THE WORLD BANK

ENDING LEARNING POVERTY:

What will it take?

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Contents

Acknowledgments

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Introduction

All children should be able to read by age 10. Reading is a gateway for learning as the child progresses through school—and conversely, an inability to read slams that gate shut. Beyond this, when children cannot read, it's usually a clear indication that school systems aren't well enough organized to help children learn in other areas such as math, science, and the humanities either. And although it is possible to learn later in life with enough effort, children who don't read by age 10—or at the latest, by the end of primary school—usually fail to master reading later in their schooling career.

In recent years, it has become clear that many children around the world are not learning to read proficiently. Even though the majority of children are in school, a large proportion are not acquiring fundamental skills. Moreover, 260 million children are not even in school. This is the leading edge of a learning crisis that threatens countries' efforts to build human capital and achievement of the Sustainable Development Goals (SDGs).[1] Without foundational learning, students often fail to thrive later in school or when they join the workforce.They don't acquire the human capital they need to power their careers and economies once they leave school, or the skills that will help them become engaged citizens and nurture healthy, prosperous families.

As a major contributor to human capital deficits, the learning crisis undermines sustainable growth and poverty reduction. The Human Capital Project is raising awareness of the costs of inaction. The average Human Capital Index (HCI) score across countries is 0.56; this means that by the age of 18, a child born today will be only 56 percent as productive as a child would be under the benchmark of a complete education and full health.[2] Shortcomings in the quality and quantity of schooling, which have been summarized as a learning crisis, are a leading contributor to this human capital deficit. Poor education outcomes have major costs for future prosperity, given that human capital is the most important component of wealth globally. Indeed, its importance grows as countries become more prosperous: in high-income Organisation for Economic Co-operation and Development (OECD) countries, human capital makes up over 60% of wealth.[3]

To spotlight this crisis, we are introducing the concept of Learning Poverty, drawing on new data developed in coordination with the UNESCO Institute for Statistics. Learning poverty means being unable to read and understand a simple text by age 10. This indicator brings together schooling and learning indicators: it begins with the share of children who haven't achieved minimum reading proficiency (as measured in schools) and is adjusted by the proportion of children who are out of school (and are assumed not able to read proficiently).

The new data show that 53% of all children in low- and middle-income countries suffer from learning poverty.[4] Progress in reducing learning poverty is far too slow to meet the SDG aspirations: at the current rate of improvement, in 2030 about 43% of children will still be learning-poor. Even if countries reduce their learning poverty at the fastest rates we have seen so far in this century, the goal of ending it will not be attained by 2030.

There is an urgent need for a society-wide commitment to invest more and better in people. If children cannot read, it is clear that all education SDGs are at risk. Eliminating learning poverty is as important as eliminating extreme monetary poverty, stunting, or hunger. To achieve it in the foreseeable future requires far more rapid progress at scale than we have yet seen.

To galvanize this progress and strengthen its own efforts, the World Bank is:

1. **Launching a new operational global learning target to cut the Learning Poverty rate by at least half before 2030**
   - Simulations show that this target is ambitious yet achievable if all countries manage to improve learning as well as the top performers of the 2000–15 period did—which means on average nearly tripling the global rate of progress.

2. **Using three key pillars of work to support countries to improve the human capital outcomes of their people**
   - A **literacy policy package** consisting of interventions focused specifically on promoting acquisition of reading proficiency in primary school
   - A **refreshed education approach** to strengthen entire education systems—so that literacy improvements can be sustained and scaled up and all other education outcomes can be achieved
   - An **ambitious measurement and research agenda**—covering measurement of both learning outcomes and their drivers and continued action-oriented research and innovation on how to build foundational skills.

Change is needed at scale, quickly, and for large populations. That cannot be done without technology. Open-source digital infrastructure and information systems will be used to ensure that resources reach all teachers, students and schools.

Education initiatives alone are not enough. The fight against learning poverty will require an integrated, multi-sectoral approach supported by actions beyond the education sector—that is, in all the other areas essential to improve learning. For example, ensuring that all children can learn requires better water and sanitation, improved health and nutrition, better social protection for disadvantaged populations, civil service reforms, and strengthened management and financing of public services. All of this requires a whole-of-government approach to better learning outcomes. Beyond this, renewed attention is needed to the role that families and communities play in building the demand for education, creating the right environment for learning, and supporting the right education reforms. The Human Capital Project recognizes this need to work across sectors to bring together all the actions required to improve human capital.

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The challenge: End learning poverty

Education is foundational for countries' growth, productivity, and development; for individual and family incomes and welfare; for improved health outcomes (including reduction in fertility); for active participation in civics and political life; for social cohesion; and for active participation of individuals and societies in the global economy. And in turn, literacy and other basic skills are foundational for all other education outcomes. The new Learning Poverty measure is aimed at spotlighting deficits in literacy and spurring action to ensure that all children can acquire literacy and other foundational skills. Education is a basic human right, and it is also central to unlocking human capabilities—so it is essential to ensure that the right to education is fulfilled in a meaningful way for all children.

The vision: Learning for all children and youth

Widespread, high-quality education is now seen everywhere as the foundation for development, growth, and poverty reduction. The Sustainable Development Goals embody very high aspirations for education. SDG 4 makes the following commitment: by 2030, the signatories will "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all." The very first of the commitments under SDG 4 is Target 4.1, which is to "ensure that all girls and boys complete free, equitable, and quality primary and secondary education leading to relevant and effective learning outcomes." In other words, the world has committed to achieving universal completion of secondary school for all youth—and with meaningful learning—by 2030. The Human Capital Index of the World Bank also highlights the importance of improving broad-based acquisition of skills for all children by the age of 18 as a foundation for subsequent productivity and growth.[5]

This emphasis on education for all children and youth is well placed. Education is a right and it has great inherent value, as well as being a key driver of development, growth, and competitiveness. Our vision at the World Bank is therefore a world in which, through education, all countries prepare their children and youth to succeed as citizens in a rapidly changing and uncertain world. This requires that they:

- **Invest in their people;**
- **Take action showing that learning really matters to them; and**
- **Commit not only the financial resources, but also the political and managerial resources necessary to build an education system that serves all.**

Providing education that prepares today's children for the future is not a static task. The world is changing at a rapid pace, as global trends such as disruptive technology, climate change, and rapidly evolving demographics continuously redefine the skills that learners need to develop today so they will be productive workers and engaged citizens tomorrow. Yet some things do not change: to be ready for this challenge, all children need to acquire foundational skills in literacy, numeracy, and basic reasoning, as well as important socio-emotional skills like conscientiousness and perseverance. These skills are the basis for learning how to learn, and for making the vision a reality.

The magnitude of the problem—and the crisis at the foundations

The core obstacle to fulfilling this vision is that, despite all the advances in schooling in recent decades, young adults are leaving school with too little learning and too few of the skills that make them employable, productive citizens. This problem has many dimensions, but the crisis starts at the foundational years of the education system:

- **We are experiencing a global learning crisis.**[6] In low- and middle-income countries, various metrics show that roughly half of students are going through school without acquiring the foundational skills they need. The lack of focus on assuring literacy and numeracy in many countries implies that millions of children leave school without these most basic cognitive skills.
- **The rate of improvement in learning is too slow.** At the current rate of improvement, it will be impossible to reach even a target of universal basic literacy and numeracy by 2030—let alone the higher-order skills that countries aspire to for their children and youth.
- **The learning crisis comes on top of continued gaps in enrollment.** Enrollment in early childhood education is low, and primary completion is not yet universal. In secondary education, dropout rates are still very high, particularly in low-income countries and among girls in some countries—sometimes because students do not find value in school, and sometimes because of the financial, social, or cultural barriers they face. In many low-income countries, demographic pressures are magnifying the challenge of keeping school enrollment up.

The lack of learning reduces the quality of the labor force in many countries, directly translating into a shortage of skills. A major component of the Human Capital Index is the learning-adjusted years of school (LAYS), which combines quantity and quality in a single measure that captures the education a child born today can expect to receive by age 18.[7] In many countries, that child will receive less than six learning-adjusted years of school. As noted above, the LAYS measure accounts for a major share of the gap between the typical country and the high-human-capital frontier in the HCI. In every region except Sub-Saharan Africa, the quality of education contributes more than quantity at this point; even in Africa, quality and quantity gaps contribute in equal parts.[8] Improving learning outcomes is thus crucial for increasing human capital and productivity. Building these countries' human capital requires that their children ac-

quire meaningful skills that will help them stay in school longer and become productive citizens and lifelong learners. Without that foundation, many people are leaving schools or tertiary institutions without essential cognitive, socio-emotional, digital, and technical skills. This leaves them unprepared for an uncertain world in which the nature of jobs is changing rapidly and adaptability is at a premium.

The Sustainable Development Goals—and specifically Goal 4—show that the international community now recognizes these problems. The new focus on learning embodied in the SDGs is a significant advance over the Millennium Development Goals, which promoted increases in access but not improved learning.

But nearly five years into the SDG era, it is time to take stock and make course corrections. Given the depth of the learning crisis, there are reasons to question whether the current targets under SDG 4 are feasible, or whether new intermediate targets are needed to spur concrete, focused action. To do this, we need to understand why this matters, how far we've come, where we're going, and how we can do better. When targets are too easy, they do not provide a real incentive for action; however, when targets are impossible to achieve, they will disappear from policy attention. Targets should be ambitious and should put pressure on all actors of the system, but they have to be—with a lot of effort—feasible.

The importance of foundational skills

There is a mountain of evidence on the benefits of education. For individuals and families, education leads to higher productivity and earnings, poverty reduction, higher rates of employment, better health outcomes, and greater civic engagement. For societies, education contributes to faster innovation and growth, better-functioning institutions, greater intergenerational social mobility, higher levels of social trust, and a lower likelihood of conflict.[9]

We now are aware that foundational skills such as basic literacy and numeracy are important drivers of these benefits. Common sense tells us that many of these benefits of education stem not from the number of years a student spends sitting in the classroom, but from the learning or skills that a student acquires.[10] And increasingly, research is substantiating this intuition. The level of skills in a society predicts economic growth better than the level of schooling does.[11] Learning contributes to intergenerational social mobility in a society too: children in communities with better schools have higher earnings as adults, and higher rates of learning appear to be one of the reasons.[12] For individuals, simple measures of foundational skills help explain earnings even after controlling for the workers' years of schooling, in both OECD and emerging economies.[13] In low- and middle-income countries, better reading ability predicts improved financial behaviors, whereas schooling does not.[14] Across 48 developing countries, the association between female primary schooling and reduced child mortality is two-thirds higher when schooling leads to more learning.[15]

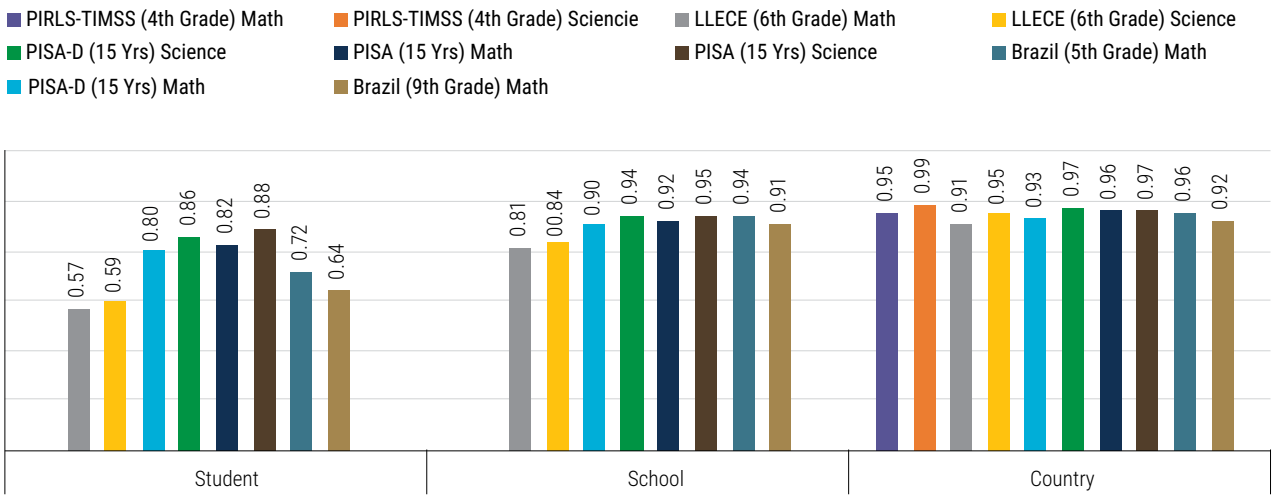
Contrary to what is often assumed, rapid change in technology or society is likely to make foundational skills even more important. If schooling has trained an individual to do only one specific type of task—even one that seems like a technically advanced task—when automation or globalization makes that task obsolete, that individual can become unemployed or suffer a sharp drop in earnings. By contrast, someone who has mastered foundational literacy, numeracy, and reasoning ability will be more able to adapt and learn new skills. Socio-emotional skills like resilience and optimism also matter for adaptability, but overall, workers need cognitive skills.

Reading—A key foundational skill and a gateway to learning

All foundational skills are important—so why focus on reading? Even the most basic definition of foundational skills encompasses far more than reading: it also includes numeracy, basic reasoning ability, and foundational socio-emotional skills, among others. But there are several reasons why we have chosen to focus the Learning Poverty metric and learning target specifically on reading.

- **Reading proficiency is an easily understood metric of learning.** In literate societies around the world, reading has for centuries been at the core of formal education. Parents and other stakeholders everywhere share an understanding that a school's first task is to ensure that children can read proficiently.
- **Reading is a student's gateway to learning in every other area.** When a child becomes proficient in reading, that unlocks the door to the vast knowledge codified in texts of all types. Whether the child takes advantage of that ability will depend on many factors, including the quality of the school system in later grades, but failure to acquire reading proficiency would clearly hinder the ability to learn throughout that individual's social and working life.
- **Reading proficiency can serve as a proxy for foundational learning in other subjects, in the same way that the absence of child stunting is a marker**

Figure 1: Correlation of reading scores with math and science scores by assessment and level of aggregation



Source: Azevedo and others (2019).
Note: For Latin American Laboratory for Assessment of the Quality of Education (LLECE), Program for International Student Assessment (PISA), and PISA for Development (PISA-D), the figure shows the correlation between reading and math/science scores within the given assessment. Correlations between scores on Progress in International Reading Literacy Study (PIRLS) literacy and Trends in International Mathematics and Science Study (TIMSS) math/science assessments are at the country level.

of healthy early childhood development. Systems that ensure that all children can read are likely to succeed in helping them learn other subjects as well. The data bear this out: across countries and schools, proficiency rates in reading are highly correlated with proficiency in other subjects. For example, the correlation between a country's reading score on the Progress in International Reading Literacy Study (PIRLS) assessment and its Trends in International Mathematics and Science Study (TIMSS) math score is 0.95, and the cross-subject correlations within other assessments are also strong (Figure 1). Language development, which is enhanced by reading skills, is also nurtured in tandem with the development of a child's self-regulation, a fundamental socio-emotional skill.[16] Moreover, as can be seen in Figure 1, this correlation is clearly stronger at higher levels of aggregations such as schools and countries, which is the reporting level of the Learning Poverty indicator.

To sum up, numeracy and other basic skills are vitally important, and nothing here should be taken to suggest otherwise—but early reading deserves special attention. It is precisely because all those skills are so important that we need to document and then accelerate the rate of progress on the most basic of skills: reading. Many countries have already achieved success in teaching reading, and the evidence from these successes can be applied to other contexts. Increasing literacy through education system reforms strengthens the capacity of countries to then take on and manage more complex education reforms. If countries get that right, the public will be more supportive of reforms, education systems will improve service delivery, and children will have the tools to learn in every area of knowledge.

Every child should be reading by age 10

Why is learning to read proficiently by age 10 so important as a benchmark? Age 10, when children are expected to be in fourth grade,[17] is when many children finish mastering "the mechanics" of basic reading in high-performing systems. By then, they can decode most words and start to grow as independent readers. In many countries, by third grade students are "reading to learn" more and have finished the intensive phase of "learning to read" that constitutes "early grade reading."[18] While they still improve their reading skills, from this point on it is more through practice in independent reading and less through explicit instruction. Once children have learned to decode and become fluent readers, they read faster, and this frees up cognitive space for them to focus on text meaning. Faster reading means more practice and very often more enjoyment. In a virtuous circle, more reading improves vocabulary and background knowledge, improving overall reading skills, which leads to more reading. By contrast, if they do not obtain good skills as readers by approximately age 10, they tend to fall further and further behind, and few catch up. Indeed, research from the United States indicates that "without . . . systematic and intensive approach to early intervention, the majority of at-risk readers rarely catch up. Failure to read by nine years of age portends a lifetime of illiteracy for at least 70% of struggling readers."[19]

High rates of reading by age 10 go hand-in-hand with better skills later in life. Theoretically, it could be argued that what matters is skills later in life, and not only at age 10. But in practice, education systems—and not just individual

Box 1: What constitutes "minimum proficiency" in reading?

The UNESCO Institute for Statistics (UIS) is leading the effort to develop internationally comparable indicators and methodological tools to measure progress toward the SDG 4 indicator targets. As part of that process, the Global Alliance to Monitor Learning (GAML) has defined a Minimum Proficiency Level (MPL) for reading at the end of primary, and this MPL serves as the basis for determining shares of students with at least minimum reading proficiency and for comparing levels across assessments and countries. While the definition is still undergoing minor refinements, the core concept is clear from the latest version:

> ***"Students independently and fluently read simple, short narrative and expository texts. They locate explicitly-stated information. They interpret and give some explanations about the key ideas in these texts. They provide simple, personal opinions or judgements about the information, events and characters in a text."***

In addition to this nutshell statement, intended to be accessible to the nonexpert, the GAML has also proposed a common terminology to describe classifications in the context of the MPL. This is a critical first step toward linking cross-national and national learning assessments with a common benchmark. Working with the UIS, we have used this MPL to build a consolidated global database with 100 countries representing 81% of the population of primary-age children globally.

Source: Minimum Proficiency Levels: Described, unpacked and illustrated, accessed at: http://gaml.uis.unesco.org/wp-content/uploads/sites/2/2019/05/GAML6-REF-2-MLP-recommendations-ACER.pdf

learners—that miss this age 10 benchmark do not usually catch up later. Nearly all systems that perform well on measures of adolescent and adult learning (such as PISA, 8th grade TIMSS, and the PIACC assessment of adult skills) have reading-proficiency rates among their 4th graders that exceed 90%, as do many other high-income countries participating in PIRLS. For example, the rates in 2016 were 99% in Hong Kong (China), 97% in Singapore, 96% in Canada, and 95% in Germany.[20] This is true even of systems that choose not to begin literacy instruction early. Finland famously does not focus on academic skills in kindergarten, but instead emphasizes play-based learning. And yet by the time Finnish students are assessed by the PIRLS assessment in 4th grade (at the average age of 10.8 years), 98% of them have already achieved basic reading proficiency.[21] In other words, Finland—like many other high-income countries—has virtually eliminated learning poverty.

Learning poverty: A new early-warning indicator to spotlight low learning levels

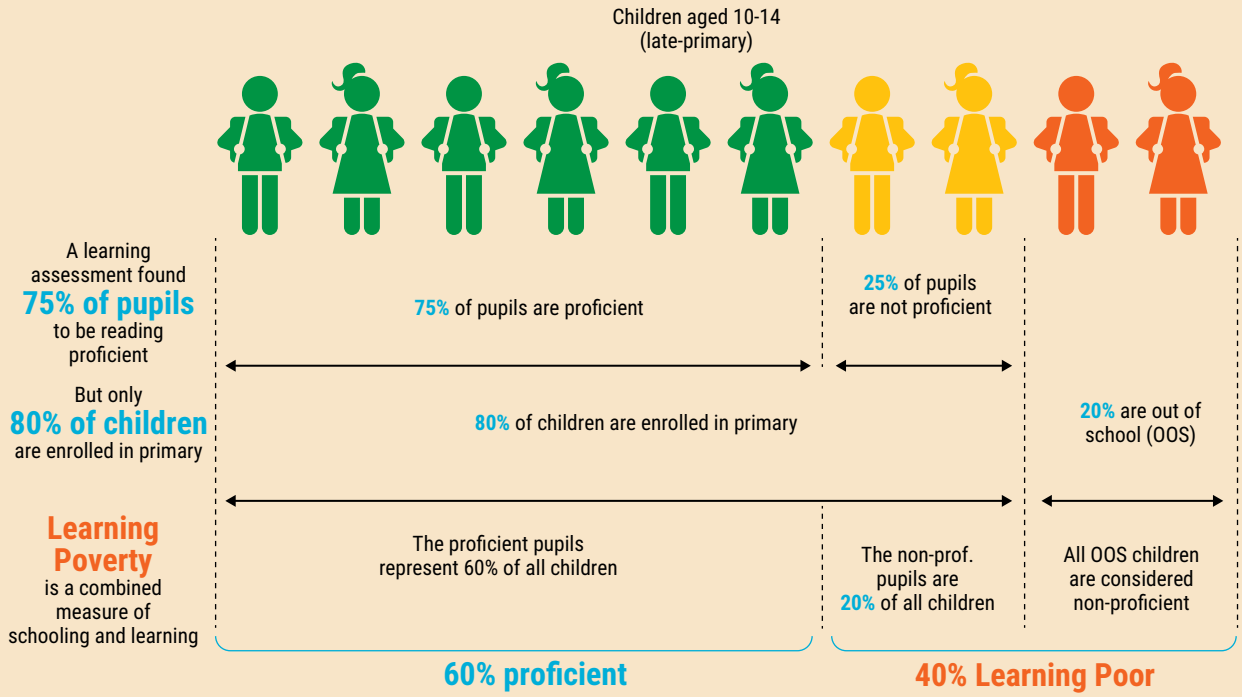
Better information can help ensure that all children acquire the reading skills they need. If hundreds of millions of children are not getting foundational reading and other skills when they should, by the end of primary school, what can be done about it? First, it is critical to raise awareness of the problem and build a willingness to tackle it. One way to do this is to encapsulate the problem in a simple summary indicator that is easy to understand and track.

This is why we are launching the Learning Poverty indicator, which combines shortfalls in school access and learning in one simple measure. It measures a straightforward concept: what share of children around the world are not able to read a short age-appropriate text with comprehension around age 10? The reading proficiency rates used for the learning poverty measure come from an approach that combines recent standardized learning assessments (cross-national and national) carried out at the end of primary school (see Box 1 for a discussion of this approach).[22] Because these assessments miss out-of-school children, we discount the calculated proficiency rate by the share of children who are not enrolled in school, thus combining quality and quantity measures of schooling. We count out-of-school primary-age children as learning-poor for two reasons: (1) empirically, they are very unlikely to read proficiently; and (2) from a human rights perspective, the Learning Poverty metric should signal that all children should be both in school and learning to read, and that the absence of either one is a form of poverty. (See Box 2 for a technical definition of the indicator.)

Like monetary poverty, learning poverty demands urgent action. The term "learning poverty" underlines just how important achieving at least a minimum proficiency in reading ability is as a vehicle to a productive, fulfilling life in the modern world. Just as monetary poverty excludes people from economic, social, and political opportunity, so too does a lack of basic reading skills. And the two typically go together: poorer and more disadvantaged children are much more likely to be learning-poor than their better-off peers. This is morally unacceptable, and it also exacts great economic costs on society.

Box 2: What is Learning Poverty?

The Learning Poverty indicator combines the concepts of schooling and learning at the end of primary education, building on indicators of reading proficiency and school enrollment generated in the SDG 4 reporting process. Consider this illustration for a hypothetical country that has gaps in both achievement and attainment:



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

$$LP = [(BMP) \times (1-OOS)] + [1 \times (OOS)]$$

where

LP = Learning poverty

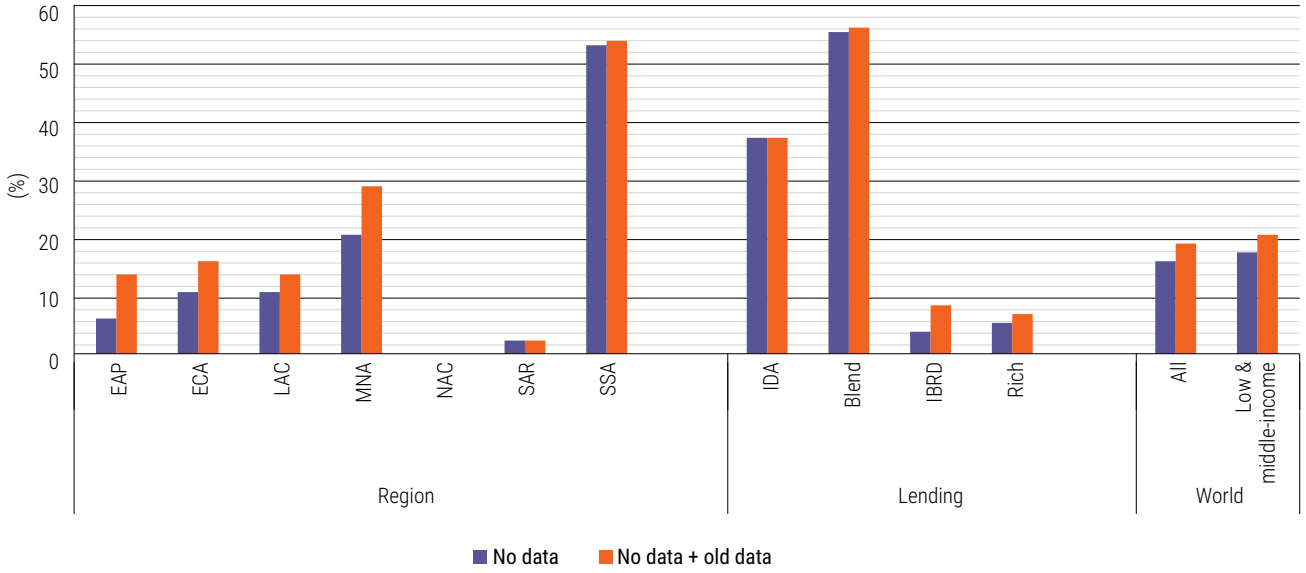
BMP = Share of children at the end of primary who read at below the minimum proficiency level, as defined by the Global Alliance to Monitor Learning (GAML) in the context of the SDG 4.1.1 monitoring

OOS = Out-of-school children, as a share of children of primary school age, and in which all OOS are regarded as being below the minimum proficiency level

The learning poverty calculations use data from both cross-national and national large-scale assessments that are judged as being of sufficient quality in terms of design, implementation, comparability, timeliness, frequency, documentation, and access. The goal of "reading by age 10" is an *ideal:* to achieve it, not only should all children be reading proficiently after three full years in primary education, but they should also have entered school at age 6 or 7. By contrast, our actual *measurement* of learning poverty is based on cross-national or national assessments that are administered in Grades 4, 5, or 6 and therefore at ages between 10 and about 14. The Learning Poverty results presented here therefore may be a conservative estimate of the extent of the literacy challenge for in-school children, since many children have been tested well after age 10. For most countries, the out-of-school children indicator is built using Adjusted Net Enrollment Rate (ANER) data for primary school from UIS. In a few cases, where those data are inconsistent with other evidence, household surveys are used to estimate the out-of-school indicator.

Note: To access the data and code to replicate the Learning Poverty indicator, please visit https://github.com/worldbank/LearningPoverty

Figure 2: Data gaps in measuring Learning Poverty: Share of population of children in countries with no or dated learning assessment data, by region, World Bank lending status, and income level



Source: Azevedo and others (2019) using the Global Learning Assessment Database (https://github.com/worldbank/GLAD).
Note: Low-, middle-, and high-Income data include only assessments since 2010; Old data include assessments from before 2010; Regions: East Asia and Pacific (EAP), Europe and Central Asia (ECA), Latin American and Caribbean (LAC), Middle East and North Africa (MNA), North America (NAC), South Asia (SAR), and Sub-Saharan Africa (SSA); Lending Categories: International Development Association (IDA); International Bank for Reconstruction and Development (IBRD); and IDA/IBRD Blend countries, meaning those that are IDA-eligible based on per-capita income levels but also creditworthy for some IBRD borrowing (Blend). Low- and middle-income includes six high-income IBRD clients.

Measuring Learning Poverty: Achievements and remaining data gaps

Thanks to progress in measuring learning and establishing comparability, the new Learning Poverty indicator covers four-fifths of the target population. Eighty percent of children in low- and middle-income countries live in a country with at least one learning assessment at the end of primary, carried out in the past 8 years, that is of sufficient quality[23] to be used for SDG monitoring.[24] We are able to use these assessments to construct a global indicator based on harmonized proficiency levels only because of the partnership with UIS and the efforts of the GAML, described above. Such comparisons and global aggregation of learning data with population coverage this large were not possible until recent years. With the recent improvements, the 80% population coverage rate for learning poverty is much higher than the coverage of the global monetary poverty indicator when it was first launched.

Yet there remain major gaps in data coverage, and these gaps often mean we are flying blind in contexts where the learning crisis is most acute. While LAC and EAP have almost 90 percent coverage, less than half of children in Sub-Saharan Africa live in a country with a National Large Scale Learning Assessment (NLSA) or a cross-national learning assessment of adequate quality to be used for this purpose (Figure 2). Differences in coverage by income level are also striking: virtually all children in high-income countries are in educational systems with such monitoring, while only one-third of those living in low-income countries are. Recency of the data also differs: in high-income countries, 70% of these assessments took place in the last four years, but in low- and middle-income countries, the figure is only 35%. Data comparability—both within and across countries, as well as over time—also poses a significant challenge. (See Box 3.) These gaps underscore the urgency for action on improving data.

The challenges are even greater for the assessments that are not included in this analysis. Here we focus primarily on the learning data used to monitor Learning Poverty, which relies on reading assessments in Grades 4, 5, and 6. Countries should be and are monitoring learning across different subjects, as well as in earlier grades (such as Grades 2 and 3) and lower secondary (Grade 9). Many of the issues discussed here—lack of data coverage, comparability both within and across countries, and lack of coordination—are magnified as the scope broadens.

The picture that emerges is of a highly fragmented learning assessment system with significant variation across regions over time and within countries, in terms of coverage, comparability, and frequency. These results corroborate the findings from UIS (2019), which also points to similar weaknesses. Going forward, the international community must work together to strengthen country systems, especially in Sub-Saharan African and in fragile and conflict-affected states. More significant innovation on implementation modalities and stronger coordination among development partners will be critical to support countries in filling this crucial data gap and making better use of what is already available.

Box 3: Challenges of data comparability

While most rich countries assess their learners at Grade 4, low- and middle-income countries tend to be less consistent and evaluate more of their learners at a later age. (See Figure B3.1.) Moreover, some countries participate in different cross-national assessments; this gives them information on learning outcomes at different grades at each point in time, but it prevents them from using these for comparisons and for tracking progress to inform policies and programs. For example, Chile and Colombia participated in LLECE (which assesses learners in Grade 6) in 2013 and in PIRLS (Grade 4) in 2016, but these assessments cannot be used to provide information on changes in learning between 2013 and 2016. In 2011, Honduras applied the PIRLS assessment, but applied it to Grade 6. This made results noncomparable to those of other PIRLS countries, which applied the assessment in Grade 4. And because the PIRLS questions were based on a different assessment framework, results were also inconsistent with Honduras' LLECE Grade 6 assessment results from 2006 and 2013.

Figure B3.1 Share of students assessed by grade level (for countries with assessments) and country income classification

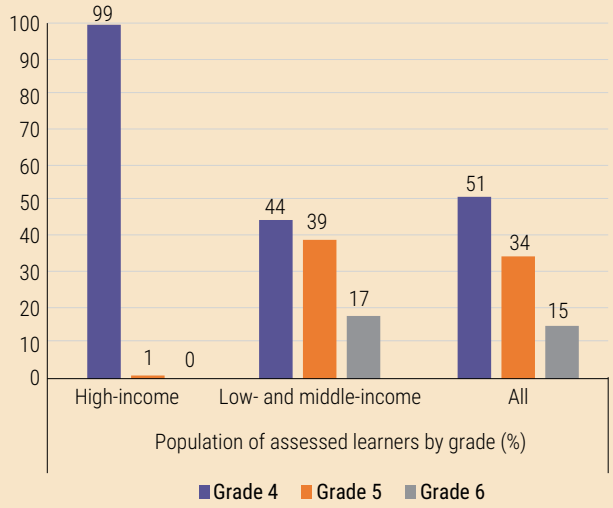
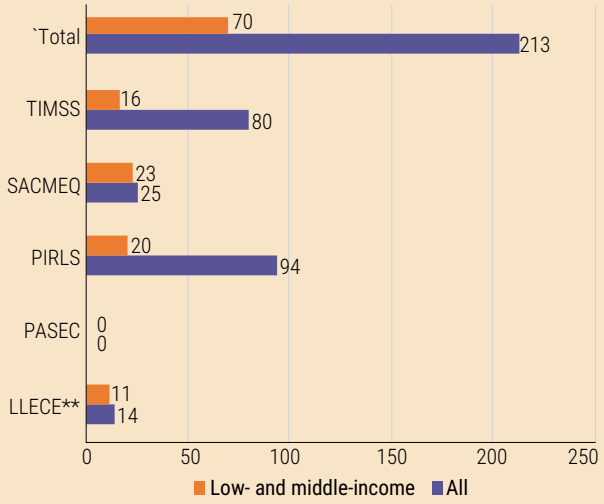


Figure B3.2 Number of spells with temporally comparable data within cross-national assessment programs *



Source: Azevedo and others (2019) using the Global Learning Assessment Database.
Note: (*) 17 TIMMS and PIRLS spells have been removed due to lack of comparability over time based on existing documentation. In addition, because PASEC is not comparable over time, although it is comparable across countries within a cycle, we do not use the data from PASEC on seven spells. (**) For LLECE we are using the TERCE-SERCE scale; otherwise those spells would also have to be removed.

Comparable data on changes in learning over time are particularly scarce. Even between rounds of a given assessment, there is often a challenge of comparability. Using the cross-national assessment data from the past 20 years, we are able to track 213 episodes of change in learning by the end-of-primary school. But most of these are for high-income countries; for low- and middle-income countries, the number is only 70 episodes (See Figure B3.2.) This limitation reflects the sparsity of the data, as assessment cycles follow five- to seven-year intervals or have been entirely irregular. Moreover, some cross-national assessment programs make significant changes in their scales between rounds or even have design instruments suited only for cross-national comparison within rounds, which results in an inability to monitor progress over time. Ignoring such design details in measurement can make it impossible to use assessment to inform policy.

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Ending learning poverty will be hard: Three findings

Where we are now: Half of the children in low- and middle-income countries are learning-poor

The headline number that emerges from this analysis is that at least 53% of all children in low- and middle-income countries are not able to read proficiently by age 10—or even at age 12—when many of them are tested. This learning poverty rate is much higher than the rate of extreme income poverty, which has already been reduced to 11%, and is well on the way to a global target of poverty elimination by 2030.[25] Yet in the education sphere, one out of every two children in the developing world is not learning to read by late primary school age. And the rate is much higher in some regions: in Sub-Saharan Africa, learning poverty is close to 87%, or nearly seven times as high as the 13% rate found in the World Bank client countries in Europe and Central Asia (Figure 3).

There is no reason to accept high rates of learning poverty. Based on the experience of rich countries, it should be possible to reduce the rate to close to zero—just as absolute poverty is near zero in those countries. Moreover, there are low- and middle-income countries and regions which have more recently made dramatic improvements in foundational skills. A generation ago, Vietnam was far from achieving even universal primary schooling, but today learning poverty has virtually been eliminated, and Vietnam's secondary school students achieve PISA scores at the same level as Germany's. In the state of Ceará in Brazil, the municipality of Sobral reformed the career paths of teachers and principals and provided basic materials to all, and within a decade it rose from a rank of 1366 on Brazil's Education Development Index (IDEB), a synthetic indicator of education quality, to a rank of 1 in the country.

Rates by country group

There are very large differences in Learning Poverty across the developing world. The 53% average for low- and middle-income countries is held down by the levels in upper-middle-income countries, which average 29% learning poverty. But in lower-middle-income countries, 55% of children cannot read proficiently, and in low-income countries, the rate is 90%. (See Figure 4 for more details.)

Similar patterns are found in the data on non-proficiency by World Bank lending status. Even in the IBRD countries in the database, 40% of children are not reading proficiently by late primary. And in the other groups, a substantial majority of children do not acquire proficiency: the learning poverty rate is 80% for IDA and IDA/IBRD blend countries.

What we know about differences by gender

Despite the barriers confronting girls in some areas of education, in virtually all countries for which we have data, girls have lower rates of learning poverty than boys do. Table 1 shows that girls are, on average 6 percentage points less learning-poor than boys.[26] The difference is significantly smaller in Europe and Central Asia and North America, and largest in the Middle East and North Africa (MNA) and East Asia and the Pacific (EAP). (Sex-disaggregated data are not available for South Asia.)

The gender difference is significantly greater in middle-income countries and in countries in the middle of the distribution of learning poverty. While in high-income and low-income countries, differences are quite small, the gap reaches 9 percentage points in lower-middle-income countries (Table 1). And gender gaps are significantly higher for countries with a learning poverty between 30% and 70% (Figure 5).

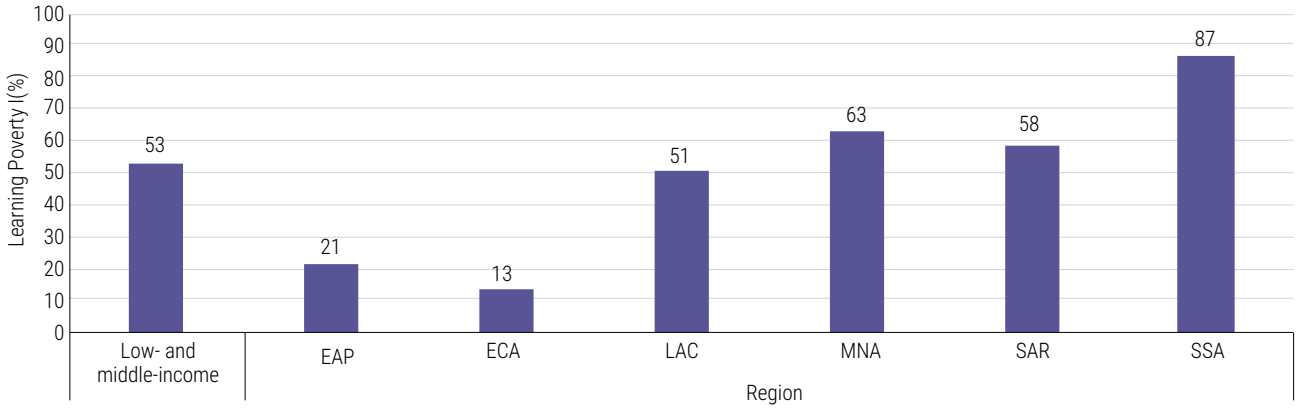
Where the world is headed: At current rates of progress, eliminating learning poverty by 2030 is out of reach

How has this learning poverty rate changed in recent years? Is it declining rapidly enough to ensure that in 2030, all children will be proficient in reading by age 10, or at least by the end of primary school?

The answer is an emphatic "No", given the historical rates of progress. When we look at each of the spells of improvement or decline in individual countries between 2000 and 2018,[27] we find that:

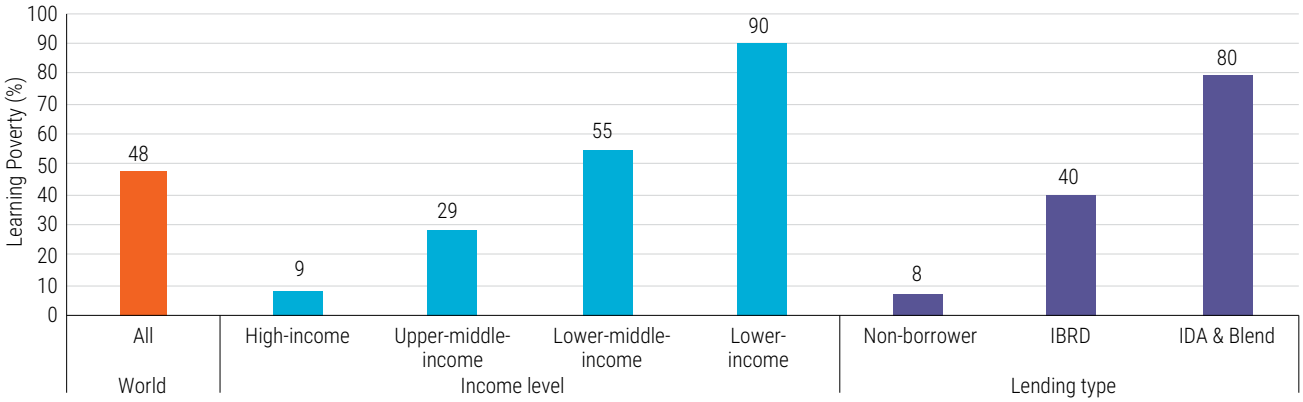
- **The median annual reduction in learning poverty, across all spells, is less than 1 percentage point per year.** With a global learning poverty rate of 53% in 2015, this suggests that unless improvement accelerates dramatically from recent historical patterns, the world will fall well short of eliminating learning poverty by 2030.
- **In around 20% of the recorded episodes of annualized change, learning poverty increases.** Thus, although global rates of reading have been improving, there is no guarantee of progress in individual countries.

Figure 3: Percent of children who are learning-poor in low- and middle-income countries, by region



Source: Azevedo and others (2019) using the Global Learning Assessment Database (https://github.com/worldbank/GLAD); UIS Enrollment Data; and UN population numbers.
Note: The MNA Learning Poverty (as in all other regions) only include low- and middle-income countries. The inclusion of the MNA high-income countries, changes the Learning Poverty in the region to 59%.

Figure 4: Percent of children who are learning-poor, by country groups and World Bank lending status



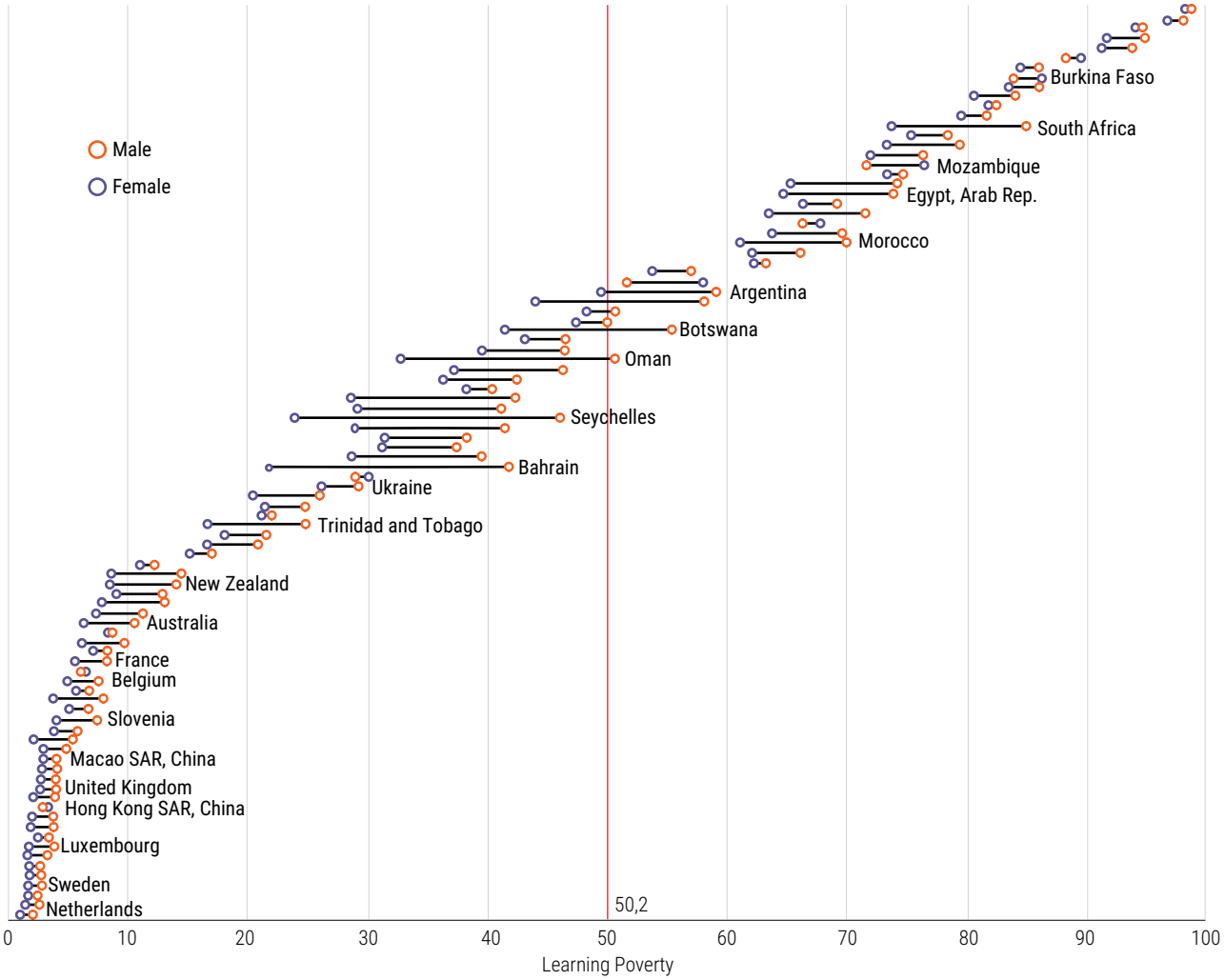
Source: Azevedo and others (2019) using the Global Learning Assessment Database (https://github.com/worldbank/GLAD); UIS Enrollment Data; and UN Population numbers.

Table 1: Learning poverty by sex and subgroups, for a subsample of countries

Domain	Description	Male	Female
Income	High-income	8.4	6.6
	Upper-middle-income	44.6	39.5
	Lower-middle-income	55.1	45.9
	Low-income	93.3	93.5
Regions	EAP	29.6	21.1
	ECA	10.0	8.2
	LAC	53.0	48.9
	MNA	66.0	56.8
	NAC	8.0	7.1
	SAR	.	.
	SSA	86.4	83.0
World	Low- & middle-income	55.5	49.8
World	All	43.6	38.9

Source: Azevedo and others (2019) using the Global Learning Assessment Database (https://github.com/worldbank/GLAD); UIS Enrollment Data; and UN population numbers.
Note: Gender breakdowns calculated using 91 cross-national learning assessments: LLECE, PASEC, PIRLS, SAQMEC, and TIMSS. All assessment data are from after 2010, except for SAQMEC (for Southern and Eastern Africa), where the data are from the Third Round carried out in 2007. Estimates do not reflect the national learning assessments in the data set, because of a lack of sex-disaggregated data. Gender breakdown is not possible for South Asia, due to reliance on national learning assessments that do not systematically report that information. Averages of the male and female columns do not match the global averages reported earlier due to changes in the country composition.

Figure 5: Learning poverty gender gap, by country



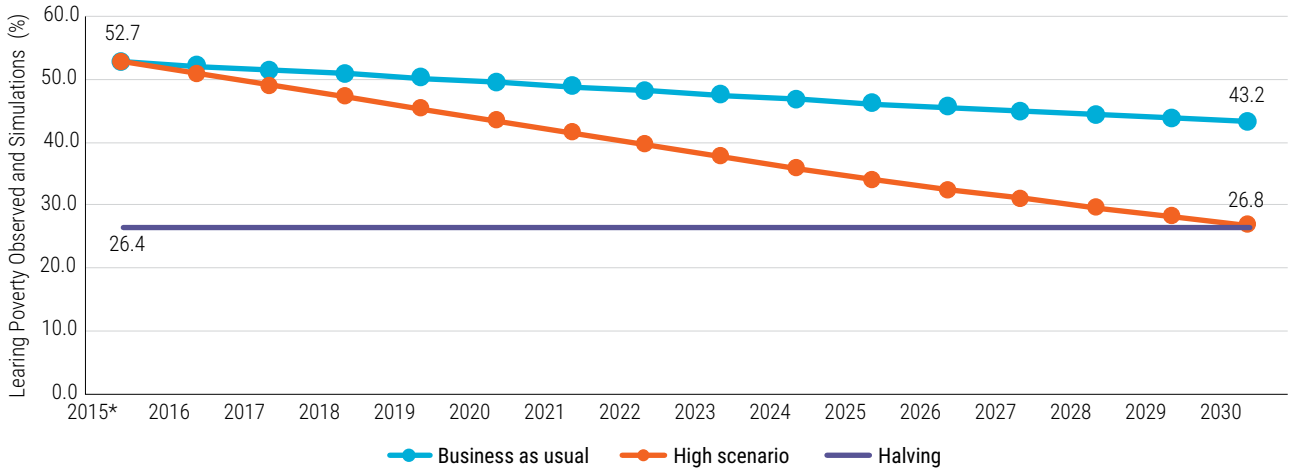
Source: Azevedo and others (2019) using the Global Learning Assessment Database (https://github.com/worldbank/GLAD); UIS Enrollment Data; and UN population numbers.
Note: Gender breakdowns calculated using 91 cross-national learning assessments: LLECE, PASEC, PIRLS, SAQMEC, and TIMSS. All assessment data are from after 2010, except for SAQMEC (for Southern and Eastern Africa), where the data are from the Third Round carried out in 2007.

- **Nevertheless, there have been some cases of rapid improvement.** About 20% of the recorded spells show annualized reductions in learning poverty of 2 percentage points or more. Even if this tail of the distribution reflects some statistical noise, this indicates that it is possible to make rapid progress (in some cases, through a combination of better learning for enrolled students and increased enrollment). We discuss some of these cases below.

Globally, business-as-usual leaves the world far from the goal of eliminating learning poverty by 2030. We can use these estimates to simulate how the population-weighted learning poverty rate can be expected to change between 2015 and 2030. Under a business-as-usual scenario for the world as a whole—just as for the median country—learning poverty falls by less than 1 percentage point per year. Starting from a baseline learning poverty rate of 53% in 2015, at this rate of progress, about 43% of late-primary children in low- and middle-income countries will still not have reached minimum proficiency in reading by 2030 (Figure 6).[28]

Progress has been slow because of a lack of commitment to improve the drivers of learning. As the World Development Report 2018 shows, the classroom experience of too many children around the world is not conducive to acquiring literacy or other foundational skills.[29] Young children arrive at school unprepared to learn because of malnutrition and a lack of stimulation, and sometimes they cannot attend school at all. Teachers often lack the skills, support, or motivation to teach effectively, and the result is teaching time that is lost or poorly used. Textbooks, learning materials, and technology are missing or poorly integrated into teaching and learning. And school management often has not been professionalized, leaving principals and other managers unable or unwilling to address the problems in the classroom. These failings in service delivery are enabled by a lack of technical capacity in

Figure 6: Learning poverty rate under two scenarios, 2016–30 (simulation)



*Note: * 2015 based Global estimate; values from 2016 to 2030 are simulated; Source:* Azevedo and others (2019) using the Global Learning Assessment Database; UIS Enrollment Data; and UN population numbers.

education bureaucracies and a lack of political commitment to make learning for all a priority. And too often, the problems are hidden by a lack of good data on foundational learning and its immediate causes.

An early warning: Even at the fastest rates of progress seen in recent decades, learning poverty will not be eliminated by 2030

But perhaps the business-as-usual scenario is too pessimistic. For much of the 2000–2015 period, education systems as a whole did not focus enough on learning.[30] To be sure, the substantial improvement in primary school completion throughout this period should have reduced learning poverty: as described above, all children out of school count as nonproficient in this statistic, so enrolling them should have lowered nonproficiency, as long as at least some of them learned to read. But policy makers' neglect of learning likely constrained the gains that were possible. Now that the international education community is focusing more on learning—a shift reflected in Sustainable Development Goal 4 and the learning indicators being used to track it—progress could well accelerate.

How much faster could we reduce learning poverty? To identify what is possible with greater effort, the high scenario uses the 80th percentile of actual experience. Specifically, it assumes that every country can reduce learning poverty as quickly as the 80th-percentile country in its region did during the 2000–2015 period, with the better performers continuing to maintain their higher rates of progress.[31] As Figure 6 shows, this allows much more rapid progress. Indeed, it represents—and requires—a near tripling of the rate of progress, from 0.6 to 1.6 percentage points per year. Nevertheless, even under this highly optimistic scenario, in 2030 the learning poverty rate will still be 27%—considerably higher than the rights-based target of zero, or even an alternate target set at the single-digit rates found in many wealthier countries (possibly 5%).

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The way forward

We must commit to focusing on education quality and ending learning poverty. Eliminating learning poverty for all children by 2030 would require improvements at a rate and scale that is unprecedented. However, we should continue to strive for this goal. Moreover, eliminating learning poverty while advancing other education goals should be a top development priority, along with the twin goals of ending extreme poverty and promoting sharing prosperity.

This requires a strategy for helping children learn to read, guided by a new medium-term operational target for eliminating learning poverty, and accompanied by system-wide reforms to strengthen and build on all foundational skills.

A new global learning-poverty target to drive action and sharpen our efforts

The first step is to set targets to guide and track progress on foundational learning—targets that are feasible but that demand more of us. Meaningful action requires the right targets for operational engagement. In this case, given how fundamental the right to education is, that means good stretch targets—those that demand unprecedented commitment but that, with such a commitment, are attainable.

The learning poverty rate is the right type of indicator to use for this purpose. It meets three key criteria for motivating action effectively:[32]

- ***Simplicity:*** Any stakeholder in education—whether a teacher, parent, business leader, or finance minister—can understand what it means to not be able to read a simple passage and why slashing learning poverty is imperative. At the same time, it is associated with other, more comprehensive indicators of interest, so the simplicity does not compromise validity.
- ***Replicability:*** The learning poverty measure is based on publicly available data and is calculated using a transparent methodology, making it straightforward to replicate.
- ***Movability:*** With enough effort, it should be possible to reduce learning poverty significantly within just a few years—meaning that changes in the indicator can be used to gauge the effectiveness of policies and programs.

The new target: cut learning poverty at least by half. Based on the analysis described above, a feasible yet ambitious target for the World Bank's operational work with low- and middle-income countries is:

> **By 2030, reduce by at least half the share of 10-year-olds who cannot read.**

This target can be attained if every country matches the rapid improvers. Learning poverty can be cut in half if all countries achieve progress at the 80th percentile of the post-2000 distribution of gains in their respective regions, and if countries above that level maintain their higher rates of progress. In other words, under this scenario, every country needs to perform like a country that has cut learning poverty rapidly enough to place it among the top 20% of improvers since 2000. At the global level, this implies that the rate of progress in reducing learning poverty will need to be accelerated substantially, nearly tripling from 0.6 to 1.6 percentage points per year. And in some regions, with high levels of learning poverty, countries would need to reduce learning poverty by about 2.5 percentage points per year.

This is very much a stretch target, and it is also consistent with even higher aspirations. Note that it specifies reducing "by *at least* half." It is crucial for the World Bank and the countries that it works with to aim for fully eliminating learning poverty. As the largest external financier of education, the Bank assumes a responsibility to support countries in reducing learning poverty by at least half by 2030. But policies are defined and implemented at the national or subnational level, and hence it is political and financial commitments from countries that will make it possible to meet that operational target before 2030 and move quickly toward ensuring that all children can read by age 10.

While this is a global target, for concrete action to happen in the classrooms of the world, each country has to establish its own path, with the objective of eventually eliminating learning poverty. Targets can and should be set by countries themselves, but they should be underpinned by a similar level of ambition. As in the case of the global poverty target, this global learning poverty target does not dictate what individual countries should do. The simulations underpinning the target indicate the magnitude of the changes that are necessary, relative to what we've seen so far in this century. They are based on historical rates of progress, using the very incomplete data available. Each country will need to consider the many factors influencing progress in their country—such as income growth, policy shifts, conflict, and migration—and decide what is feasible, and then set its own target and strategy. Global progress over the next decade will represent the aggregation of all these country-driven efforts. The bottom line is that for the world to be on track toward eliminating global learning poverty over the next generation, dramatic improvements are necessary in many countries.

Reducing learning poverty is part of a process that strengthens the overall quality of education systems. While the learning poverty target focuses on reducing the share of children with very low performance in low- and middle-income countries, for most of these countries this will drive an improvement in their average performance as well. There is strong evidence that to move from a very low mean performance to at least a middle level of mean performance, countries need to substantially reduce the

share of children who are at very low levels of performance. Policies to improve learning among lower-performing schools and pupils (the tail of the distribution) are required to improve learning equitably and to reduce unfair inequality.[33]

Interventions focused on literacy can accelerate progress toward the Learning Target and raise overall education quality

The Learning Target is conceptualized as a tool to guide and accelerate improvement of literacy and as a catalyst for broader improvements in education quality. The actions that spark improvement for achievement of the target are consistent with and contribute to each of the pillars of improved education quality discussed in the next section.

Policy and actions should be grounded in evidence. Policy actions to improve literacy should be deeply grounded in the evidence of how children learn to read. Decades of research have now shed light on this process. Policies and practices that conform to evidence produce results. Reading well is a very complex skill that integrates numerous subskills, some of which need to be learned before others. Good literacy policies are based on detailed knowledge of actions that raise the mastery of specific subskills and are appropriate in scope and sequence. They pay heed to both specific knowledge reader's needs and to the order in which they are best acquired. They may begin by raising general awareness about words through preliteracy skills like rhyming and word play before moving to explicit instruction as formal school begins. Early grade reading makes children explicitly aware that words are made up of sounds, and that symbols (called letters in alphabetic languages) represent those sounds. Instruction then shows how letters and sounds go together, and helps build vocabulary and the ability to decode written words. Early grade reading imparts the skills that students need to read smoothly, fluently, and with comprehension. It seeks to accomplish all this in ways that motivate children and promote love of reading and learning.

Young learners need specific skills along with positive engagement and motivation. Pathways to proficient reading are characterized by continuous interaction of mastery of specific tasks, continuous knowledge and skill building, and building and maintaining strong motivation among students. The main specific tasks are sometimes referred to as the "mechanics" of reading; they relate primarily to the "code-cracking skills" needed to decode written language. Vocabulary, knowledge of syntax and grammar, and general background knowledge are fundamental to understanding text meaning; unlike code-cracking skills, however, these are built up continuously. Engagement, motivation, and enjoyment drive students to read more, helping students become independent readers whose knowledge and skills increase as they read more and more complex texts.

Children require explicit instruction to gain these skills and build or sustain motivation; imparting it is the most important task of early grade schooling. The World Bank's Policy Package for helping children learn to read consists of four components that bring focus and facilitate what countries need to do. They are: (1) ensure political and technical commitment to clear goals, means, and measures for literacy; (2) ensure effective teaching for literacy; (3) ensure timely access to more and better age and skill-appropriate texts; and (4) first teach children in the language they speak and understand.

Component 1: Ensure political and technical commitment to clear goals, means, and measures for literacy

The road to success begins with commitment to the goal of all children learning to read in primary school. Education systems with high learning poverty are failing on the fundamental task of securing students' foundational skills. Changing the learning trajectory in these systems requires a commitment to the goals, means, and measures that ensure all students become proficient readers in the early grades.

Goals, means, and measures comprise a pathway that guides policy and action. National education authorities have the mandate and responsibility to create effective school systems where policies and practices lead to learning for all students. In many cases, a vision of successful learning orients the choice of policies, actions, and milestones that assure the vision becomes a reality. This sounds obvious, but unfortunately it is not the case in many systems, where there is no clear pathway to learning. Systems that perform well connect the end goal of reading to the means of achieving it and the measures that verify success. That is, they define national goals, relate interventions to those goals, and measure student and system progress on an ongoing basis.

Goals for literacy recognize the urgency of having all students learn to read so that they can begin to "read to learn" by the end of the early grades. The Learning Target's focus on reading for comprehension by age 10 is consistent with the culmination of successful literacy instruction and learning from the start of school through about the end of the third grade of primary school. Goals

for preprimary will focus on language and print awareness, promoting play-based learning that sets children up to succeed when formal instruction begins in primary school. Detailed goals in the first years of primary also track the sequence of subskills that students need to become good readers: knowledge that words are made up of sounds, letter-sound knowledge, strong recognition and knowledge of basic vocabulary words, and the ability to read with increasing smoothness and understanding. Goals become more varied and complex for each successive grade, culminating in the production of graduates who have the reading skills, vocabularies, and a broad and deep mastery of the background knowledge they need to build their human capital and reach their full potential.

Assessing performance. Some education systems may not have fully committed to improving literacy because they lack good measures of current performance. Education authorities may not know how few students are becoming proficient readers or they may believe that students are making up lost ground after the early grades. Or their systems may fail to measure the steps on the way to literacy, and therein fail to show where and what types of actions are needed for improvement. It is essential that assessment systems have well-defined ways to inform future instruction based on assessment results. These systems require proper design, implementation, documentation, and dissemination of results. Attention should also be given to ensuring that the assessment results are comparable within the country over time, allowing for consistent measurement of country progress. National goals should be set with an understanding of how students are currently doing, and systems should use the data as a baseline on which to develop achievable goals, interventions, and indicators of progress.

Measures should start early and point to key summative milestones. "Measuring early" involves two important meanings: early in the policy setting process and early in the student's school career. As mentioned above, policy makers are best served to formulate policies and actions from a position of knowledge about current student performance. This may be a single measure of reading proficiency at the end of the early grades, or more granular information from multiple points on the education pathway. Early assessment also needs to be considered as it pertains to the progress of each individual student. Information on preliteracy subskills such as language and print awareness leads to improvements being made to impart the skills that prepare students for success in primary school. The first "paper-based" test of reading comprehension—typically administered when children are at or near age 10—should be seen as both a crucial first indicator of success and the culmination of efforts to have children master all the subskills of early reading.

Reading assessment results can mobilize country coalitions and streamline national education reform. When Peru ranked last in the 2012 round of PISA, its students' poor performance in reading and math made headlines across the country. Reformers in the government used this information to mobilize public support for a variety of reforms, including investing more in education and improving teachers' careers and professional development.[34] It also led to developing measurement capacity that strengthened the overall education system. By 2015, the results of PISA showed substantial improvements in reading comprehension of Peruvian secondary students and a reduction in the number of students not reaching minimum proficiency.[35]

Projects to improve early literacy should align with and build upon national goals and curricula with appropriate scope and sequence. Lao PDR's Reading Readiness Program (RRP) is a good example. It addresses vocabulary, print awareness, sounds and phonological awareness, narratives and comprehension, and writing. Each topic is linked to specific learning objectives addressed over the academic year. The RRP features two teacher-led shared-reading sessions each week, in which teachers embed dialogues with children and help children build the ability to discuss an interesting word or to retell a story after it is read. The RRP aligns well with the existing curricula by emphasizing shared-reading routines, yet it provides additional structure to these routines to ensure that children's development of key readiness skills is explicitly targeted.

Component 2: Ensure effective teaching for literacy

Teachers in many countries are not providing the types, sequences, and/or amounts of instruction students need to learn to read. The evidence shows that when students are taught in the right way (content, sequence, and amount of instruction), nearly all of them learn to read.[36] However, many teachers in low-income countries lack the skills they need to provide effective instruction overall, and for reading in particular. This is true for knowledge of both subject content and pedagogy. For example, in Sub-Saharan Africa, the World Bank's Service Delivery Indicator surveys in six countries show that 84% of Grade 4 teachers have not reached the minimum level of competence. In Lao PDR, only 2.4% of teachers scored 80% or more on a test of Lao language and math, and the average score on a test of pedagogy was 52%.[37] As indicated, teachers need support to acquire the knowledge and abilities required for effective teaching of reading.

Successful early grade reading interventions do two things well: First, they introduce reading materials and teacher guides with step-by-step guidance on what to

teach and how to teach. In many settings, books that have "tightly structured and effective pedagogy" greatly help students learn. These books are in fact lesson plans for teachers which can be used on a voluntary basis; they simplify the task of providing instruction by allowing teachers to focus on how to teach rather than on what to teach. They remove the need for teachers to devise plans on their own, although teachers should be encouraged to continuously find creative ways to deliver concepts and ideas. The pedagogies and teacher guides are designed by reading pedagogy experts, and they incorporate the findings from the science of how children learn to read. They pay attention to organizing instruction around content, scope, and sequence of tasks and abilities that children need to become good readers. Countries such as China and Vietnam have histories of providing clear guidelines for teachers and focused textbooks with clear sequences of content. This approach is credited with helping these two countries obtain PISA scores significantly above the predicted scores by income level.[38] As education systems improve and teachers increase in preparation and expertise, the need for highly structured lessons decreases, and lesson plans become a tool that teachers can build upon according to their knowledge and capacity.

Second, successful interventions provide a new kind of "training" or teacher professional development (PD) that strongly emphasizes practicing specific classroom skills. This "practice-based" PD supports "lesson fidelity"—the ability of teachers to implement the pedagogical plan they are given (e.g., lesson plans with tightly structured and effective pedagogy)—and offers detailed guidance to aid teachers in low-capacity settings. The World Bank's Education Policy Approach recommends this kind of teacher training, highlighting the need to make it continuous and, when possible, "on-site."[39] Through its new initiative, *Coach*, the World Bank aims to support teachers in the content and delivery of their lessons and train school leaders to provide on-going coaching. This focus of classroom practice training helps teachers apply what they learn in their classrooms immediately. This in turn permits the consolidation of the practiced skills, as teachers observe how students respond to this more focused instruction. Continuous support to teachers in this process is essential. Coaching, mentoring, and "communities of practice" models give teachers access to experts and/or senior colleagues who help to keep the focus on improving classroom teaching practices. Practical, focused professional development and continuous follow-up through coaching and support are indispensable elements of improvement.

In-class teacher support can be expanded through the use of virtual coaching to provide just-in-time guidance for reading instruction strategies. For instance, a study of a comprehensive intervention in South African public schools found that locally designed low-cost integrated technology can be a cost-effective alternative to on-site coaching. In particular, the combination of tablet-based lesson plans (preloaded with demonstration videos) and e-coaching was as effective as paper-based lesson plans and a reading coach.[40]

Behavioral change by teachers in classrooms requires teacher and principal buy-in. Improved lesson plans need to be delivered by capable, motivated teachers. If structured lesson plans are not used in the classroom, or teachers do not change their behavior after training, perfected technical designs will lead nowhere. Thus, making sure that reforms to improve literacy build ownership with teachers and principals is critical. To build ownership, clear information on what is expected, appropriate support and accountability for meeting these expectations, and interventions to support schools that are struggling should be provided. Teachers become allies if these changes facilitate their work and if they can observe an impact on the improvement of children's reading levels.[41]

Classroom-focused interventions need systems-level support. To sustain these focused actions in the classroom that help all children to read, systems need fair and effective management of the careers of teachers and school leaders, as well as clear accountabilities and definitions of roles and responsibilities throughout an education system.

Mastery of reading skills requires teaching at the right level. "Teaching at the right level" is a phrase that has become shorthand for ensuring that each student is given the task he or she needs to master in his or her learning progression. It means, for example, that students who are struggling with letter sounds continue to work on letter sounds and master them before moving to word reading. Teaching at the right level (TaRL) is often associated with a pedagogical approach that the NGO Pratham has used throughout India. This approach has reached more than 50 million students to date in India, Ghana, and Zambia. A set of six randomized evaluations over the last decade have shown that focusing teaching to the level of the student improves learning outcomes in reading and math across a variety of contexts.[42] TaRL may have the most impact in settings characterized by large classes, poor teacher capability, frequent teacher and student absenteeism, or pressures for instruction to move forward before students have mastered a given subskill in the learning sequence. These pressures may result from mandates to cover the entire curriculum in a given school year even when the curriculum has been shown to be overly ambitious for most students and teachers.[43]

Teachers are the key resource for keeping students on the learning path, and "teaching at the right level" signifies multiple options for assessing and reacting to be sure this happens. These include reading camps for chil-

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dren in which volunteers teach during summer or out of school periods (India); remedial teaching carried-out by government teachers and provision of special learning materials (India); grouping students by ability instead of by age (Kenya); and adapting remedial education in one or two hours of a regular/contract school day (India).[44] Whether it is through group work, or student-level assessment, home reading, or supplementary classes taught by volunteers, all efforts should point the student to the next challenge in the learning pathway.

Adaptive learning software can be used effectively to tailor reading materials to the proficiency level of individual learners. For example, Mindspark centers in India used an adaptive learning software that customized content based on the proficiency level and rate of progress of each student. When students attended these centers after school for a period of four and a half months, they achieved dramatic improvements in reading outcomes, more than doubling their rate of progress.

Many countries are adopting a holistic approach to providing structured lesson plans as a means of improving results. In Poland, early literacy textbooks are accompanied with a rich teaching framework in the form of a curriculum, teaching guides (with class scenarios), proposed materials for each lesson, and suggested adaptations for children with special education needs.[45] In Liberia, the successful EGRA Plus program combined structured lessons for teachers with observation and feedback from literacy coaches. This was part of a general approach that included curriculum-based measures (CBMs) to carefully track student progress. These CBMs include both oral and written assessments that replace the old pencil and paper-only tests. At the end of this program, reading scores had increased a very impressive 0.82 standard deviations.[46]

Component 3: Ensure timely access to more and better age- and skill-appropriate texts

Availability of quality, age-appropriate reading materials is a significant predictor of strong early literacy. Children who lack access to books or exposure to printed or digital and written materials are more generally at a disadvantage as they try to learn to read. "Print poverty" has huge consequences on performance: data from the United States show that students scoring on the 98th percentile of tests may read 4.7 million words a year, equivalent to 67 minutes a day; those scoring in the 10th percentile

may only read 51,000 words per year, or 1 minute a day.[47] To achieve fluency, students must be exposed to appropriate texts and have sustained time to practice reading.[48] Partner organizations such as UNESCO and USAID have emphasized the importance of timely access to reading materials to improve learning.[49] Evidence confirms the importance of each child having a book of his or her own during instruction, but in reality students often have to share a book with several other classmates. These books are especially effective if they are in a language the child speaks at home and best understands (see Component 4).[50]

Books alone are not enough, however. It is the combination of high-quality books, distributed at a 1:1 ratio for children, and supported by effective teachers and clear pedagogical guidelines that has the highest impact.[51] A randomized control trial of the Kenya Primary Math and Reading Initiative (PRIMR) indicated that the combination of structured lessons, PD, and coaching, plus a book for every child, was more than twice as effective as having only two of these three key inputs.[52] In Mongolia, improved provision of books provided in isolation led to a 0.21 standard deviation improvement in student outcomes. Teacher training, provided in isolation, did not have a statistically significant effect on student outcomes. The combination of the books and teacher training however, resulted in impacts greater than the sum of impacts of the two interventions alone, improving student outcomes by 0.35 standard deviations.[53] These results point towards a critical policy implication that where inputs are complementary, education investments can deliver a much higher result in combination; higher than the additive effect of interventions applied in isolation.

Texts and reading practice at home complement what children get at school. Reading skills are not built exclusively through school-based instruction. While high-quality formal instruction in primary school is imperative, home reading and preliteracy activities in early childhood education are also essential. The evidence confirms the importance of a conducive home environment for literacy outcomes. A study from Uganda found that an important factor that influenced learning outcomes in early literacy was having reading materials at home.[54] A more comprehensive study from the Philippines, Uganda, Mali, and Ethiopia found that the home learning environment was a predictor of literacy across all contexts, with the most critical component of the home environment being access to print material.[55]

In low- and middle-income countries, high-quality, age-appropriate supplementary reading materials may be scarce or even absent. A full one-fourth of Malawi's students lack access to the teaching and learning materials that support literacy. Even when texts are present, they may be outdated, not contextually relevant, uninteresting, or not aligned with the requirements of effective pedagogy. The Global Book Alliance has raised awareness about the extent and causes of the problem. In Malawi, for example, the Tumbuka and Yao languages each have approximately 2.2 million native speakers, yet fewer than 20 book titles are available in either language.[56]

The problem has both short- and long-term dimensions. From one perspective, the problem is that existing books are not getting to classrooms and into the hands of children. Solutions involve purchasing and distributing books, not creating more or better. Getting every child a copy of the main reading textbook for each grade would constitute an important step forward. However, building strong readers requires more than just the main classroom textbook. Children need access to large amounts of books and texts on various topics at various levels of difficulty. Achieving "one book per student" should be an interim milestone on the way to making many books per child available.

The lack of level-appropriate reading materials for children stems from interrelated problems. One problem is a lack of qualified authors and publishers working in the local language. Another is the insufficient or inappropriate use of book procurement and distribution systems, which increases the costs of provision. In Guinea, Niger, and Chad, over 50% of the books that are printed are lost in warehousing, transport, and distribution due to lack of oversight, accountability, and planning.[57]

To ensure access to more and better age-appropriate texts that are accessible for all, policies to promote reading must intervene at each level of the book chain.[58] This will require: (i) book/title development—with attention to authorship, illustration, cultural relevance of book content, and publishing capacities; (ii) access/availability of books for use by children, including licensing arrangements that permit wider use, formats that allow for adaptation, and platforms that share existing titles; (iii) coordination of procurement systems involved in the purchase of books and textbooks to improve efficiency; (iv) improved supply and distribution chains to ensure that texts, once developed, are delivered from the production site to the students who are the intended end users; and (v) effective use of texts for reading instruction and practice both in and out of the classroom.

Universal access to textbooks is correlated with strong literacy in Vietnam. Where both text availability and early grade reading abilities have both been measured, they often are closely correlated. In Vietnam, for example, the Young Lives initiative carefully measured a number of school-related factors among a cohort of children from lower socio-economic households. Measurements included both textbook availability and student progress in reading. A 2013 Young Lives report found that 97% of

students in Vietnam own a Vietnamese textbook. Even among the poorest subset of students[59] in the poorest province of Vietnam, 97% reported owning a Vietnamese textbook, and 95% reported owning a math textbook.[60] Vietnam has achieved high levels of enrollment in basic education in recent years and has undertaken important reforms intended to improve school access, quality, and equity. Results from PISA 2015 showed that the average Vietnamese student has the same level of achievement as the average OECD student.[61]

National campaigns have sparked innovations for improving efficiency in publishing and delivering books. Over the past decade Rwanda has made book provision a priority through teaching and learning materials reform. A national campaign organized by the Ministry of Education called "Rwanda Reads" aimed to develop a reading culture in Rwanda. Subsequent initiatives have mobilized a commitment to literacy and have provided essential support to publishers, local authors, and teachers.

Digital texts and e-readers can complement the use of textbooks. The work of the Worldreader NGO in Ghana, Kenya, and India has demonstrated that it is possible to make available digital reading materials on phones and other mobile devices in ways that are both accessible to young readers and cost-effective at scale.[62] Literacy apps such as Bolo and Feed The Monster utilize game-based mechanisms to increase the engagement of emerging readers with reading materials. Further, electronic materials can be created to include support for learners with special educational needs, for example through larger texts, audio, and word tracking features.[63]

Component 4: First teach children in the language they speak and understand

Children gain reading proficiency if taught in their home language first. Students taught to read in a language they do not speak at home have great difficulty learning.[64] Many become frustrated and disengaged, and they are more likely to leave school early and with less knowledge capital.[65] By contrast, research has shown that students in early grades who are taught in their home language achieve higher reading comprehension.[66] In fact, research in Sub-Saharan Africa has indicated that learning how to read in one's home language can help students acquire greater skill in their second language in later years: the practice of decoding in a language they speak can be applied when they attempt to learn in a second language. [67] Effects appear to persist over a lifetime, with higher average earnings accruing to students who began their schooling in their home language.[68] Using the home language to instruct students for the early years of schooling is an important factor to establish not only reading competency, but also to provide the foundation to study more complex topics. In fact, home language should be used across the curriculum, not just in reading. Data from Trends in International Mathematics and Science Study (TIMSS) have shown that, with few exceptions, in countries with large proportions of students from homes where the language of instruction is not the language spoken at home, math achievement is lower. Internationally, 4th graders who had not been taught in their home language had average scores 28 points lower on TIMSS 2011 than 4th graders who had been taught in their home language (477 versus 501).[69]

To implement home language instruction effectively, systems need to train their teachers in students' home languages and provide appropriate reading and pedagogical materials. Countries adopt a variety of policies that incorporate home language instruction in ways tailored to their own needs and priorities. They may differ on duration of home language instruction and if and when second languages are introduced. In all cases, however, national and local educational planning and budgeting are needed to effectively incorporate home languages into the overall functioning of the education system.[70] Teachers should be trained to teach in the local language and be able to use the materials in a targeted way. Teaching how to read in the first and second language should also be coordinated. Specifically, there is great value in leveraging similarities between how languages are written when beginning to teach reading in the second language. Ecuador and Mali are two examples of countries that have introduced targeted training programs on bilingual education.[71] New technologies can also facilitate the low-cost development and dissemination of mother tongue titles, offer content tailored to the needs and interests of individual learners, and augment the printed word with multisensory features, such as audio playback and word tracking.

The Pacific Early Age Readiness and Learning Program (PEARL) is showing significant impact in raising school readiness and early literacy in Tonga. The program established playgroups for children aged 0–5; offered structured lessons focused on early grade reading; provided training and coaching in the home language for teachers in Grades 1 and 2; and helped governments design, implement, and evaluate interventions. The early grade reading interventions led to an increase in the percentage of students able to read with comprehension by 11 percentage points (from 18% reading with comprehension by Grade 2 to 29%).[72] Another successful program that supports home language instruction is the Gambia READ project. Children were taught in one of seven native languages, and teachers were trained and provided with structured lessons. Additionally, children were regularly assessed by teachers and by parents through scorecards.

An evaluation of the program found that children under the home language program read with a higher fluency in English in Grades 1–3 compared to the children in other programs.

Decisions about language-of-instruction policies balance important technical and political considerations. A country with many linguistic minorities needs learning and teaching materials for each language. Important political and economic considerations can drive the desire to have all children be proficient in a single national language. Parents may perceive instruction in a widely spoken language such as English or French as key to their children's economic futures. No single language policy fits all circumstances. As policy choices are made, however, it is important to keep in mind the strong evidence for teaching children to read in their home language. Good language policies that prioritize home language instruction can yield positive outcomes while also helping to preserve cultural traditions and resources. Done well, they can promote better skills in both the home language and second language in the long term.

Niger balanced diversity in languages of instruction and considerations of economies of scale. Six national languages, plus French, are used as languages of instruction in Niger. These six languages were chosen from among all recognized national languages because they had developed orthographies and dictionaries that could be used in formal instruction. The six languages used as languages of instruction in Niger covered 97.8% of the population. Niger also has a policy for transition from exclusive home language instruction to bilingual instruction in the home language and French. Under these policies, schooling gradually shifts from 95% home language instruction in the 1st grade to 20% home language instruction by the 6th grade. In the 4th grade, both the home and French languages are used in class, each half of the time.[73]

Adapting the Literacy Policy Package across diverse country conditions

Conditions that favor literacy vary considerably across and within countries. Policies and practices should adapt appropriately to these variations. The difficulty of getting all children to read by age 10 depends on several factors. Perhaps the most critical factors are the institutional capacity of the national education system, the availability of the number of texts and books, and the nature of the language(s) to be learned. Depending on the country's context along these dimensions, different policies are implementable and appropriate. As a country develops, the context changes, allowing for different policies to be implemented.

- **Institutional capacity.** A critical factor for success is how well all parts of an education system work together to deliver a high-quality classroom experience. At the favorable end of the spectrum, qualified teachers are routinely present in classrooms equipped for learning. They act in ways that show they take the mandate for all students to learn seriously. They have been selected based on their qualifications, and they have been supported and trained by school leaders and pedagogical coaches. In these contexts, technically sound instruction is routinely delivered to all students, and teaching is adjusted to meet students' individual needs, in many cases with the use of technology to support the process. On the other end of the spectrum, in other systems, teachers may lack capacity, they might have been hired on political grounds, absenteeism may be high, and activities may not be properly monitored. Inputs are often lacking in these settings; classroom sizes are exceptionally large; and professional development, coaching, and support for teachers are scarce and ineffective. Basic skills for literacy that children can learn in a few dozen hours in high-institutional-capacity settings (such as the names of all the letters in the given alphabet) may take several times longer to acquire in low-capacity settings or may not ever be fully learned. Lack of institutional capacity can manifest itself in many ways, from policies not being implemented adequately, to actors not aligned for learning, and to learning resources not being adequately distributed. Resources may be available but inefficiently used.
- **Language simplicity and transparency.** The difficulty of learning to read in a given country depends on how many languages are spoken, how much they have in common, and how difficult they are to learn. All writing systems represent sounds and ideas with symbols, but how these map to oral language varies greatly in simplicity and regularity. As a result, children have an easier time learning to read in some languages compared to others. Writing systems where symbols map directly and simply to sounds are said to have "shallow" or "transparent" orthographies; those with indirect mapping and many exceptions are said to have "deep" orthographies.[74] Research on 13 European languages found that learning how to read in English (whose "deep" orthography has many exceptions to its spelling rules) needed on average two or three times more instruction than learning in languages such as Spanish or Italian. [75] (Spanish and Italian have very regular or "shallow" orthographies: letter-sound correspondences are often one-to-one, and there are few if any exceptions to learn.) The number of languages spoken nationally matters too, as does the commonality among the languages in both oral and written forms. The size and nature of the job of making ev-

eryone literate therefore will depend on many language-related factors. However, research shows that while difficult languages take more time to learn, the vast majority of children can learn to read if the right conditions are in place and the right policies are implemented, regardless of the language being learned.

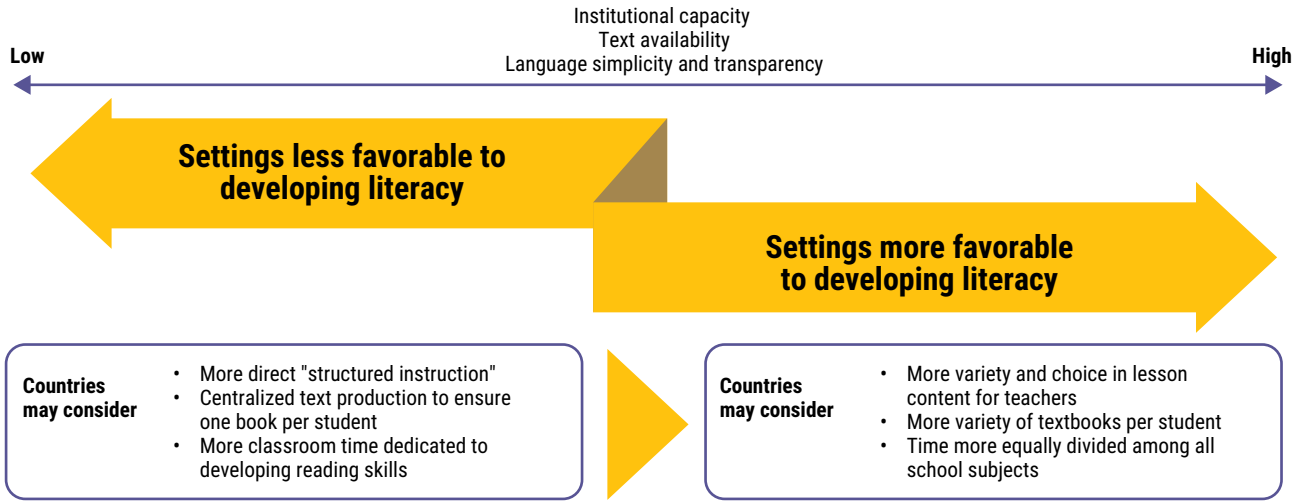
- **Text and book availability.** Children's skills as readers vary with the amount they read, which in turn varies with their opportunities to read. Environments where texts and books are ubiquitous both stimulate reading and provide greater opportunities for children to practice the skills they are learning in school. In Cambodia, where a recent PISA for Development (PISA-D) report showed that roughly 50% of students have to share a textbook in school, performance in reading was below the PISA-D average.[76] Text availability extends beyond basic textbook availability. Children growing up where texts are scarce have greater difficulty entering a virtuous circle where initial reading enjoyment sparks motivation, and in turn leads to more practice, better skills, and higher motivation.

Countries sit at given points along these three continua, each with a unique combination of language, institutional capacity, and text availability—and literacy policy choices need to reflect this. While the overall difficulty of the task varies, experience shows that children can become literate even in the most challenging conditions if the right policies and practices are implemented. But this requires being aware of where the country stands in each area and adapting accordingly. What children are taught, how much instruction they receive, and what form that instruction takes should all be compatible with assessments of difficulties and obstacles.

The Literacy Policy Package should be adapted to promote success in any given context. Policy options tailored to country circumstances raise the chances of success, no matter where along the continuum countries find themselves. Figure 7 presents this visually. Here are some examples for each of the four components of the policy package and how each component could be adapted to a country's context:

- **Committing to clear goals, means, and measures for literacy.** Countries need to set clear goals on literacy and map out the measures and means they will use to achieve the goals, based on their current context. When conditions for literacy are unfavorable, the share of total time in school dedicated to learning how to read may need to increase. In these less favorable settings, each "unit of progress" takes more time to achieve. For example, in contexts such as Sub-Saharan Africa where 87% of children cannot read a simple story, increasing the time dedicated to literacy instruction could pay multiple dividends. As systems go from low to medium to high institutional capacity and their students achieve this foundational skill, they can start to dedicate more time to other subjects (as illustrated in Figure 7). For countries in fragile, conflict, and violence-affected (FCV) settings, a first measure would be to gather information on literacy and other educational needs of the refugee population (including their language) to then set appropriate measures and goals.
- **Ensuring effective teaching.** Detailed guidance for teachers is a feature of successful education systems in many settings, but embracing direct instruction and providing lesson plans is especially important where the literacy task is hard or capacity is low. Where conditions are unfavorable and capacity is low, policies to develop and have teachers implement clear and simple lessons can anchor the delivery of instruction. When conditions make success harder, structured lesson plans can make teachers' jobs easier. In FCV countries such as South Sudan,[77] with a dramatic shortage of teachers, training volunteers/community members to act as teachers, providing them with highly structured lesson plans or other resources to compensate for their lack of experience, and using education technology to complement this can be a short-term measure to ensure that these already disadvantaged children acquire foundational skills. Directed instruction, enabled through the use of good structured lesson plans, focuses on the essentials: the scope and sequence of learning tasks that all students need to become proficient. As teachers grow in confidence and capacity as early reading instructors, offering greater autonomy and choice in the reading curriculum and organization of instruction is warranted. As students master the basics and become more fluent and capable of independent reading, curricula and teaching practices may broaden to promote a greater range and diversity of reading skills and interests. Similarly, countries with greater institutional capacity and with a more qualified teaching force have less need for structured lesson plans. In such contexts, the lesson plans can turn into supporting tools that indicate the core of the lesson on which teachers can build upon according to their knowledge and capacity.
- **Ensuring timely access to more and better age- and skill-appropriate texts.** Ideally, young readers build enjoyment of reading by finding a variety of texts they like on different subjects of interest. When this is not possible, teachers can still build student enjoyment around mastery of reading skills if each child has a high-quality text to read which suits his or her ability. To achieve reading fluency, students need to be exposed to appropriate text; in fact, re-

Figure 7: Adapting the Literacy Policy Package to different country circumstances



search suggests that time spent with books is the best predictor of reading success.[78] Countries with the least favorable conditions for literacy should focus on the first-order goal of ensuring each child has a text. Creating a single text per grade (which instantiates the lessons scope and sequence and teacher guidance, and matches the level of the average student in the class) and focusing energy on ensuring that every student receives a copy of the text should be the first goal for systems in challenging circumstances. Even when the task is simplified in this way, success can be elusive, but some low-capacity countries are already acting to improve their book supply chain. For instance, through a World Bank-supported project, Cambodia has implemented a "Track and Trace" system to show textbook locations in real time throughout the ordering and distribution process. After achieving the basic milestone of one book per child and improving institutional capacity, systems can move toward supplying classrooms and schools with large numbers of texts for students to develop reading skills in and out of classrooms.

- **Teaching children first in the language they speak and understand best.** Using the home language to instruct students for the early years of schooling not only establishes reading competency; it makes the study of more complex topics possible, and it leads to better outcomes for students when they later read in a second language.[79] Countries should adopt policies of home-language instruction that are tailored to their own circumstances (multiple languages spoken and transitioning from home language to national language, among other factors). Issues related to home language instruction are acutely felt by refugee children and by children in fragile, conflict, and violence-affected contexts. In these dire situations, teachers/volunteers should be trained to teach in the local language and be able to use the materials in a targeted way.

Interventions reflect country capacities and circumstances

Institutional capacity, especially as it bears on the ability to deliver instruction, is a key factor that distinguishes different context for success in literacy. Text availability—and to a lesser extent, language simplicity and transparency—tend to vary along with institutional capacity, although not in a strict linear way. Different levels of institutional capacity, usually correlated with different levels of learning outcomes, imply different sets of policies that should be implemented. An indicative typology developed for illustrative purposes is presented in Table 2 to provide more details on how the Literacy Policy Package can be adapted.

- **In settings affected by fragility, conflict, and violence, schools are likely to be scarce, suffer from unsafe conditions, and have few or no trained teachers present.** Given the protracted nature of conflict, countries like Yemen, the Democratic Republic of Congo, and Somalia command our sustained attention and require innovative methods for delivering education. Working through implementation partners such as UN agencies, community-based organizations, and nongovernmental organizations to deliver interventions can yield a great impact, as in Yemen and South Sudan. In circumstances when physical school spaces are lacking, the innovative use of technology, such as virtual classrooms, use of mobile phones, and radio broadcasting, should be considered. Volunteer teachers can also be deployed, aided by technological training and delivery tools. Where there are no teachers,

education technologies can provide emerging readers with engaging, educational, game-based applications to help learners develop basic literacy skills. For example, the XPRIZE for Global Learning and Norad's EduApp4Syria have demonstrated that it is possible to deliver effective literacy programs using new technologies in some of the most challenging educational contexts in Africa and the Middle East.[80] Additionally, accelerated learning programs, such as the World Bank's Emergency Basic Education Support Project in the Central African Republic, can be deployed after prolonged periods of conflict.

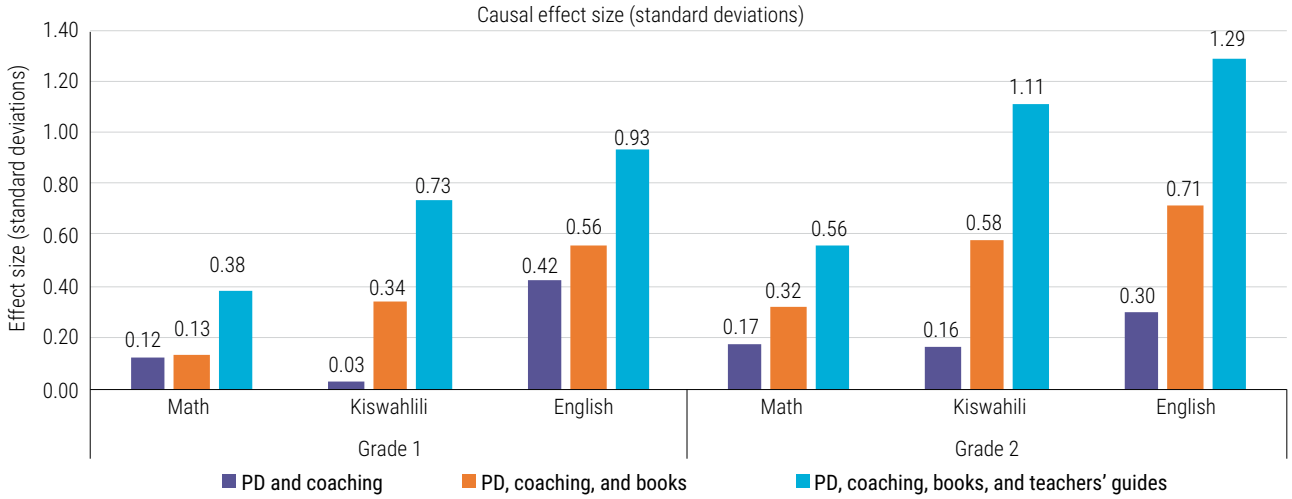
- **For countries with low institutional capacity that struggle to deliver high-quality instruction, interventions require a focus on providing clear guidance to teachers, including structured lessons where appropriate.** Coaching and skill-based training provide the basis for improving instruction. A variety of efforts can be undertaken to improve the number of texts that make it to the classroom. Even when such texts are available, success in getting a book for each child is typically elusive. Moreover, low-capacity countries may have a national language in which the bulk of instruction is done that differs from what most people speak. Policies should be in place to have as many children as possible begin learning in the language they speak and understand best. Numerous countries have begun instituting policies whereby children first learn to read in the language they speak and understand best. Some countries like Mali have made efforts to improve early grade reading with disappointing results.[81] But others, such as Kenya and Nigeria, are building on some notable successes (by allocating enough resources, training teachers, and providing students with appropriate reading and pedagogical material in their home language) and are now seeking to take good practices to the national scale.
- **Countries with moderate levels of institutional capacity may be able to provide a textbook for each child and may not suffer from extreme absenteeism or drastic teacher shortages.** In countries such as Colombia, a range of conditions are found, but average student achievement still has room for improvement. Teacher capacities may be higher, but classroom practice may be outdated, and schools may lack the knowledge or means to introduce more dynamic teaching and learning materials. Similarly, classrooms may not include the full range of needed inputs. In these settings, interventions can bring greater variety and relevance to reading materials by strengthening national authorship capacity or enhancing home reading. To improve teaching and learning, school leaders can be key in making sure that remediation and "teach at the right level" techniques are known and used.
- **Countries with high institutional capacity generally have the basics of the four components to ensure that each child can read by the end of primary school.** Their constraints are more nuanced and respond to more sophisticated constraints, such as a lack of screening for disabilities or assessment data not necessarily informing policies and teacher practices. For example, in Argentina and Uruguay, assessment systems are developed, but assessment results need to inform policies more closely to improve school, teacher, and student performance. Providing a high quality of education to all students regardless of socioeconomic background is also a challenge, and countries such as Armenia still struggle to provide quality education to disadvantaged groups, vulnerable populations, and learners with disabilities.[82]

Measurement and assessment at both the student and system levels are key for all countries. Although the type of assessment may vary, what is essential is for assessment systems to have well-defined ways to feed information on student performance back into the system to drive decisions. National goals need to be set with an understanding of how students are currently doing, and then this data needs to be used as a baseline on which to develop achievable goals and indicators of progress toward them. Most school systems where 90% of children learn to read have explicit, concrete, and time-bound goals for early grade readers.[83]

Table 2: Suggested interventions for countries with different levels of institutional capacity[84]

Institutional Capacity Level	Potential Constraints	Menu of Possible Interventions
Fragile, conflict, and violence-affected settings (e.g., Yemen)	Unsafe schools; nonformal schools; few or no trained teachers; no organized learning program; no teaching and learning materials; language of instruction issues related to refugee and/or fluid populations.	Ensure political and technical commitment to clear goals, means, and measures for literacy • Utilize mechanisms to collect basic information on literacy and other educational characteristics/ needs of refugee populations and host communities (including language) Ensure effective teaching • Use technology (such as virtual classrooms, mobile phones, radio broadcasting) when there are no or too few teachers • Deploy volunteer teachers aided by tightly structured and effective pedagogy (e.g. proven lesson plans and detailed teacher guides which ensure that the fundamentals are covered) and technological tools • Work with community-based organizations, nongovernmental organizations, etc., to aid in service delivery • Provide accelerated learning and/or remediation through alternative education programs Ensure timely access to more and better (age- and language-appropriate, suitable to the level of the students) texts • Focus attention on access to locally relevant, and quality texts considering through use of technology First teach children in the language they speak and understand • Use community volunteers and technology to teach children in the language they speak at home
Low institutional capacity (e.g., Nigeria)	Absent or not well-trained teachers; low amount of time dedicated to literacy instruction; books, if available, are too complex; high ratios of students to books; multiple local languages; overly rapid transition to national language.	Ensure political and technical commitment to clear goals, means, and measures for literacy • Promote nationally representative measures of early grade reading skills Ensure effective teaching • Provide tightly structured and effective pedagogy (e.g. through proven lesson plans and detailed teacher guides which ensure that the fundamentals are covered) • Provide practical, skills-based, on-site teacher training and focus professional development in structured pedagogy and on delivering instruction • Promote use of basic, in-class techniques to check for understanding and teach to the right level Ensure timely access to more and better (age- and language-appropriate, suitable to the level of the students) texts • Provide interventions to secure one quality book per child by tackling constraints in the book supply chain • Emphasis on pedagogical quality of the book, including alignment with national curricula and appropriate scope and sequence for early reading First teach children in the language they speak and understand • Implement a clear and evidence-based policy on moving from a home language to the national language
Medium institutional capacity (e.g., Colombia)	Textbooks are more common but supplementary texts may be inadequate; remediation unavailable; students do not get instruction at the right level; PD is ineffective; insufficient class time for reading.	Ensure political and technical commitment to clear goals, means, and measure for literacy • Use assessment data to adjust teaching to individual student levels Ensure effective teaching • Provide for increasing autonomy in lesson content and structure • Design coaching and professional actionable training for teachers that allows them to teach literacy effectively • Institute an array of remediation techniques tailored to student needs • Empower and increase school leaders' abilities to guide professional development to the extent possible Ensure timely access to more and better (age- and language-appropriate, suitable to the level of the students) texts • Develop authorship capacity and improve the availability of books • Provide children and teachers with more quality books to develop reading skills in and out of classrooms, when resources allow it • Emphasis on pedagogical quality of the book, including alignment with national curricula and appropriate scope and sequence for early reading First teach children in the language they speak and understand • Introduce a language transition policy with supporting pedagogical guidance for teachers
Higher institutional capacity (e.g., Armenia)	Assessment data not informing instruction; lack of alignment of literacy with overall curriculum; inadequate support to teachers for lesson planning; lack of relevant content in reading material.	Ensure political and technical commitment to clear goals, means, and measures for literacy • Integrate early grade reading with overall curricula goals • Develop capacity to participate in international and/or regional assessments Ensure effective teaching • Empower and increase school leaders' ability to guide professional development • Provide more variety and choice in lesson content for teachers (might include complex structured lesson plans which provide autonomy) Ensure timely access to more and better (age- and language-appropriate, suitable to the level of the students) texts • Provide a greater variety of quality books and materials both in and out of school to incentivize motivation for reading First teach children in the language they speak and understand • Support language transition policy with aligned teacher PD and wider text availability in home languages

Figure 8: Combinations of key inputs promote more learning: Evidence from Kenya's PRIMR Program



Interventions targeted at literacy require a broader agenda for improving education quality

The actions countries take to improve early grade reading and literacy are consistent with and support actions to improve education quality more generally. Significant overlaps and multiple feedback loops characterize relationships. Clear, explicit, and coherent curricula, with appropriate guidance for teachers, improve early reading and other subjects when used appropriately. The availability of teaching and learning materials promotes learning outcomes across disciplines, and good language-of-instruction policies benefit instruction regardless of what is being taught. Narrower reforms can catalyze broader reforms, or vice versa. Countries with poor track records of implementing complex reforms may seek to focus more on a defined set of goals for foundational skills in the early grades. Other countries may have the bandwidth to tackle full systems reform all at once.

In the classroom, all inputs come together to create the school experience that determines learning outcomes. Significant evidence shows the complementary and interaction effects that occur when multiple inputs come together in the best way. The strongest example is of good curricula taught by capable teachers when students each have a copy of a high-quality textbook in a language they speak and understand. A cost-effectiveness analysis on the ingredients of success of Kenya's PRIMR program showed that the option of PD, instructional support, 1:1 revised books, and teachers' guides was the most expensive, but the entire package together had the most additional impact on learning and was the most cost-effective intervention[85] (Figure 8). No single component is the key to success, but when systems can focus on a combination of the four is when literacy improves most.

Five pillars of system improvement

For interventions targeted at literacy to operate in a sustained way, broad reforms that ensure the right elements of the system are in place are needed. For a system to improve on a continual basis requires a meritocratic teacher career progression system; basic infrastructure for learning; well-managed systems that deliver the needed feedback; and inputs for continual improvement. The package has to be anchored in a system-wide reform for which countries will need more time and political commitment.

The World Bank's Approach to improving education systems is built around five pillars. These five pillars represent the areas where countries typically have to make progress in order to craft systems that provide the right experiences to their students. Each pillar reinforces the specific literacy policy package described above, and together they can help achieve the Learning Target. The five pillars focus on learners, teachers, classrooms, schools, and education systems and function as detailed in Figure 9. Figure 10 shows the alignment of the approach and the literacy policy package.

- **Learners are prepared and motivated to learn: Efforts to support children's development and learning prior to primary school entry are critical to ensure children arrive at school prepared to succeed.** Robust evidence from countries of all income levels confirms that a child's earliest years are a critical window to intervene and build strong foundations for the future—and that it is especially important to help children from disadvantaged backgrounds keep up with more advantaged peers during this

Figure 9: The education approach's five pillars

Learners are prepared and motivated to learn

- Early Childhood Education (ECE)
- Nutrition
- Stimulation

Teachers at all levels are effective and valued

- Meritocratic profession
- Effective HR function of Ministry
- Continous school-based professional development
- Children taught at the right level

Classrooms are equipped for learning

- Simple, effective, curriculum
- Books and supportive technology
- Coaching & structured pedagogy

Schools are safe and inclusive spaces

- Eliminate all types of school violence & discrimination in schools
- Students with any disability receive the right service
- Minimum level of infrastructure

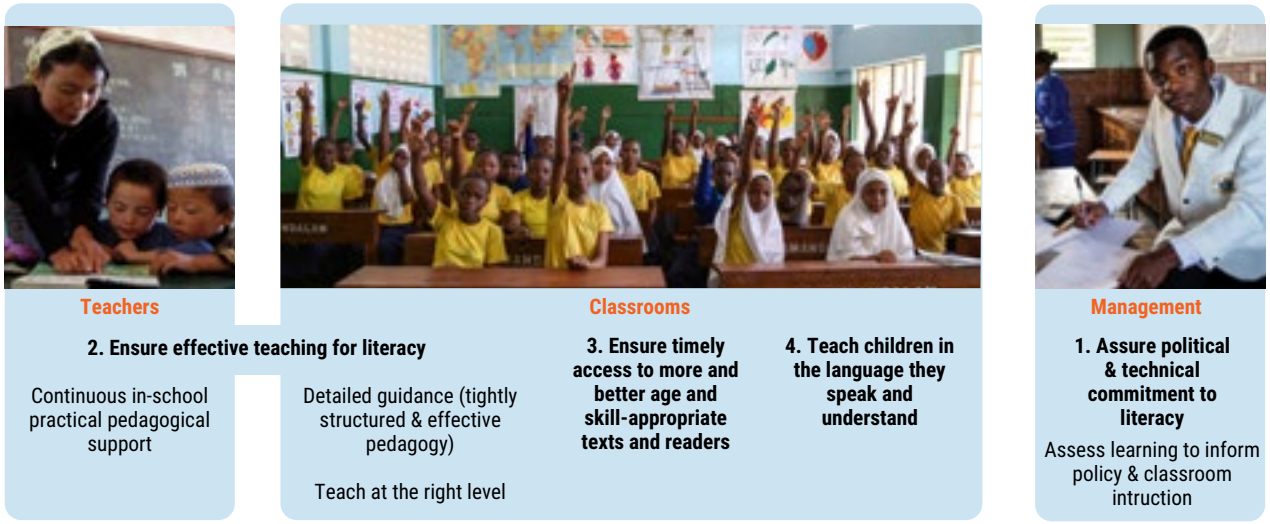
Education systems are well-managed

- Career track for principals
- Clear mandates & accountability
- Merit-based professional bureaucracy

period. High-quality early childhood education programming should be a mix of efforts to engage parents in children's early learning and enroll children in high-quality center-based services that promote cognitive and socio-emotional skills, help children build language and preliteracy skills, and develop the love of learning that can carry them through the rest of their education. Families, in some cases with the support of targeted policies, play a critical role in providing children with care, stimulation, and nutrition inputs for long-term cognitive, emotional, and physical health.

- **Teachers at all levels are effective and valued: Improving teacher quality rests upon five key principles.** First, make teaching an attractive profession by improving its status, compensation policies, and career progression structures. Second, ensure preservice and in-service education includes a strong practicum component to ensure teachers are well-equipped to transition and perform effectively in the classroom. Third, promote meritocratic selection of teachers, followed by a probationary period, to improve the quality of the teaching force. Fourth, provide continuous support and motivation, in the form of high-quality in-service professional development and strong school leadership, to allow teachers to improve continually. Fifth, use technology wisely to enhance the ability of teachers to reach every student, factoring in their areas of strength and development. Although the Literacy Policy Package centers on improving the quality of instruction for teachers already in the system, its effectiveness relies on having well-prepared, motivated teachers in classrooms. In some countries this might require holistic teacher management reforms along the five principles mentioned above.[86]
- **Classrooms are equipped for learning: Countries need to ensure clear, explicit, and coherent curricula (aligned with teachers' abilities to deliver instruction and students abilities to learn), as well as quality inputs, tools, and interventions to translate the curricula into effective learning for all students.** Curriculum reform requires a simple design with clearly determined competencies to be developed by the students and covered by teachers. Teachers should follow pedagogies, including remedial approaches such as "teach to the right level," that allow them to adapt to the needs of all students, and they should be able to measure what students learn to provide timely feedback and inform policy. A robust body of literature exists on the importance of basic physical inputs to enable student learning in school.[87] In the case of reading, these inputs of course include reading materials: children need access to reading textbooks and reading materials at home.[88] Digital learning resources can provide further opportunities both in the classroom and at home. Other enabling conditions include desks, tables, chairs, blackboards, and school infrastructure (such as walls, ceilings, roofs, electricity, and connectivity).[89]
- **Schools are safe and inclusive spaces: All children should be able to learn to read in healthy, safe, and inclusive learning environments.** As the number of countries falling into crisis, fragility, and violence increases, so too does the number of children who attend schools in these contexts—meaning that ensuring safety is a first priority. Bullying, discrimination, and violence in schools should be eliminated.

Figure 10: Summary of the main areas of intersection of the education approach and the literacy policy package



If a student doesn't feel safe, protected, and cared for, it is very difficult for any learning to take place. Families, communities, and teaching staff should be aware of the costs of gender and racial stereotyping, and of stereotyping those with disabilities. Learning environments must also be inclusive: teaching and learning practices should also support those with reading difficulties or disabilities. In practice, this means training teachers and other available resource staff (such as special education teachers or teacher assistants supporting inclusive practices) in skills and knowledge to provide differentiated teaching and support as needed.

- **Education systems are well-managed: The management capacity of ministries of education, including in subnational offices and in schools, needs to be able to handle the delivery of a complex service like education to thousands of schools every day.** Management capacity means having the people with the right skills and motivation working within organizational structures aligned toward supporting learning in the school and in the classroom. Countries need clear mandates and accountability, merit-based selection of personnel, and evidence-based decision making. Technocracies need pedagogical, managerial, and leadership capabilities to excel. School principals and leaders also have a part to play, through setting clear roles and responsibilities for staff, ensuring the meritocratic and transparent selection into school positions, and more generally providing critical support to the implementation of components under the literacy policy package.

The area of student assessment shows how key actions operate at multiple levels. Knowledge of current student levels of mastery is essential for the selection of the next steps in the learning process. This is true at the student, class, school, district, national, and even international level. Strong assessment policies operate at all levels. Countries undertake national and internationally comparable benchmarking to know where they are in the aggregate and with respect to other countries, and to meet their reporting obligations under the Sustainable Development Goals. Yet the information generated by teachers during a single lesson or at specified summative milestones is no less critical to the progress of a class or a student. Technical assistance tools such as the World Bank's Learning and Assessment Platform (LeAP—see next section) emphasize the need to build capacity for all key points along the continuum from the student level to the system level.

These five pillars must be supported by a strong political commitment to ensuring that all children learn. As the World Development Report 2018 emphasized, political challenges can pose an even greater barrier to learning than the technical ones. The political barriers are created by the competing interests of key actors affecting the education system, such as politicians, bureaucrats, employers, and providers, and to lower those barriers, countries need committed leadership supported by coalitions for learning. These coalitions can help good policies and programs survive changes in administration.

High-level political commitment also supports a whole-of-government approach to learning. Education ministries can't do it alone: they also need support from other parts of government and society. For all children to learn well, many other pieces must fall into place. For example, families need resources to send children to school, so jobs and social safety nets are crucial; children need

to arrive at school healthy and well-nourished, which requires well-functioning water, sanitation, health, and nutrition systems; transport systems have to make it possible for children to get to school in the first place; schools need electrification to operate effectively; and civil-service regulations need to support well-functioning education bureaucracies. Effective leadership from the top and political coalitions for learning can ensure that the government as a whole views ending learning poverty as a priority, so that all these agencies can work together.

Using technology to support literacy efforts

Efforts to accelerate the rate of progress in reading proficiency would be incomplete without the consideration of technology. To reach the Global Learning Target, countries will need to disrupt existing models of reading content development, delivery, and measurement, and new technologies can be critical to such efforts. The previous discussion already made reference to some of the ways in which new technologies can be used disruptively to achieve the global learning target: through the use of digital texts, readers, and didactic materials, as well as apps and other adaptive software applications to teach students to read; computer-facilitated student assessment; open digital education platforms and information systems to expand access to reading material; "Track and Trace" technologies to provide real-time monitoring of textbook distribution; and virtual coaching for the at-scale delivery of teacher professional development. Underpinning all of these is the establishment of foundational open-source digital infrastructure that will enable the delivery of at-scale solutions and accelerate the rate of progress. As an example, India's National Digital Infrastructure for Teachers, *DIKSHA*, aims to enable, accelerate and amplify solutions to advance teacher professional development and support. The Bank is supporting similar efforts in countries like Costa Rica and Peru in partnership with the EkStep Foundation.

To support all of these initiatives, the World Bank will help countries find technological solutions that build on effective teaching and bolster literacy in developing countries. Interventions that incorporate a smart use of new technologies can have some of the biggest impacts on learning. World Bank procurement and advisory work on procurement activities will help countries avoid the ineffective and expensive adoption of new technologies in education by generating and diffusing evidence of cost-effective uses of technology, as well as shaping the investment decisions of suppliers of literacy-related products and services to meet specific needs and operating contexts of user groups working on literacy-related initiatives, especially in low-income, low-resource communities in developing economies. This will be part of the World Bank's larger "3D" initiative to support the discovery, diffusion, and deployment of new technologies in education:

- **Discover:** *Document and analyze evidence-based and promising technologies and the necessary pre-conditions to utilize them effectively in education*, by maintaining a knowledge base of cost-effective and scalable technologies and generating impact evidence and guidance on key requirements (such as technology infrastructure and levels of users' digital skills required for effective implementation).
- **Diffuse:** *Disseminate knowledge about what works and what doesn't—and why—in the use of new technologies in education* by supporting the sharing of practical information and know-how with *policy makers and key stakeholder groups,* as well as the development of related communities of practice. This includes pointing at the necessary preconditions and enabling environments for their adoption, given the resource and political economy constraints of schools and education systems today.
- **Deploy:** *Support the implementation of technology-enabled educational products and services*, including by tackling market and procurement barriers for adoption of the required supporting technology infrastructure (hardware, connectivity, software, electricity), ensuring effective integration with the curriculum and classroom instruction (e.g., teachers' and students' digital skills), and using innovative tools and approaches to support quick learning and iteration in technology-enabled educational initiatives.

In partnership with DFID and the Gates Foundation, the World Bank is building an ambitious global "EdTech Hub" to implement this 3D strategy. Through this partnership, the World Bank will help countries adopt technologies that support teachers in implementing "Teach at the Right Level" practices, facilitate the deployment of self-paced learning tools for those environments where there is scarcity of effective teachers, and enable management capacity to deploy these solutions at scale. The new EdTech Hub seeks to galvanize a global community toward impact, focusing on providing evidence to fund and pursue what works—and to avoid what does not. It will focus on "discovery" and "diffusion" under the 3Ds, seeking to complement ongoing World Bank work on "deployment."

Accompanying this country-level support is an ambitious measurement and research agenda

While countries will lead the action to reduce learning poverty, with country-level support from the World Bank, it is also important to continue to provide measurement and action-oriented research that can support these efforts. Because they benefit many countries, some investments—notably, in the development of measurement tools and research—can most cost-effectively be carried out at the global level.

First, to reach the Learning Target, countries need to start by knowing where they stand in terms of early literacy and other foundational skills such as numeracy. It is almost impossible for countries to design effective early literacy policies without knowing the magnitude and characteristics of the learning poverty in their countries. Furthermore, data can help in building coalitions of stakeholders (parents, teachers, principals) for improving literacy, understanding what is or is not working, and tracking how fast progress is being made.

This means improving student learning assessment systems. Not all countries gather data on learning, and even when data are collected, there are often serious challenges with their quality. Also, most data from national assessments is not internationally comparable. While an increasing number of countries participate in cross-national assessments, this does not necessarily contribute to improved national assessment capacity. And some countries that do measure learning systematically do so only at the end of secondary school, when it is often too late to make a difference. In fact, over the past decade, only about 100 countries have collected internationally comparable data for foundational literacy. Having good assessment data that allow a country to know if it is on track to meet its goals is essential.

To leapfrog in learning measurement, the World Bank is launching the Learning Assessment Platform (LeAP). LeAP, the activities of which are currently funded by the second Russia Education Aid for Development (READ) Trust Fund program, aims to improve the quality and availability of global learning data by aligning cross-national learning assessments and expanding national capacity to assess learning. As part of LeAP, the Bank established a partnership with UNESCO Institute for Statistics (UIS), the institution in charge of monitoring SDG 4.1. Through this partnership, the Bank is collaborating closely with UIS and its Global Alliance to Monitor Learning to ensure that countries are able to report high-quality, comparable data for this indicator. This collaboration has included work on developing a global reporting scale and supporting protocols that allow countries to report "minimum proficiency" data from a variety of national and cross-national assessments in a comparable way. This harmonization effort is allowing for a much clearer picture of the learning crisis to emerge.

The World Bank will also provide client countries with technical support and financing to design and implement quality learning assessments. Countries might decide to generate their own high-quality national assessments or participate in cross-national assessments. The World Bank will support the design and implementation of high-quality, fit-for-purpose learning assessments that can also generate internationally comparable data on learning. It will also support the local capacity building required for continuous assessment and monitoring. Finally, knowledge products and capacity-building tools will be developed as a global public good. For instance, the Bank is working with UIS to develop an international item bank which can be used by countries to complement their learning assessments, improve their quality, and make them internationally comparable.

But the data needs go well beyond just improving student learning data in primary school. For one thing, they have to start earlier, in the years before a child enters school. Evidence from a range of disciplines confirms that a child's earliest years are a critical time to invest to build human capital. The returns to investments in the early years are diverse, and policies and programs to improve children's development have been steadily expanding in most countries. Yet despite improvements in access, in many countries, the quality of early-years programs is below what is required to promote child development. Investments in quality early childhood education can help children arrive at primary schools with strong foundations to succeed and are critical to tackle learning poverty. The World Bank is working with governments to scale up these investments; in response to government demand, our investments in early childhood education have more than doubled in the last five years. Governments, development partners, and parents also need better information on children's development and the quality of early learning environments. The World Bank's efforts to scale up measurement in early childhood include working with partners to scale up global monitoring and leading innovative efforts to support a better measurement of child outcomes and the quality of early learning settings. We are working with governments to integrate early childhood measurement into their systems and to use these data to prioritize strategic investments in early learning.

Strengthening adult literacy and other skills is also essential. Rates of learning poverty were even higher

for past generations of children than for today's, leaving many adults unable to read proficiently (or to read at all). According to UNESCO, 750 million adults in the world have difficulty reading and/or writing. The mega-trends of rapid technological change, demographic transformation, and global integration of production imply that good jobs increasingly require novel mixes of cognitive, technical, and socio-emotional skills. The World Bank's Skills Toward Employment and Productivity (STEP) measurement program has been pioneering efforts to measure and analyze the impact of these different skills on the socioeconomic success of working-age adults. The World Bank is also reviewing the science of adult literacy acquisition and an analysis of adult literacy programs (ALPs) around the world. To complement these efforts on adult skills measurement, the WBG and UNESCO Institute for Statistics (UIS) will use their recently signed partnership to develop the protocols for integrating the adapted version of the Literacy Assessment and Monitoring (mini-LAMP) into regular household surveys. This could be a significant milestone for measuring the skills of adult populations in low-income countries.

To measure the drivers of learning, the World Bank has launched the Global Education Policy Dashboard (GEPD).[90] This tool will enable countries to monitor how well their practices (or service delivery), policies, and politics are oriented toward learning and attainment for all children. It will measure the quality of key school-level ingredients of learning (teaching, school management, inputs and infrastructure, and prepared learners), as well as the deeper systemic drivers in policies and politics. This tool brings together streamlined versions of existing measurement tools such as *Teach*, a classroom observation tool for measuring the quality of teaching practices. The GEPD will generate and report information on a comprehensive, and yet focused, set of indicators to offer countries some guidance on where to act and the ability to monitor progress in the short and medium term. The GEPD indicators and instruments have been the result of extensive collaboration across the education, health, social protection, governance, and other global practices of the World Bank, and the GEPD is being implemented in 13 countries across all regions in 2019 and 2020, with the goal of scaling up rapidly afterward. At the same time, the GEPD is enabling the piloting of new areas of measurement, such as the prototyping of an EdTech Readiness Index that could be used to inform countries of where they stand on EdTech. To do this, it will measure the extent to which education technologies, as well as the efforts of multiple actors within a larger EdTech ecosystem, are integrated with broader education system policies and practices (such as teacher training, curriculum, and infrastructure), and therefore the extent to which investments in EdTech are likely to bear fruit.

Measurement efforts need to use a "whole child development" lens. Given the evidence on the importance of socio-emotional skills in education policies, indicators on students' socio-emotional skills need to be collected in a culturally robust manner. The Bank is working with partners to develop instruments assessing socio-emotional skills that, once developed, would freely be made available for use by policy makers, researchers, and organizations interested in generating performance metrics of the education system with a "whole child" approach lens. This work will also feed into the World Bank's existing work on measuring and improving teaching practices around developing students' socio-emotional skills in the classroom (through the *Teach* tool).

The World Bank will also continue to support an action-oriented agenda in research and innovation related to foundational skills. Among other topics, this research agenda will explore the knowledge and implementation gaps in policy interventions to improve literacy in middle- and low-income countries (e.g., What are effective models for developing teachers' content and pedagogical knowledge? What are the best ways to ensure that books reach children? How are interventions best adapted for contexts with different home languages? What adaptations work for fragile settings?). It will also explore the cognitive processes required for children to read with comprehension and how they can inform policy making in client countries (with different languages and contexts). Impact evaluations of scalable programs, rapid assessments of existing evidence, and lessons from program implementation processes will be used to provide client countries with timely and evidence-based advice.

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A call to action

The high rates of learning poverty and slow rate of progress in eliminating it are morally and economically unacceptable. All children should learn to read by age 10, both to ensure that they have opportunities in life and to strengthen skills in their societies. Learning poverty places children's future and the development of their countries at risk. Eliminating learning poverty is an urgent development objective, one that is critical to achieving our goals of ending extreme poverty and advancing shared prosperity, as well as any other education goals. We are at an inflection point: the 10-years-olds of 2030 will be born next year. It is critical to accelerate efforts now to ensure that these children will be able to read when they turn 10 years of age.

Tackling this crisis will require a new level of commitment, coupled with comprehensive reforms to ensure domestic resources are used as effectively as possible. Education is a sector with critical macro implications: education spending amounts to 15 to 20 percent of the public budget in many countries, and the education sector builds the human capital that drives development. The World Bank is establishing a Global Education Finance Platform to support country efforts to ensure that education systems are adequately funded and resources are used effectively. The Platform comprises a set of initiatives and activities to develop tools, build the evidence base, and provide technical assistance.

A first step is to increase efforts to support countries in measuring learning and implementing systemic education reforms. Some countries that have data do use it to its fullest to inform policy makers. Unfortunately, many countries are flying blind and have very scattered, inconsistent data. And in several countries, especially in Sub-Saharan Africa, learning is not measured at all.[91]

Reforms to end Learning Poverty require interventions focused on improving literacy, systematic and sustained improvements in education systems, a whole-of-government approach, and society-wide commitment to investing in people. Interventions focused on literacy can accelerate progress towards the learning target, but for them to operate in a sustained way, the package has to be anchored in system-wide reform. The commitment to ending learning poverty should have support from ministries of finance, planning ministries, and others with economy-wide responsibilities. Further, for education outcomes to improve, we need interventions from all sectors. Nutrition and sanitation interventions improve children's health and foster brain development; cash transfer programs have a proven impact on children and particularly girls' school attendance; transport interventions can reduce costs of attending schools; infrastructure investment is needed to close the gap on the supply side; and digital development strategies support school connectivity, enabling EdTech interventions such as adaptive learning. Parents, communities, potential employers, and civil society all have a role to play.

Meeting the Learning Poverty Target won't be easy, but we can't back down from the challenge. We owe it to the children of this world to set our sights high, so they can too.

Annex A

Table A: Learning poverty by country

Country Name	Out-of-School (OoS)	Below Minimun Proficiency (in School)	Learning Poverty	Assessment Year	Assessment
Afghanistan	49.6	87.0	93.4	2013	NLA
Argentina	0.6	53.6	53.9	2013	LLECE
Armenia	7.2	30.0	35.0	2015	TIMSS
Australia	3.2	5.5	8.6	2016	PIRLS
Austria	0.0	2.4	2.4	2016	PIRLS
Azerbaijan	5.0	19.2	23.3	2016	PIRLS
Bahrain	2.1	30.6	32.1	2016	PIRLS
Bangladesh	4.9	56.0	58.1	2017	NLA
Belgium	1.3	5.1	6.4	2016	PIRLS
Benin	3.6	77.3	78.2	2014	PASEC
Botswana	7.2	44.3	48.3	2011	PIRLS
Brazil	2.7	46.9	48.4	2013	LLECE
Bulgaria	6.8	5.2	11.7	2016	PIRLS
Burkina Faso	31.7	78.6	85.4	2014	PASEC
Burundi	2.7	92.7	92.9	2014	PASEC
Cambodia	2.6	49.8	51.1	2013	NLA
Cameroon	5.2	75.9	77.2	2014	PASEC
Canada	0.0	4.3	4.3	2016	PIRLS
Chad	21.1	97.0	97.7	2014	PASEC
Chile	9.3	30.3	36.8	2013	LLECE
China	0.0	18.2	18.2	2016	NLA
Colombia	6.9	44.7	48.6	2013	LLECE
Congo, Dem Rep	63.2	62.0	86.0	2011	NLA
Congo, Rep	12.8	82.9	85.1	2014	PASEC
Costa Rica	1.1	31.7	32.5	2013	LLECE
Cote d'Ivoire	21.1	77.6	82.3	2014	PASEC
Croatia	3.0	1.0	4.0	2011	PIRLS
Cyprus	2.2	14.3	16.2	2015	TIMSS

Country Name	Out-of-School (OoS)	Below Minimun Proficiency (in School)	Learning Poverty	Assessment Year	Assessment
Czech Republic	0.0	3.0	3.0	2016	PIRLS
Denmark	1.0	2.6	3.6	2016	PIRLS
Dominican Republic	6.6	79.4	80.7	2013	LLECE
Ecuador	1.9	62.1	62.8	2013	LLECE
Egypt, Arab Rep	1.4	69.2	69.6	2016	PIRLS
Ethiopia	14.0	88.7	90.3	2015	NLA
Finland	0.9	1.7	2.6	2016	PIRLS
France	0.9	6.3	7.1	2016	PIRLS
Georgia	0.4	13.5	13.8	2016	PIRLS
Germany	0.2	5.5	5.7	2016	PIRLS
Guatemala	10.1	63.6	67.3	2013	LLECE
Honduras	17.1	69.4	74.7	2013	LLECE
Hong Kong SAR, China	1.9	1.4	3.2	2016	PIRLS
Hungary	3.1	2.9	5.9	2016	PIRLS
India	2.3	53.7	54.8	2017	NLA
Indonesia	2.4	33.8	35.4	2011	PIRLS
Iran, Islamic Rep	0.9	35.1	35.7	2016	PIRLS
Ireland	0.0	2.3	2.3	2016	PIRLS
Israel	2.9	9.0	11.7	2016	PIRLS
Italy	1.4	2.1	3.5	2016	PIRLS
Japan	1.2	1.0	2.2	2015	TIMSS
Jordan	4.0	50.0	52.0	2015	TIMSS
Kazakhstan	0.3	1.9	2.2	2016	PIRLS
Korea, Rep	2.7	0.3	3.0	2015	TIMSS
Kuwait	3.3	49.4	51.0	2016	PIRLS
Kyrgyz Republic	1.9	63.8	64.5	2014	NLA
Latvia	3.2	0.8	4.0	2016	PIRLS
Lithuania	0.3	2.7	3.0	2016	PIRLS
Macao SAR, China	1.3	2.4	3.7	2016	PIRLS
Madagascar	21.9	95.8	96.7	2015	NLA
Malaysia	1.4	11.7	12.9	2017	NLA
Mali	33.0	86.6	91.0	2012	NLA
Malta	2.4	26.8	28.6	2016	PIRLS
Mexico	1.2	42.5	43.2	2013	LLECE
Morocco	5.4	63.8	65.8	2016	PIRLS
Netherlands	0.3	1.3	1.6	2016	PIRLS
New Zealand	1.5	10.0	11.4	2016	PIRLS
Nicaragua	1.6	69.3	69.8	2013	LLECE

Country Name	Out-of-School (OoS)	Below Minimun Proficiency (in School)	Learning Poverty	Assessment Year	Assessment
Niger	38.9	97.9	98.7	2014	PASEC
Norway	0.2	5.8	6.0	2016	PIRLS
Oman	1.5	40.9	41.8	2016	PIRLS
Pakistan	27.3	65.0	74.5	2014	NLA
Panama	7.1	64.1	66.6	2013	LLECE
Paraguay	10.8	71.3	74.4	2013	LLECE
Peru	4.2	53.7	55.7	2013	LLECE
Poland	4.4	2.0	6.3	2016	PIRLS
Portugal	3.6	3.0	6.5	2016	PIRLS
Qatar	2.2	33.8	35.3	2016	PIRLS
Romania	6.9	14.1	20.0	2011	PIRLS
Russian Federation	2.4	0.9	3.3	2016	PIRLS
Saudi Arabia	2.5	36.7	38.3	2016	PIRLS
Senegal	25.7	65.2	74.1	2014	PASEC
Serbia	0.8	7.4	8.1	2015	TIMSS
Singapore	0.1	2.7	2.8	2016	PIRLS
Slovak Republic	2.1	6.6	8.5	2016	PIRLS
Slovenia	2.2	3.7	5.8	2016	PIRLS
South Africa	8.4	77.9	79.8	2016	PIRLS
Spain	1.5	3.4	4.9	2016	PIRLS
Sri Lanka	0.9	14.0	14.8	2015	NLA
Sweden	0.4	1.9	2.3	2016	PIRLS
Thailand	2.0	21.9	23.5	2011	TIMSS
Togo	8.5	84.2	85.6	2014	PASEC
Trinidad and Tobago	1.3	19.7	20.7	2016	PIRLS
Tunisia	0.4	65.1	65.3	2011	TIMSS
Turkey	5.0	17.6	21.7	2015	TIMSS
Uganda	9.0	81.1	82.8	2014	NLA
United Arab Emirates	2.8	32.4	34.3	2016	PIRLS
United Kingdom	0.2	3.2	3.4	2016	PIRLS
United States	4.1	3.9	7.9	2016	PIRLS
Uruguay	0.5	41.4	41.7	2013	LLECE
Vietnam	0.6	1.1	1.7	2011	NLA
Yemen, Rep	18.9	93.5	94.7	2011	TIMSS

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Endnotes

1 World Bank 2018, UNESCO Institute for Statistics 2017.
2 Kraay 2018, World Bank 2018d.
3 Lange, Wodon, and Carey 2018.
4 This paper draws heavily on two background papers: Azevedo and others 2019, Crawford and others 2019. Note that "Low- and middle-income countries" consists of those defined as IDA, Blend, and IBRD countries under the World Bank lending classification. Note that it includes six IBRD countries that now qualify as high-income: Chile, Croatia, Panama, Poland, Trinidad and Tobago, and Uruguay.
5 Angrist, Djankov, Goldberg, and Patrinos 2019.
6 World Bank 2018a.
7 Filmer, Rogers, Angrist, and Sabarwal 2018.
8 Note that this is true even though there is a lot of room for quantity improvements: The quantity benchmark for a full education in the HCI is 14 years of schooling, meaning that any 18-year-old who has not stayed in school from pre-primary (2 years of pre-primary, in fact) through upper-secondary graduation has not achieved the benchmark.
9 For a recent summary, see World Bank 2018a, Chapter 1.
10 Pritchett 2013.
11 Hanushek and Woessmann 2012, World Bank 2018a.
12 Chetty and others 2016, Chetty and others 2014.
13 Hanushek and others 2015, Valerio and others 2016.
14 Kaffenberger and Pritchett 2017.
15 Oye, Pritchett, and Sandefur 2016.
16 Skibbe and others 2019.
17 In virtually every country, the official start age for primary school is at or before 7 years of age (World Bank Open Data).
18 PIRLS also assesses the reading achievement of young students in their fourth year of schooling as this is "an important transition point in their development as readers. Typically, by this time in their schooling, students have learned how to read and are now reading to learn" (IEA 2016).
19 Lyon and Chhabra 2004, citing Shaywitz 2003.
20 Mullis, Martin, Foy, and Hooper 2017.
21 As explained below, minimum proficiency on PIRLS is measured as scoring at least 400 points, which PIRLS defines as the Low International Benchmark.
22 Only assessments for Grades 4, 5 and 6 were included in this analysis.
23 Quality is assessed in this context in terms of design, implementation, comparability, frequency, timenliness, documentation, and data access.
24 If we count the number of countries with adequate learning assessments for the learning poverty indicator, rather than using this population-weighted figure, then coverage is considerably lower.
25 In 1990, the baseline year of the Millennium Development Goals (MDGs), the global monetary poverty rate (using the international-dollar-per-day poverty line) was 36%. Under the MDGs, the world agreed on the target to halve this number by 2015. As it turned out, poverty actually fell to 10%, surpassing the original committment. It is worth noting that global monetary poverty was never higher than 50% in the period of systematic global measurement. In 1981, when it was first measured, the rate was 42%. Survey coverage was just 51% of the world population, and four regions (including Sub-Saharan Africa) had a survey coverage of less than 40%. For more details, please visit the Povcalnet website at http://iresearch.worldbank.org/PovcalNet/povDuplicateWB.aspx.
26 If numeracy (rather than literacy) were used to calculate the learning poverty rate, the pattern might be expected to be different. Among adolescents, boys slightly outperform girls on PISA math scores, for example. Yet on the 4th-grade TIMSS math assessment, girls outperform boys in many countries, such as Saudi Arabia, Jordan, South Africa, and Indonesia, and in the median country there is no gender difference.
27 This analysis examines spells of improvement for each country within a given assessment, for the subsample of countries in which the same assessment was applied more than once between 2000 and 2018.
28 This message is consistent with the concerns about slow progress raised by UNESCO (2019), a report for the 2019 UN High-Level Political Forum on the SDGs.
29 See also Pritchett 2013 for an earlier discussion of this issue.
30 Pritchett 2013, World Bank 2018a.
31 An alternative assumption for this high scenario would be to set the rate of improvement for every country equal to the global 80th percentile. It turns out, however, that the regional 80th-percentile scenario yields faster global reductions in learning poverty. This is because the regional 80th percentile is higher in Sub-Saharan Africa than in other regions, and the regional scenario applies that more rapid rate to Africa's large child population.
32 We are grateful to Simeon Djankov and Ambar Narayan for these points. Thanks to these properties, as well as the greater availability of data today, the Learning Poverty measure could serve the purpose once envisioned for a "Millennium Learning Goal" (Filmer, Hasan, and Prichett 2006).
33 Crouch and Rolleston 2017; Crouch and Gustafsson 2018.
34 Saavedra 2019a.
35 Guadalupe and others 2017.
36 Castles, Rastle, and Nation 2018.
37 Beteille and Evans 2019.
38 World Bank 2018b.
39 Beteille and Evans 2019.
40 Kotze, Fleisch, and Taylor 2019.
41 Piper 2018.
42 Banerjee and others 2017.
43 JPAL 2019
44 Banerjee and others 2017.
45 Kucirkova and others 2017.
46 Gove and Wetterberg 2011.
47 Anderson, Wilson, and Fielding 1988.

48 Gove and Cvelich 2011.
49 The Education Commission 2016.
50 Crabbe, Nyingi, and Abadzi 2014.
51 Piper and others 2018.
52 Piper and others 2018.
53 Fuje and Tandon 2016.
54 Piper 2010.
55 Friedlander 2013. Environmental factors associated with early reading achievement in the developing word: A cross-national study. The study found that up to 15% of the variance in student outcomes in the Philippines, Uganda, Mali, and Ethiopia were attributable to home environment factors.
56 Results for Development 2016.
57 Results for Development 2016.
58 For more information on the Book Chain, refer to the work of the Global Book Alliance (GBA). The GBA has created various analytical tools to help countries strengthen their "book chains" to increase text access and use by young readers.
59 Determined through a Home Background Index, which uses indicators such as whether or not the child is of an ethnic minority, has a college-educated mother, a college-educated father, a computer at home, and/or Internet at home.
60 Rolleston, James, and Duc 2013.
61 World Bank 2018b.
62 Worldreader website. Accessed at: https://www.worldreader.org/learnings/.
63 Google and Bolo 2019; Koval-Saifi and Plass 2018.
64 USAID 2016.
65 Duc and Tam 2013.
66 Piper, Zuilkowski, and Ong'ele 2016.
67 Shin and others 2015; Taylor and von Fintel 2016.
68 Patrinos and Velez 2009.
69 TIMSS 2011.
70 USAID 2015.
71 Maurer 2010.
72 Macdonald and others 2017.
73 Results for Development 2016.
74 The technical terms for the relative complexity of a writing system is "orthographic depth." Shallow orthographies are ones with simple letter-to-sound correspondences, often one-to-one. Deep orthographies by contrast have less direct relationships between letters and sounds. Pronunciation does not follow regular rules. Instead the same letter may be pronounced differently depending on the word itself, such as with "pint" and "mint" in English. In other cases, the exceptions group into regular rules, such as pronouncing "gh" with an "f" sound when it occurs at the end of a word in English.
75 Seymour, Aro, and Erskine 2003.
76 MoEYS 2018.
77 UNESCO 2018b.
78 Bulat and others 2017.
79 Shin and others 2015; Taylor and von Fintel 2016.
80 Xprize website, accessed at: https://www.xprize.org/prizes/global-learning; https://norad.no/en/front/thematic-areas/education/innovation/eduapp4syria/positive-evaluation-findings-for-eduapp4syria/].
81 Gove and Wetterberg 2011.
82 World Bank 2018e.
83 European Commission 2012.
84 We have used the Government Effectiveness indicator under the World Bank's Worldwide Governance Indicators to discern, in a general manner, different institutional contexts for which potential constraints and suggested interventions may apply. The definition of Government Effectiveness relates to "capturing perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies." Accessed at https://info.worldbank.org/governance/wgi/Home/Reports.
85 Piper and others 2018.
86 Beteille and Evans 2019.
87 Glewwe and others 2011.
88 Piper 2010.
89 World Bank 2018b.
90 This work is carried out with support from the Bill and Melinda Gates Foundation, the UK's Department for International Development, and the government of Japan.
91 Only 40% of the children in Sub-Saharan Africa live in a country with a learning assessment with a strong design, implementation, and documentation.

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