

## Foreword

At least three major education reports published in the past two years argue that a data revolution is needed in order to transform education systems across the globe. The reason behind the claim is that an education system is complex, consisting of many different structures, rules, and professional relationships, so improving the way it works and performs depends on having – and using – reliable, timely and adequate information. The flipside of this systemic view is that improving one classroom at a time is all it would take to transform an education system, and so the only information that is needed is how to improve what an individual teacher knows and how she teaches.

Both views, I would argue, are relevant. Notwithstanding the large sum of information available to students on the Worldwide Web, the core learning in our time still happens in the classroom, dependent on the quality of interaction between a teacher and a learner. However, a school works best when it is part of an education system that supports both teacher and student with an environment that is conducive to learning—stimulating, resourced with adequate learning material, and safe. It is when governments are strongly committed to the education of young people and are able to make good decisions about how to allocate public resources, what programs to support, and what rules and regulations to establish that schools perform well. Without adequate data, those who formulate policies and manage programs are at a disadvantage of not knowing whether their spending decisions and policies are actually working and whether education goals are being met. Information about the inputs, outputs and outcomes of the education system can influence spending and program choices by leaders and managers in the system. And when system information is open and shared widely, politics and vested interests are less likely to drive policy and spending decisions.

This JICE issue features five articles that examine how different types of data can inform decisions in an education system and also how data can be used to improve learning in classrooms and schools. Starting with the latter, Junghee Choi, Booyeul Kim and Ju-Ho Lee use cross-country data from the OECD Teaching and Learning International Survey database to examine the evidence on the efficacy of learner-centered teaching methods. Controlling for a wide range of teacher and classroom characteristics in 32 countries, as well as country and school fixed-effects, they conclude that learner-centered teaching has a significant and positive association with both teachers' sense of self-efficacy (that is, their confidence in being able to teach students effectively and help them develop) and their level of job satisfaction.

In her article, Angela Little argues for greater attention on class-based formative assessment in order to improve teaching and learning, and for less attention on international, regional and national student assessments which she argues are used mainly for the sake of assessing systems and for justifying education funding decisions rather than for supporting the daily business of learning in the classroom. Class-based formative assessment, her article argues, can be used to provide timely feedback to a teacher about

the strengths and weaknesses of a student and about content or skill areas that require additional or remedial effort. Indeed, this type of assessment should be an integral part of learner-centered pedagogy, and teachers should be trained, and given time, to use it.

The types of student and system assessment that Professor Little argues against, however, can be used to improve education outcomes but through different ways – by informing leaders at different levels of government about progress in education indicators, or lack thereof; by identifying gaps and inequalities in the allocation of national and donor resources; and by motivating community and political support for education. The article by Samantha Custer and co-authors indicate that policymakers and managers in education systems do demand more information, including on the impact of specific interventions on education outcomes and the experience of other countries. The responses to two surveys of leaders and managers in low- and middle-income countries, however, show that education data are not used when they are considered irrelevant, unreliable, inaccessible or simply too complex. The findings emphasize the need to understand the obstacles to information use by leaders and managers. Many education systems already collect a multitude of data – and some say too much data – but too many countries also do not have even the most basic education data. Today, according to the UNESCO Institute of Statistics, only 71 percent of developing countries report data on four basic MDG indicators and just over one-half of developing countries have a systematic national learning assessment.

The article by Lindsay Read and Tamar Manuelyan Atinc focuses on the efforts in a number of countries to collect information to enhance accountability and thereby improve service delivery. They examine the main mechanisms by which information shapes decision-making at the school-level. They compile, synthesize, and categorize recent impact evaluations according to the intensity of interventions and their target change agents (parents, teachers, school principals, and local officials). Studies have shown that robust accountability and transparency mechanisms help raise the quality of service delivery, because the scope and complexity of what governments must do to achieve education goals is nearly impossible without reliable and timely data.

Finally, the article by John Newman and co-authors illustrates the benefits of having measures of the quality of an education system. A frequently-used measure of education quality, the average pupil-teacher ratio in a country, has long been debunked as a credible indicator of quality because the variation in the ratio does not explain the variation in average student performance. Moreover, focusing on this ratio wrongly implies that the menu of policies and programs that is at the disposal of decisionmakers is limited to teacher recruitment. Newman and co-authors instead use a system quality index based on a rating scheme of the different policy domains in an education system. They find that education systems that are rated as better, based on the rubrics of the rating scheme, are more likely to have higher average student performance – in terms of achieving higher years of completed schooling and higher scores on student assessments<sup>1</sup> – and a larger share of the country's population who are satisfied with the system. The authors compile different sources of data to build a unique country-level database for their analysis.

The global push for increased enrollment since 1990 and the adoption of the Sustainable Development Goals have elicited a strong demand for wider data coverage on education. Countries and partner organizations are investing more in collecting and curating timely, complete, open and reliable data from the different parts of the education system. A greater focus today on learning levels is turning the spotlight more on where teaching and learning take place and on the adequacy of resources and capacity to meet learning goals. There are many more student assessments that allow countries to benchmark their student performance against other countries.<sup>2</sup> The types of education data analyzed in the five articles featured in this journal issue certainly deserve more attention from education decisionmakers and academics, but they are only a small subset of the various types of education data on developing countries that are being collected, curated and made publicly available. Let me mention just two other types of data that I think deserve more use by education researchers and, of course, education decisionmakers.

First, household surveys, such as UNICEF's Multiple Indicator Cluster Surveys (MICS) and the older Living Standards Measurement Surveys (LSMS) and Demographic and Health Surveys (DHS), collect a wealth of data from a randomly selected sample of households in a large number of countries, including education indicators and demographic and socioeconomic characteristics, allowing users to address questions such as the determinants of the demand for schooling in poor and nonpoor households and the relationship between individual health status and schooling or between gender differences in completed schooling and gender wage differentials. The Young Lives project has been conducting household and child longitudinal surveys for 15 years, though for just a handful of countries as of now. Panel data, as compared with cross-sectional data, can be used to follow the life trajectory of individual children and thus understand better how children change over time, and how growing up in different contexts (urban or rural, rich or poor) affects their educational outcomes.

Second, at the classroom level, a data source that is gaining interest comes from observing and rating teachers' classroom practice and analyzing what affects it. While classroom observations methods to assess the quality of teachers' classroom practice, such as that developed by Jane Stallings<sup>3</sup> in the 1970s, are used in rich countries, they are not generally used in developing countries. However, there is growing interest in the use of

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<sup>1</sup> Altinok, N., Diebolt, C., & De Meulemeester, J.-L. (2013). A New International Database on Education Quality: 1965-2010. *Applied Economics*, 46(11), 1212-1247.

<sup>2</sup> Table 2 in Angela Little's article in this issue lists the international, regional and other student assessments that provide measures of learning levels in many, though not all, countries. While each assessment allows comparisons across participating countries, it is difficult to compare scores across different assessment schemes. See Altinok et al. (2013) cited above for how such comparisons can be made. A more recent database of harmonized test scores has been produced using their method, but this database was not yet available when the articles for this issue were being written; see Altinok, N., Angrist, N., & Patrinos, H.A. (2018). *Global data set on education quality (1965–2015)*. The World Bank.

<sup>3</sup> Stallings, J. (1977). *Learning to look: A handbook on classroom observation and teaching models*. Wadsworth Publishing Company.

this instrument. According to a World Bank manual on the instrument, “[t]he Stallings instrument generates robust quantitative data on the interaction of teachers and students in the classroom, with a high degree of inter-rater reliability (0.8 or higher) among observers with relatively limited training, which makes it suitable for large scale samples in developing country settings” (p. 3).<sup>4</sup>

On a final note, let us consider the connection between a “data revolution” in education and the new digital technologies that have profoundly changed the way we communicate, work and live. Worldwide, education systems are embracing these technologies to serve different purposes—paying teachers faster, facilitating students’ access to technical knowledge, enriching training programs, and so on—and the effectiveness of these separate uses depends on the availability of accurate, timely, fit-for-purpose data that can improve the overall quality of policies and programs.

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<sup>4</sup> World Bank. (2015). *Conducting Classroom Observations. Analyzing Classroom Dynamics and Instructional Time Using the Stallings “Classroom Snapshot” Observation System*. Available in <http://documents.worldbank.org/curated/en/790221467997639302/pdf/97904-WP-Box391498B-PUBLIC-WB-Stallings-web.pdf>.