Learning, Marginalization, and Improving the Quality of Education in Low-income Countries

EDITED BY
DANIEL A. WAGNER,
NATHAN M. CASTILLO AND
SUZANNE GRANT LEWIS

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Learning at the Bottom of the Pyramid

Cover design by Anna Gatti.

Introduction

Daniel A. Wagner

The fourth United Nations Sustainable Development Goal (SDG4) calls for *inclusive*, *equitable*, and *quality* education. While certainly a noble endeavor on the surface, it is important to ask how these three characteristics can actually be measured and achieved. To help answer such an essential question, this volume brings together the research of experts from universities, non-governmental organizations, and national government think tanks and agencies who are pioneering new approaches to reach vulnerable children and youth—those who are "learning at bottom of the pyramid" (LBOP).

The chapters herein are based on papers presented at the second international conference on this topic, co-hosted (virtually) in December 2020 by the University of Pennsylvania and IIEP-UNESCO entitled "Learning at the Bottom of the Pyramid", or LBOP2. This event built on a framework from an earlier conference and book (Wagner, Wolf, & Boruch, 2018). Contributors prepared seven thematic papers on key sub-topics of LBOP, which lay out strategies to improve learning outcomes in low-income countries. Country-specific professionals prepared four national case studies, each utilizing this framework, which are based on research undertaken in India, Ivory Coast, Kenya, and Mexico.

Let us begin with a description of two learning contexts that help delineate the meaning of learning at the bottom of the pyramid.

South African classrooms: Two contexts of learning[1]

Shayandime Primary School is located in a small rural village in the northern province of Limpopo, South Africa. Just a few dozen miles

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[1] This section draws from Wagner & Castillo (2014). Author's note: the school names have been changed, and these profiles combine details from several schools.

from the border of Zimbabwe, the area is dotted with traditional houses called *rondavels*, an adapted version of the southern African-style hut. In spite of the occasional broken window, the school is not without resources. It is one of many establishments in the region that received a donation of desktop computers, and upper-primary learners spend time working on basic typing activities. However, disadvantaged learners with weak English proficiency have limited access to the computers, since no programs have been written in their local language, Venda. In the classroom, learners spend most of their time copying sentences from the chalkboard, and rarely participate in activities that support child-centered creativity and critical thinking skills.

By contrast, four hours away in the provincial capital of Polokwane sits Central Elementary School. It has brick paths around the perimeter and a state-of-the-art computer lab, with flat-screen monitors and a smart board with projector. The computer lab, which rivals that of the local university, was acquired in part through revenue earned by renting out the school's event hall to the community. There are no broken windows, the teachers present structured lesson plans, and the parents are an integral part of the school culture. Given its appealing learning environment, the provincial officials proudly exhibit this urban school to visiting national and international education planners. Many students have mobile phones, and give the appearance of being motivated to learn and to be connected to South Africa's future.

Comparisons of rural and urban contexts in low- and middle-income countries (LMICs) often consist of these types of observations of infrastructural and social differences. The South Africa Annual National Assessment (ANA), administered at the end of each school year, measures progress in learner achievement in Grades 1–6 and 9 (e.g., DBE 2013). The ANA inevitably confirms the type of subjective vignette described above. South African schools are categorized according to a poverty index based on the relative wealth or poverty of the community and are grouped into quintiles. Rural Shayandime Primary belongs to the lowest quintile. When the ANA was conducted there, only five learners in Grade 3 scored above the national norm, while the large majority scored in the bottom 10 percent, creating a skewed distribution. By contrast, Central Elementary ranks in the middle (third) quintile with normally distributed scores; these are somewhat below the

national urban norms for the mathematics and home language reading competencies for Grade 3.

These contrasts of LBOP2 are typical in many LMICs, almost creating two worlds of education: one for the relatively well-off, and one for those without. Over the past two or three decades, an avalanche of new research has confirmed this relative bifurcation of learning worlds (Wagner, 2018; Wagner et al., 2018).

The search for inclusion and equity

The two schools above raise a fundamental question: how can countries promote greater inclusion and improve learning equity, as called for in SDG4? Two actionable perspectives seem increasingly evident: first, countries must *raise the floor* of learning outcomes of the poor and marginalized, rather than primarily focusing on average national scores; and second, countries must *close the gap* in learning disparities between those at the bottom and those at the top of the scale. Both are needed to support the achievement of all learners, and both are broadly addressed in the thematic papers contained in this volume. Indeed, it was this framework that fueled discussions at the LBOP2 conference and led to each of the papers in this volume.

Thematic papers: Towards raising the floor

In many countries today, the strong focus of public policy is on the "middle" or norm—whether referring to income, years of schooling, or learning outcomes. This is understandable since the majority population in most countries (and its largest voting bloc, one might add) is comprised of "average" people who are, politically and statistically, in the middle group of any population. However, such a focus on the middle comes with educational, social, and economic costs.

A Minister of Education might rightly ask the following question: can the needs of the poor be better addressed by raising outcomes for the middle of the population—thereby "lifting all boats", as the saying goes. Or, by contrast, should the focus be on addressing the needs of the very poor directly, the approach we term *raising the floor*?[2] With the advent of

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2   First described in Wagner and Kaur (2006).

SDG4, and the current COVID-19 pandemic, greater attention is being paid to learning levels, and especially to those learners with the lowest outcomes (UNESCO, 2021; Wagner et al., 2018; World Bank, 2021).

In the three subsections below, we lay out several broad issues that are highly pertinent to how to raise the floor: (1) who are the children left behind; (2) learning in the classroom; and (3) improving metrics on learning.

Who are the children left behind?

In this volume, we have tried to identify which children are most at risk, and for what reasons. Across the globe, and especially in LICs, there is little question that human diversity drives major differences in learning. In *Chapter 1*, Pisani and Dowd lay out a broad definition of diversity at the BOP, highlighting three major dimensions of diversity: (1) gender disparities—with a case study in Afghanistan; (2) disability—with a case study in Tamil Nadu (India); and (3) language of instruction—with a case study in Kenya. Overall, the authors show that policy and investment need to progress beyond a "one size fits all" approach to disadvantage, and recognize that producing equitable learning outcomes for all children requires different levels and types of inputs for different groups.

Another key population of children at risk is those displaced due to internal or external migration. As Kelcey, Guven, and Burde point out in *Chapter 2*, access to quality education can help migrants navigate the uncertainties of geographical displacement and contribute to the social and economic development of their host states. Yet data on migrants' learning outcomes remain inadequate and collected in inconsistent ways. Employing two case examples (in Lebanon and Ecuador), the authors show that official policies for migrant children differ, or are interpreted differently, at the school level, and that students' wellbeing and sense of belonging are also connected to learning achievement.

Learning in the classroom

Improving the quality of children's learning necessitates a close look at teachers' roles and responsibilities. But, as with their learners, teachers are quite diverse, as are the contexts within which they work. Many of these contexts, especially in LMICs, are rife with challenges.

In *Chapter 3*, Akyeampong focuses on some new and unprecedented obstacles that teachers face. Even as "teacher quality" has improved by increasing teacher training in some better-off communities, student populations have grown dramatically. As a result, class size and the overall diversity of students has led to less time learning, and a drop in learning achievement, especially at the BOP. In addition, during the global pandemic, we have seen huge impacts on children's access to good-quality education, especially with the push towards remote (virtual) learning.

Information and communication technologies (ICTs) can transform how we can support learning through real-time data collection and analytics. In *Chapter 4*, Castillo, Adam, and Haßler point out that ICTs are becoming cheaper and more powerful each year, with access expanding to nearly every part of the education sector. Particularly, mobile phones are outpacing other types of technology—even in low-income contexts—opening up opportunities to move away from "traditional" teaching materials (such as textbooks, chalkboards, and notebooks), while improving teacher training and data collection for real-time assessments. The authors suggest that emerging technologies should employ a reciprocal model whereby student input helps optimize the model and the model, in turn, helps optimize user skills through continuous, formative analysis.

Improving metrics on learning

Measurement (or metrics) has been central to conversations about learning at the BOP. As noted in the first LBOP volume (Wagner et al., 2018), such an analysis requires an understanding of the demographics of the sample, as well as a reliable way to measure learning. In this volume, three chapters explore what kinds of metrics are required in order to create reliable, valid, and comparable tools. Crouch and Slade, in *Chapter 5*, propose using a variety of "smaller, quicker, cheaper" (SQC; after Wagner, 2011) assessments, particularly since their use has grown in recent years. They point out that in one of the latest signs of that interest, the World Bank (2019) is seeking to cut the proportion of 10-year-old non-readers in lower-middle-income countries by half, from around 50 percent to around 25 percent, by 2030. But how to ascertain whether such a goal is feasible—what types of metrics will be required?

By using a large EGRA (early grade reading assessment, oral reading fluency) dataset from Kenya, the authors show that a Gini coefficient (and other measures of inequality for learning) can reliably measure the gap between readers and non-readers. In sum, Crouch and Slade found that when one correlates improvements in the average levels of reading fluency with changes in inequality, these improvements are highly related to reductions in inequality.

In *Chapter 6*, Van Damme, Prokic-Breue, and Vermeulen propose an innovative measure of learning at the BOP, called "learning exclusion"— which they define as the relative distance in learning outcomes between the lowest 10 percent of performers and the median in a country's population. A larger gap would indicate that learners at the bottom are relatively more excluded from what a nation's population considers to be the norm. A smaller gap would suggest that learners at the bottom are more integrated into the skill profile of a nation's population. The authors used outcomes from six rounds of PISA scores between 2000 and 2018 to measure learning exclusion, and found that some countries that scored poorly in terms of learning exclusion in 2012 showed remarkable progress over time, while others remained stagnant. The exclusion of a learner is not, they found, primarily defined by his or her absolute performance in global terms, or by his or her distance from the top performers—but rather by the deviation from what a society considers to be the norm.

For each goal of the SDGs, there is a clamor for more resources, and SDG4 is no exception. But what about the equity concerns of spending? Should financial resources be spent "across the board" on all goals, or should some areas receive extra attention—and more funding? In *Chapter 7*, Al-Samarrai and Benveniste consider a framework for what they term "spending equity". They find that total public education spending tends to be unequally distributed, particularly in low-income countries. Further, they note that it is common for the poorest and wealthiest quintiles to have similar enrollment rates in public *primary* schooling, but a far greater proportion of children in the wealthiest quintile are enrolled in public *tertiary* institutions. Thus, since per-student expenditure is much higher in tertiary institutions, this tends to skew the distribution of public education funding in favor of wealthier quintiles, particularly in low-income countries. Improving metrics for

determining where spending should be targeted will improve support for those at the bottom of the pyramid.

National case studies: Towards closing the gap

The global benchmarks set by the UN Sustainable Development Goals are expected to be carried out at the national level, typically through government agencies. However, it is important to recognize that there are multiple stakeholders that implement education in every country, and adaptation of strategies and policies to local contexts, languages, and other factors is essential for success. Teachers, families, and non-governmental agencies offer critical insights into how learning can be supported effectively. Promoting local, scalable, and collaborative policies and approaches is a cornerstone of improved learning, and necessary to help close the learning gap in low-income countries. This volume's second section provides case studies, distributed over four countries, that dive deeper into issues of localizing the LBOP approach within national educational systems.

Mexico (*Chapter 8*), is the first of these national case studies. Schmelkes, Robles, and Santos provide an overview of the demographics of social vulnerability, and how these data map on to low learning levels. The authors demonstrate that Mexico has not managed to guarantee: (a) universal access to school; (b) universal completion of compulsory education; or, (c) basic levels of learning to progress in school. This implies what they term a "social debt", especially to children in conditions of social vulnerability. They point out that the heritage and diversity of Mexico comes in part from its native indigenous populations, whose languages can be organized into 68 linguistic groups. Indigenous children who attend school almost always receive instruction in Spanish, and in these circumstances, children take much longer to learn to read and write, and their mastery of the content included in the curriculum is consequently much lower. The authors conclude that some Mexican government policies and programs have been put into place to mitigate the effect of poverty on education, but most continue to privilege access and permanence in education, rather than learning.

In India, three case studies provide varying perspectives on key aspects of education at the BOP. In *Chapter 9*, Govinda provides a set of

reflections on policies and programs for education of the disadvantaged in India. He begins by asking a fundamental question: what if all children gain access to school (India's overarching goal), but the majority fail to acquire even the basic skills of literacy and numeracy after several years of schooling? Indeed, he notes that Indian policy has always embedded concern for quality within a framework of equity and social justice, but translation of that intent into reality has proved elusive, particularly for disadvantaged children. In *Chapter 10*, Singh, Singh, and Banerjee examine disadvantage through the lens of language diversity in India. Nearly 96 percent of India's mother-tongues are spoken by only four percent of the population, but early grade education, textbook production, and teacher training programs rarely take into account these linguistic minorities, despite constitutional provisions that require schools to impart education in every child's mother-tongue. They conclude by noting that academic, socioeconomic, and psychological support systems that take into account India's heterogenous populace are required to achieve resilience and lifelong learning of children. Finally, in *Chapter 11*, Singh, Chandrashekar, and Baghel consider the role of civil society organizations (CSOs) in promoting innovations in marginalized communities, particularly using ICTs. They note that CSOs often act as subject matter experts, support capacity building, and often represent marginalized communities by serving as advocates while promoting fundamental rights and values. As one example, they describe Pratham's PraDigi Open Learning program that has reached hundreds of thousands of Indian children across multiple states. They conclude that such ICT platforms blend technology, children's curiosity, and traditional social structures to engage communities in children's learning.

In the Ivory Coast, there are two case studies concerning LBOP. In *Chapter 12*, Azoh and Goin Bi provide a review of government policies, with a focus on how to identify the vulnerable populations that face the most barriers to education and learning. The authors describe the demographics by poverty, gender, disability, and national citizenship—and how each dimension challenges children's learning at the BOP. National educational policies in the Ivory Coast have responded to such problems of disadvantage by integrating local schools (Islamic, community, handicapped) into policy frameworks that are helping to

reduce gaps over time. Complementing the above approach, Jasińska and Guei (in *Chapter 13*) find that impoverished rural communities are often denied access to quality education, where only 14 percent of sixth-grade students attain sufficient competency in both math and language. The authors review several research-based programs that incorporate three broad strategies: (1) changing classroom structures to better meet children's learning needs; (2) leveraging educational technologies to provide access to quality education; and (3) systematically addressing poverty. In one example of the latter, the authors detail a cash transfer program that offers families small amounts of financial support to ease economic hardship, thereby promoting school attendance rather than work on plantations. Integrated interventions that include poverty reduction transfers and innovative pedagogical approaches offer new ways to address the causes of inadequate learning outcomes among Ivory Coast's most vulnerable children.

In Kenya, four case studies are included. In *Chapter 14*, Ruto, Gachoya, and Ngindiru write about the policy framing of education and learning equity among school children. They note that the inequitable distribution of learning opportunities has historical, sociocultural, and economic underpinnings, particularly in Kenya's arid north. While the positive ingredients needed for a functional education system are available in terms of textbooks and teachers, the most important issue is one of inequitable opportunity for building a resilient system that works for all children—where policies should move from being input-driven to becoming outcome-based. In *Chapter 15*, Manyasa and Karogo focus on recent trends in free primary and secondary education, and whether this is effective for quality learning. Based on multiyear data collection, the authors found that children at the bottom of the pyramid constitute a significant percentage of all children, and yet despite being in school, their learning levels remain low. Indeed, while Kenyan government policies have facilitated children's access to school, their study shows that little learning happens in the early years of schooling, leading to disadvantages along children's entire school journey. Mugo, Makau, and Njengere, in *Chapter 16*, consider ways of improving learning among those with disabilities in Kenya, showing also that there is an over-representation of over-age children in schools. Further, despite the accommodations for disabilities already

in place, end-of-cycle examinations continue to marginalize learners with disabilities, and hold them back. Finally, Kinyanjui (in *Chapter 17*) provides a comparative analysis of children's marginalization across multiple counties in rural Kenya as related to school enrollment rates, with particular attention paid to poverty, language barriers, gender, and more. Recently, the pandemic has also impacted learning, as only about 20 percent of Kenyan students have regular access to digital learning. Kinyanjui, as with others in the Kenyan case, find that there are many interconnected and continuing causes of marginalization that remain obstacles for learning at the bottom of the pyramid.

Conclusions

Collectively, the papers of this volume try to clarify how we can improve learning in low-income countries and in poor and marginalized communities, among populations at the bottom of the pyramid. They also demonstrate multiple approaches to both raising the floor and narrowing learning gaps. Even so, much needs to be done to achieve improved learning equity.

Better situated *diagnostics* are clearly important. As the saying goes: "If you cannot measure it, you cannot manage it."[3] This principle is widely cited in many fields, and it is becoming increasingly central to how educational policymakers, researchers, and practitioners think about their work. Measurement is crucial, even if not everyone agrees on what and how to measure. As this volume shows, credible research evidence depends on measurement, and should be an essential component for all substantive development efforts. Yet experts frequently do not have enough valid, reliable, and disaggregated data to evaluate how their initiatives will work over time, across contexts, and specifically for populations at the bottom of the pyramid.

Field-based partners and other local stakeholders, as well as national ministries of education, will be central to the next phase of work on LBOP issues. As noted earlier, this type of involvement in LBOP efforts cannot be taken for granted. BOP learners have remained disadvantaged for decades and even centuries, often for the kinds of reasons that are

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3   Attributed to Peter Drucker, a major figure in corporate management. No citation is available. See also Wagner (2018, p. 240).

explored in multiple chapters of this volume. While researchers may understand, at a distance, the challenges of overcoming marginalization, at the local level such problems are endemic and difficult to change. Thus, an activist LBOP approach would need to include at least the following components: local and culturally adapted instruments and interventions; a focus on valid measurement tools that emphasize disaggregation at their core; ICT tools that promote personalized and adaptive learning content informed by real-time data capture; and longitudinal designs that will enable the study of change over time. Finally, and necessarily, cross-disciplinary and cross-sector collaborations will be required to scale up future visions of improving learning for those at the bottom of the pyramid.

As we move forward into the remaining years of the 2030 UN SDG targets, it is clear that social and economic inequalities will persist, and even increase, unless we maintain a serious focus on learning among the poor. Only by transforming the way learning is understood in contexts at the bottom of the pyramid can we begin to understand how to better promote learning equity for those hardest to reach. One thing is clear: progress on issues of learning equity will take considerable effort, persistence, understanding, and collaboration.

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