom?*



## Attraction TEACHING

This lever measures whether teaching is an attractive profession with good salary and benefits (compared to potential alternatives), good working conditions, respect from society, and opportunities for career progression.



### INDICATOR

A score ranging from 1 to 5, calculated based on policy questions. Responses will be scored according to a rubric that considers the factors that increase the attractiveness of the teacher profession. Two scores are reported: one for *de jure* policy existence and one for *de facto* policy implementation.

### BACKGROUND

Getting talented people to become teachers is essential. The evidence indicates that those considering whether to go into the profession care about what they would earn relative to other occupations (Boyd et al. 2006b; Dolton 1990; Wolter & Denzler 2003) and what the long-term career opportunities are (OECD 2012; Darling-Hammond 2010), and that higher salaries attract more able candidates into teaching (Barber & Mourshed 2007; Figlio 1997; Hanushek, Kain & Rivkin 1999). There is considerable evidence that teachers also care a great deal about their working conditions (Boyd et al. 2005a; Hanushek, Kain & Rivkin 2004a, 2004b; Jackson 2010). And yet, in many countries, teachers are facing a declining social status and worsening working conditions (Elacqua et al. 2018; Evans & Yuan 2017). The observational studies described above are complemented by the causal evidence from Dal Bo et al (2013) in Mexico, which finds that higher wages attract more able applicants as measured by their IQ, personality, and public-sector orientation. Finally, there is also evidence that the status of the profession beyond the financial compensation also matters (Berlinski & Ramos 2018).

### MEASUREMENT

#### Instrument

SCHOOL SURVEY
POLICY SURVEY

#### Data Sources

Systems Approach for Better Education Results – Service Delivery (SABER-SD) Instrument Development World Management Survey (DWMS)

#### Approach

There are 8 questions being used to calculate this indicator. They are part of the Policy Survey (*de jure*) and Teacher Questionnaire module in the School Survey (*de facto*). The questions include:

1. (*de jure*) What is the average public-school initial teacher salary? (salary expressed as % of GDP per capita)
2. (*de facto*) How satisfied or dissatisfied are you with your social status in the community?
3. (*de facto*) How satisfied or dissatisfied are you with your job as a teacher?
4. (*de facto*) During the last academic year, did you receive any bonuses, in addition to your salary? For what?
5. (*de jure*) Are there incentives, financial or other forms of recognition, for teachers working in hard-to-staff schools or in grades/subjects that are in need of more qualified teachers?
6. (*de facto*) If two people became public teachers five years ago and one was much better at teaching than the other, would he/she be promoted faster?
7. (*de jure*) Is there a well-established career path for teachers?
8. (*de facto*) Over the past year, was your salary ever delayed? If yes, how many times?

# Selection & Deployment

## TEACHING

This lever measures the extent to which there is a meritocratic system for recruiting teachers—specifically, whether that system takes into account content knowledge, pedagogical skills, and other relevant characteristics in making hiring and deployment decisions.

### INDICATOR

A score ranging from 1 to 5 will be calculated based on policy questions. Responses will be scored according to a rubric that considers the best practices for selection and deployment. Two scores are reported: one for *de jure* policy existence and one for *de facto* policy implementation.

### BACKGROUND

While attraction is important, it has to be complemented with the right selection and deployment policies. Case studies on high-performing systems such as Singapore, South Korea, and Finland show that these countries have a very competitive process to select applicants to teacher initial education programs (Auguste, Kihn & Miller 2010, Darling-Hammond 2010, Barber & Mourshed 2007). While more recent studies find that having a competitive selection mechanism is important, we still don't know enough about which specific instruments (e.g., written test, mock classroom, etc.) work best in selecting teachers (Rockoff et al. 2011). As a result, the literature supports using multiple selection instruments and trial periods before awarding teachers long-term contracts. It is also important to actively deploy capable teachers to schools where their skills are most needed; without purposeful incentives or allocation, teachers will likely gravitate towards schools serving better-off students, deepening inequalities in the system (Boyd et al. 2005a; Hanushek et al. 2004b).

### MEASUREMENT

#### Instrument

SCHOOL SURVEY  
POLICY SURVEY

#### Approach

For measuring this indicator, seven questions are used. These include *de jure* questions asked in the Policy Survey and *de facto* questions from the School Survey. For example:

1. (*de jure*) What are the requirements to become a public-school teacher?
2. (*de facto*) Which of the following are considered during the recruitment process of new teachers? Options include: completed required coursework, achieved a specific educational qualification, graduated from any tertiary education degree program, graduated from a tertiary degree program specifically designed to prepare teachers, passed a subject content knowledge written test, passed an interview-stage assessment, had a minimum amount of practical professional experience, passed an assessment conducted by a supervisor based on the practical professional experience, the conduct during mockup class
3. (*de jure*) Which of the following criteria are used to determine whether to fulfill a teacher's request to be transferred to another school?

# Support

## TEACHING

This lever measures the quality of the support available to teachers as proxied by the availability and quality of pre-service and in-service training opportunities.

### INDICATOR

A score ranging from 1 to 5, calculated based on policy questions. Responses are scored according to a rubric that considers the factors associated with good support systems for teachers. Two scores are reported: one for *de jure* policy existence and one for *de facto* policy implementation.

### BACKGROUND

Equipping teachers with the skills they need to succeed in a classroom and continuously supporting them to improve their skills is crucial. First, few (if any) individuals are born effective teachers. Everyone needs subject content knowledge, pedagogical skills, and lots of practice to be successful in the classroom. Second, adequate training and initial experience help to anticipate and minimize mistakes on the job. Several studies have found that the first few years of experience considerably improve a teacher's effectiveness in the classroom—regardless of whether the teacher acquires this experience through clinical practice or during a probationary period (Boyd et al. 2009; Chingos & Peterson 2010; Hanushek et al. 2005; Hanushek & Rivkin 2010; Rivkin et al. 2005). This shows that teachers can improve their practice substantially, and so support mechanisms are necessary to help teachers reach their potential and perform at their best. A 2013 survey of 34 countries found that 90% of teachers had participated in professional development within the previous year (OECD 2014). But although there were high attendance rates, these trainings tended to be brief, overly theory-focused, and of low quality. Subsequently, current research shows that teachers' content knowledge and pedagogical skills did not improve as a result of these training programs (Evans et al. 2017). Recent research has shown that to be effective, training needs to be more tailored to the needs of individual teachers, integrated with classroom practice, and reinforced with frequent follow-up visits and tailored coaching (Evans & Popova 2016; Evans et al. 2017).

### MEASUREMENT

#### Instrument

SCHOOL SURVEY  
POLICY SURVEY

#### Data Sources

Service Delivery Indicators (SDI) Instrument  
In-Service Teacher Training Survey Instrument (ITTSI)

#### Approach

To measure this indicator, 14 questions are used. These 14 questions relate to availability and quality of pre-service education programs, mentoring programs, practicum experience, and professional development. They are asked in the Policy Survey (*de jure*) and School Survey (*de facto*). For example:

1. (*de jure*) Are teachers required to complete a pre-service practicum as part of their pre-service training?
2. (*de facto*) Did you attend any of the following professional development trainings specifically for teachers in the last 12 months? Approximately how many total days did the training last? Over how many weeks was this training and related follow-up spread? What was the main topic of the training? How much of the training took place in your classroom (if any)?

This lever measures whether there is a teacher evaluation system in place, and if so, what types of decisions are made based on the evaluation results.

This lever measures the extent to which teacher presence is being monitored, whether attendance is rewarded, and whether there are consequences for chronic absence.

#### INDICATOR

A score ranging from 1 to 5, calculated based on 10 policy questions. Responses are scored according to a rubric that considers the factors associated with good evaluation systems for teachers. Two scores are reported: one for *de jure* policy existence and one for *de facto* policy implementation.

#### BACKGROUND

Monitoring and evaluating teaching and learning is key for guiding interventions. First, identifying low-performing teachers and students allows education systems to provide them with adequate support to improve. One example is using an observation rubric to diagnose teachers' strengths and weaknesses and then provide targeted feedback on how to improve their pedagogical skills (Beisiegel, Mitchell, & Hill 2018; McDuffie et al. 2014; Walkoe 2015). The evidence from Brazil and the United States suggests that interventions where coaches observe and continuously provide feedback to teachers can have positive effects on instruction quality and indirectly on student learning (Bruns et al. 2018; Kraft, Blazar, & Hogan, in press). When these interventions are complemented with student learning information to guide instruction, the effects can become larger (Fryer 2017; de Hoyos et al. 2017). Second, teacher evaluation also helps identify good practices that can be shared across the system to improve school performance. For example, the IMPACT teacher evaluation system in Washington DC, which monitors quality and rewards good performance, led to substantial improvements in teaching quality and student learning (Dee & Wyckoff 2015; Gitomer et al. 2015).

#### MEASUREMENT

##### Instrument

SCHOOL SURVEY  
POLICY SURVEY

##### Data Sources

Service Delivery  
Indicators (SDI)  
Instrument  
Systems  
Approach for  
Better Education  
Results (SABER) -  
Teachers

##### Approach

There are 10 questions that are part of this indicator. These cover the existence of a public authority that evaluates teachers, defined performance standards, criteria for evaluation performance, and consequences for negative/positive evaluations. They are asked in the Policy Survey and School Survey (as part of the Teacher Questionnaire module). The questions combine *de facto* and *de jure* information. For example:

1. *(de jure)* Is there a law or regulation that assigns responsibility to a public authority (national, sub-national, or local) to evaluate the performance of public-school teachers? Are there defined performance standards for public school teachers? Which criteria are used to evaluate teachers?
2. *(de facto)* During the last school year, were you formally evaluated? Which authority evaluated your work? What specific aspects of your work did they evaluate you on? What would happen if a teacher received 2 or more negative evaluations? What would happen if a teacher received 2 or more positive evaluations?

#### INDICATOR

A score ranging from 1 to 5, calculated based on 5 policy questions. Responses are scored according to a rubric that considers the factors associated with good monitoring and accountability systems for teachers. Two scores are reported: one for *de jure* policy existence and one for *de facto* policy implementation.

#### BACKGROUND

Increasing the frequency of school monitoring has been found not only to predict reduced absenteeism in India, but also to be ten times more cost-effective in improving student learning than reducing the student-teacher ratio (Muralidharan et al. 2016), which can be another option to reduce absenteeism through improved teacher motivation. In another study in India, Duflo et al (2012) found that making salaries in part dependent on attendance and monitoring attendance using cameras reduced absence by 21 percentage points. On the other hand, providing increases in salaries that were not tied to attendance or performance in Indonesia led to no change in teacher effort as reflected in skills acquisition or attendance (de Ree et al. 2018). Based on the available literature, this indicator captures policy aspects that are associated with incentivizing teacher presence. In countries where teacher absenteeism is not a pervasive problem, these policies may not be needed, but where teacher absenteeism is a problem, they may help mitigate it.

#### MEASUREMENT

##### Instrument

SCHOOL SURVEY  
POLICY SURVEY

##### Data Sources

Newly developed,  
but based on  
Service Delivery  
Indicators (SDI)  
Instruments

##### Approach

The 5 questions that are part of this indicator cover the collection of data on absences, incentives for being present, reasons for being absent, and consequences for being frequently absent. They are asked in the Policy Survey and School Survey (as part of the Teacher Questionnaire module). The questions combine *de facto* and *de jure* information. The questions include:

1. *(de jure)* Is data on teacher absences being systematically collected at national/ regional level on a regular (at least annual) basis?
2. *(de jure)* Do teachers receive rewards (financial or non-financial, such as prizes, certificates, bonuses, or promotions) for meeting a specific attendance threshold (e.g. 80% of school days)?
3. *(de facto)* During the last academic year, have you received any rewards, in addition to your salary because of regular attendance?
4. *(de facto)* Over the past year, did you have to miss class because of any of the following? Collect paycheck, School administrative procedure, Errands with the school district office, Request from the school district office or other government official
5. *(de facto)* What happens if a teacher is absent over 40% of the time without proper justification within an academic year?



# Intrinsic Motivation

TEACHING

This lever assesses whether teachers are intrinsically motivated to teach. The questions address this phenomenon by measuring the level of intrinsic motivation among teachers and also asking about teacher values that may be relevant for ensuring that the teacher is motivated to focus on the learning of all children, and not just some.

#### INDICATOR

A score ranging from 1 to 5 is calculated based on 13 questions. Responses are scored according to a rubric that considers how the answers indicate that the teachers are intrinsically motivated. Two scores are reported: one for *de jure* policy existence of policies that may increase intrinsic motivation and one for *de facto* presence of intrinsically motivated teachers.

#### BACKGROUND

A reason for low levels of effort among teachers may be poor intrinsic motivation: teachers may feel burned out, unappreciated by the community, or discouraged because of their poor working conditions, lack of support, or low levels of autonomy within the classroom (Benabou & Tirole 2003; Pink 2009). While the empirical literature on this is thin, there is rigorous evidence from the health sector in India, Pakistan, and Zambia that higher intrinsic motivation can lead to substantial increases in effort (Ashraf et al 2014; Callen et al 2015; Lee 2017). Effort might also differ depending on the goals and beliefs of the teachers. Several studies have shown that teacher expectations can determine which students learn more than others (IES 2014; Rosenthal & Jacobson 1966), presumably in part through the teachers' level of motivation and effort in working with those students. If teachers believe and expect that some students will succeed while others will not (in some cases, due to the students' gender, caste, ethnicity, race, or other presumed characteristic), then teachers are more likely to concentrate their efforts on presumed higher-potential students while leaving others behind.

#### MEASUREMENT

**Instrument**

SCHOOL SURVEY  
POLICY SURVEY

**Data Sources**

Sabarwal and Jawdeh (2017)

Based on Carol Dweck's Growth Mindset Questionnaire

**Approach**

To calculate this indicator, 12 questions are posed to teachers through the Teacher Questionnaire in the School Survey and 1 additional question is collected through the Policy Survey. These questions capture: teacher views on absenteeism, teacher views on preferential treatment to certain children, teacher views of growth mindset, teacher's primary reasons for becoming a teacher, and the existence of probationary periods to allow those who do not like the profession to exit if needed. Some examples include:

For each of the following, indicate Strongly Disagree, Disagree, Agree, Strongly Agree:  
 1. (de facto) It is acceptable for a teacher to be absent if the assigned curriculum has been completed  
 2. (de facto) Students deserve more attention if they attend school regularly  
 3. (de facto) Students can always substantially change how intelligent they are



# Standards

INPUTS & INFRASTRUCTURE

This lever measures the extent to which policies set standards for what inputs and infrastructure need to be available at every school.

#### INDICATOR

A score ranging from 1 to 5 is calculated based on 9 policy questions. Responses are scored based on whether there are stipulated standards for each of the basic inputs and infrastructure aspects. Two scores are reported: one for *de jure* policy existence and one for *de facto* policy implementation.

#### BACKGROUND

For each of the practice indicators of inputs and infrastructure (basic inputs and basic infrastructure), the GEPD identifies the two main key policy levers and proposes an approach to measure them. Given the similarities between the two practice indicators, the same premise is used for the policy levers associated with each. The first refers to the presence of standards. Standards set the basic guidelines for what inputs and infrastructure should be available in every school (public or private). Lack of guidance on what the standards should be leaves the discretionary power to the school, district, or subnational levels, which could mean that some areas have the necessary inputs and infrastructure for effective learning while others do not. While evidence on this indicator is scarce, there is a strong theoretical presumption that, along with adequate enforcement, standards mandating universal provision of basic inputs and infrastructure are an important tool for ensuring that all schools will have them.

#### MEASUREMENT

**Instrument**

SCHOOL SURVEY  
POLICY SURVEY

**Data Sources**

Newly developed, but based on Systems Approach for Better Education Results (SABER) - School Finance

**Approach**

The questions that make up this indicator can be found in the Policy Survey and in the School Management module of the School Survey. They ask whether standards require all schools to have certain inputs and infrastructure, as well as whether those standards are known by the staff working in the schools. For example:

1. (de jure) Is there a policy in place to require that students in all public schools have the prescribed textbooks?
2. (de facto) Do you know if there are standards in place to require that students in all public schools have the prescribed textbooks?
3. (de jure) Is there a policy in place to require that students in all public schools have access to computers?
4. (de facto) Do you know if there are standards in place to require that students in all public schools have access to computers?
5. (de jure) Is there a policy in place that require all schools to have access to functional hygienic facilities?
6. (de facto) Do you know if there are standards in place to require all schools to have access to functional hygienic facilities?

# Monitoring INPUTS & INFRASTRUCTURE

This lever measures the extent to which there is a monitoring system in place to ensure that mandated inputs and infrastructure are in fact available at the schools. This set of questions will cover three aspects: 1) Is there someone monitoring? 2) Is there a system monitoring all schools? And 3) is the community involved in the monitoring?

## INDICATOR

A score ranging from 1 to 5, calculated based on 16 policy questions. Responses are scored according to a rubric that considers the factors associated with good monitoring systems for inputs and infrastructure. Two scores are reported: one for *de jure* policy existence and one for *de facto* policy implementation.

## BACKGROUND

To ensure that all schools meet the standards stipulated, there must be some form of monitoring system in place. Such system will monitor the schools that might be missing certain factors (such as functioning toilets), which will highlight the schools that are not in compliance with the standards and thus are in need of further support. In the event that funding has been allocated to introduce a particular input or infrastructure aspect in a school, monitoring also facilitates the process of ensuring that the investment materializes into the desired inputs (Collier & Hoeffler 2005). In the end, monitoring learning conditions will provide policymakers with information and tools to better address the needs and problems of schools (Amin et al. 2008).

## MEASUREMENT

### Instrument

SCHOOL SURVEY  
POLICY SURVEY

### Data Sources

Newly developed, but based on Systems Approach for Better Education Results (SABER) - School Finance

### Approach

The 16 questions that make up this indicator can be found in the Policy Survey as well as the School Information module that is part of the broader School Survey. They ask about the (*de facto* and *de jure*) monitoring practices associated with each of the inputs and infrastructure aspects being tracked as part of the GEPD. For example:

1. (*de facto*) Is there someone monitoring that basic inputs are available to the students at the school? Basic inputs include: functioning blackboard, chalk, pens, pencils, textbooks, exercise books in 4th-grade classrooms, basic classroom furniture, and at least one computer in the schools.
2. (*de jure*) Is the task of monitoring all basic inputs clearly allocated in the legislation?
3. (*de facto*) What are the inputs that are being monitored?
4. (*de jure*) Which basic inputs are clearly stipulated in the legislation as inputs that must be monitored?
5. (*de facto*) Are parents or community members involved in the monitoring of availability of basic inputs?
6. (*de facto*) What infrastructure aspects are being monitored?
7. (*de jure*) Is the task of monitoring basic infrastructure clearly allocated in the legislation?

# Nutrition Programs LEARNERS

This lever captures a sense of the availability and quality of programs that support early childhood nutrition during the mother's pregnancy as well as during the first 5 years of life.

## INDICATOR

A score ranging from 1 to 5, calculated based on 4 questions relating to availability of programs and 4 *de facto* elements to capture quality of the programs. Responses to each set of 4 questions are scored according to a rubric that considers the factors associated with good nutrition programs for children and mothers. Two scores are reported: one for *de jure* policy existence and one for *de facto* policy implementation.

## BACKGROUND

Malnutrition can severely undermine early childhood learning (Lupien et al. 2000; McCoy et al. 2016; Walker et al. 2007). Children in developing countries, particularly those at the bottom end of the income distribution, are subject to nutrient deprivation, infectious diseases, and chemically toxic or physically dangerous environments, which affect them not only after birth, but also in the womb. Just to illustrate the magnitude of these deprivations, 30% of children under 5 in developing countries are physically stunted, which is typically due to chronic malnutrition (Black et al. 2017). This lever measures the existence of social programs aimed at supporting mothers and their children in achieving proper nutrition in the early years, especially during the first 1,000 days of life. Examples of such social programs and supports include breastfeeding interventions and protections to micronutrient supplements. Many of these interventions have been linked to greater cognitive ability, leading to better educational outcomes in developing countries (Eilander et al. 2010; Horta et al. 2015).

## MEASUREMENT

### Instrument

POLICY SURVEY  
EXISTING DATA SOURCE

### Data Sources

System Approach for Better Education Results - Early Childhood Education (SABER-ECE)  
Demographic and Health Surveys (DHS)/ Multiple Indicator Cluster Surveys (MICS)

### Approach

This indicator is based on 4 *de jure* questions asked through the Policy Survey on the availability of nutrition programs. For each of those *de jure* questions, an element of program quality will be captured by the inclusion of *de facto* information on coverage, coming either from the School Survey (for school feeding) or from external data sources (for the remaining three). For example:

1. (*de jure*) Does a national policy to encourage salt iodization exist?
2. (*de facto*) Percentage of households with salt testing positive for any iodide among households
3. (*de jure*) Does a national policy exist to encourage iron fortification of staples like wheat, maize, or rice?
4. (*de facto*) Percentage of children age 6-23 months who had at least the minimum dietary diversity and the minimum meal frequency during the previous day
5. (*de jure*) Is there a publicly funded school feeding program?
6. (*de facto*) Percentage of schools reporting having publicly funded school feeding program

# Health Programs

LEARNERS

This lever captures the level of health guidance and support available to parents and children in the early years. Such support includes deworming treatment, prenatal visits, immunizations, and access to healthcare services.

## INDICATOR

A score ranging from 1 to 5, calculated based on 4 questions relating to availability of health programs as well as 4 external *de facto* elements to capture quality of the programs. Responses to each set of 4 questions are scored according to a rubric that considers the factors associated with health programs for children and mothers. Two scores are reported: one for *de jure* policy existence and one for *de facto* policy implementation.

## BACKGROUND

Even with the best nutrition, health risks can cause malnutrition in children. The literature has pointed to worms, infections, and diarrheal disease caused by lack of sanitation facilities as health problems that are linked to malnutrition in children. Deworming, iodine supplements, and immunizations have led to major improvements in children's nutrition as well as their ability to learn (Galasso & Wagstaff 2016). These deprivations at such early ages have long-lasting effects because they impair infants' brain development (Coe et al. 2007; Garner et al. 2012; Nelson 2016). In the context of the school system, such deprivations mean that many children arrive at school unprepared to fully benefit from it (Paxson & Shady 2007; Schady et al. 2015). Even in a good school, deprived children learn less. While the Health Programs GEPD indicator can report on only a few health program types, these can signal whether problems in the provision of health services are reducing children's school readiness. If desired, other sources of information, such as MICS and PHCPI, can be used to complement this information.

## MEASUREMENT

### Instrument

POLICY SURVEY

EXISTING DATA SOURCE

### Data Sources

System Approach for Better Education Results - Early Childhood Education (SABER-ECE)

Demographic and Health Surveys (DHS)/ Multiple Indicator Cluster Surveys (MICS)

### Approach

This indicator is made up of two factors - 4 *de jure* questions included in the Policy Survey that inquire about the existence and availability of health policies and programs, and a *de facto* component for each to capture the quality and/or coverage of each program. For example:

1. (*de jure*) Are young children required to receive a complete course of childhood immunizations?
2. (*de facto*) Percentage of children who at age 12-23 months had received all basic vaccinations
3. (*de jure*) Is there a policy that assures access to healthcare for young children?
4. (*de facto*) Percentage of children under 5 covered by health insurance
5. (*de jure*) Are deworming pills funded and distributed by the government? [Only included if applicable]
6. (*de facto*) Percentage of children age 6-59 months who received deworming medication. [Only included if applicable]

# Early Childhood Education

LEARNERS

This lever measures the extent to which the government supports access to quality early childhood education for children under 5.

## INDICATOR

A score ranging from 1 to 5, calculated based on 4 *de jure* policy questions and 1 external *de facto* data point to capture coverage of early childhood education. Responses to the 4 questions are scored according to a rubric that considers the factors associated with good ECE systems for children under 5. Two scores are reported: one for *de jure* policy existence and one for *de facto* policy implementation.

## BACKGROUND

Pre-primary education can promote foundational skills. In countries ranging from Ethiopia to the United States, high-quality center-based programs have shown significant benefits in developing children's language, cognitive, motor, and socioemotional skills (Berlinski et al. 2008; Engle et al. 2011; Favara et al. 2017; Garcia et al. 2016; Rao et al. 2014). By contrast, attending a low-quality ECE program can be worse than attending none at all (Bouguen et al. 2013; Rosero & Oosterbeek 2011). Studies in countries like Mozambique have shown the effectiveness of center-based preschool programs is largely determined by the quality of child-caregiver interactions. Only half of children worldwide age 3-6 have access to pre-primary education. Coverage ranges vastly; from 21 percent in low-income countries to 86 percent in high-income countries, with poorer children enrolled at the lowest rates in every country (UIS 2018).

## MEASUREMENT

### Instrument

POLICY SURVEY

EXISTING DATA SOURCE

### Data Sources

System Approach for Better Education Results - Early Childhood Education (SABER-ECE)

Multiple Indicator Cluster Surveys (MICS) - Early Childhood Education Participation

If available, best source of information for quality of ECE. E.g. Measuring Early Learning Quality and Outcomes (MELQO)

### Approach

This indicator is made up of two factors - 4 *de jure* questions included in the Policy Survey that inquire about the availability of public quality center-based care, and 1 *de facto* component that measures the participation rate in early childhood education. If data on quality is available, participation in ECE will be adjusted for quality. The various measures include the following:

1. (*de jure*) Is there a policy that guarantees free education for some or all grades and ages included in pre-primary education (for children age 0-83 months)?
2. (*de facto*) Percentage of children age 36-59 months who are attending an early childhood education programme
3. (*de jure*) Are there developmental standards established for early childhood care and education?
4. (*de jure*) According to laws and regulations, which of the following are required to become an early childhood educator, pre-primary teacher?



## Caregiver – Financial Capacity

This lever measures the availability and quality of programs that aim to build the financial capacity of caregivers.

### INDICATOR

A score ranging from 1 to 5, calculated based on 1 *de jure* question and 1 external *de facto* data component. The response to the *de jure* question will be scored according to a rubric that considers the factors associated with good programs to strengthen caregivers' financial capacity. Two scores will be reported: one for *de jure* policy existence and one for *de facto* policy implementation.

### BACKGROUND

This policy lever relates to support systems available to build caregiver capacity. There are two main types of support programs to build caregiver capacity: 1) those aiming to build their financial capacity to care for their children, and 2) those that aim to build their parenting skills. Both are equally important, and in many instances, they are offered in parallel. Programs that build caregivers' capacity to support healthy development can substantially improve children's outcomes. A common type of program that tends to build caregiver capacity through a variety of interventions and nudges is the conditional cash transfer (CCT). Cash transfer programs can address acute material deprivation in households and improve developmental outcomes, particularly when provided with prenatal care and child services. For example, CCT programs in Ecuador, Mexico, and Nicaragua have reduced stunting, improved cognitive development, and promoted better parenting practices (Britto et al. 2016; World Bank 2015).

### MEASUREMENT

#### Instrument

POLICY SURVEY

EXISTING DATA SOURCE

#### Approach

This indicator is made up of two factors – 1 question included in the Policy Survey that inquires about the availability of support programs to build the financial capacity of the caregivers and a *de facto* component that measures the coverage of such programs. The two measures are the following:

1. (*de jure*) Are any of the following types of programs publicly-supported in your country? If yes, check whether or not they are conditional on prenatal care and child services?
  - a. Anti-poverty interventions that focus on ECD [ ] [ ]
  - b. Cash transfers conditional on ECD services/enrollment [ ] [ ]
  - c. Cash transfers focused partially on ECD [ ] [ ]
2. (*de facto*) Coverage of social protection programs (benefit incidence)

#### Data Sources

System Approach for Better Education Results  
- Early Childhood Education (SABER-ECE)  
Atlas of Social Protection – Indicators of Resilience and Equity (ASPIRE)



## Caregiver – Skills Capacity

This lever measures the availability and quality of programs that aim to build caregiver capacity—for example, programs that incentivize parents to provide their children with health checkups and vaccines, and programs that teach parents better parenting practices.

### INDICATOR

A score ranging from 1 to 5, calculated based on 2 *de jure* questions and 2 external *de facto* data components. Responses to the 2 questions are scored according to a rubric that considers the factors associated good programs to build caregiver capacity in terms of parenting skills. Two scores are reported: one for *de jure* policy existence and one for *de facto* policy implementation.

### BACKGROUND

This policy lever relates to support systems available to build caregiver capacity. There are two main types of support programs to build caregiver capacity: 1) those aiming to build their financial capacity to care for their children, and 2) those that aim to build their parenting skills. Both are important, and in many instances, they are offered in parallel. Programs that build caregivers' capacity to support early childhood stimulation and healthy development can substantially improve children's outcomes. Examples of such programs include home visits, school sessions, and school-based groups. These types of interventions have been found to have positive effects on both parental practices and children's development in low- and middle-income countries (Alderman 2011; Putcha & van der Gaag 2015; Cardenas, Evans, and Holland 2017; Yousafzai et al. 2016; Saima et al. 2014; World Bank 2016a; Barry et al. 2017).

### MEASUREMENT

#### Instrument

POLICY SURVEY

EXISTING DATA SOURCE

#### Data Sources

System Approach for Better Education Results  
- Early Childhood Education (SABER-ECE)  
Multiple Indicator Cluster Surveys (MICS)

#### Approach

This indicator is made up of two factors – 2 *de jure* questions included in the Policy Survey that inquire about the availability of support programs to build the skills of the caregiver, and two *de facto* components that serve as *de facto* proxies of those skills. The questions are:

1. (*de jure*) Does the government offer programs that aim to share good parenting practices with caregivers?
2. (*de jure*) Are any of the following publicly-supported delivery channels used to reach families in order to promote early childhood stimulation? Home visits, Group sessions, Community health programs, Health center waiting rooms, School-based groups, Mass media/Information campaigns
3. (*de facto*) Percentage of children under age 5 who have three or more children's books
4. (*de facto*) Percentage of children age 24-59 months engaged in four or more activities to provide early stimulation and responsive care in the last 3 days with any adult in the household



# Clarity of Function Implementation

This policy lever captures whether the core operational management and instructional leadership functions to be carried out in schools are articulated and allocated in legislation or existing policy frameworks.

## INDICATOR

A score ranging from 1 to 5, calculated based on the 2 policy questions. The stipulation and allocation of each core function is scored using an equal weight when calculating the score. Two scores are reported: one for *de jure* policy existence and one for *de facto* policy implementation.

## BACKGROUND

The existence of clear stipulations and allocation of these core functions is a first step to create a system that ensures that these functions are performed. However, many countries have not clearly articulated the allocation of these functions. A recent study finds that in Guatemala, Peru, Brazil, and the Dominican Republic around 25% of these core responsibilities—primarily the ones related to the implementation dimension of personnel management functions—are not clearly articulated in the legislation (Adelman et al. 2018). The same study also shows that even in cases where the responsibilities have been allocated, there is often a confusion between the *de jure* allocation and the bureaucrats' *de facto* understanding. Therefore, it is important that there be an expectation that these functions must be carried out and that those responsible for executing them know and understand their responsibility.

## MEASUREMENT

### Instrument

POLICY SURVEY

EXISTING DATA SOURCE

### Approach

This indicator will be based on two questions, one that will be answered through a legislative review and one that will be asked through School Management module (as part of the School Survey). The questions are the following:

1. (*de jure*) Does the legislation and/or policies governing schools assign responsibility for the implementation of each of the following? Indicate for each, Yes/No as well as the level at which they are allocated: national, sub-national, local, or school.

(*de facto*) Do you know if the policies governing schools assign responsibility for the implementation of each of the following? Indicate for each, Yes/No as well as the level at which they are allocated: national, sub-national, local, or school.

- Maintenance and expansion of school infrastructure
- Procurement of materials
- Teacher hiring and assignment
- Teacher supervision, training, and coaching of teachers
- Student learning assessments
- Principal hiring and assignment
- Principal supervision and training



# Attraction

SCHOOL MANAGEMENT

This policy lever measures whether the right candidates are being attracted to the profession of school principals. The questions capture the provision of benefits to attract and maintain the best people to serve as principals, as well as the level of satisfaction that principals experience with their jobs and within their community.

## INDICATOR

A score ranging from 1 to 5, calculated based on 3 policy questions. Responses are scored according to a rubric that considers the factors that increase the attractiveness of the principal profession. Two scores are reported: one for *de jure* policy existence and one for *de facto* policy implementation.

## BACKGROUND

Being an effective school leader requires specific skills. The principal must go beyond the tasks of a teacher and show the vision and leadership necessary for the inputs, infrastructure, teachers, and the students to come together and create an effective learning system. These challenges require attracting the right candidates for principal positions. The role of the school principal must be clear and respected, and principals should be properly compensated, so that talented candidates are drawn to the profession.

## MEASUREMENT

### Instrument

SCHOOL SURVEY

POLICY SURVEY

### Data Sources

Newly developed, but based on Mulkeen 2007 Systems Approach for Better Education Outcomes – Service Delivery (SABER-SD)

### Approach

There are three questions that make up this indicator. They are part of the School Management module of the School Survey and the Policy Survey. Together, they get a sense of the recognition of the profession as well as the benefits associated with being a principal. The questions include:

1. (*de jure*) Do the national policies governing the education system portray the position of principal or head teacher as professionalized and distinct figure within schools?
2. (*de facto*) What is the average public-school principal salary? (salary will be expressed as a percentage of GDP per capita)
3. (*de facto*) How satisfied or dissatisfied are you with your social status in the community?

# Selection & Deployment

## SCHOOL MANAGEMENT

This policy lever measures whether the right candidates are being selected to become principals. These questions probe whether the recruitment process is set up to ensure that the most qualified individuals get the positions. The indicator is based on whether: 1) there is a standard approach for selecting principals, 2) that approach relies on professional/academic requirements, and 3) those requirements are common in practice.

### INDICATOR

A score ranging from 1 to 5, calculated based on 4 policy questions. Responses are scored according to a rubric that considers the best practices for selection and deployment. Two scores are reported: one for *de jure* policy existence and one for *de facto* policy implementation.

### BACKGROUND

As mentioned earlier, being a principal requires specific skills. The principal must go beyond the tasks of a teacher and show the vision and leadership necessary for the inputs, infrastructure, teachers, and the students to come together and create an effective learning system. Aside from attracting strong candidates, the system must select the right ones as principals. This requires the process to be meritocratic and designed to select the candidates that will best fulfill the role of school leader, with all that the position entails.

### MEASUREMENT

#### Instrument

SCHOOL SURVEY  
POLICY SURVEY

#### Approach

The four questions (two *de jure* and two *de facto*) that make up this indicator are part of the School Management module of the School Survey and the Policy Survey. Together, they give a sense of whether there is a meritocratic recruitment process that considers professional background when hiring/promoting principals. The questions include:

1. (*de jure*) Is there a systematic approach/rubric for the selection of principals?
2. (*de jure*) How are principals selected?
3. (*de facto*) In this district, what factors are considered when selecting a principal?
4. (*de facto*) Which one of the previously mentioned do you think is the most important?

#### Data Sources

Newly developed, but based on Mulkeen 2007 Systems Approach for Better Education Outcomes - Service Delivery (SABER-SD)

# Support

## SCHOOL MANAGEMENT

This policy lever measures the extent to which principals receive training and/or exposure to other professional opportunities that could help them be better school leaders. The questions assess whether such programs are provided, and if they are, at what level of quality.

### INDICATOR

A score ranging from 1 to 5, calculated based on 7 questions. Responses are scored according to a rubric that considers the factors associated with good support systems for principals. Two scores are reported: one for *de jure* policy existence and one for *de facto* policy implementation.

### BACKGROUND

Equipping principals with the skills they need to succeed in their role as school leaders to ensure they can carry out all the responsibilities that fall under their purview is crucial. As is the case with teachers, being effective as a principal is the result of specific preparation and training. There are many studies that show that more effective principals make a significant difference in school outcomes (Boyd et al. 2011; Branch, Hanushek, and Rivkin 2012; Grissom 2011; Ladd 2011; Loeb, Kalogrides, and Béteille 2012). A principal scoring one standard deviation above the mean for principal effectiveness could increase the mean student achievement from the 50th to the 58th percentile (Branch, Hanushek, and Rivkin 2012). Therefore, developing training and learning opportunities that will help principals better their skills can have a substantial impact on their effectiveness, and thus on student outcomes. This is further corroborated by recent studies that have shown that providing principals with effective and relevant training opportunities results in improvements in their performance as well as student outcomes (Fryer 2017; Fryer 2014).

### MEASUREMENT

#### Instrument

SCHOOL SURVEY  
POLICY SURVEY

#### Data Sources

Systems Approach for Better Education Outcomes - Service Delivery (SABER-SD)

Newly developed, but based on Borden 2002

#### Approach

A series of 8 questions (3 *de jure* and 4 *de facto*) make up this indicator. They are all included in the School Management module that is part of the School Survey as well as the Policy Survey. Together, they capture the extent to which principals receive training that is relevant for their day-to-day activities as well as the quality of those trainings. The questions include:

1. (*de facto*) Have you ever received formal training on how to manage a school?
2. (*de facto*) If so, what type of training have you received?
3. (*de facto*) Thinking back to the last training you had on how to manage a school, have you used the skills you gained at that training?
4. (*de facto*) Thinking of the past year, how many trainings and professional development courses have been offered to principals?

# Evaluation

## SCHOOL MANAGEMENT

This policy lever measures the extent to which principal performance is being monitored and supported through accountability measures. The indicator is based on 1) there is legislation outlining the need to monitor, 2) principals are being evaluated, 3) principals are being evaluated on multiple things, and 4) there are accountability mechanisms in place.

### INDICATOR

A score ranging from 1 to 5, calculated based on 8 policy questions. Responses are scored according to a rubric that considers the factors associated with good evaluation systems for principals. Two scores are reported: one for *de jure* policy existence and one for *de facto* policy implementation.

### BACKGROUND

Given the important role that school principals have within the school and the potential effect of their actions (or lack thereof) on student outcomes, it is important to have accountability mechanisms in place. These mechanisms of evaluation serve as a way of ensuring that the principals are fulfilling their responsibilities and that they have the right skills to do so effectively. Monitoring the performance of principals can point at areas where more training is needed to guarantee the fulfillment of responsibilities. It can also highlight cases where certain important tasks like the provision of instructional leadership or the maintenance of school infrastructure are not being performed.

### MEASUREMENT

#### Instrument

SCHOOL SURVEY  
 POLICY SURVEY

#### Data Sources

Systems  
Approach for Better Education Outcomes – Service Delivery (SABER-SD)  
Newly developed, but based on SABER – Teachers

#### Approach

There are 8 questions that make up this indicator. These are asked through the Policy Survey and through the School Management module of the School Survey. The questions capture both *de jure* and *de facto* information. They inquire about whether: 1) there is a legislation outlining the need to monitor, 2) principals are being evaluated, 3) principals are being evaluated on multiple things, and 4) there are consequences to a positive/negative evaluation. For example:

1. (*de jure*) Is there a national or sub-national law/regulation that specifies the need to monitor principal or head teacher performance?
2. (*de facto*) During the last school year did any authority evaluate your work?
3. (*de facto*) What specific aspects of your work did they evaluate you on?
4. (*de facto*) What would happen if a principal received 2 or more positive evaluations?
5. (*de facto*) What would happen if a principal received 2 or more negative evaluations?





# Characteristics of Bureaucracy

POLITICS & QUALITY OF BUREAUCRACY

This indicator assesses the characteristics of the bureaucracy, which is the implementing machinery of the government for achieving national learning goals and ensuring that the policies created to promote learning are enforced.

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## INDICATOR

A score ranging from 1 to 5, based on a series of 12 questions. For all questions, a score of 1 indicates low effectiveness and 5 indicates high effectiveness in that area. This indicator is disaggregated by urban/rural location.

## BACKGROUND

The implementation of national learning goals requires motivated and skilled bureaucrats (Hasnain et al. 2019). Given difficulties in monitoring, the selection of the right type of bureaucrat is key to a high-quality bureaucracy. Merit, instead of political appointments, as the main criterion for selection and promotion is the hallmark of the Weberian bureaucracy and can help create strong professional norms that drive performance. Intrinsic motivation and pro-social motivation are particularly important determinants of bureaucrats' productivity. Intrinsic motivation is the desire to work hard for the enjoyment of the task itself rather than for the rewards, such as higher pay, promotion, or recognition, that the achievement of the task may bring. Public-service or pro-social motivation is the desire to work and exert effort for the benefit of others and not for oneself. A large psychology and public administration literature show that it is the combination of intrinsic and pro-social motivation that drives effort and work of public sector workers (Grant 2008; Perry & Hondeghem 2008). A finding that is corroborated by more recent experimental studies that show that more pro-social doctors and nurses perform better in their jobs (Callen et al. 2014; Deserranno 2019).

The 12 questions included in this section of the questionnaire measure the following: knowledge and skills, work environment, merit, and motivation.

## MEASUREMENT

**Instrument**

SURVEY OF PUBLIC OFFICIALS

**Approach**

A series of 12 questions asked to public officials. For example:

1. *Think about whether employees trust one another to undertake the commitments they make or if there is a general culture of mistrust in this organization. In your view, how often do employees of this organization trust one another to undertake the commitments they make?*
2. *How does your organization encourage innovation and the adoption of new practices in its day-to-day operations?*



# Impartial Decision-Making

POLITICS & QUALITY OF BUREAUCRACY

This module assesses the extent to which public officials implement policies in an impartial way, meaning that decisions are free from political clientelism or undue influence from any single interest group.

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## INDICATOR

A score ranging from 1 to 5, based on a series of 12 questions. For all questions, a score of 1 indicates low effectiveness and 5 indicates high effectiveness in that area. This indicator is disaggregated by urban/rural location.

## BACKGROUND

Beyond internal factors, such as the quality of management and skills of administrators, external influences can play an important role in the performance of the bureaucracy. The most common source of influence in decision-making in the bureaucracy is the political elite (Acemoglu & Robinson 2007). The politician-bureaucrat nexus is central to the functioning of the bureaucracy, particularly the selection and motivation of public employees. Clientelism, or the provision of jobs, contracts, welfare support, money, and so forth in exchange for political support, is a common feature of the public sector across countries in all regions and income groups (Bold et al. 2018; Anderson et al. 2014; Keefer 2007). Political interference in personnel management can be disruptive to the effective functioning of the administration and of schools (Berenschot 2018; Bruns & Luque 2014). It can also impact the performance of the bureaucracy indirectly by lowering the motivation and satisfaction of civil servants affected by the clientelistic practices (Meyer-Sahling et al. 2018).

Beyond personnel management, policy outcomes are often sub-optimal when clientelistic politics are predominant. In India, for example, the effectiveness of digitally-enabled monitoring of health workers for improving attendance was conditional on local politics as many local governments did not use the data to sanction absent workers because they were protected by politicians (Dhaliwal & Hanna 2017). In Pakistan, smartphone-based monitoring of district health supervisors in rural clinics doubled inspections of health facilities and reduced medical worker absenteeism, but the results were highly contingent on the severity of patronage politics in a locality (Callen et al. 2015).

## MEASUREMENT

**Instrument**

SURVEY OF PUBLIC OFFICIALS

**Data Sources**

Bureaucracy Lab  
- Survey of Public Officials

**Approach**

A series of 12 questions asked to public officials. For example:

1. *To what extent would you agree that hiring decisions in your organization are more likely to be based on political endorsements than on merit?*
2. *From your experience working in this organization, how much would you say politics affects the design and development of the school curriculum? For example, in the subjects taught or the language they are taught in.*



# Mandates & Accountability

POLITICS & QUALITY OF BUREAUCRACY

The aim of this indicator is to measure the extent to which the mandates are clearly defined and allocated in the legislation, as well as whether such allocation is reflected in practice.

## INDICATOR

A score ranging from 1 to 5, based on a series of 9 questions. For all questions, a score of 1 indicates low effectiveness and 5 indicates high effectiveness in that area. This indicator is disaggregated by urban/rural location.

## BACKGROUND

Effective management and work practices for the achievement of national learning goals are dependent on the clarity of mandates regarding responsibilities and allocation, independently of where those responsibilities are allocated (Prichett & Pande 2006). In many education systems there is confusion about education functions across levels of government and a lack of shared understanding amongst officials about these responsibilities. This confusion could be because of lack of legal clarity on the responsibilities, or gaps in the knowledge of the officials responsible, or failures in accountability systems for ensuring that these functions are effectively fulfilled (Adelman et al. 2019).

Drawing on the organization and management literature (Nadler & Tushman 1980; Gibbons 2003; Prichett 2015), the concept behind this indicator is that coherence between officials' understanding of the allocation of responsibilities matters for the outcomes produced by public education systems. When different parts of the system fail to work together, learning outcomes will fall short of what is possible. Given that these difficulties are enhanced when there is a vacuum in the legislation regarding responsibility for the execution of each of the core functions of the education system, this indicator will try to measure the extent to which these are defined, and the relevant actors are aware of those mandates. It will also measure the extent to which there are processes of transparency and accountability to help ensure that those mandates are being fulfilled. The 9 questions included in this questionnaire will measure the coherence, transparency, and accountability of bureaucrats.

## MEASUREMENT

**Instrument**  
**SURVEY OF PUBLIC OFFICIALS**

**Approach**

A series of 9 questions asked to public officials. For example:

1. *In your experience, is the organizational responsibility for teacher supervision and coaching clear?*
2. *In your experience, is the organizational responsibility for procuring inputs clear?*
3. *Does your organization make public its achievements of its performance targets?*



# National Learning Goals

POLITICS & QUALITY OF BUREAUCRACY

The aim of this indicator is to capture the extent to which there is a goal and/or strategy that encapsulates a desire and a path to reach higher learning outcomes. This is what ultimately drives the work of the ministry and district offices that together, with the support of other stakeholders and civil society, work towards achieving those goals.

## INDICATOR

A score ranging from 1 to 5, based on a series of 12 questions. For all questions, a score of 1 indicates low effectiveness and 5 indicates high effectiveness in that area. This indicator is disaggregated by urban/rural location.

## BACKGROUND

The WDR 2018 highlights how education systems are often poorly aligned with learning goals. These misalignments are driven in part by technical complexities: education systems simultaneously pursuing many conflicting goals, with many system actors continually interacting in complex ways. Even when learning is recognized as a central goal, it often receives less prominence than other objectives. And even when the learning goal is clearly defined, the way education systems are organized sometimes hampers performance.

Goal alignment has two elements: First, there needs to be an overall strategy and goal that is clearly articulated. Second, all relevant organizations and stakeholders playing a role in the education system must be working towards that goal, or at the very least not hampering the efforts towards that goal. Effective goal orientation in organizations revolves around sound management practices. Principal-agent approaches underline the centrality of monitoring and incentives to motivate staff to perform. Good management entails clarity in setting organizational goals and targets; regular monitoring of these targets; effective personnel management, including how managers distribute tasks across employees, involve staff in problem solving, and give staff the autonomy to carry out their tasks; and the regularity and robustness of performance evaluations. These goal-oriented elements of management also need to be complemented with effective engagement of policy-makers and bureaucrats with communities to help parents monitor front-line service providers.

## MEASUREMENT

**Instrument**  
**SURVEY OF PUBLIC OFFICIALS**

**Approach**

A series of 12 questions asked to public officials. For example:

1. *Does your organization have a clear set of learning targets that are aligned with national learning goals?*
2. *To what extent would you say that members of your organization are knowledgeable of the organization's learning targets and how they relate to their work?*

The aim of this indicator is to capture key aspects of education financing that play a key role in promoting learning for all. These are adequacy and efficiency. If existing information is available, a sub-indicator on equity will also be reported.

### INDICATOR

A score ranging from 1 to 5 that considers the quality of financing using two lenses – adequacy and efficiency. This score is calculated using 3 sub-indicators: 1) per-child spending (adequacy), 2) public management financing performance (efficiency), and 3) outcomes per spending (efficiency). If an existing data source is available, a fourth sub-indicator on equity will be included. The disaggregated information for each of these 4 sub-indicators is available as a drill-down option.

### BACKGROUND

Many countries have successfully increased their investments in education; just in the last 15 years, government spending on education has doubled. Yet much more is needed to achieve the ambitious learning agenda that countries have signed onto with the SDGs, and countries will also need to invest better. Using resources more efficiently, and targeting it at those who most need it, will require tackling weak links in spending-learning chains—by improving the alignment between spending and learning, reducing inequalities in spending, avoiding spending on the wrong things, and ensuring that the funds reach the schools. Therefore, the indicator proposed measures not just adequacy (how much money is being invested), but also equity and efficiency (how the investment is being distributed and whether it is achieving the expected results).

### MEASUREMENT

#### Instrument

EXISTING DATA SOURCE

#### Data Sources

UNESCO Institute of Statistics for spending per child and spending per education level (primary)  
Public Expenditure and Financial Accountability (PEFA)

#### Approach

All four sub-indicators mentioned above will be normalized, so that they can be added to generate a summary score to measure overall health of financing. The methodology for each of the sub-indicators is the following:

1. To capture adequacy: Calculate per-child spending at the primary-school level using data from the UIS.
2. To capture efficiency in terms of performance of the financing processes: Use the summary score resulting from the Public Expenditure and Financial Accountability (PEFA) assessment. The score is then weighted to give additional weight to the service delivery pillar of the PEFA assessment.
3. To capture efficiency in terms of outcomes achieved for the given level of investment (return on education investment): Use stochastic frontier analysis to estimate the expected adjusted learning outcomes (combination of access and learning outcomes) associated with the different levels of per child spending. The sub-indicator reports the distance between the observed outcomes and the expected outcomes.
4. To capture equity: When data availability allows, an equity sub-indicator will also be reported. This sub-indicator will be based on the comparison of the primary education spending per capita in the bottom quintile of the national income distribution to the national average.

## FREQUENTLY ASKED QUESTIONS

### AUDIENCE, PURPOSE, AND RELATIONSHIP TO OTHER INSTRUMENTS

#### 1. Who is the audience of the dashboard?

The current intended audience includes senior decision makers in ministries of education; senior officials in ministries of finance or planning who are monitoring education outcomes; and other stakeholders, including advocates. The idea is to link the dashboard data to the decision-making process. The dashboard is designed for stakeholders at the national level (or state/province level in federal systems, sample size permitting).

#### 2. Is this a dashboard or diagnostic tool?

It is a dashboard, and it is designed to complement rather than replace detailed diagnostics in specific areas. The dashboard identifies areas that need improvement, with the goal of sparking more in-depth diagnoses and discussion on how best to make those improvements happen.

#### 3. How does the dashboard relate to other instruments like SDI?

The dashboard is designed as an overall system monitoring tool that builds on and complements existing tools. The instruments to collect data for the Dashboard use streamlined versions of items from all these existing tools, and they are much more focused than those tools within specific domains. On the other hand, the dashboard aims to be more comprehensive (or holistic) than existing tools, in that it covers the key drivers of the learning crisis at both the school and system levels. It brings together the core of many of the existing instruments in one place, allowing a snapshot that covers (among others) school readiness, teaching quality, inputs and infrastructure, and school management at the school level, and bureaucratic quality and finance at the system level.

When a country applies the dashboard, therefore, it may well identify areas that it needs to probe in greater depth—leading it to apply the full version of the original instrument. For example, poor performance on the “learners” indicators could lead a country to decide to apply more comprehensive tools to measure early childhood development (such as GECDD) and its determinants.

## SCALE, SCOPE, AND NATURE

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### 1. How many countries does it cover?

During the initial phase, the dashboard approach is being implemented in 13 countries. However, it has been designed to be easily scalable, so that it can be rolled out quickly to all the Human Capital Project Countries, and then after that to many of the countries that the WBG works with.

### 2. What is the scope of the data collection effort in each country?

In each country, the team visits a nationally representative sample of at least 200 schools to apply the School Survey and interviews 200 public officials to apply the Survey of Public Officials. As part of the School Survey, the modules will have the following sample size in each school:

- Module 1 - School Information – Principal
- Module 2 - Roster (Teacher Presence) – 10 teachers
- Module 3 - Teacher Questionnaire – 5 teachers
- Module 4 - Teacher Assessment – 5 teachers
- Module 5 - Classroom Observation – 1 classroom
- Module 6 - Direct Assessment – 3 children in 1st grade
- Module 7 - School Management – Principal
- Module 8 - 4th-Grade Student Assessment – 1 classroom

The team will also collect data using a Policy Survey, which will be collected by a local consultant via legislative reviews and expert interviews.

### 3. How actively do countries have to engage in collecting the indicators?

In light of the many demands on public officials in participating countries, the project has been designed so that it doesn't require governments to carry out survey and analysis tasks themselves. But because the dashboard is based primarily on school surveys and surveys of public officials, countries do need to take ownership if they want to participate. They don't have to directly collect data for these new indicators, but they need to provide the necessary information for sampling and the necessary approvals for the surveys.

### 4. Does the Dashboard include de facto or de jure indicators?

The dashboard includes both *de facto* and *de jure* indicators. All service delivery indicators contain *de facto* information. These *de facto* indicators on the actual conditions in schools are the starting point for the dashboard, from which it then branches out to explore determinants in the policies and politics. At the same time, the *de jure* policies are policy levers that governments can use to try to change *de facto* indicators, so including some indicators of these policies and how well they are implemented is also important. Policies and politics indicators are comprised of both types of questions.

### 5. Does the dashboard cover only public education?

This depends on the country context and on each government's needs. But in general, wherever private schools or privately managed schools have a significant market share, their performance should be included in the dashboard indicators (at least the indicators on school-level learning conditions).

### 6. Does the dashboard reward countries for making progress on educational equity and inclusion, or just for raising the average level of indicators?

The indicators reflect a concern for equity—that is, for ensuring that all children and youth have access

to schooling that leads to learning. It is worth emphasizing that the whole initiative is motivated by a focus on equity given the extensive evidence showing that shortcomings in the education system have the greatest impact on those that are already disadvantaged. Because the dashboard for each country is based on data from representative samples of schools, teachers, and public officials, the indicators offer a good national snapshot of the conditions in each area. While developing this national view is the main goal of this streamlined data-gathering effort, samples are large enough to allow some disaggregation to explore equity concerns (for example, along rural/urban or gender lines). Where larger samples are possible thanks to additional funding, additional disaggregation may be possible.

In addition, some indicators specifically focus on measuring equity and inclusion in education. For example, teaching pedagogical practices takes into account the teacher's ability to adapt to different learning styles and to challenge gender stereotypes. Teacher intrinsic motivation includes questions on the extent to which teachers believe that every child can learn, regardless of gender, ethnicity, or socio-economic background. Basic infrastructure inquires about the accessibility of the schools and the classrooms to children with disabilities. All of the policy levers for learners are closely related to equity by touching on key aspects that can put children in different learning trajectories. These include nutrition, health, early childhood education, and caregiver capacity (in financial terms, but also in terms of parenting skills).

### 7. How do the dashboard metrics align with the WB commitment that all education projects will be disability-inclusive by 2025?

We are taking this commitment very seriously. One of our two outcome indicators relate to participation, and recent research shows that less than 50% of children with disabilities are attending school in the developing world (Male & Wodon 2017). This is largely the case because the schools are inaccessible for students with disabilities. Even if students with disabilities are in schools, there might be various barriers for learning. For this reason, the dashboard captures several aspects of the extent to which the schools are accessible to children with disabilities. We worked with the Education Global Practice's Inclusive Education Thematic Lead and tried to align our questions with those developed by UNICEF. Through this process, the team consulted with, and received guidance from, the Global Campaign for Education-US. The Dashboard currently captures and reports on the following:

- Whether the school is accessible for students with disabilities. Based on:
  - Is the road leading to the school accessible to students with disabilities for example in wheelchair, including during the rainy season?
  - Are there steps leading up to the main entrance?
  - If yes, is there a proper ramp in good condition usable by persons with disabilities, for example student using a wheelchair?
  - Is the main entrance to the school wide enough for a person in a wheelchair to enter?
- Whether the toilets are accessible for students with disabilities
- Whether the classrooms are accessible for students with disabilities
- Whether the curriculum, text books, and other learning materials are accessible for students with print disabilities (such as braille or audio book, large print, etc.)
- Whether there are children with disabilities and/or diverse educational needs in the school (including physical, sensory, cognitive, intellectual, and psychosocial disabilities)
- Whether (all) teachers participated in training on inclusive education pedagogy and/or whether there are teachers who received more specialized training on inclusive education pedagogy, diverse learning needs, and support/enrichment for learning
- Whether there are screenings and assessment activities organized at the school (for example to assess vision, hearing, motor skills, learning)

In addition to these, some of the instruments used for teaching (teacher questionnaire and Teach) capture the inclusiveness of the classes for all children.

## **8. How does the dashboard capture the presence of ICT in the schools?**

As part of the School Survey, enumerators check for the following:

- Access to electricity
- Number of PCs, Laptops, Tablets, or other computing devices
- Number of students having access to those devices
- Whether the devices are functional
- Whether the devices are connected to the internet
- Whether teachers have used computing devices to explain material in the past 2 weeks

The team is also working on prototyping an EdTech Readiness Index as part of the dashboard initiative that will measure countries' readiness in catalyzing the potential of EdTech when successfully integrated into the curriculum.

## **METHODOLOGY AND PRODUCTION PROCESS**

### **1. What tools are used to collect data?**

The data-collection process is multifaceted, drawing a combination of various tools that have been deployed in recent years to measure the quality of education. It is based on nimbler versions of SDI, SABER-Policy Intent, GECDD (formerly MELQO), DWMS, ITTSI, TEACH, and a Bureaucracy Lab survey, all combined in three new dashboard survey instruments—the School Survey, Policy Survey, and Survey of Public Officials.

### **2. How was the cost of these instruments reduced?**

There are various ways in which the team streamlined the data collection process and cost. Some include:

- Fewer questions: The dashboard does not attempt to be as comprehensive as existing instruments. For example, it uses only a small subset of the existing de jure SABER indicators, and the Survey of Public Officials is much shorter than the standard surveys.
- Fewer school visits: The team makes only one visit per school.
- Tech innovations: GEPD uses tablet-based data collection in schools, wherever possible building on the recent experience of the successful Service Delivery pilot in Punjab.
- Economies of Scale: For classroom observations, a very resource-intensive component of data collection, GEPD takes advantage of the implementation experience of the TEACH tool in multiple countries. Rather than observing the class live and coding the class in the field, classes are recorded, which reduces fieldwork and training by allowing all coding to be conducted in one location.
- Lower training costs: The estimated cost of data collection per country is lower than other service delivery surveys because of the reduction in survey size as well as in complexity. Eventually our objective is to reduce costs even more by developing resources that will reduce the amount of expert-led training, travel, & staff time.

### **3. How does the dashboard get buy-in of key stakeholders?**

There are three approaches used to ensure that countries are on board with the indicators and instruments that are part of the dashboard as well as to have a higher probability of igniting action. First, the project team used Listening Labs to provide opportunities for the audience to express their opinion on what the content is, how it is displayed, and ways of improving it. Second, the team conducts stakeholder validations in-country. In these events, members of the dashboard team walk stakeholders through the

results and start discussions around them, so that findings are validated and are more likely to result in actions. Third, the complementarity of the Dashboard with the Education Policy Design Lab project, which has created an approach for stakeholders and WB staff to make better use of this type of data. Lastly, the team strives to continue to link the initiative and its findings to the work of other local and international actors by maintaining a strong commitment to transparency and collaboration. In each country, the GEPD team presents to various teams within each government, to Local Technical Working Groups, development partners, and others to ensure that where there are potential opportunities to collaborate, those are acted upon.

## **PRESENTATION & USE**

### **1. Why doesn't the dashboard include a summary index and country ranking?**

An index would be a mash-up and not meaningful; also, in the Human Capital Index we already have an index that is motivating governments to focus on education. The dashboard thus does not rank countries but aid them in identifying where they need to act to promote progress on the HCI.

### **2. Given that no index is reported, how are the indicators displayed?**

The service delivery/practice indicators are generally presented in the original metrics, as in SDI— e.g., teacher absence rate, percentage of teachers reaching minimum subject knowledge, average number of inputs and infrastructure – because those will be easy to understand. For policies and political indicators, each one of these questions (answers) are assigned a score (e.g., 1 point, 2 points) based on the level of progress of the practice, policy, or political indicator, respectively. Then, for each indicator, a score is generated based on these specific question scores. In the end, the GEPD reports a 1-5 score for each policy lever and system indicator. The scale assesses the extent to which a given education system has set the type of practices, policies and politics related to improved student outcomes. In terms of data visualization, the dashboard includes colors to easily pinpoint possible areas of improvement to policymakers.

### **3. Does the system approach represented by the dashboard require tackling all problems at once?**

No—it allows us to identify the most important areas of the sector (or other sectors) to intervene in now, taking into account the linkages across these areas. (Scan globally, then act locally.)

## **LONG TERM VISION FOR THE DASHBOARD**

### **1. What are the plans for the scale-up of the dashboard?**

Given that the dashboard can help countries identify bottlenecks and monitor efforts to tackle the learning crisis, the goal is to potentially use this as a core component of the World Bank's regular human capital monitoring to accompany the HCI, in the same way that the Bank's regular poverty monitoring efforts measure progress toward the twin goals. Ensuring that we provide a credible tool is the first step. But the medium-term ambition is to try to reach as many Bank client countries as would like to participate. For this to happen, the team is working towards a systematic scale-up plan, which requires two developments:

First, the dashboard needs to be embedded in Bank operations and Advisory and Analytical Services (ASA), and in those of partner agencies; indeed, several country teams for countries have embraced this and are planning to embed in Bank operations already. Second, it requires support to making this happen from a dedicated Dashboard team or unit. The Education GP is discussing this with several partners as its priority monitoring tool to accompany the HCP/HCI.

## **2. Should dashboard data be collected by governments as part of regular administrative monitoring?**

During this initial phase of the dashboard, the data is collected by survey firms contracted by the World Bank. However, the instruments were developed along with training materials and resources to facilitate data collection at a low cost by the World Bank, other development partners, and the governments themselves. All instruments and training materials are readily available, so governments can have access to them and be able to use them for higher-frequency monitoring or to track the impact of specific (targeted) policies.

## **REFERENCES**

- Acemoglu, Daron, and Robinson, James. 2007. "The Role of Institutions in Growth and Development." Working Paper 10, Commission on Growth and Development, World Bank, Washington, DC.
- Adelman, Melissa, Renata Lemos, Maria José Vargas, and Reema Nayar. 2018. "Managing for learning: (in) coherence in education systems in Latin America." World Bank, Washington, DC.
- Alderman, Harold, ed. 2011. "No Small Matter: The Impact of Poverty, Shocks, and Human Capital Investments in Early Childhood Development." Washington DC: World Bank.
- Anderson, Siwan, Patrick Francois, and Ashok Kotwal. 2015. "Clientelism in Indian villages." *American Economic Review* 105 (6): 1780-1816.
- Angrist, Joshua D., Parag A. Pathak, and Christopher R Walters. 2013. "Explaining Charter School Effectiveness." *American Economic Journal: Applied Economics*, 5 (4): 1-27.
- Amin, Samia, Jishnu Das, Markus Goldstein. 2008. "An introduction to methodologies for measuring service delivery in education." Washington DC: The World Bank.
- Amin, Samia, and Nazmul Chaudhury. "An Introduction to Methodologies for Measuring Service Delivery in Education." In *Are You Being Served? New Tools for Measuring Service Delivery*, edited by Samia Amin, Jishnu Das, and Markus Goldstein, 67-110. Washington, DC: World Bank.
- Ashraf, Nava, Oriana Bandiera, and Kelsey Jack. 2014. "No margin, no mission? A field experiment on incentives for public service delivery" *Journal of Public Economics* 120: 1-17.
- Auguste, Byron, Paul Kihn, Matt Miller. 2010. "Closing the Talent Gap: Attracting and Retaining Top-Third Graduates to Careers in Teaching." McKinsey and Company.
- Azevedo, Joao Pedro. 2020. Learning Poverty : Measures and Simulations. Policy Research Working Paper; No. 9446. World Bank, Washington, DC. © World Bank.
- Barber, Michael, Mona Mourshed. 2007. "How the Best-Performing School Systems Come Out on Top." McKinsey and Company.

- Barde, Julia, and Juliana Walkiewicz. 2014. "Access to Piped Drinking Water on Human Capital Formation - Evidence from Brasiliian Primary Schools." Department of International Economic Policy – Discussion Paper Series No. 28, University of Freiburg.
- Barry, Oumar, Ali Mory Maïdoka, and Patrick Premand. 2017. "Promoting Positive Parenting Practices in Niger Through a Cash Transfer Programme." *Early Childhood Matters* 126 (2017): 56-60.
- Beisiegel, Mary, Rebecca Mitchell, and Heather C. Hill. 2018. "The Design of Video-Based Professional Development: An Exploratory Experiment Intended to Identify Effective Features." *Journal of Teacher Education* 69 (1): 69-89.
- Benabou, Roland, and Jean Tirole. "Intrinsic and Extrinsic Motivation." *The Review of Economic Studies* 70 (3): 489-520.
- Berlinski, Samuel, and Alejandra Ramos. 2018. "Does Rewarding Pedagogical Excellence Keep Teachers in the Classroom? Evidence from a Voluntary Award Program." IDB Working Paper IDB-WP-906, Inter-American Development Bank, Washington, DC.
- Berlinski, Samuel, Sebastian Galiani, and Paul J. Gertler. 2008. "The Effect of Pre-primary Education on Primary School Performance." *Journal of Public Economics* 93 (1-2): 219-34.
- Berenschot, Ward. 2018. The Political Economy of Clientelism: A Comparative Study of Indonesia's Patronage Democracy. *Comparative Political Studies* 51 (12): 1563-1593.
- Bietenbeck, Jan, Marc Piopiunik, and Simon Wiederhold. 2017. "Africa's Skill Tragedy: Does Teachers' Lack of Knowledge Lead to Low Student Performance?" *The Journal of Human Resources* 54: 857-899.
- Black, Maureen M., Susan P. Walker, Lia C. H. Fernald, Christopher T. Andersen, Ann M. DiGirolamo, Chunling Lu, Dana C. McCoy, et al. 2017. "Early Childhood Development Coming of Age: Science through the Life Course." *The Lancet* 389 (10064): 77-90.
- Bloom, Nicholas, Renata Lemos, Raffaella Sadun, and John Van Reenen. 2015. "Does Management Matter in schools?" *Economic Journal* 125 (584): 647-674.
- Bloom, Nicholas, Carol Propper, Stephan Seiler, and John Van Reenen. 2015. "The Impact of Competition on Management Quality: Evidence from Public Hospitals." *The Review of Economic Studies* 82 (2): 457-489.
- Bold, Tessa, Deon Filmer, Gayle Martin, Ezequiel Molina, Brian Stacy, Christophe Rockmore, Jakob Svensson, and Waly Wane. 2017. "Enrollment with Learning: Teacher Effort, Knowledge, and Skill in Primary Schools in Africa." *Journal of Economic Perspectives* 31 (4): 185-204.
- Bold, Tessa, Dean Filmer, Ezequiel Molina, Jakob Svensson. 2018. "The Lost Human Capital: Teacher Knowledge and Student Achievement in Africa." IIES Working Paper.
- Bold, Tessa, Dean Filmer, Ezequiel Molina, and Jakob Svensson. 2018. "The Lost Human Capital: Teacher Knowledge and Student Achievement in Africa." Policy Research Working Paper Series 8849, World Bank, Washington, DC.
- Bold, Teresa, Ezequiel Molina, and Abla Safir. 2018. "Clientelism in the Public Sector: Why Public Service Reforms Fail and What to Do about It." Policy Research Working Paper 8439, World Bank, Washington, DC.
- Boyd, Donald, Pamela Grossman, Hamilton Lankford, Susanna Loeb, and James Wyckoff. 2009. "Teacher Preparation and Student Achievement." *Educational Evaluation and Policy Analysis* 31(4): 416-40.
- Boyd, Donald, Pamela Grossman, Hamilton Lankford, Susanna Loeb, and James Wyckoff. 2006. "How Changes in Entry Requirements Alter the Teacher Workforce and Affect Student Achievement." *Education Finance & Policy* 1(2): 176-216.
- Boyd, Donald, Hamilton Lankford, Susanna Loeb, and James Wyckoff. 2005. "The Draw of Home: How Teachers' Preferences for Proximity Disadvantage Urban Schools." *Journal of Policy Analysis and Management*, 24(1), 113-132.
- Boyd, Donald, Pamela Grossman, Marsha Ing, Hamilton Lankford, Susanna Loeb, and James Wyckoff. 2011. "The Influence of School Administrators on Teacher Retention Decisions." *American Education Research Journal*, Vol. 48, No. 2, 2011, 303-333.
- Bouguen, Adrien, Deon Filmer, Karen Macours, and Sophie Naudeau. 2013. "Impact Evaluation of Three Types of Early Childhood Development Interventions in Cambodia." Policy Research Working Paper 6540, World Bank, Washington, DC.
- Branch, Gregory F., Eric A. Hanushek, and Steven G. Rivkin. 2012. "Estimating the Effect of Leaders on Public Sector Productivity: The Case of School Principal." Washington, D.C.: National Center for Analysis of Longitudinal Data in Education Research, working paper 66, 2012.
- Britto, Pia Rebello, Stephen J. Lye, Kerrie Proulx, Aisha K. Yousafzai, Stephen G. Matthews, Tyler Vaivada, Rafael Perez-Escamilla, et al. 2016. "Nurturing Care: Promoting Early Childhood Development." *The Lancet* 389 (10064): 91-102.
- Bruns, Barbara, and Javier Luque. 2015. "Great Teachers: How to Raise Student Learning in Latin America and the Caribbean." Washington, DC: World Bank. doi:10.1596/978-1-4648-0151-8.
- Bruns, Barbara, Leandro Costa, and Nina Cunha. 2018. "Through the looking glass: Can classroom observation and coaching improve teacher performance in Brazil?" *Economics of Education Review* 64: 214-250.
- Callen, Michael, Saad Gulzar, Ali Hasanain, Yasir Khan, and Arman Rezaee. 2015. "Personalities and Public-Sector Performance: Evidence from a Health Experiment in Pakistan." NBER Working Paper No. 21180
- Cardenas, Sergio, David Evans, and Peter Holland. 2017. "Estimating the Effects of a Low-Cost Early Stimulation and Parenting Education Programme in Mexico." 3ie Impact Evaluation Report 57. New Delhi: International Initiative for Impact Evaluation (3ie).

- Chaudhury, Nazmul, Jeffrey Hammer, Michael Kremer, Karthik Muralidharan, and F. Halsey Rogers. 2006. "Missing in Action: Teacher and Health Worker Absence in Developing Countries." *Journal of Economic Perspectives* 20(1): 91–116.
- Chingos, Matthew, and Paul Peterson. 2011. "It's Easier to Pick a Good Teacher than to Train One: Familiar and New Results on the Correlates of Teacher Effectiveness." *Economics of Education Review* 30(3): 449–465.
- Coe, Robert, Cesare Aloisi, Steve Higgins, and Lee Elliot Major. 2014. "What Makes Great Teaching? Review of the Underpinning Research." London: Sutton Trust.
- Coe, Christopher L., and Gabrielle R. Lubach. 2007. "Mother- Infant Interactions and the Development of Immunity from Conception through Weaning." In *Psychoneuroimmunology*, edited by Robert Ader, 455–74. Burlington, MA: Elsevier Academic Press.
- Coelli, Michael, and David A. Green, "Leadership Effects: School Principals and Student Outcomes." *Economics of Education Review*, Vol. 31, No. 1, 2012, 92–109.
- Collier, Paul, and Anke Hoeffler. 2005. "The economic costs of corruption in infrastructure." In Transparency International (Ed.) *Global Corruption Report 2005*. London: Pluto Press.
- Crawfurd, Lee. 2017. "School Management and Public-Private Partnerships in Uganda." Rise Working Paper 17/013.
- Dal Bó, Ernesto, Frederico Finan, and Martin Rossi. 2013. "Strengthening State Capabilities: The Role of Financial Incentives in the Role of Call to Service." *The Quarterly Journal of Economics* 128(3): 1169-1218.
- Damon, William, Deanna Kuhn, and Robert Siegler. 1998. "Handbook of Child Psychology." New York : J. Wiley, ©1998.
- Danielson, Charlotte. 2007. "Enhancing Professional Practice: A Framework for Teaching, 2nd edition." Association for Supervision and Curriculum Development (ASCD).
- Darling-Hammond, Linda. 2010. "Teacher Education and the American Future." *Journal of Teacher Education* 61(1-2): 35-47.
- Darling-Hammond, Linda, Maria E. Hyler, and Madelyn Gardner. 2017. "Effective Teacher Professional Development." Palo Alto, CA: Learning Policy Institute.
- Dee, Thomas, and James Wyckoff, 2015. "Incentives, Selection, and Teacher Performance: Evidence from Impact." *Journal of Policy Analysis and Management*, John Wiley & Sons, Ltd., vol. 34(2), 267-297.
- Deserranno, Erika. 2019. "Financial Incentives as Signals: Experimental Evidence from the Recruitment of Village Promoters in Uganda." *American Economic Journal: Applied Economics*, 11 (1) 277-317.
- de Hoyos, Rafael E., Vicente A. Garcia-Moreno, and Harry Anthony Patrinos. 2017. "The Impact of an Accountability Intervention with Diagnostic Feedback: Evidence from Mexico." *Economics of Education Review* 58: 123–40.
- de Ree, Joppe, Karthik Muralidharan, Menno Pradhan, and Halsey Rogers. 2018. "Double for Nothing? Experimental Evidence on an Unconditional Teacher Salary Increase in Indonesia." *The Quarterly Journal of Economics*, Volume 133, Issue 2, May 2018, 993–1039.
- Dhaliwal, Iqbal, and Rema Hanna. 2017. "The Devil is in the Details: The Successes and Limitations of Bureaucratic Reform in India." *Journal of Development Economics* 124: 1-21.
- Dobbie, Will, and Roland G. Fryer Jr. 2013. "Getting beneath the Veil of Effective Schools: Evidence from New York City." *American Economic Journal: Applied Economics*, 5 (4): 28-60.
- Dolton, Peter. 1990. "The Economics of UK Teacher Supply: The Graduate's Decision." *Economic Journal*, Royal Economic Society, 100(400): 91-104.
- Duflo, Esther, Rema Hanna, and Stephen P. Ryan. 2012. "Incentives Work: Getting Teachers to Come to School." *American Economic Review* 102(4): 1241-1278.
- Dhuey, Elizabeth, and Justin Smith, "How Important Are School Principals in the Production of Student Achievement?" *Canadian Journal of Economics*, Vol. 47, No. 2, 2014, 634–663.
- Institute of Education Sciences (IES). 2014. "Education Longitudinal Study of 2002: A First Look at 2002 High School Sophomores 10 Years Later." National Center for Education Statistics, NCES 2014-363.
- Eilander, Ans, Tarun Gera, Harshpal S. Sachdev, Catherine Transler, Henk C. M. van der Knaap, Frans J. Kok, and Saskia J. M. Osendarp. 2010. "Multiple Micronutrient Supplementation for Improving Cognitive Performance in Children: Systematic Review of Randomized Controlled Trials." *American Journal of Clinical Nutrition* 91 (1): 115–30.
- Elacqua, Gregory, Diana Hincapie, Emiliana Vegas, Mariana Alfonso, Veronica Montalva, and Diana Parades. 2018. "Profesion: Profesor en America Latina: ¿Por qué se perdió el prestigio docente y como recuperarlo?" Inter-American Development Bank, Washington, DC.
- Engle, Patrice L., Lia C. H. Fernald, Harold Alderman, Jere Behrman, Chloe O'Gara, Aisha Yousafzai, Meena Cabral de Mello, et al. 2011. "Strategies for Reducing Inequalities and Improving Developmental Outcomes for Young Children in Low-Income and Middle-Income Countries." *The Lancet* 378 (9799): 1339–53.
- Evans, David, and Anna Popova, 2016. "What Really Works to Improve Learning in Developing Countries? An Analysis of Divergent Findings in Systematic Reviews." *The World Bank Research Observer*, Volume 31, Issue 2, August 2016, 242–270.
- Evans, David, and Fei Yuan. 2017. "The Economic Interventions that Increase Learning." Background Paper for WDR. Washington, DC: World Bank.

- Evans, David, and Tara Betaille. 2019. "Successful Teachers, Successful Students: Recruiting and Supporting Society's Most Crucial Profession." World Bank Policy Approach Papers. Washington, DC: World Bank.
- Favara, Marta, Martin Woodhead, Juan Francisco Castro, Grace Chang, and Patricia Espinoza. 2017. "Preschool Education and Skills Development in Peru, Vietnam, Ethiopia, and India: Evidence from Young Lives." World Bank, Washington, DC.
- Figlio, David N. 1997. "Did the 'Tax Revolt' reduce student performance?" *Journal of Public Economics* 65 (2), 245–269.
- Filmer, Deon, Halsey Rogers, Noam Angrist, Shwetlena Sabarwal, and Roberta Gatti. 2018. "Learning-Adjusted Years of Schooling (LAYS): Defining a New Macro Measure of Education." World Bank Policy Research Working Paper No. 8591, World Bank, Washington, DC
- Fryer, Roland. 2017. "Management and Student Achievement: Evidence from a Randomized Field Experiment." NBER Working Paper No. 23437, National Bureau of Economic Research, Cambridge, MA.
- Fryer, Roland. 2014. "Injecting Charter School Best Practices into Traditional Public Schools: Evidence from Field Experiments." *The Quarterly Journal of Economics* 129(3): 1355 – 1407.
- Garcia, Emma, and Elaine Weiss. 2018. "Student Absenteeism. Who misses school and how missing school matters for performance." Economic Policy Institute, Washington DC.
- Galasso, Emanuela, and Adam Wagstaff. 2016. "The Economic Costs of Stunting and How to Reduce Them." With Sophie Naudeau and Meera Shekar. Policy Research Note 5, World Bank, Washington, DC.
- García, Jorge Luis, James J. Heckman, Duncan Ermini Leaf, and María José Prados. 2016. "The Life-Cycle Benefits of an Influential Early Childhood Program." National Bureau of Economic Research, NBER Working Paper 22993.
- Garner, Andrew S., Jack P. Shonkoff, Benjamin S. Siegel, Mary I. Dobbins, Marian F. Earls, Laura McGuinn, John Pascoe, et al. 2012. "Early Childhood Adversity, Toxic Stress, and the Role of the Pediatrician: Translating Developmental Science into Lifelong Health." *Pediatrics* 129 (1): e224-e231.
- Gibbons, Robert. 2003. "Team Theory, Garbage Cans, and Real Organizations: Some History and Prospects of Economic Research on Decision-Making in Organizations." *Industrial and Corporate Change* 12: 753-87.
- Gitomer, Drew, Kevin Crouse, and Jeanette Joyce. 2015. "A Review of the DC IMPACT Teacher Evaluation System." Graduate School of Education, Rutgers University.
- Grant, Adam M. 2008. "Does Intrinsic Motivation Fuel the Prosocial Fire? Motivational Synergy in Predicting Persistence, Performance, and Productivity." *Journal of Applied Psychology* 93 (1): 48–58.
- Grissom, Jason A., D. Kalogrides, and S. Loeb, "Using Student Test Scores to Measure Principal Performance." *Education Evaluation and Policy Analysis*, Vol. 37, No. 1, 2015, 3–28.
- Grissom, Jason A., "Can Good Principals Keep Teachers in Disadvantaged Schools? Linking Principal effectiveness to Teacher Satisfaction and Turnover in Hard-to-Staff Environments." *Teachers College Record*, Vol. 113, No. 11, 2011, 2552–2585.
- Hanushek, Eric, John Kain, and Steven Rivkin. 1999. "Do Higher Salaries Buy Better Teachers?" National Bureau of Economic Research, NBER Working Paper 7082.
- Hanushek, Eric A., John F. Kain, and Steven G. Rivkin. 2004. "Disruption versus Tiebout Improvement: The Costs and Benefits of Switching Schools." *Journal of Public Economics* 88(9/10): 1721–46.
- Hanushek, Eric, John Kain, and Steven Rivkin. 2004. "Why public schools lose teachers." *Journal of Human Resources* 39 (2), 326–354.
- Hanushek, Eric, John Kain, Daniel O'Brien, and Steven Rivkin. 2005. "The market for teacher quality." National Bureau of Economic Research, NBER Working Paper 11154.
- Hanushek, Eric A., and Steven G. Rivkin. 2010. "Generalizations About Using Value-Added Measures of Teacher Quality." *American Economic Review* 100 (2): 267–271. doi:10.1257/aer.100.2.267.
- Horta, Bernardo L., Christian Loret de Mola, and Cesar G. Victora. 2015. "Breastfeeding and Intelligence: A Systematic Review and Meta-Analysis." *Acta Paediatrica* 104 (S467): 14–19.
- Hasnain, Zahid; Daniel Oliver Rogger, Daniel John Walker, Kerensa Mayo Kay, and Rong Shi. 2019. "Innovating Bureaucracy for a More Capable Government." Washington, D.C. : World Bank Group.
- Jackson, Kirabo. 2013. "Match Quality, Worker Productivity, and Worker Mobility: Direct Evidence from Teachers." *The Review of Economics and Statistics* 95(4): 1096-1116
- Johnson, David. 2006. "Investing in Teacher Effectiveness to Improve Educational Quality in Developing Countries: Does In-Service Education for Primary Mathematics Teachers in Sri Lanka Make a Difference to Teaching and Learning?" *Research in Comparative and International Education* 1(1): 73–87.
- Keefer, Phillip. 2007. "Clientelism, Credibility, and the Policy Changes of Young Democracies." *American Journal of Political Science*, Vol. 51, No. 4, October 2007, 804-821.
- Ko, James, and Pamela Sammons. 2013. "Effective Teaching: A Review of Research and Evidence." Reading, U.K.: CfBT Education Trust.
- Kraay, Aart. 2018. Methodology for a World Bank Human Capital Index. Policy Research Working Paper;No. 8593. World Bank, Washington, DC. © World Bank.
- Kraft, Matthew A., David Blazar, Dylan Hogan. 2018. "The Effect of Teacher Coaching on Instruction and Achievement: A Meta-Analysis of the Causal Evidence." *Review of Educational Research* [Internet]. 2018;88 (4) :547-588.

- Ladd, Helen F. 2011. "Teachers' Perceptions of their Working Conditions: How Predictive of Planned and Actual Teacher Movement?" *Educational Evaluation and Policy Analysis*, Vol. 33, No. 2, 2011, 235–261.
- Lavy, Victor. 2015. "Do Differences in Schools' Instruction Time Explain International Achievement Gaps? Evidence from Developed and Developing Countries." *The Economic Journal*, vol 125(588), F397-F424.
- Lavy, Victor and Adi Boiko. 2017. "Management Quality in Public Education: Superintendents Value-Added, Students' Outcomes and Mechanisms." *National Bureau of Economic Research*, NBER Working Paper No. 24028.
- Lee, Scott. 2017. "Intrinsic Incentives: A Field Experiment on Leveraging Intrinsic Motivation in Public Service Delivery." Working Paper.
- Loeb, Susanna, Demetra Kalogrides, and Tara Béteille. 2012. "Effective Schools: Teacher Hiring, Assignment, Development, and Retention." *Education Finance and Policy*, Vol. 7, No. 3, 2012, pp. 269–304.
- Lupien, Sonia J., Suzanne King, Michael J. Meaney, and Bruce S. McEwen. 2000. "Child's Stress Hormone Levels Correlate with Mother's Socioeconomic Status and Depressive State." *Biological Psychiatry* 48 (10): 976–80.
- Majundar, Shyamal. 2013. "Emerging Trends in ICT for Education and Training." UNESCO: Paris.
- Male, Chata, and Quentin T. Wodon. 2017. "Disability gaps in educational attainment and literacy (English). The price of exclusion: disability and education." Washington, D.C.: World Bank Group.
- Mayer, Richard E. 2003. "The promise of multimedia learning: using the same instructional design methods across different media." *Learning and Instruction*, Volume 13, Issue 2, April 2003, Pages 125-139.
- McDuffie, Amy Roth, Mary Q. Foote, Corey Drake, Erin Turner, Julia Aguirre, Tonya Gau Bartell and Catherine Bolson. 2014. "Using video analysis to support prospective K-8 teachers' noticing of students' multiple mathematical knowledge bases." *Mathematics Teacher Educator*. Vol. 2, No. 2 (March 2014), pp. 108-140.
- McCormack, John, Carol Propper, and Sarah Smith. 2014. "Herding Cats? Management and University Performance." *The Economic Journal* 124 (578): 534–564.
- McCoy, Dana Charles, Evan D. Peet, Majid Ezzati, Goodarz Danaei, Maureen M. Black, Christopher R. Sudfeld, Wafaie Fawzi, and Gunther Fink. 2016. "Early Childhood Developmental Status in Low- and Middle-Income Countries: National, Regional, and Global Prevalence Estimates Using Predictive Modeling." *PLOS Medicine* 13 (6): e1002034.
- Metzler, Johannes, and Ludger Woessmann. 2012. "The impact of teacher subject knowledge on student achievement: Evidence from within-teacher within-student variation." *Journal of Development Economics* 99, 486–496.
- Meyer-Sahling, Jan-Hinrik, Christian Schuster, and Kim Saas Mikkelsen. 2018. "Civil Service Management in Developing Countries: What Works?" Report for the UK Department for International Development (DFID).
- Molina, Ezequiel, Carolina Melo Hurtado, Adelle Pushparatnam, Tracy Marie Wilichowski. 2018. Teach: Observer Manual. Washington, D.C. : World Bank Group.
- Muijs, Daniel, Leonidas Kyriakides, Greetje van der Werf, Bert Creemers, Helen Timperley, and Lorna Earl. 2014. "State of the Art—Teacher Effectiveness and Professional Learning." *School Effectiveness and School Improvement: An International Journal of Research, Policy and Practice* 25(2): 231–56.
- Muralidharan, Karthik, Abhijeet Singh, and Alejandro J. Ganimian. 2016. "Disrupting Education? Experimental Evidence on Technology-Aided Instruction in India." *National Bureau of Economic Research*, NBER Working Paper 22923.
- Nadler, David, and Michael Tushman. 1980. "A Model for Diagnosing Organizational Behavior." *Organizational Dynamics*. Volume 9, Issue 2, Autumn 1980, Pages 35-51.
- Nelson, Charles A. 2016. "Brain Imaging as a Measure of Future Cognitive Outcomes: A Study of Children in Bangladesh Exposed to Multiple Levels of Adversity." Presentation, CMU Department of Psychology Colloquium, Department of Psychology, College of Humanities and Social Sciences, Carnegie Mellon University, Pittsburgh, September 29.
- Organisation for Economic Co-operation and Development (OECD). 2012. "Preparing teachers and developing school leaders for the 21st century." Paris: OECD.
- Organisation for Economic Co-operation and Development (OECD). 2014. "New Insights from TALIS 2013: Teaching and Learning in Primary and Upper Secondary Education." Paris: OECD.
- Organisation for Economic Co-operation and Development (OECD). 2016. "PISA 2015 Results (Volume II): Policies and Practices for Successful Schools." Paris: OECD.
- O'Reilly, Ciara, Matthew C. Freeman, M. Ravani, J. Migele, A. Mwaki, M. Ayalo, S. Ombeki, Mike Hoekstra, and R Quick. 2008. "The impact of a school-based safe water and hygiene programme on knowledge and practices of students and their parents: Nyanza province, Western Kenya, 2006." *Epidemiology and infection* 136(1):80-91.
- Paxson, Christina H., and Norbert Schady. 2007. "Cognitive Development among Young Children in Ecuador: The Roles of Wealth, Health, and Parenting." *Journal of Human Resources* 42(1):49-84.
- Perry, James L., and Annie Hondeghem. 2008. "Building Theory and Empirical Evidence about Public Service Motivation." *International Public Management Journal* 11 (1): 3–12.
- Pritchett, Lant, and Varad Pande. 2006. "Making Primary Education Work for India's Rural Poor: A Proposal for Effective Decentralization." Social Development – South Asia Series Paper No. 95. The World Bank.
- Pritchett, Lant. 2013. "The Rebirth of Education. Schooling Ain't Learning." Center for Global Development
- Pritchett, Lant. 2015. "Creating Education Systems Coherent for Learning Outcomes: Making the Transition from Schooling to Learning." Working Paper 15/005. Research on Improving Systems of Education (RISE).

- Pianta, Robert, Karen La Paro, and Bridget Hamre. 2007. "Classroom Assessment Scoring System (CLASS): Manual." Baltimore: Paul H. Brookes Publishing Co.
- Pink, Daniel. 2010. "Drive: The Surprising Truth About What Motivates Us." Riverhead Books.
- Putcha, Vidya, and Jacques van der Gaag. 2015. "Investing in Early Childhood Development: What Is Being Spent, and What Does It Cost?" Washington, DC: Brookings Institution.
- Rao, Nirmala, Jin Sun, Jessie M. S. Wong, Brendan Weekes, Patrick Ip, Sheldon Shaeffer, Mary Young, Mark Bray, Eva Chen, and Diana Lee. 2014. "Early Childhood Development and Cognitive Development in Developing Countries: Education Rigorous Literature Review." Faculty of Education, University of Hong Kong, Hong Kong SAR, China.
- Rasul, Imran, and Daniel Rogger. 2013. "Management of bureaucrats and public service delivery: evidence from the Nigerian civil service." Public Economics Programme Papers, PEP 20. The London School of Economics and Political Science, Suntory and Toyota International Centres for Economics and Related Disciplines, London, UK.
- Rosero, José, and Hessel Oosterbeek. 2011. "Trade-Offs between Different Early Childhood Interventions: Evidence from Ecuador." Tinbergen Institute Discussion Paper TI 2011-102/3, Faculty of Economics and Business, University of Amsterdam; Tinbergen Institute, Amsterdam.
- Rivkin, Steven, Eric Hanushek, and John Kain. 2005. "Teachers, Schools, and Academic Achievement." *Econometrica* 73(2):417-458.
- Rockoff, Jonah, Brian Jacob, Thomas Kane, and Douglas Staiger. 2011. "Can You Recognize an Effective Teacher When You Recruit One?" *Education Finance and Policy* 6(1): 43-74.
- Rosenthal, Robert, and Lenore Jacobson. 1966. "Teachers' expectancies: Determinants of pupils' IQ gains." *Psychological Reports*, 19, 115-118.
- Schady, Norbert R, Jere Behrman, Maria Caridad Araujo, Rodrigo Azuero, Raquel Bernal, David Bravo, Flórencia Lopez-Boo, Karen Macours, Daniela Marshall, Christina Paxson and Renos Vakis. 2015. "Wealth Gradients in Early Childhood Cognitive Development in Five Latin American Countries." *Journal of Human Resources* 50(2):446-63.
- Saima, Gowani, Aisha Yousafzai, Robert Armstrong, and Zulfiqar A. Bhutta. 2014. "Cost Effectiveness of Responsive Stimulation and Nutrition Interventions on Early Child Development Outcomes in Pakistan." *Annals of the New York Academy of Sciences* 1308: 149–61.
- Tandon, Prateek, and Tsuyoshi Fukay. 2015. "Educating the Next Generation: Improving Teacher Quality in Cambodia." Directions in Development-Human Development; Washington, DC: World Bank. © World Bank.
- UIS. 2017. "More Than One-Half of Children and Adolescents Are Not Learning Worldwide." UNESCO Institute for Statistics Fact Sheet No. 46 (September).
- Vieluf, Svenja, David Kaplan, Eckhard Klieme, and Sonja Bayer. 2012. "Teaching Practices and Pedagogical Innovation: Evidence from TALIS." Paris: OECD Publishing.
- Walker, Susan P., Theodore D. Wachs, Julie Meeks Gardner, Betsy Lozoff, Gail A. Wasserman, Ernesto Politt, Julie A. Carter, and the International Child Development Steering Group. 2007. "Child Development: Risk Factors for Adverse Outcomes in Developing Countries." *The Lancet* 369 (9556): 145–57.
- Walkoe, Janet. 2015. "Exploring Teacher Noticing of Student Algebraic Thinking in a Video Club." *Journal of Mathematics Teacher Education* 18(6): 523-550.
- Wilson, Valerie, Heather Malcolm, Sheila Edward, and Julia Davidson. 2008. "Bunking off: The impact of truancy on pupils and teachers." *British Educational Research Journal*, Vol. 34/1, pp. 1-17.
- Wolter, Stefan C., and Stefan Denzler. 2003. "Wage Elasticity of the Teacher Supply in Switzerland." IZA Discussion Papers 733, Institute for the Study of Labor (IZA).
- World Bank. 2015. "World Development Report 2015: Mind, Society, and Behavior." Washington, DC: World Bank.
- World Bank 2016a. "Assessing Basic Education Service Delivery in the Philippines: The Philippines Public Education Expenditure Tracking and Quantitative Service Delivery Study." Report AUS6799.
- World Bank. 2016b. "Transferts Monétaires, Valeur Ajoutée de Mesures d'Accompagnement Comportemental, et Développement de la Petite Enfance Rapport Descriptif de l'Evaluation d'Impact à Court Terme du Projet Filets Sociaux au Niger." Washington, DC: World Bank.
- World Bank. 2018. "World Development Report 2018: Learning to Realize Education's Promise." Washington, DC: World Bank.
- World Bank. 2019. "Ending Learning Poverty: What Will It Take?" Washington, DC: World Bank.
- Yousafzai, Aisha, Jelena Obradović, Muneera Rasheed, Arjunmand Rizvi, Ximena Portilla, and Nicole Tirado-Strayer. 2016. "Effects of responsive stimulation and nutrition interventions on children's development and growth at age 4 years in a disadvantaged population in Pakistan: A longitudinal follow-up of a cluster-randomised factorial effectiveness trial." *The Lancet Global Health* 4(8):e548-58.





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