

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

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Second volume in the series
Learning at the Bottom of the Pyramid



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1. Diversity and Equity in Education

Policy, Practice, and Options for Reaching Children at the Bottom of the Pyramid

Lauren Pisani and Amy Jo Dowd

Introduction

Despite calls for “Education for All”, there is a global learning crisis at every level of education, and the COVID-19 pandemic has only exacerbated the challenge of realizing Sustainable Development Goal 4 (SDG4)—that all children complete free, equitable, and quality primary and secondary education leading to relevant and effective learning outcomes. Prior to the pandemic, there were 250 million children at the pre-primary level in low- and lower-middle-income countries (LMICs) at risk of not realizing their developmental potential (Black et al., 2016), and at the primary and secondary levels, more than 617 million children and adolescents were not achieving minimum proficiency in reading and mathematics (UNESCO Institute for Statistics, 2018). In addition, 200 million adolescents were not enrolled in secondary education, and out-of-school rates had been essentially stagnant since 2012 (UNESCO Institute for Statistics, 2018). These challenges were disproportionately affecting disadvantaged children—those living in poverty, those with disabilities, girls, and those learning in a second (or even third!) language (Rose et al., 2017; World Bank, 2018).

In the fall of 2020, 1.7 billion children faced closed, interrupted, or uncertain access to schooling, and emerging data suggest that 40 percent of low- and middle-income countries (LMICs) have not taken steps to support learners at risk of exclusion during the COVID-19 pandemic (UNESCO, 2020) (see Figure 1). The short- and long-term effects of COVID-19 on learning are unknown, but experts warn that they will likely exacerbate the divide between advantaged and vulnerable children that existed prior to 2020. In the short-term, differences in learning levels prior to school closures, access to remote learning opportunities and materials (e.g., access to the internet), and responsibilities at home such as chores and childcare could lead to learning loss (Carvalho & Hares, 2020). In the long-term, economic shocks to individual families and national education systems threaten both the access and quality of school post-pandemic (Save the Children, 2020; UNESCO, 2020). For example, prior to COVID-19, education spending inequities showed an average of 10 percent of public education budgets in LMICs spent on the poorest 20 percent of learners (UNICEF, 2020). Now, the estimates predict an education financing gap of \$77 billion in LMICs (Save the Children, 2020).

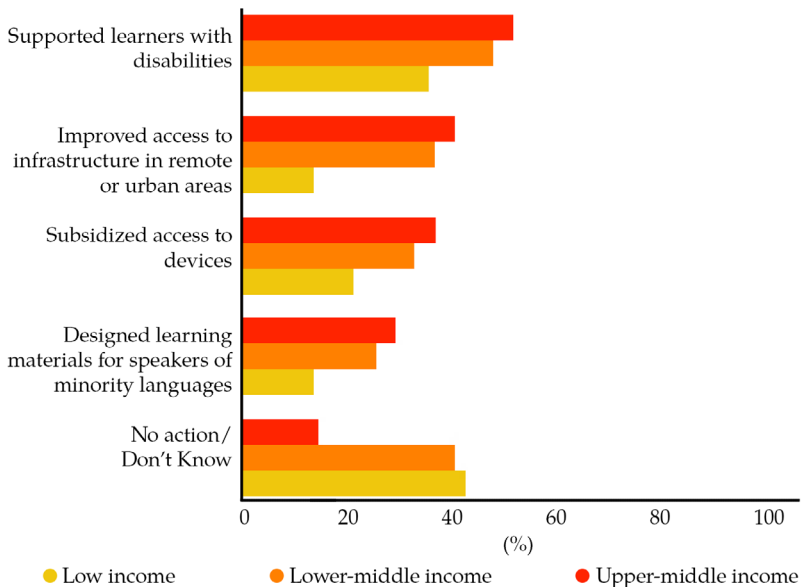


Fig. 1. Proportion of LMICs taking measures to include disadvantaged populations in distance learning during the COVID-19 pandemic in 2020. Source: UNESCO (2020).

Wealth-driven gaps in learning grow with each level of education (Rose & Alcott, 2015), and these shortfalls have led to calls for progressive universalism (Education Commission, 2016), or attention to quality education expansion, with priority given to the lowest levels of schooling (including pre-primary education) and to those at the bottom of the pyramid (Wagner et al., 2018). In this way, as access to quality preschool and schooling expands and learners thrive, level by level, all children are supported to achieve their potential. Such policies would pave the way for more equitable education systems, but we must also support the millions of children who are out of school in our current systems. This number will only grow due to COVID-19, and a substantial proportion of children around the world will require additional support in order to master the foundational literacy, numeracy, and social emotional skills that will allow them to effectively enter the workforce.

Disparities will persist until education systems strengthen the connections between equity-focused policy and practice. Countries across the globe strive to provide access to quality instruction, but many struggle to implement those policies effectively and universally. For example, basic education expansion in Tanzania intentionally focused on improving access for girls, and while this effort was successful it also deepened educational inequality for the rural poor, as well as disabled children (Baum et al., 2019). This case shows that equity-focused policy implementation is feasible, but a focus on one dimension may not be holistic enough to raise enough children from the bottom of the pyramid (Wagner, 2018). On the other hand, where rich young Bangladeshi men are 10 times more likely to attend higher education than poor young Bangladeshi women, there is a disconnect between equity goals and education budget allocations (Ilie & Rose, 2016).

Systems need to develop differentiated strategies that take the diversity of their student body into account. They must recognize that some children face additional challenges during their educational journeys. If we fail to consider and act on the factors that affect whether or not children attend school and are engaged while there, we risk the gaps between vulnerable and advantaged children growing larger and larger. Importantly, these issues intersect and some factors, like poverty and location, can multiply or reduce the impact of other factors on children's learning outcomes. Contextualized targeting of

policy is challenged by a relative lack of data—especially for disability and language differences—but makes iterative testing of policy and implementation no less important.

Potential solutions relate not only to policy (e.g., girls have the right to education in all areas of the country), but also to school systems themselves (e.g., access to appropriate latrines for girls), as well as culturally held norms existing in children’s communities (e.g., value of education for girls vs. boys). Prioritizing how to move towards progressive universalism requires not only data, but concentrated effort to use it and leverage political will to implement pro-equity policy, and monitor its impact on for learning and equality of outcomes over time. This data-based approach will vary by context, requiring local solutions and an iterative approach to evidence, practice, and policy.

In this paper, we explore examples of such efforts along four different equity dimensions—poverty, gender, disability, and language—using global data and particular country case studies. We know that these issues intersect for many children at the bottom of the pyramid, and present available data showing this reality. We discuss how each dimension affects children’s learning experiences in pre-primary, primary, and secondary schooling and how challenges can grow as students at the bottom of the pyramid progress through education systems. This approach allows us to explore how disadvantage accumulates over time, discuss the interplay between issues of access and quality, and elucidate examples of efforts to improve quality, expand outreach, and innovate to include more children and support their learning.

Poverty at the bottom of the pyramid

Poverty and its relationship to learning outcomes for children at the bottom of the pyramid requires special attention. Poverty is the leading factor that drives educational disadvantage, and it has the power to exacerbate or alleviate the relationship between other types of disadvantage and learning outcomes. On its own, wealth has a strong relationship to school enrollment both between and within countries. Low-income countries have out-of-school rates that are consistently higher than lower-middle, upper-middle, and high-income countries (UNICEF, 2019; Wagner et al., 2018; World Bank, 2018). Within

countries, poor children are significantly more likely to be out of school than wealthy children, and poor girls in low-income countries are the least likely in the world to be accessing education (UNICEF, 2019; World Bank, 2018). The COVID-19 crisis has exacerbated these challenges as many systems moved to distance learning, but in LMICs only 20 percent of households have access to the internet and around half have access to radio or television (Carvalho & Hares, 2020). The related economic crisis is estimated to mean that an additional 90 to 117 million children will be living in poverty, and between 7 and 9.7 million will drop out of school (Save the Children, 2020).

Poverty also has a clear link with learning outcomes from the earliest ages. Multi-country studies identify poverty as a key driver of low cognitive development in 3–4 year old children living in low- and middle-income countries (LMICs) (Black et al., 2016; McCoy et al., 2016). Similarly, meta-analyses using data from the International Development and Early Learning Assessment (IDELA) find a significant positive relationship between family wealth and learning and development for children aged 3–6, with an effect size ranging from one to three months of development per additional household asset (Save the Children, 2018). Assessments of children's performance in primary school across various LMICs have also highlighted the strong link between children's socioeconomic status and their learning outcomes (Rose & Alcott, 2015; Wagner et al., 2018). Thus, whether among young children or those in primary school, poverty fundamentally challenges the equality of learning outcomes.

There are exceptions where students in poor countries have strong learning outcomes and poor children in other countries are closer to performing on par with their wealthier peers. In order to promote best practices in this area, it's important to understand how governments and policymakers are driving better educational equity for the children they serve, and whether and how corresponding progress is made at the bottom of the pyramid as well. Recent PISA results demonstrated that children's learning outcomes are resilient to poverty in many high-income countries, but this generally occurs in countries with stronger education systems overall (OECD, 2019). Lessons learned from countries with weaker systems and fewer resources who have taken on poverty in their education systems can inform many others who are still working toward this goal.

Case study: Ethiopia

Ethiopia has invested substantially in improving conditions for children in recent years, especially in the domains of health and education. Public services and policies supporting children, including health and nutrition services, child protection, and access to education have increased. The country's first National Children's Policy was approved in 2017 and provides a framework for implementing the Conventions on the Rights of the Child. Additional pro-poor policies and initiatives within the Ministry of Education's Sector Development Programs have targeted improving quality and equity of educational services for all children (Pankhurst et al., 2018; UNICEF, 2017).

Access to both pre-primary and primary enrollment in Ethiopia has been growing faster than many other African nations. However, the gaps in access and learning outcomes for the richest and poorest remain large. For example, the proportion of children out of school was cut by approximately half in a decade, but in 2016, 39 percent of the poorest had never been to school, compared to 7 percent of the richest (see Figure 2). Similarly, the proportion of children completing primary school in Ethiopia has grown substantially over a short period, but still only 25 percent of the poorest complete this level of education compared to 76 percent of the richest children.

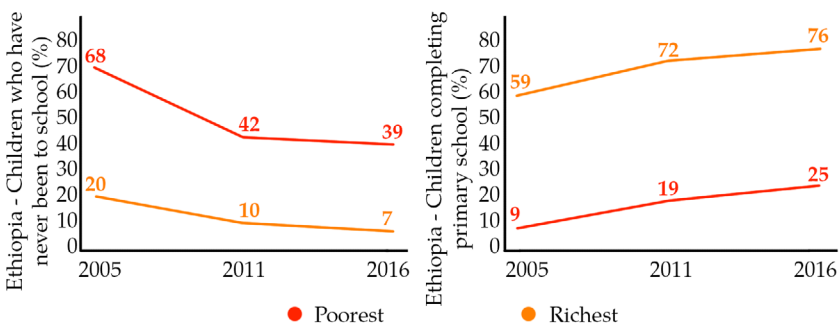


Fig. 2. Access and learning by wealth over time in Ethiopia. Source: Created by authors with data from the World Inequality Database on Education.

Multiple studies of early childhood education in Ethiopia have found that poorer children have weaker learning and development outcomes

than their wealthier peers (Dowd, Borisova, Amente, & Yenew, 2016; Save the Children, 2017). Further, longitudinal research from the Young Lives study demonstrates that learning gaps between wealthy and poor children that emerged during early childhood persisted over time and were associated with grade progression, primary school completion, and learning outcomes at the end of primary school. By the end of primary school, the Young Lives study found that most children were performing at two or three grade levels below curricular expectations. The widest gaps were observed between children in urban and rural communities in mathematics, and between poor and wealthy children in English (Pankhurst et al., 2018).

Multiple initiatives are underway in Ethiopia to improve children's learning from the early childhood period onward. Many of these initiatives involve leveraging families and communities to supplement school-based programs, or extend reach where schools are not effectively operating. One such program trained parents to deliver early literacy and mathematics content to preschool-aged children who did not have access to pre-primary classes (locally called O-Classes), and found that children whose parents participated in this home-based ECE program displayed learning gains comparable to those of children enrolled in government O-Classes (Borisova et al., 2017). Further, a study of the same program found that children who attended government O-Classes and whose parents attended the home-based training learned more over the course of a school year than children who attended O-Classes only, with those from the poorest families gaining more than their wealthier peers (Dowd et al., 2016).

The benefits of engaging parents and communities has been tested and found to be effective at the primary level as well. A study of literacy programs from multiple countries, including Ethiopia, found that children who participated in community reading activities (e.g., book borrowing, reading clubs, etc.) displayed stronger gains in reading comprehension than their classmates who did not participate in these activities (Dowd et al., 2017a). Additional research on this topic has demonstrated that programs which include community reading activities have larger impacts on children's higher-order literacy skill development (i.e., fluency and comprehension) than teacher training alone (Friedlander et al., 2019).

At least one-third of the youth in Ethiopia are out of school at the upper-primary and lower-secondary level, overwhelmingly those from poor families. Approximately 10 percent of these children dropped out of school, but an additional 25 percent never attended at all (Bashir et al., 2018). Effective coordination and appropriate funding for alternative education programs at scale is severely lacking. However, there is promising evidence from a number of small-scale programs which mix educational inputs with life-skill training and mentoring (Inoue et al., 2015). For example, the Youth-in-Action program implemented in Ethiopia and four other African countries found that youths could develop critical work readiness skills in a relatively short period of time, and that more active family involvement and support magnified the benefits of the program (D'Sa, 2018).

Ethiopia has been progressive in its social policies and has prioritized improving educational outcomes for children, but realizing education progress for all 58 million children, including those at the bottom of the pyramid, will continue to be a challenge. This is especially true given the humanitarian crises that have affected Ethiopia in recent years and will likely continue to impact schooling and learning for millions of children. Unfortunately, this reality is common in LMICs, and substantial progress for the poorest will require additional pro-poor targeting and innovation.

One innovation that is cost-effective and has proven to be impactful in East and Southern Africa, as well as other regions of the world, is to more strategically leverage children's time outside of school for learning (Dowd et al., 2017b). Globally we see that improvements in access to education tend to take the path of least resistance; they begin with the easiest to reach—wealthier, more urban communities—and progress to harder-to-reach communities (Wagner, 2018). If we sit back and wait for schooling to come to everyone, we will waste decades of learning for children at the bottom of the pyramid. Indeed, if school disruptions due to the pandemic endure, more and more children will be without access than there were even just a decade ago. Families and communities can be mobilized now to improve learning outcomes for children at all levels of education. COVID-19 has left families hungry for resources to enable their participation in ensuring learning continuity. Greater involvement of parents and communities can also help to improve demand and

accountability from policymakers for poor quality education (Rose & Alcott, 2015).

In addition, we know that time spent while children are in school is not optimal and there is much work to be done to improve the quality of education everywhere, but especially for the poorest. Ministries of Education must become more innovative in their pro-poor targeting of quality improvement initiatives (Wagner et al., 2018). A recent study from Malawi showed that supplementing administrative records on teacher placement with geo-spatial data created a more objective database of school remoteness on which to build policies for more equitable deployment of teachers and incentives (Asim et al., 2019). Having objective data driving policy improves enforcement and accountability, and preliminary results from Malawi demonstrate promising improvements in regulation of teacher placement and class size in poor communities. While there are many challenges, new ideas and creative innovations to test abound.

Gender disparities at the bottom of the pyramid

Gender parity in educational outcomes has been a top global policy priority for decades, but disadvantages for girls persist. The Millennium Development Goals set the target that: “By 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling”. Progress toward gender parity was made and the most recent global statistics suggest that today there is relative gender parity in enrollment from pre-primary through secondary education (UNESCO, 2015b; UNICEF, 2019; World Bank, 2018). However, gender disparities in completion and learning still exist, especially for the poorest, and gains in equity are stalling or even regressing in some places (Psaki et al., 2018; World Bank, 2018).

Gender disparities in enrollment and learning outcomes worsen as girls progress through education systems. Few gender differences in these categories have been identified at the pre-primary level, and it's more common for learning outcomes to favor girls where there are differences (Save the Children, 2018; UNICEF, 2019). Results from large-scale learning assessments at the primary and secondary level display some trends of girls outperforming boys in reading and boys outperforming

girls in mathematics, but overall do not display a consistent advantage for girls or boys. However, data from household surveys find that 15–19 year old girls who have completed primary education are more likely to lack basic literacy skills than boys with the same level of education (Psaki et al., 2018). One reason that girls at older ages experience lower learning outcomes is their absence from school due to menstruation and gender-based violence. Girls in LMICs often face a lack of appropriate sanitation resources to effectively manage menstruation while at school, and this can lead to increased absenteeism and disengagement (Mason et al., 2013; Miirio et al., 2018; Sommer et al., 2016). In addition, as girls age, instances of gender-based violence, early marriage, and pregnancy increase and negatively affect enrollment, attendance, and learning (Ellsberg et al., 2014; Erulkar & Muthengi, 2009; Nanda et al., 2014).

In locations where societal norms perpetuate large gender disparities in enrollment and learning, disadvantages for girls are persisting or even widening (Psaki et al., 2018). Estimates of the impact of the COVID-19 pandemic for girls include an increase in early marriage for around four million girls (World Economic Forum, 2020) and secondary school dropout for 20 million young women (MalalaFund, 2020). One example of a country that has made strides, but also continues to struggle with gender equality in education is Afghanistan.

Case study: Afghanistan

In 1999, Afghanistan was the lowest-ranking country in terms of gross enrollment rates for girls, with less than four percent of girls enrolled in school (UNESCO, 2015a). After the fall of the Taliban in 2001, reconstruction of the education system became a priority for the country as well as international donors, and Afghanistan ratified policies that support universal enrollment for boys and girls through Grade 9 (Human Rights Watch, 2017; Jones, 2008). Large investments were made in improving access and quality of education programs for all children, especially girls. Statistics about the gains in primary school enrollment and completion for girls are disputed, but UNESCO reported that the country succeeded in enrolling 72 girls for every 100 boys by 2015 (UNESCO, 2015b). However, as in other contexts, large disparities

exist within the country, and poor girls living in rural areas are the least likely to access education.

Educational inequality in Afghanistan is driven by issues at the policy, school, and community levels. At the policy level, the Ministry of Education has endorsed plans supporting girls' education, but lacks the authority and resources to enforce these policies. At the school and community levels, school locations and a lack of female teachers prevent families from sending their girls to school. Most of Afghanistan is rural farmland, and children tend to live long distances from the nearest school. Families typically feel less comfortable allowing their girls to travel long distances to attend school compared to their boys. In addition, there are substantially fewer female teachers than male teachers, and families often feel uncomfortable having their daughters in close contact with unfamiliar men. At the community level, deeply held cultural beliefs and traditions that place little value on education for girls prevent families from demanding better educational conditions for their daughters.

One of the main strategies adopted by the government for improving the enrollment for all children, but especially girls, has been to build more schools. Administrative data from the Ministry of Education showed that many children lived five kilometers or further from the nearest primary school and that these schools typically did not have appropriate facilities for girls or female teachers. As a result, substantial efforts were made to improve infrastructure (i.e., build more schools in rural areas and improve facilities for women and girls) (Human Rights Watch, 2017; Jones, 2008). A randomized trial that studied the effectiveness of this strategy found that building a school in a rural village did significantly improve enrollment and learning outcomes for all children, and that the effects were even larger for girls (Burde & Linden, 2013).

Another strategy leveraged by non-governmental organizations and endorsed by the government has been to increase provision of home- or community-based education. A study of the perception of these programs by local stakeholders found that they are culturally acceptable and valued alternatives to government-based schools (Kirk & Winthrop, 2008). Community-based schools represent the only possibility for education for many girls in Afghanistan, and also provide additional

opportunities for adult women to hold respected roles as teachers in their communities. However, without integration and oversight by the Afghan Ministry of Education, these programs lack alignment with government curricula, key resources, and quality oversight.

The condition of girls' education in Afghanistan is one of the most extreme in the world, and the recent change in government as of August 2021 may well make matters significantly worse. However, aspects of the dynamics found here are present in many other contexts. Globally, we find that persistent gender discrimination in education is not driven by national policies, but rather by school resource limitations and strongly held cultural beliefs. There are countries within which boys are now at an educational disadvantage, but research finds that this tends to occur in higher-functioning systems (i.e., higher income), whereas girls tend to be at a disadvantage in lower-functioning systems (lower income) (Psaki et al., 2017). Therefore, when considering how to progress toward improving education for those at the bottom of the pyramid, improving the quality of education systems in LMICs and effectively engaging communities are the most relevant ways forward for improving education for the most disadvantaged girls.

Similar to the results of the Burde and Linden (2013) study in Afghanistan, recent global research also finds that the most effective programs for improving girls' access to education focus on providing schools that are closer to girls' homes and decreasing the cost of schooling (Evans et al., 2019). Families place a lower value on education for girls, especially in patriarchal societies (Kaul, 2018), even though the private and social returns of education for girls are actually higher than for boys (Psacharopoulos & Patrinos, 2018). These types of interventions may be effective in areas where girls are struggling the most because they help to reduce the social and financial risks of sending girls to school.

In addition, alternative approaches—like community-based schools that employ local women as teachers—could help provide educational services in communities where weak government systems are not functioning. Solutions that work outside government systems are not ideal, but in the short- to medium-term they may represent the only realistic option for some children at the bottom of the pyramid. Finding effective alternative approaches will be especially critical in contexts of conflict and instability, where it is often unknown when state-supported

services will resume. Studying the effectiveness of alternative educational approaches, as well as designing processes for aligning them as much as possible with government standards, is important for maximizing the potential benefits of these initiatives (Meyers & Pinnock, 2017).

In terms of improving learning outcomes once girls are enrolled in school, different types of initiatives have been shown to be promising for different age groups. A recent meta-analysis of 177 studies of both general education interventions and targeted gender-based interventions found that general interventions which raise the quality of schooling for all children tended to have the largest impact on girls' learning outcomes in early primary grades (Evans et al., 2019). As girls progress through their schooling, improving infrastructure and sanitation has been found to improve engagement in learning (Mason et al., 2013; Miiro et al., 2018; Sommer et al., 2016). Finally, meaningful engagement with community members around the value of educating girls could help to improve families' willingness to invest in education for their girls, and to increase demand for these services.

Disability at the bottom of the pyramid

Children with disabilities—who have “long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others”—represent another group of learners at the bottom of the pyramid (UNCRPD, 2007). In the education sphere, they can face challenges both in accessing education and in being well-supported once they arrive. Very few children with disabilities across the globe access pre-primary education, and among primary- and lower-secondary-school-aged children, those with disabilities are estimated to be out of school at rates that are much higher than children without disabilities (Education Commission, 2016). Access gaps widen from Grade 1 onwards, and are often about twice as large as the gap associated with rural residence or high poverty (Filmer, 2008). Kuper et al. (2014) also show disabled children's lower probability of schooling among more than 900,000 children across 30 countries, and find them more likely to pursue pre-primary and primary than secondary education. Further, those with learning and communication impairments were

least likely to attend school compared to children with other types of disabilities (e.g., physical, vision, hearing); see also Mugo et al. (this volume) on education and disabilities in Kenya.

Once in school, children with disabilities may face apathy, uncertainty, and exclusion, leading to lower rates of completion and gaps in learning outcomes that widen over time (World Bank, 2019). As a result of the COVID-19 crisis, they are now even less likely to be in school or to gain foundational skills, and their parents may have heightened concerns about their return to school (World Bank, 2020). As discussed in the section above, (where raising overall educational quality is found to be key to raising girls' learning outcomes), it is important to consider the overall quality of the education systems that children with disabilities have access to (Singal, 2019a). Overcrowded classrooms, insufficient materials and teacher support, limited parental support, and no or low levels of local evidence are global challenges that affect all students' learning, and need to be considered systemically alongside more disability-specific issues like assistive technologies and teacher attitudes. On this last point, a review of studies from a variety of countries on primary school teachers' attitudes towards the inclusion of children with disabilities in regular classroom settings shows teachers are primarily neutral or negative, depending on their training and experience with such students (De Boer, Pijl, & Minnaert, 2011). Thus, improving educational quality for all children and engaging with attitudes—whether of parents, teachers, or both—can help address the challenges of disabled learners at the bottom of the pyramid.

Case study: India

In India, a supportive, inclusive policy environment places the education of children with disabilities as a central concern of its *Sarva Shiksha Abhiyan* (SSA) program, ensuring educational access and quality for children aged 6–14 years old. The program, however, faces challenges with both implementation and enforcement, resulting in children with disabilities being out of school at a rate five and a half times the general rate. When children do enroll, they are more often boys who rarely progress beyond primary schooling (Singal, 2009; UNESCO, 2019). These challenges have resulted in the pursuit of inclusive education via both mainstream

schooling (overseen by the Ministry of Human Resource Development) as well as special schools (overseen by the Ministry of Social Justice and Empowerment, often implemented by NGOs). These two ministries and many additional partners have overlapping goals and age groups for which each state determines how to invest (UNESCO, 2019), which leads to implementation challenges. For example, a 2007 World Bank report noted that, while the policy provides support for aids and appliances, in practice people with disabilities rarely knew about it, or else paid to get it—transferring a right into a privilege. Though more recent evidence shows low-income parents accessing these resources and improved attendance, it remains difficult to meet basic needs and ensure that teachers have the capacity to support all children’s learning (Singal, 2016).

Teacher training under SSA is primarily in-service and focused on identification of children with disabilities and management (as opposed to pedagogy); support for adapting teaching and learning materials is scarce (Singal, 2009). There are also gaps in teacher attitudes, as well as curriculum and pedagogy to support their learning effectively. For example, a positive attitude towards inclusion has been documented to have the strongest links to prior acquaintance with a person with a disability (Parasuram, 2006). Thus, the system has supportive policies, but personal relationships seem to frame acceptance in the classroom.

India’s public early childhood system, the Integrated Child Development Services (ICDS), and privately managed preschools alike have very limited numbers of children with disabilities (Kaul et al., 2017). This has been longstanding: only 10 percent of people with disabilities between the ages of 3 and 35 have attended a preschool program (Government of India Ministry of Statistics and Programme Implementation, 2019) and 75 percent of five-year-olds with disabilities do not attend any educational institution (UNESCO, 2019). The presence of children with disabilities in preschool is more common in urban than rural areas, highlighting the intersectional nature of this access. In addition, ICDS teachers are not trained in how to work with children with disabilities (Alur, 2002).

Early detection of delays is important to enable timely intervention, but these practices are limited by infrastructure as well as capacity in the ICDS centers (UNESCO, 2019). Tackling this challenge head on is

the Samarpan Early Intervention Center model of Madhya Pradesh, established in 2010, that aims to identify, screen, treat, and rehabilitate children with developmental delays or physical disabilities (National Institute for Transforming India Aayog & UNDP, 2015). Focused on early identification and action, it addresses social, visual, speech, hearing, mental, and physical development under one roof, aiming to remove or reduce detected delays. This program became a model for national roll-out in 2013. Since then, it has evolved to have district coordinators, distribute teaching and learning kits, experiment with mini-centers to expand access, and build hostels to facilitate short-term residential family training. It also addresses attitudinal barriers by using street theater, wall paintings, pamphlets, and advertisements to raise awareness about disability, remove feelings of embarrassment, and build sensitivity and acceptance in hopes that people will shed their inhibitions and seek support for their children (National Institute for Transforming India Aayog & UNDP, 2015). Thus, even responses built upon the developmental priorities of identification and intervention should integrate actions aimed at changing attitudes towards children with disabilities.

In the schooling system, even though the first years of the century saw an increase in the enrollment of children with disabilities (Singal, Jeffery, Jain, & Sood, 2011), one-fourth of Indian children with disabilities aged 5 to 19 do not attend any educational institution (UNESCO, 2019), with barriers including accessibility, curriculum, and pedagogy, as well as parent and teacher attitudes. The challenges of teacher attitudes range from lack of training, confidence, resources, and administrative support, to fears about whole-class impact, as well as limited prior contact with children with disabilities. Importantly, research in diverse country contexts has shown that such attitudes and fears can be shifted via week-long pre-service training, especially for those who do not have the advantage of knowing a person with a disability (see, for example, Sharma & Nuttal, 2016). Further, parents of children with disabilities from all socioeconomic strata are increasingly supportive—in attitude and action—of their children’s education, but their engagement is not particularly well-organized (Singal, 2016; Singal & Jain, 2012). Thus, models and actors exist for concretely moving forward and implementing the supportive policy

that exists in India, but thus far success has varied state-by-state alongside variation in investment (see Figure 3).

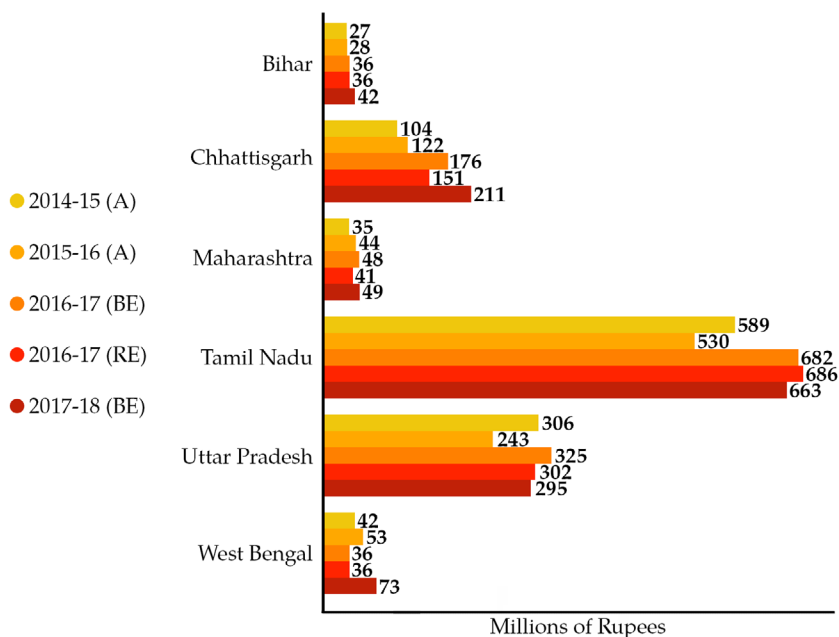


Fig. 3. Budgetary interventions for primary and secondary school education for children with disabilities—selected states (millions of Rupees).

Figure 3 suggests that a disabled child among Tamil Nadu's 68 million residents is likely to enjoy greater investment than one among Uttar Pradesh's 204 million, where investment in children with disabilities was less than one percent of the SSA budget (UNESCO, 2019). Investment in professional and attitudinal development has not yet occurred, leaving many teachers feeling unable to respond to the needs of children with disabilities. This deficit leads to low classroom engagement, low levels of learning, and dismal transition rates into upper primary and beyond (Singal, 2019b). Indeed, only one in five Indians with a disability aged 15 or older has attended secondary school or higher education; only one in four is in the labor force (Government of India Ministry of Statistics and Programme Implementation, 2019). Research carried out in Madhya Pradesh contrasts such frustrating employment outcomes with disabled young people's own sense of the value of schooling. The youth see their

education as having enhanced their social skills and networks, especially in terms of confronting stigmatization, while their parents were more likely to label schooling a failure because it did not lead to a job (Singal et al., 2011). Either way, the main challenge of *how* to deliver on India's long-standing vision of inclusive education remains.

Whether in the ICDS or in the classrooms of primary or secondary schools, children with disabilities in India are increasingly included, but often still marginalized (Singal, 2019a). SSA supports their presence but lacks pervasive early intervention options, clear teacher training and support mechanisms, and consistent and adequate budgetary allocations to make the vision a reality. Still, children with disabilities gain skills and networks—the more education they have, the greater these are—especially boys; however, these investments inconsistently lead to employment or independence, leaving the children, families, and teachers alike frustrated. The policy-practice connection for disabled children at the bottom of the pyramid is under-funded and under-implemented to date, but possibilities for leveraging greater learning exist to be tested.

Language of instruction at the bottom of the pyramid

Many nations' education policy statements uphold a child's right to learn in the language that they speak at home. In classrooms across the globe, however, the reality is that the language of instruction is very often determined by the priorities of head teachers, teachers, and parents. These local decision-makers determine whether the classrooms in their communities feature a foreign language or local language(s) (Trudell, 2007). In many settings, local attitudes and priorities tend to favor international languages, given their believed economic value and prestige. Whether it's French in Mali or English in Vietnam, education occurs in international languages officially as early as the first few grades of primary school, and in practice often from the start, leaving children who do not speak them at the bottom of the pyramid.

The languages that children hear in the classroom often change across pre-primary, primary, and upper-primary/secondary schooling, such that children experience instruction in two, sometimes three, languages in different dosages and to different purposes across their

school careers. Even in pre-primary education where local languages are more commonly used, it is not an absolute (Bronteng, Berson, & Berson, 2019). These shifts and changes in focus and exposure make it unsurprising that overall learning is poor. The challenges of languages at the bottom of the pyramid are so long-standing that they affect both the teachers who learned the foreign language incompletely as they went through the system as well as their current students. Indeed, a recent survey across seven countries in Africa showed that only 11 percent of fourth-graders were able to read a paragraph in their national (international) language, and only one in 10 of their teachers had mastered their own students' language curriculum (Bold et al., 2017).

Case study: Kenya

Kenyan language policy states that the medium of instruction in pre-primary education is the language of the catchment area. It also states that literacy is taught in the lower primary grades in the first language of the learner, with English and Kiswahili (where it is not the language of the catchment area) taught as subjects, and English is the medium of instruction beginning in Grade 4 (Kenya Institute of Curriculum Development, 2019). However, implementation can be quite different from policy. The majority of 72 pre-primary and primary teachers from across the Kisii, Kericho, and Bondo counties interviewed by Begi (2014) report leading their classes in English, a situation that Begi links to key inputs like training (one-quarter of teachers are trained in how to use their mother-tongue in the classroom), materials (one-third have culturally relevant materials), and official support (only 55 percent of pre-primary teachers, and less than 40 percent of primary teachers, feel supported in using their mother-tongue). This situation is made worse by the fact that only 34 percent of Grade 4 language teachers have the minimum subject knowledge (Bold et al., 2017). Thus, without optimal support in local or national languages, only 26 percent of Kenyan fourth-graders can read a paragraph, and their average reading comprehension score is 40 percent correct (Bold et al., 2017). While students and teachers alike struggle, norms like the informal use of students' language to convey meaning being considered a sign of poor teaching (Trudell, 2004) can only make things worse.

Kenyan parents value education, but not all have the reading skills or the awareness of the importance of oral language for literacy development to contribute to foundational reading skills from a child's first years. For example, a study from Uwezo (2015) estimates that, on average, 45 percent of mothers of school-aged children cannot read English at a second-grade level, and that this proportion could be as high as 90 percent in the highly impoverished Northern Eastern Province. This leads to a situation in which young Kenyan children have little support from their closest caregivers in navigating shifts between languages in their early years of schooling.

Recent research findings present a viable option for addressing this challenge with young children. A cluster-randomized control trial demonstrated that a program that provided training and dialogic reading materials, with books featuring colorful pictures and familiar content related to children's daily lives (that had been adapted for a low-literacy population), boosted children's book-related vocabulary significantly, especially among children with illiterate caregivers (Knauer, Jakiela, Ozier, Aboud, & Fernald, 2019). Interestingly, additional input (i.e., refresher training or a home visit) did not further enhance these outcomes, suggesting that this could be a low-cost and scalable model to replicate in other contexts. While this intervention measures only one developmental aspect of being school-ready, reading and discussing books with parents or other caregivers has myriad benefits that contribute to holistic development (Mendelsohn et al., 2018).

At the primary level, Free Primary Education in Kenya still excludes the poorest families (Oketch & Ngware, 2010), and Kenyan policy delineates the use of mother-tongues for instruction in Grades 1–3, with both Kiswahili and English as subjects. In reality, however, English dominates instruction in these grades, leading to low levels of English-reading mechanics and little comprehension, and even in the face of more limited instruction, better comprehension in Kiswahili and mother-tongues (Trudell & Piper, 2014). At home, most parents do not have the skills to interpret their students' learning data (Lieberman, Posner, & Tsai, 2014)—lessening the level of home support for the transition to the next level of schooling. The result is a system in which young children are taught intensively in a language that the vast majority of them do not speak, so it is not that surprising that only three in 10 Grade

3 students can do Grade 2 schoolwork (Uwezo, 2016). These results are worse for poor children and children living in rural areas, many of whom use neither English nor Kiswahili in their daily lives outside of the classroom, as those in urban areas do (Piper & Miksic, 2011).

Even if teachers believe that students should be taught in their mother-tongues, they themselves may not speak the language of the area, which makes acting on that notion challenging, if not impossible. Further, a multilingual classroom negates the ability to choose one mother-tongue to speak, leading to a reliance on Kiswahili or English instead of local languages (Muthwii, 2004). Responses to these issues that test language policy options, like the two versions of the Primary Math and Reading Initiative (PRIMR) (one of which tested use of English and Kiswahili, and another the use of those languages as well as mother-tongues) show that mother-tongue instruction leads to the acquisition of higher-order reading skills like fluency and comprehension (Piper, Zuilkowski, & Ong'ele, 2016). Scaling this solution would require the political will and resourcing to tackle the challenges of teacher-student language matches and multilingualism, noted above. Teacher training and allocation based on language ability along with shifts in political will and resourcing would help ensure that the four proven PRIMR intervention components (teacher training and guides, student books, and instructional coaching) deliver on high-quality language policy implementation.

From Grade 4 onwards, when the medium of instruction in Kenya officially shifts to English, the nature of the language challenge becomes intergenerational—not only within families but also across generations of teachers and learners in the schools. The access issue has mostly resolved itself via the attrition of students who cannot speak enough English to continue. Challenges are heightened because “the language teacher is a non-native speaker who has been taught and trained by non-native users of English mak[ing] the task of teaching ... a very difficult one; indeed a nightmare” (Kioko & Muthwii, 2001, p. 206). Kembo-Sure and Ogechi (2016) document the difficulties that teachers of science and mathematics have when they themselves face challenges in both English proficiency and in the mastery of the math and science concepts that they are teaching. The resulting classroom interactions do not effectively facilitate learning. Thus, solutions must combine elements of student

and teacher support in order to result in better instruction and outcomes. One such opportunity consists of using an assessment of Mathematical Knowledge for Teaching (Miheso-O'Connor Khakasa & Berger, 2016) to discover teachers' strengths and weaknesses in teaching the Kenyan secondary math curriculum, and using this proactively to overcome identified challenges. Curiously, the framework does not consider English language proficiency but could be strengthened—and provide more holistic solutions for teachers and their students—by doing so.

Where a mismatch between language policy and language use in schools in Kenya exists, children, especially those at the bottom of the pyramid, struggle to learn. Parents are unable to support their children's learning and teachers may not have mastered the content when learning in a second or third language themselves. Further, due to limitations in access to English speakers as well as practice opportunities, many teachers may not have mastered enough English to effectively support learning. These challenges multiply across generations of teachers and students, and across levels of education.

Unfortunately, as evidenced by the cross-country studies noted above, this situation is not unique to Kenya. Any solution must address all parties. The solutions reviewed above—from dialogic reading between parents and children at the pre-primary level, to well-supported mother-tongue implementation in Primary Grades 1–3 and the possibility of targeted professional development in upper-primary and secondary schooling—offer several promising options for addressing these challenges (Knauer et al., 2019; Miheso-O'Connor Khakasa & Berger, 2016; Piper, Zuilkowski, & Ong'ele, 2016). If such efforts at all levels of education target those struggling most, they could progressively contribute to improving learning for those at the bottom of the pyramid.

Conclusion

Children at the bottom of the pyramid are often dealing with more than one dimension of disadvantage. With global GDP expected to contract by 4.9 percent as a result of COVID-19, international, national, and household spending on education will likely decline as well—disproportionately affecting the most marginalized learners (IMF, 2020). In order to make meaningful progress toward the UN goals set for 2030,

we must take larger, more innovative steps forward. Education systems need to recognize the diversity in their student populations, prioritize early investment and enrollment for the most marginalized, and take more meaningful steps toward implementing proven policies that can improve access and learning for all. Strategies that show promise include more fully leveraging the resources that currently exist in disadvantaged communities, investing in teachers, using administrative data more strategically, and developing more targeted policies for children at the bottom of the pyramid.

Stronger engagement of parents and communities can ease some of the disconnections between policy and practice, and improve educational outcomes for the most disadvantaged children. Empowering families around their children's education will help increase demand for higher quality services and hold policymakers accountable for these disconnections (Rose & Alcott, 2015). Strengthening the connection between schools and families can also help school administrators and teachers better understand the needs and demands of the communities they serve, and can help parents better understand educators' practices to promote learning. Conversely, failing to meaningfully engage families in their children's education can inhibit the results of effective classroom reforms. For example, a randomized control trial of a new teacher-training program for pre-primary students in Ghana with three study arms (control, teacher training only, and teacher training with parental awareness) found that adding parental awareness meetings counteracted the positive effects of the program that were found in the study arm that involved teacher training only. That is, study results showed significant positive effects on learning in the teacher-training study arm, and no effects in the study arm with teacher training and parental awareness sessions. Interviews with parents revealed that many parents disagreed with the emphasis the program had placed on child-centered, play-based pedagogy and felt strongly that pre-primary classes should focus on academics and discipline (Wolf et al., 2019).

Research from all levels of education finds that effective engagement of parents and communities can substantially enhance the learning that takes place in classrooms (Friedlander et al., 2019; D'Sa, 2018; Dowd, Borisova, Amente, & Yenew, 2016; Dowd et al., 2017b; Özler et al., 2016). In addition, in situations where children are out of school, especially

in the early childhood period, parents and communities can fill an important gap in early learning support for the most disadvantaged children (Borisova, Pisani, Dowd, & Lin, 2017). This reality has been heightened by COVID-19 as children of all ages were learning from home. Many interventions and systems across the globe made a shift to some form of distance learning, placing parents in an even more central role in their children's education. Emerging evidence collected during COVID-19 lockdowns also suggests that supporting parents' mental health and wellbeing is critical for supporting children's wellbeing and learning during times when they have less access to the supports typically provided by schools and other institutions (Center for Translational Neuroscience, 2020; Yoshikawa et al., 2020). Building stronger synergies with families leverages a critical cadre of resources that already exist in communities around the world.

Children at the bottom of the pyramid are often those who enter classrooms with different or additional needs, and teachers must be better equipped to reach the wide range of children they serve. For example, any child is likely to struggle with mastering the language of instruction if their teacher does not fully grasp that curriculum, but those who do not speak this language outside of school or those with learning delays or disabilities are differentially affected. At a minimum, these children need teachers who have mastered the curriculum, and ideally their teachers should be equipped with additional strategies and resources to support their unique learning needs. Systematically improving pre-service and in-service support for teachers is critical for improving learning outcomes for all children, but especially the most disadvantaged.

A promising technique for driving large-scale improvement for children at the bottom of the pyramid is better use of administrative data. Each year, more and more data are generated about children's access and learning outcomes, but little of it is transformed into useful information for governments. For example, the approach of using existing administrative records and geo-spatial data to inform allocation of teachers in poor communities in Malawi is a helpful example of how data can be leveraged to hold policymakers accountable and improve learning conditions for children at the bottom of the pyramid (Asim, Chimombo, Chugunov, & Gera, 2019). Data must also be leveraged

to understand which solutions work, for whom, and under which conditions. The profile of the most disadvantaged children differs depending on the context, as do the primary drivers of their educational outcomes. In order to accelerate and improve efficiency in investments for children at the bottom of the pyramid, we must be continuously testing and learning about not only whether new solutions work, but also how and why.

Policies that target the most disadvantaged children in their particular contexts, and recognize that these children require more than the status quo, will be critical for improving learning outcomes for all. Policy and investment need to progress beyond a “one size fits all” approach, and recognize that producing equitable learning outcomes for all children requires different levels of inputs for different groups. This is essential, as forecasts suggest that a reduction in national education budgets of \$22 billion in 2020 could grow to \$55 billion in 2021 (Save the Children, 2020). Humanitarian contexts are especially challenging and ongoing investment is needed to reach the estimated 104 million out-of-school children living in areas affected by violent conflicts and political instability pre-COVID, as well as those who have joined their ranks in 2020 (UNICEF, 2018).

Children who are typically marginalized—girls, the poorest, those with disabilities, and those from different language or ethnic groups—and fare even worse in these contexts. To date, governments in LMICs, as well as international donors, have been prioritizing the “reach” of an investment over the depth or the profile of the children being served. This has driven the large improvements in coverage that have been achieved since the 2015 UN Millennium Development Goals, but now we need to shift the conversation from quantity to quality.

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