RISE

RESEARCH ON IMPROVING SYSTEMS OF EDUCATION

Focus to Flourish:

Five Actions to Accelerate Progress in Learning

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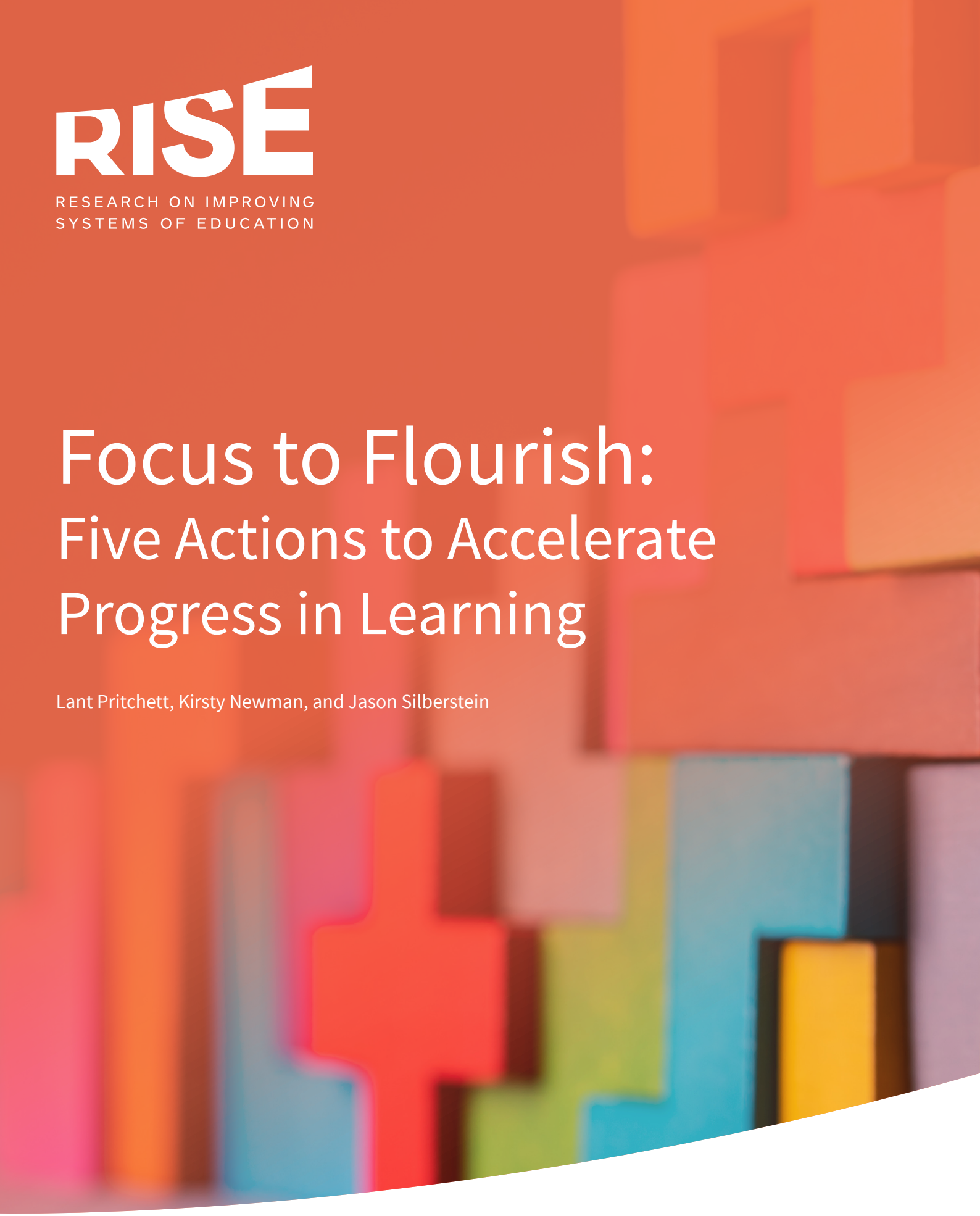

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Introduction

There is a severe global learning crisis. While nearly all children start school, far too many do not learn even the most foundational skills of reading, writing, and basic mathematics during the years they spend there. The urgent need to address this crisis requires no elaborate reasoning. If one starts with love for a child, a human universal, it is easy to see that in the modern world a child's dignity, self-worth, and freedom to define their own destiny require an adequate education. An adequate education is what will then enable that child to lead a full adult life as a parent, community member, citizen, and worker in the 21st century.

To enable every child to leave school with the foundational skills they need will require fundamental changes to education systems. Since 2015, the Research on Improving Systems of Education (RISE) Programme, with which we are affiliated, has been conducting research exploring how to make these changes through country research teams in seven countries (Ethiopia, India, Indonesia, Nigeria, Pakistan, Tanzania, and Vietnam) and crosscutting teams on the political economy of education reform. Drawing on the cumulative body of research on learning outcomes and systems of education in the developing world, both from the RISE Programme and other sources, we advocate for five key actions to drive system transformation. (See next page.)

A message cutting across all five actions is "focus to flourish". Education systems have been tremendously successful at achieving specific educational goals, such as expanding schooling, because that is what they committed to, that is what they measured, that is what they were aligned for, and that is what they supported. In order to achieve system transformation for learning, systems must focus on learning and then act accordingly. Only after a system prioritises learning from among myriad competing educational goals can it dedicate the tremendous energies necessary to succeed at improving learning. The research points to these five actions as a means to chart a path out of the learning crisis and toward a future that offers foundational skills to all children.

The first section that follows provides background on the depth and nature of the learning crisis. The remainder of the document explains each of the five actions in turn, synthesising the research that informs each action, contrasting that action with the prevailing status quo, and describing what the action would entail in practice.

> In high-income countries, 9 out of 10 children learn to read by age 10.
>
> In low-income countries, 9 out of 10 children do not learn to read by age 10.
>
> (World Bank, 2019)

Align Measure Commit Support Adapt

Commit to universal, early foundational learning.

Measure learning regularly, reliably, and relevantly.

Align systems around learning commitments.

Support teaching.

Adapt what you adopt as you implement.

Acknowledgements

The authors of this policy paper have benefitted from the advice of Julius Atuhurra, Amanda Beatty, Rona Bronwin, Rastee Chaudhry, Luis Crouch, Santiago Cueto, Jishnu Das, Baela Raza Jamil, Michelle Kaffenberger, Lillie Kilburn, Shintia Revina, Sarah Lane Smith, Marla Spivack, and comments at a joint meeting of the RISE Research Directorate, Intellectual Leadership Team, and Country Research Teams. Special thanks go to Katie Cooper, Tom Lucas, and Yue-Yi Hwa for their exceptional work on graphics and design.

Background: The learning crisis

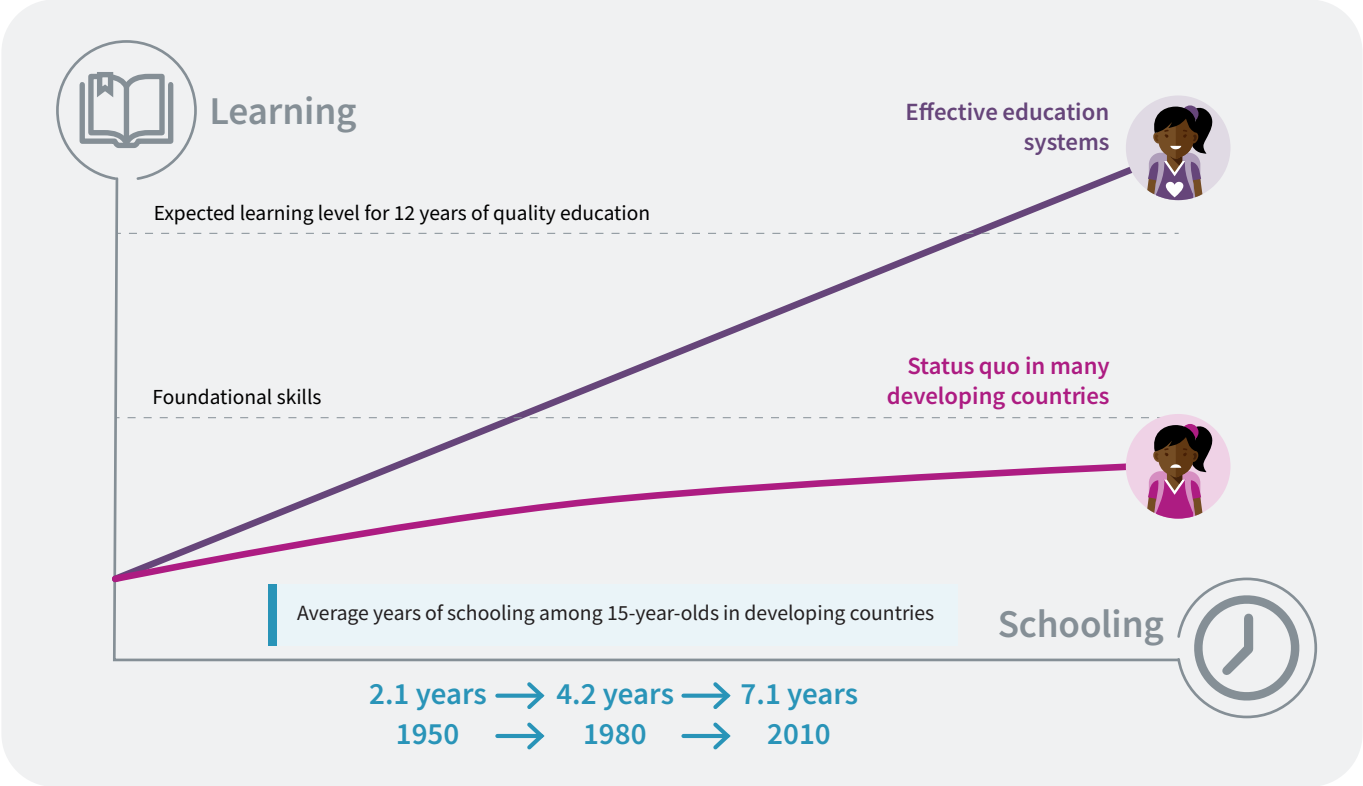
National leaders and the global community have long committed to universal education. From the 1948 Universal Declaration of Human Rights, to the 1990 Jomtien declaration of Education for All, to the 2000 Dakar Framework for Action, to the 2015 Sustainable Development Goals (SDGs), world leaders have affirmed and reaffirmed their commitment to universal education goals that, at a minimum, included universal foundational learning. Those commitments have been matched by widespread action on schooling, and since the mid-20th century the world has seen a historic expansion in schooling. The number of years during which a child goes to school in developing countries has more than tripled since 1950; nearly all children now have access to primary school, and enrolment in secondary school is rising sharply (World Bank, 2018).

If there has been so much progress, how is it possible that many of these same countries are still experiencing a profound "learning crisis"?

The answer lies in the pace of learning (Figure 1). There have always been two necessary paths to improving the cumulative total of skills, capabilities, and competencies that youth have when they complete their basic education: more schooling, and more learning per year of schooling. Most countries around the world, though not all, have successfully expanded schooling. But the essence of the learning crisis is that this has occurred even while the learning trajectory, the pace at which children learn per year of schooling, has remained far too shallow.

Due to this slow pace of learning per year, even children who complete 10 or 12 years of basic education are not

Figure 1: In many countries, the slow pace of learning means that many children complete basic schooling without gaining foundational skills

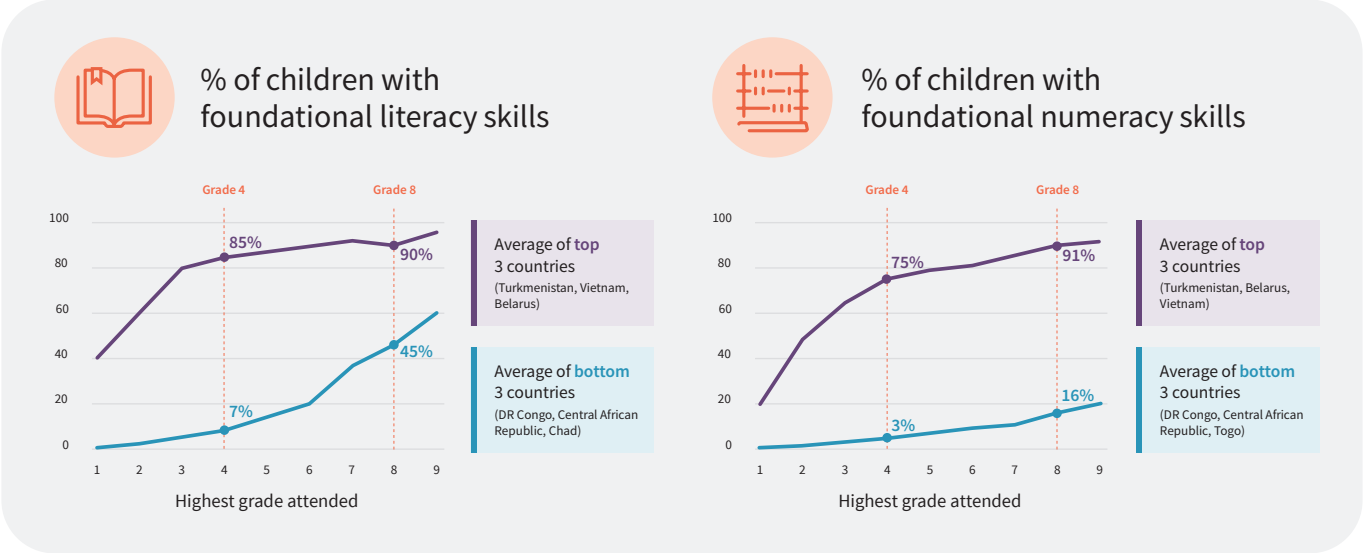


Source: Illustration informed by Silberstein, 2021. Average years of schooling is the average of country-level data from countries in Asia, Africa, and Latin America from Barro and Lee, 2013. See also Crouch, Kaffenberger, and Savage, 2021.

acquiring foundational reading or mathematics skills. These are basic skills that the SDGs, under goal 4.1.1a, benchmark as a globally acceptable minimum level of learning for all children by Grade 3 (typically age 9). While the depth of the learning crisis has been documented by many sources, including the World Bank's Human Capital Index, RISE research has produced some striking examples:

- In Indonesia, a household survey that assessed command of basic arithmetic found that less than 30 percent of youth who had completed Grade 12 could correctly answer a simple two-digit division problem and less than 25 percent could subtract two simple fractions (e.g., 1/3-1/6=?). Two-digit division and adding and subtracting fractions are both Grade 4 curricular skills. (Beatty et al., 2021).
- An assessment in Rajasthan, India found that the typical child in Grade 8 had mastered only the Grade 4 curricular content in mathematics (Muralidharan and Singh, 2019).
- Using international standardised assessment results from PISA-D, researchers showed that in six participating countries (Cambodia, Guatemala, Honduras, Paraguay, Senegal, and Zambia) on average only 9 percent of in-school 15-year-olds reached the minimum learning level in mathematics, 15 percent in science, and 19 percent in reading (Pritchett and Viarengo, 2021).
- Gust, Hanushek, and Woessman (2022) estimate that 94 percent of children in Sub-Saharan Africa and 89 percent in South Asia are not reaching basic skills by age 15.
- Results from MICS6, an international household survey run by UNICEF, showed that there is huge variation in learning between countries, and that some countries—even at modest levels of country wealth—have created systems that teach foundational skills to the vast majority of students (Figure 2). However, in only 4 out of 31 participating countries do half of children achieve the global minimum standard of mastery of foundational reading and math by Grade 3 (Global Education Monitoring Report, 2022). Low learning is not inevitable, but it is the norm.

Figure 2: In many countries, learning trajectories for foundational skills are far too shallow, but dramatically superior performance is possible



Source: Global Education Monitoring Report (2022).

Note: 'Top 3' and 'bottom 3' refer to the performance in Grade 5 for countries in the MICS6 dataset for which data were available for Grades 1–8. The foundational reading and math skills measured are typically Grade 2 or 3 level skills that roughly correspond to SDG 4.1.1a, which calls for all children to acquire these skills by Grade 3 by 2030.

Education systems need to change not because of failure, but because of revolutionary, though partial, success.

Many countries have dramatically increased schooling, but have done so without also ensuring an adequate pace at which children learn per year. Faced with this partial success (Figure 3), it might be tempting to double down and put even more resources behind the world's commitment and proven ability to deliver more schooling. However, this will not address the learning crisis for three reasons.

Firstly, even if countries could ensure universal enrolment and attainment well into secondary school, children would still leave school without a minimum level of learning if their pace of learning remains inadequate. As we see from the PISA-D results, only about 30 percent of children are still enrolled at age 15. However, even if 100 percent of children were still enrolled at age 15 and learning as much as the currently enrolled 15-year-olds, only 10 percent of the cohort would reach the SDG in mathematics. Other data confirm this trend: staying in school does not necessarily, or even usually, lead to mastery of foundational skills.

Secondly, research shows that a substantial fraction of children discontinue their schooling because they are not learning (Kaffenberger, Sobol, and Spindelman, 2021). Efforts to push those children back into school without remediating the underlying lack of foundational learning can fail to produce higher learning outcomes. A simulation of achieving universal completion of Grade 10 found that this massive expansion in enrolment might produce *zero* progress towards the SDG for foundational learning as none of the children spending additional years in school

Figure 3: Most countries around the world have been fantastically successful at expanding access to schooling, but must make further progress on learning

Source: Illustration informed by Le Nestour, Moscoviz, and Sandefur, 2022; Pritchett and Viarengo, 2021; UIS and GEM, 2022; and UIS data.

Note: In this pictogram, each icon represents approximately 0.05 (5 percent) of all youths globally. These are illustrative, best-guess estimates based on several sources, which use different assessment benchmarks and different sampling frames (which result in, among other things, different age ranges for 'youths,' ranging from mid-teens to twenties). For details on these sources and methods, see endnote.[1]

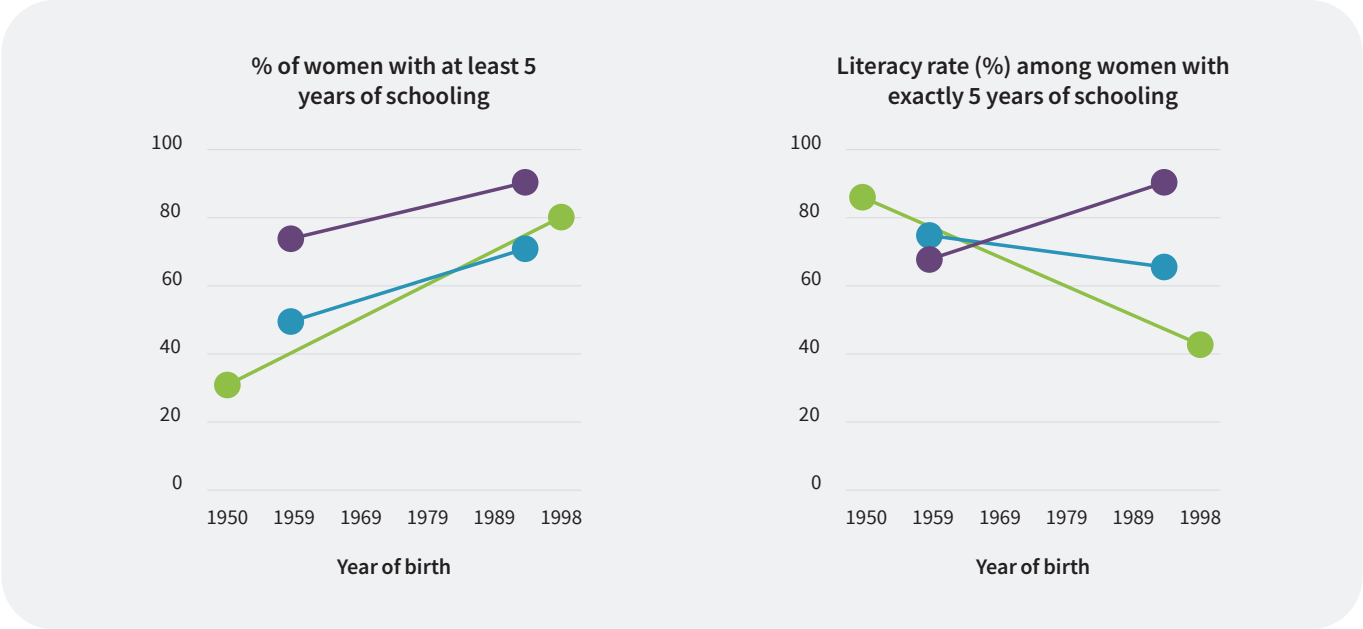
would be on a steep enough learning trajectory to reach the SDG benchmark. The exercise showed that most children in this scenario shift from not learning while out of school to not learning while in school (Kaffenberger and Pritchett, 2021).

Finally, an implicit assumption behind any continued focus on expansion is that learning trajectories would at least stay constant, allowing systems to focus on schooling before eventually transitioning to raising the learning of those in school. However, RISE research from Indonesia shows that even while schooling attainment rose substantially from 2000 to 2014, this was more than offset by falling learning achievement levels. The actual fraction of youth who mastered even the simple arithmetic operations taught in the primary school curriculum *fell* over this period (Beatty et al., 2021). Other research findings, shown in Figure 4, suggests that this phenomenon is widespread, and that the massive global expansion in enrolment has happened alongside flat or declining proportions of enrolled children who gain foundational skills from school (Le Nestour, Moscoviz, and Sandefur, 2022).

There is wisdom in the saying "we will cross that bridge when we come to it." In 1960, any debate over how to ensure more children got a minimally adequate education accepted that expansion of schooling was the critical part of the answer, since most children at that time never started school and few completed basic education.

The 1990 Jomtien Declaration on Education For All raised many of the same issues about a "learning crisis" that the RISE Programme and others are raising in 2022. Yet still, many children in 1990 never enrolled in or did not complete basic education, and hence it was natural that the response to the call for action on expansion and learning was mainly further expansion of schooling.

Figure 4: In most countries, there has been a massive expansion in school enrolment, but trends in education quality have varied widely across countries



Source: Le Nestour, Moscoviz, and Sandefur (2022)

There is wisdom in the saying "we will cross that bridge when we come to it." In 2022, we have come to the bridge.

In 2022, metaphorically speaking, we have come to the bridge. There has been tremendous progress on schooling from the world's commitments, but the path forward requires fundamental changes. No one can reasonably expect the education systems that, for the past 50 years, have successfully expanded schooling but have been unable to improve learning to suddenly produce very different results. It's common sense that if education systems want different results—if they want all children to learn—then they must do things differently. All one can expect from "more of the same" is "more of the same". We need "more and better."

How can education systems cross the bridge and accelerate progress in learning? Our synthesis of the research points to five interconnected actions.

Commit to universal, early foundational learning

Vietnam's participation in the PISA international assessment in 2012 and 2015 revealed that, in spite of its low level of GDP per capita, the mathematics competence of its students surpassed that of children in the USA and the UK. A key question for the RISE Vietnam team was: "How did they do it?"

Vietnam's astounding performance can't be attributed to higher spending since expenditure per pupil in Vietnam is a small fraction of spending levels in the USA and UK. Research using multiple datasets (Glewwe et al., 2021; Dang et al., 2020) showed that the usual measures of school quality based on inputs, such as class size or teacher qualifications, also explain almost none of Vietnam's exceptional performance. Another longitudinal dataset ruled out anything unusual about Vietnamese children's preparation for school or cognitive abilities at age 5: *all* of the superior learning performance of Vietnamese 12-year-olds emerges in school (Singh, 2020a).

When pressed that their studies were only showing what the answer to the Vietnamese puzzle wasn't, and not what the answer actually was, one researcher responded: "Vietnam succeeded because they wanted to." While "because they wanted to" might seem simplistic, it is profound. Even if the team could have traced out "how" Vietnam succeeded by pointing to specific inputs or policies, this explanation would not have answered "why" Vietnam invested in those specific inputs or pursued those policies in the first place.

Committing to learning is a necessary first step toward the large-scale, sustained gains needed to achieve learning for all (Kaffenberger, 2022; London, 2021). This is why our first recommended action is to commit. It is also why our description of and rationale for this action is so lengthy in relation to the other actions that follow. A country will be able to accelerate foundational learning only if it wants to.

Of course, national and global education actors have consistently made commitments to quality education in the past. However, these commitments have often been more rhetorical than effective. RISE research suggests that effective commitments to foundational learning would be radically different in five key ways.

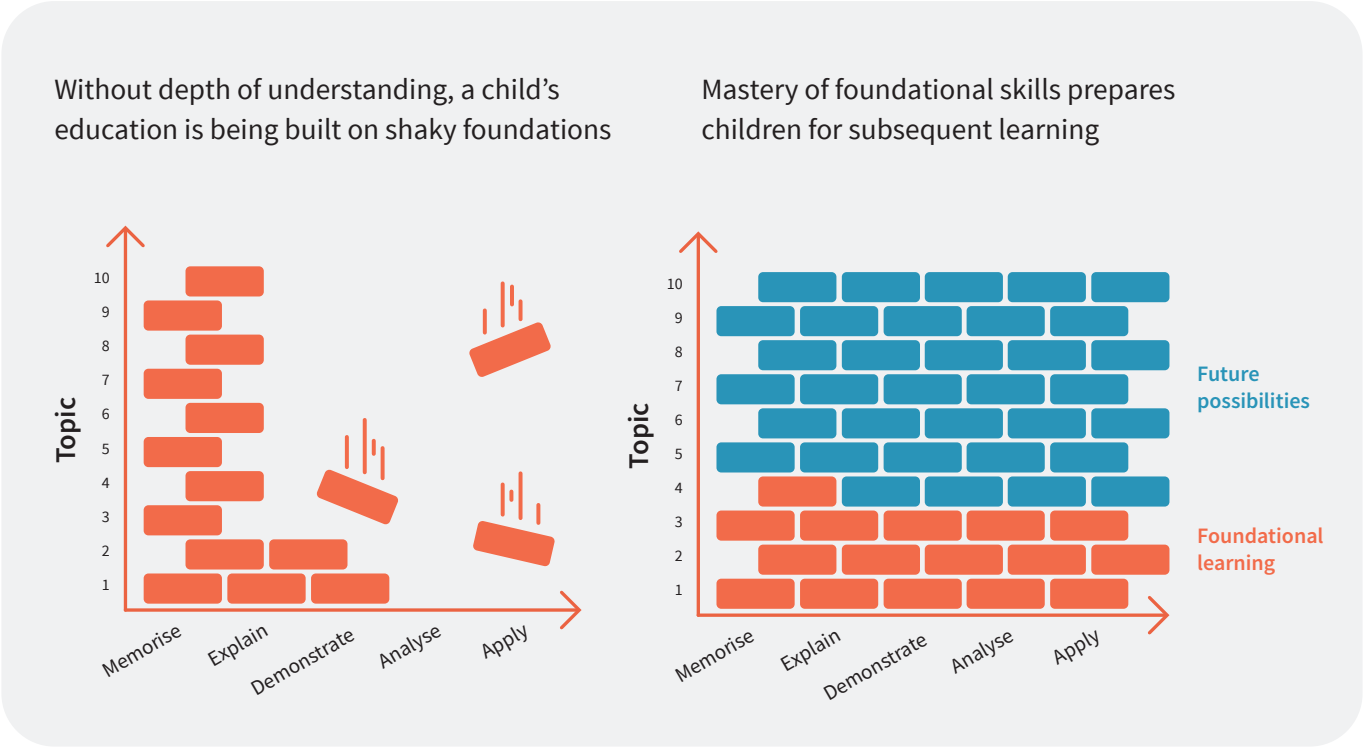
1.1 Commit to universal, early mastery of foundational learning

A commitment to universal, early mastery of foundational literacy and numeracy is an ambitious and forward-looking goal. We explicitly are not advocating for going "back to basics" or focusing on rote memorisation of facts or on the ability to answer examination questions that probe the superficial ability to mimic procedures.

Figure 5 illustrates two elements of what we do mean. First, by "mastery" we mean a deep conceptual understanding that allows a person to utilise knowledge and apply it to new and non-routine situations. Second, by "foundational" we mean skills with broad application. Being able to read fluently with comprehension is foundational to learning everything from poetry to history to law to medicine to engineering. Mastering numeric, quantitative and arithmetic skills is foundational to not just science and engineering but to practical decision making about shopping, budgeting, borrowing money, taking medicines, or applying fertiliser. Other essential socio-emotional or non-cognitive skills that are needed for success in broad domains of life might also meet the definition of foundational skills.

A simple illustration of the difference between the depth of learning typically produced by many systems and

Figure 5: If children do not gain foundational learning early, they cannot attain more complex educational goals later



Source: Belafi, Hwa, and Kaffenberger (2020); Atuhurra and Kaffenberger (2022)

conceptual mastery of foundational skills is the assessment question about the length of an object shown in Figure 6 (developed by the Indian NGO Education Initiatives). The way the concept of "length" is commonly taught is a textbook picture displaying an object next to a ruler, with the object aligned at zero so that its correctly measured length is at the tip of the object. However, the rote procedural knowledge that "the length of the object is the number on the ruler at the tip of the object" is distinct from a true conceptual understanding of length, as evidenced by the fact that children cannot then apply their knowledge to novel circumstances. If the same question is asked but the object isn't aligned with zero, students without a deep conceptual understanding of length will get the question wrong—and an assessment in India in 2017 showed that among children aged 14-18 more students got this question wrong than right (ASER, 2018).

Measuring length is a foundational skill for mathematics like geometry and for any practical science; the concepts of perimeter and area and volume are all based on length. Without a conceptual mastery of length, there isn't an adequate base on which to build these more advanced skills.

Conceptual mastery of basic arithmetic is so foundational that, without it, young people cannot even apply their learning to a broad range of simple practical problems. In ASER's 2017 assessment of rural youth ages 14-18, one question showed the picture of a 300 rupee t-shirt on sale at a 10 percent discount and asked the final price. Only 37 percent of youth enrolled in school could answer this simple practical question. But the truly shocking result was that of youth enrolled in tertiary schooling, only 52.5 percent answered correctly. About half of youth who had completed upper secondary school (standard XII) and persisted to higher education could not correctly solve a very simple everyday applied problem (ASER, 2018).

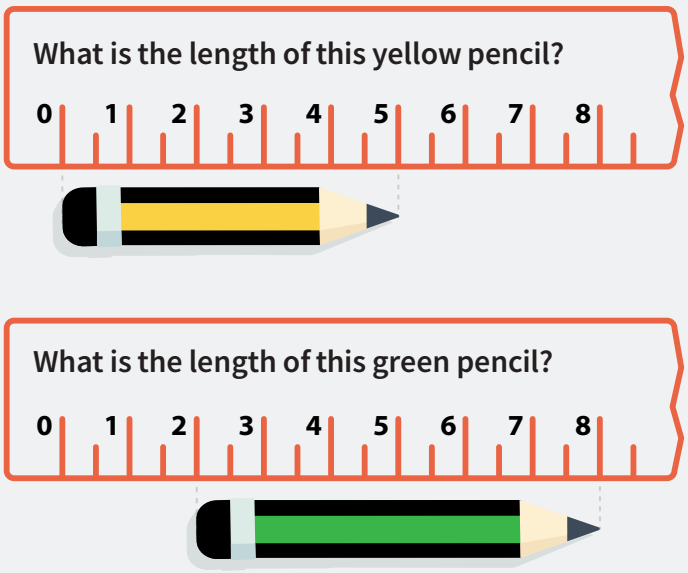


Figure 6: While 86 percent of Indian youth aged 14 to 18 could correctly state the length of the yellow pencil, less than 40 percent of them could correctly state the length of the green pencil.

Source: ASER (2018)

That mastery of foundational learning must be universal and happen early in schooling is a widely accepted, but equally important, dimension of this commitment. All children must acquire these skills in the first years of school since they are prerequisites to attain the far more ambitious subsequent educational goals we all hold for primary and secondary school. There is now a large body of research (synthesised in Belafi, Hwa, and Kaffenberger, 2020) emphasising the importance of children's early acquisition of foundational skills and the difficulty of trying to catch up later as the curriculum moves on to more advanced material and a widening gap opens between instruction and children's actual learning levels. (Below we discuss the importance of measuring this gap and aligning systems to close it.) Emphasising early mastery of foundational skills is not lowering expectations, but the opposite, raising them. To achieve the high aspirations we hold for education, and to avoid costly and compounding misalignments in the system, mastery of foundational learning must happen early for all children.

1.2 Commit to learning outcomes to give purpose to spending, inputs, and programmes

A second characteristic of an effective commitment to foundational learning is that it directly focuses on improving learning outcomes.

Many countries make strong rhetorical commitments to learning outcomes, but then translate this commitment into intermediate targets that they hope will lead to learning. For example, many countries make commitments to spending targets (e.g., 20 percent of government spending or 4 percent of GDP), input targets (e.g., all schools having a boundary wall, or a low student-teacher ratio), or the adoption of specific programmes.

But commitments to spending, inputs, or programmes alone get the logic of effective education systems backwards. Generally speaking, effective systems and organisations have a strong commitment to purpose at their core (Figure 7). In the case of education systems, that core purpose to which they are committed must be learning. This core purpose is what leads systems to innovate and adopt effective technical practices (such as particular programmes). There are, in turn, other functions which support the implementation of effective technical practices such as procurement rules that obtain needed inputs in the right ways; EMIS systems that produce

information relevant to management; or human resource systems that attract, retain, and motivate quality teaching (Kaffenberger, 2022).

While many countries focus on creating robust support functions, and to a lesser degree on technical practices, most underinvest in prioritising and articulating the core, shared purpose needed to animate the rest of the system. The purpose of education systems cannot be to just spend money. Prior commitment to the purpose of cultivating student learning is needed to inform how to spend money in order to achieve that goal. All effective systems may have adequate levels of spending, but without clear guidance from a purpose, there are many ways to spend money without achieving adequate learning (Pritchett and Aiyar, 2014).

There are many examples from RISE research and beyond demonstrating that spending, inputs, and even the adoption of "evidence-based" programmes are not effective at improving learning outcomes if they are not animated by an overarching commitment to that purpose.

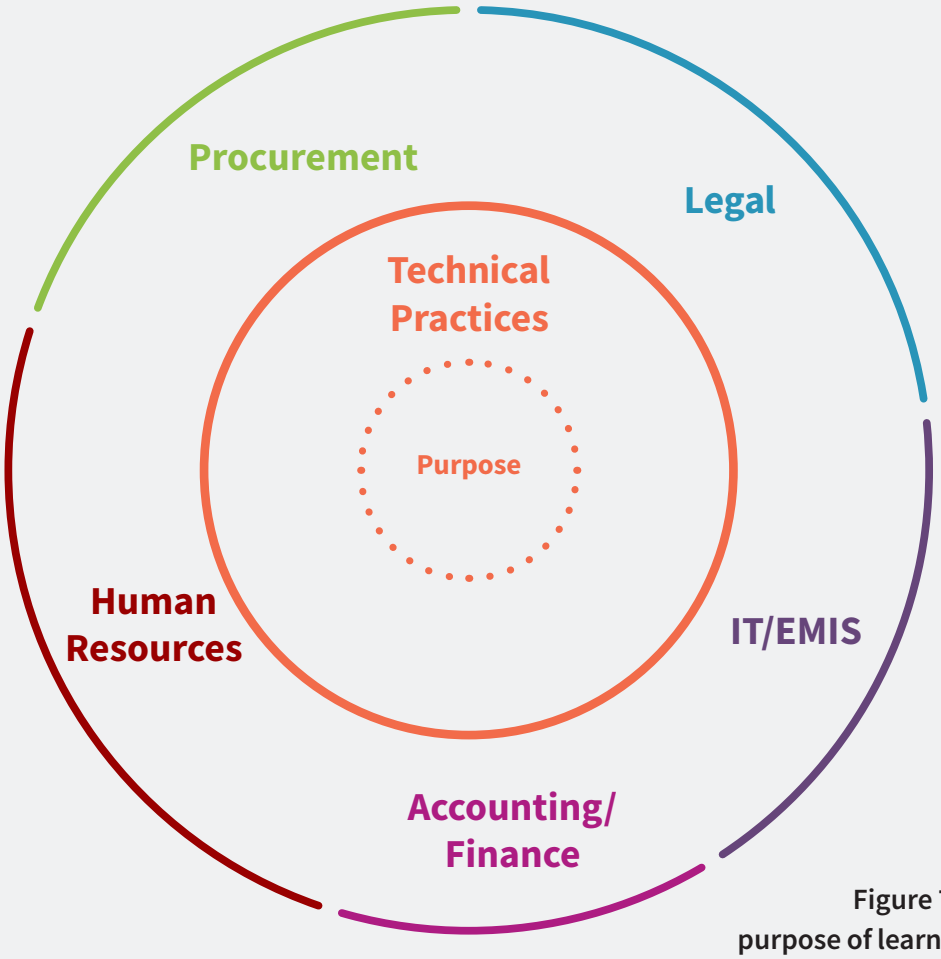


Figure 7: A commitment to the purpose of learning creates an enabling environment for improving technical practices and other functions of the system

Source: Kaffenberger (2022)

An important RISE study from India examined what happens when an "evidence-based" programme is adopted but is detached from any underlying purpose (Muralidharan and Singh, 2020). The programme studied sought to introduce school improvement plans at scale in the large Indian state of Madhya Pradesh. This type of school improvement plan had proved successful in other contexts and was adopted as a "best practice". The RISE team's impact evaluation found that the programme was, in key respects, successfully implemented and adapted to the context. Nearly every school that was supposed to adopt the programme produced a school improvement plan, and these plans were not just boilerplate cut-and-paste jobs but reflected, at least in part, the reality of the challenges that each school faced.

However, the programme implementation stopped with the production of the plans. The schools that implemented the programme did not do anything else differently from the "control" schools not in the programme: there were no differences in teaching, no differences in school supervision (which was supposed to support implementation of the plans), and absolutely no differences in learning outcomes (Figure 8). Despite the findings of this "gold standard" impact evaluation that clearly described the reform's lack of impact on student learning outcomes, the programme was considered to be a success, and is being scaled up by the government with the aim of eventually reaching 1.6 million schools. The authors conclude that this demonstrates the hidden logic of a political and bureaucratic system designed around inputs and the "appearance of activity". The system's commitment to process compliance, and its lack of commitment to the underlying purpose of improving learning outcomes, allowed it to interpret a programme that produced nothing more than paperwork as a success.

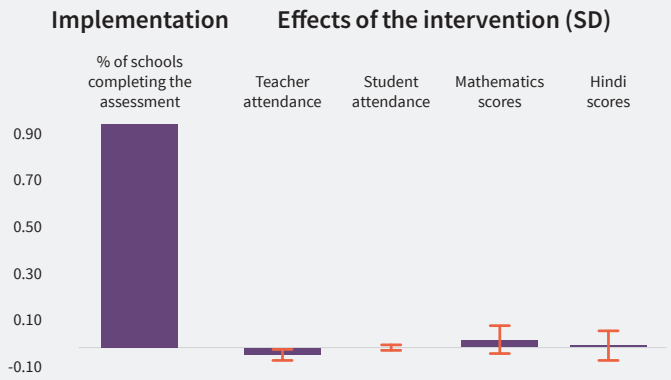
If a country really wants to improve learning outcomes, it can find a way. Absent this commitment, it will find the task of transforming more spending, inputs, or "best practices" into learning to be difficult or impossible.

1.3 The commitment to foundational learning must be a clear and urgent political priority

An important strand of RISE research explored the politics of the adoption of learning-oriented reforms. A central question for this research was why the commitment to expanding schooling and inputs was so common in recent decades and yet the sustained commitment to improving learning outcomes was so rare. This work on the historical and contemporary politics of learning reforms included studies from the seven RISE countries plus six additional countries with valuable comparative experiences (Chile, Ecuador, Egypt, Kenya, Peru, and South Africa).

One of the key findings from this research is that learning outcomes, everywhere and always, are only one of many competing goals for what an education system is meant to deliver. Goals related to political socialisation, from "nation-building" to legitimising specific actors or ideologies, often plays a large role, and learning goals around both cognitive and non-cognitive foundational skills can take a back seat (or be left out altogether). Even the relatively successful cases in which learning outcomes were moderately good or improving—as in Ecuador, Peru, Vietnam—show just how long the continuous struggle to put and keep learning outcomes at the fore is. While education systems will always serve multiple purposes, achieving learning for all cannot be relegated to a middle tier in the hierarchy of political priorities.

Figure 8: In a system without an animating commitment to the purpose of learning, even a well-implemented and evidence-based school quality assurance programme had no impact in Madhya Pradesh, India



… We have to make a work plan and then upload it, get it printed. There is so much paper work that by the time some teachers figured that out they had forgotten what [the programme] itself [is about]. I do all the documentation work at home because I have no time in the school.

—Headteacher of a champion school, quoted in Muralidharan & Singh (2020), p. 18

Source: Muralidharan and Singh (2020)

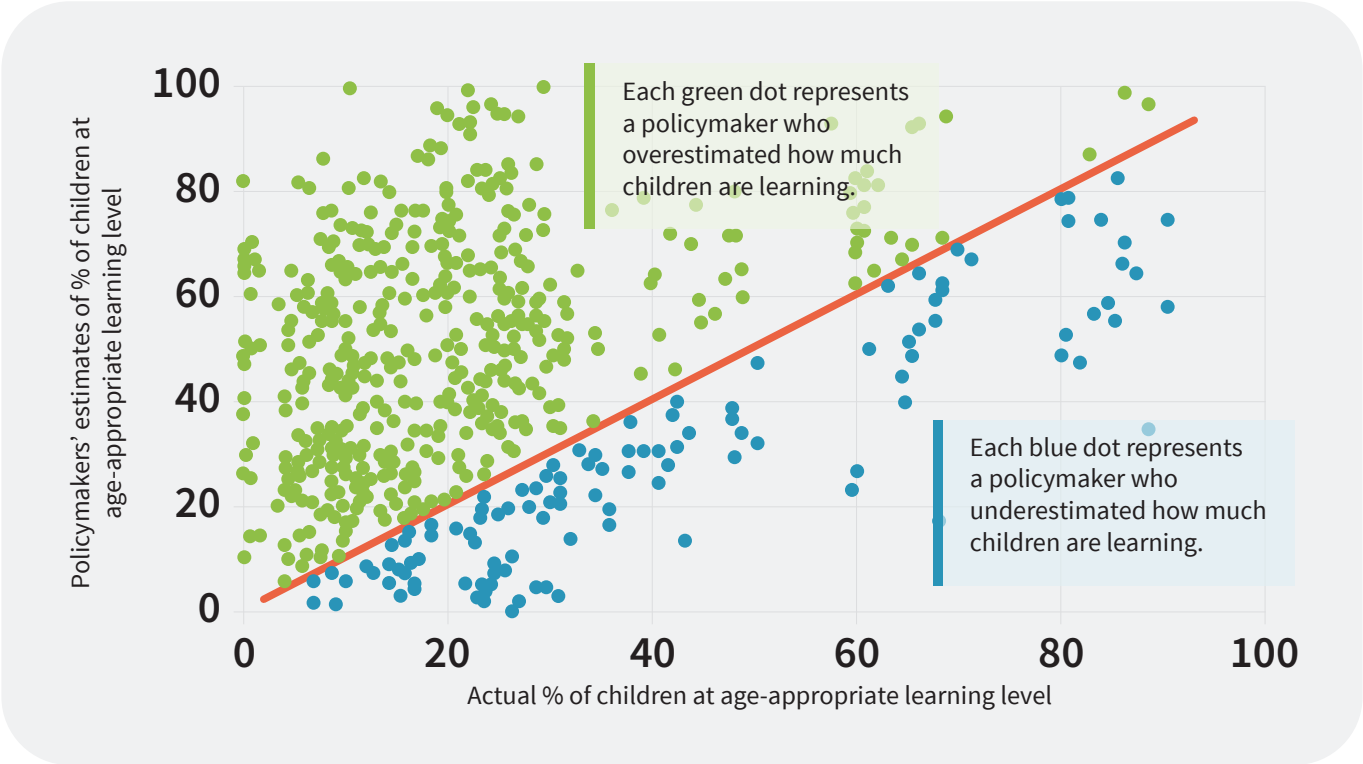
To make learning a top political priority, three common challenges will need to be addressed.

One obstacle to a political commitment to foundational learning is optimistic disregard for the facts. A recent study (Crawfurd et al., 2021) showed that many policymakers do not yet prioritise tackling the learning crisis, and that the surveyed policymakers were often misinformed about the learning outcomes actually being produced by their education systems. 80 percent overestimated the proportion of students at expected learning levels, and this overoptimism was especially true in low performing systems. In Figure 9 one can see that in countries where only 20 percent of students were actually at expected learning levels, policymakers held the entire possible range of beliefs range of beliefs—from zero to 100 percent— as to how many students were getting an adequate education.

A second major obstacle to making learning a political priority is the pressure to address the highly visible cumulative symptoms of low learning among older children and youth. For example, there are enormously pressing concerns about the poor employment and earning prospects of current youth, and about dropout, particularly among adolescent girls. There is no question that these problems require and deserve dedicated attention. However, employability and school abandonment are due at least in part to the slow pace of acquisition of foundational skills by these young people in primary school. While efforts at mitigating the consequences of poor previous learning for the current youth are needed, these interventions may face difficulties in adding value if youth do not have basic foundational skills on which to build (Newman and Obiakor, 2022). However, these problems will be impossible to address fully without confronting the underlying problem of the lack of an effective commitment to foundational skills.

A third political obstacle to prioritising is that improving learning outcomes is a long-term and uncertain endeavour and politics rewards short-term and certain success. The case studies of the politics of learning revealed that many competing sector priorities—such as expanding access, improving connectivity, improving physical infrastructure, or using education budgets for patronage by providing "rents" to specific interests (like local construction firms or textbook publishers)—are more politically attractive because they are doable in the short- to medium-time horizon within which politics often operates (Belafi 2022; Bano and Dyonisius, 2022a). Even a straightforward, visible goal like school construction is not a sure-fire political winner. Research by the Tanzania team examined the connection between local vote shares of the winning party and construction of secondary schools. They found that *promises*

Figure 9: A survey of 684 senior government staff from developing countries found that around 80 percent overestimated the learning levels of children in their education systems



Source: Crawfurd et al. (2021)

of school-building brought more votes but that five years later, as the construction policies were implemented, the construction of a school actually reduced vote share (in part because the cost burden actually fell on the locality) and that two electoral cycles later there was no effect (Habyarimana, Opalo, and Schipper 2020).

These entrenched features of the political economy around low foundational learning make it hard for politicians to embrace it as a priority, especially relative to competing and politically safer educational goals. But these challenges are not intractable. Acknowledging them can help recognise true political commitment to foundational learning where and when it exists, and how to enable this commitment when it does not.

1.4 The commitment to foundational learning must be society-wide

The commitment to universal, early mastery of foundational learning must be political, but at the same time it cannot be *only* political. The commitment must be broad and deep, extending throughout society.

RISE systems framework describes an education system as a broad collection of stakeholders—children, parents, groups of citizens, teachers and their associations, school leaders, bureaucrats, policymakers, politicians—who are connected and embedded in relationships of accountability (Pritchett, 2015). The key premise of this framework is that the system will only produce learning when enough of these relationships are aligned around that goal and working together to reinforce progress toward it. A major reason to adopt a "systems" approach to education is to transcend the technocratic mindset in which improving education can be done by a Ministry alone and in which Ministers are imagined to have near untrammelled autonomy to make and enact policy. As the World Bank (2018) suggests, "learning for all requires all for learning", and an "all for learning" commitment is a shared understanding

extending across families, communities, schools, bureaucracies, and branches of government.

RISE research used a variety of methods across a variety of settings to examine how society-wide commitments to learning are articulated and contested. A common source of resistance to this sort of commitment is that it has often been convenient for governments to rely on top-down, civil-service bureaucracies to deliver the expansion of schooling and for these bureaucracies to be largely "dis-embedded" from the local communities and societies in which the schooling happened. The "dis-embedded autonomy" of schooling-oriented bureaucracies had benefits, such as shielding schools from the potentially inequitable pressures of local politics, but also costs. In particular, families and communities were sidelined and expected to be passive recipients of education. In contexts as diverse as Mexico, Pakistan, and Nigeria, attempts to reengage parents' voices in schools through mechanisms like school management committees have been largely unsuccessful (Barrera-Osorio et al., 2021; Asim, 2019), in part because these groups are largely "isomorphic" with the power to make specific "apolitical" demands rather than to govern local schools (Bano, 2022b). This has left schools relatively invulnerable to direct accountability exercised by the community or local politics, and more vulnerable to operating with little or low accountability altogether.

RISE research in Indonesia explored a contrasting context where decentralisation of education to the district level has deeply embedded education in local societies. This research highlighted the extent to which the goals of education vary by district according to the local labour market, social norms, and the mediation of opportunistic politicians (Bano and Dyonisius, 2022b). Similarly, different districts adopt different reforms depending on their "fit" to the district's "cultural" context (Nihayah, Revina, and Usman, 2020). While this body of research emphasised the strong influence of society on education, it also highlighted the fact that societal will (like politics) may prioritise multiple educational goals other than learning. Education systems are deeply embedded in overall social systems, and so learning goals must be coherent with broader social values (Watkins and Kaler, 2016).

Other RISE research emphasised how it is possible to promote this coherence by fostering societal will to focus on learning. For example, the Indian NGO Pratham has successfully built "learning communities" that provide concrete ways for community members to take action on the learning crisis as a means to build a shared commitment to foundational learning (Bano, 2022a). In Nigeria, Education Summits have engineered a new space for communities and politicians to hold facilitated dialogues and develop a shared understanding of the learning crisis and the steps needed to tackle it (Nweke, Ogwuike, and Chimere, 2022).

Development partners are also key stakeholders who need to be genuinely committed to the goal of learning to enable progress (Stern et al., 2021; Newman, 2021). While external actors cannot impose commitment to learning on others, they can partner with national governments to support their goals. The RISE Ethiopia team reports on the gradual process through which donors and governments negotiate with each other, build trust through intermediate projects, and finally become able to tackle more challenging reforms related to inclusion and learning outcomes (Asgedom, Carvalho, and Rose, 2021).

Commitment to foundational learning is not easy to achieve. The action of committing to foundational learning is not just a statement from a politician, or even a policy from the Ministry of Education, but a *society-wide* commitment.

1.5 Commit to narrowing global inequality in foundational learning outcomes

A final way in which existing commitments to foundational learning often fall short is that they deemphasise global inequalities in learning outcomes and focus exclusively on narrowing inequalities within a country. There are unjust differences in access and learning outcomes within all countries: children from poorer households do less well

Eliminating inequality inside countries would still leave most children short of learning goals.

than more privileged children; children living in rural and remote areas do less well than urban children; in nearly all countries some ethnic and language groups (and/or recent migrants) are disadvantaged; and in some countries and subjects girls do less well than boys. However, globally a child's educational opportunity and learning levels are much more a function of *where* they are (what country they are from) than *who* they are within that country.

RISE research with many different datasets on learning has shown that in low-performing education systems eliminating differences across a wide range of socio-economic groups is insufficient to achieve even minimum education goals. Eliminating inequality inside countries would still leave most children short of learning goals (Crouch, Rolleston, and Gustafsson, 2021; Akmal and Pritchett, 2021). The most recent data from UNICEF's MICS6 survey for 22 low and lower-middle income countries shows that only 39 percent of the children from the "rich" households (top 20 percent of households by wealth) gained foundational reading skills by Grade 3 on average (the reading test measured what are typically Grade 2-3 skills roughly in line with the SDG's early learning target). So while the children from the top quartile were far ahead of children from poor households (only 16 percent of whom had foundational reading skills by Grade 3), 61 percent of the richer children were still not meeting the SDG's global minimum target (Kaffenberger, Silberstein, and Spivack, 2022).

The PISA-D assessments, which extended PISA to countries poorer than those that had traditionally participated in the OECD-led PISA effort, showed that even the children enrolled in public schools at age 15 who were from categories regarded as socially advantaged (male, urban, native speaker of the language of instruction, non-migrants) and who were part of the socio-economic elite (top five percent) were far from meeting the SDG early learning target. In six of the seven PISA-D countries (Cambodia, Guatemala, Honduras, Paraguay, Senegal and Zambia), less than one-quarter of children from this select group reach the SDG target. Therefore, eliminating *all* domestic inequalities across the aforementioned demographic categories would still leave these countries far, far short of global goals (Pritchett and Viarengo, 2021).

This does not imply that a commitment to achieving universal early foundational learning implies less attention to equity. Commitments to universal achievement are strong goals for equity (Crouch, Rolleston, and Gustafsson 2021). Inclusion of all children into a system that offers them an adequate education means focusing on the adequacy of the overall system, not only focusing on differences between groups within a country.

Measure learning regularly, reliably, and relevantly

The converse of the old adage "what gets measured gets done" is likely truer: "what does not get measured does not get done." All actors in education systems—from parents and teachers to middle level managers and national policymakers—need to understand children's learning levels before they can act to improve them. There are two broad ways that systems need to change the way that they conduct and analyse assessments.

2.1 Conduct assessments that follow the "three Rs" of useful measurement: Relevant, Regular and Reliable

For measures of learning to be an integral part of accelerating progress they need to meet the "three Rs" of useful data: Relevant, Regular, and Reliable.

During the drive to expand education systems to provide universal schooling, many easily observable and quantifiable inputs did get measured in a regular and reliable way, and these became, by default as much as design, the most relevant pieces of information in education systems. However, learning was not one of the things measured in a "three Rs" way. While almost all education systems have student assessments, these assessments are:

- Not relevant to learning. The most important assessments in most countries are some type of primary and/or secondary school-leaving exams. However, in poorly performing systems, these exams are primarily designed to function as tools for "selection" rather than "education". Selection systems, rather than embracing a commitment that every child can and should learn, act as a filter that selects a small number of students who are determined to be "adept" or "capable" enough for higher levels of education or the labour market.

  Where exams primarily serve to filter students, they often measure the wrong things. They do not reliably assess student mastery of procedural knowledge (ability to make use of and apply concepts to carry out new tasks) or conceptual knowledge (understanding of key principles). A review of existing examinations emphasised that "bad tests lead to bad teaching" because the narrowly focused—but high-stakes for the students—examinations led to "teaching to the test" and an emphasis on rote learning and memorisation (Burdett, 2016; Burdett, 2017).

  Assessments designed to measure learning are not just an issue in government systems, but also for donor programmes. An ongoing research project highlighted that most development funders did not have even a single programme that had measured and could demonstrate that it had improved learning at scale (Stern et al., 2021).
- Irregular. Another consequence of selection systems is that they emphasise summative assessments at a single point in time, and usually late in school. School-leaving exams at the end of secondary school, or at the end of primary school, occur years after many or most children have begun to fall behind the pace of the curriculum and instruction. This prevents the assessments from serving as timely, effective tools to identify how the system needs to realign itself to meet students where they are.
- Unreliable. Some of the more depressing RISE papers measured the extent to which existing learning assessments actually reflect student learning. Singh (2020b) showed that in the Indian state of Madhya Pradesh, even a low-stakes-for-the-student administrative assessment overstated actual student performance, measured through a carefully invigilated retest using the same assessment, by at least a factor of two (e.g., in mathematics

the official data showed 64 percent of answers correct, while the repeated test showed only 25.1 percent correct). Also in India, Johnson and Parrado (2021) suggest the official national learning data overstate learning and do not provide reliable comparisons across states. Berkhout et al. (2020) showed that the introduction of tablets for the national junior secondary assessment in Indonesia, which determines placement in senior secondary school and is therefore high-stakes for the students, radically changed the results at many schools by eliminating common forms of cheating. If standard examinations are not reliable, they cannot serve as useful feedback to policymakers and others managing the education system.

What, then, can systems do in order to follow the 3Rs of effective measurement? The exact skills measured, in what grades, and in what way will, by necessity, vary between countries as they "adapt what they adopt" (Action 5). In other words, the 3Rs are not a set of best practices, but they do offer some useful first principles.

For a system that wants to improve learning, assessments will only be relevant if they are designed to measure learning, and to include at a minimum a measure of mastery of foundational skills. Sample-based assessments are likely relevant for most systems since they allow decisionmakers to check the pulse of the system and realign its constituent parts (as detailed in Action 3.1). In some systems with higher capacity and resources, census-based learning assessments may also be relevant to identify individual children who have fallen behind (as detailed in Action 3.2). These assessments should be conducted at regular intervals throughout the schooling cycle, including during the early years of primary school since this is when research shows that children have already begun to fall behind. Assessments must also be reliable, which relies on a combination of design considerations (i.e., so that exams are comparable across years), adequate administration, and lower stakes for students and teachers in order to reduce perverse incentives to game the results. In short, systems should measure learning (relevance) and track progress over time starting early in school (regularity) in a way that avoids widespread cheating (reliability).

2.2 Use learning trajectories to analyse how learning progresses across grades and inform action

Once an education system has assessment data that follows the "three Rs", it needs a way to productively analyse that data in ways that can inform action to improve learning. One major innovation of RISE was to expand the use of *learning trajectories*, a tool to visualise and analyse how children's learning evolves as they progress through school.

Currently, most national assessments occur at one, or at best two, points in time during a child's schooling, and this is usually quite late in school (when children are leaving primary school at the earliest). Most existing internationally comparable assessments also focus on children at a single age or grade. This type of measurement biases analysis and action around learning in two ways. Firstly, it tends to focus attention on static comparisons across students (or groups of students by region, sex, or household characteristics) rather than the *dynamics* of learning across grades. Secondly, late-in-schooling assessments tend to focus attention—powerfully, if inadvertently—toward late-in-schooling interventions after many students have already abandoned school or are too far behind to catch up on learning.

Learning trajectories offer education systems a different kind of analysis that can accelerate learning in a number of important ways (Crouch, Kaffenberger and Savage, 2021). For example:

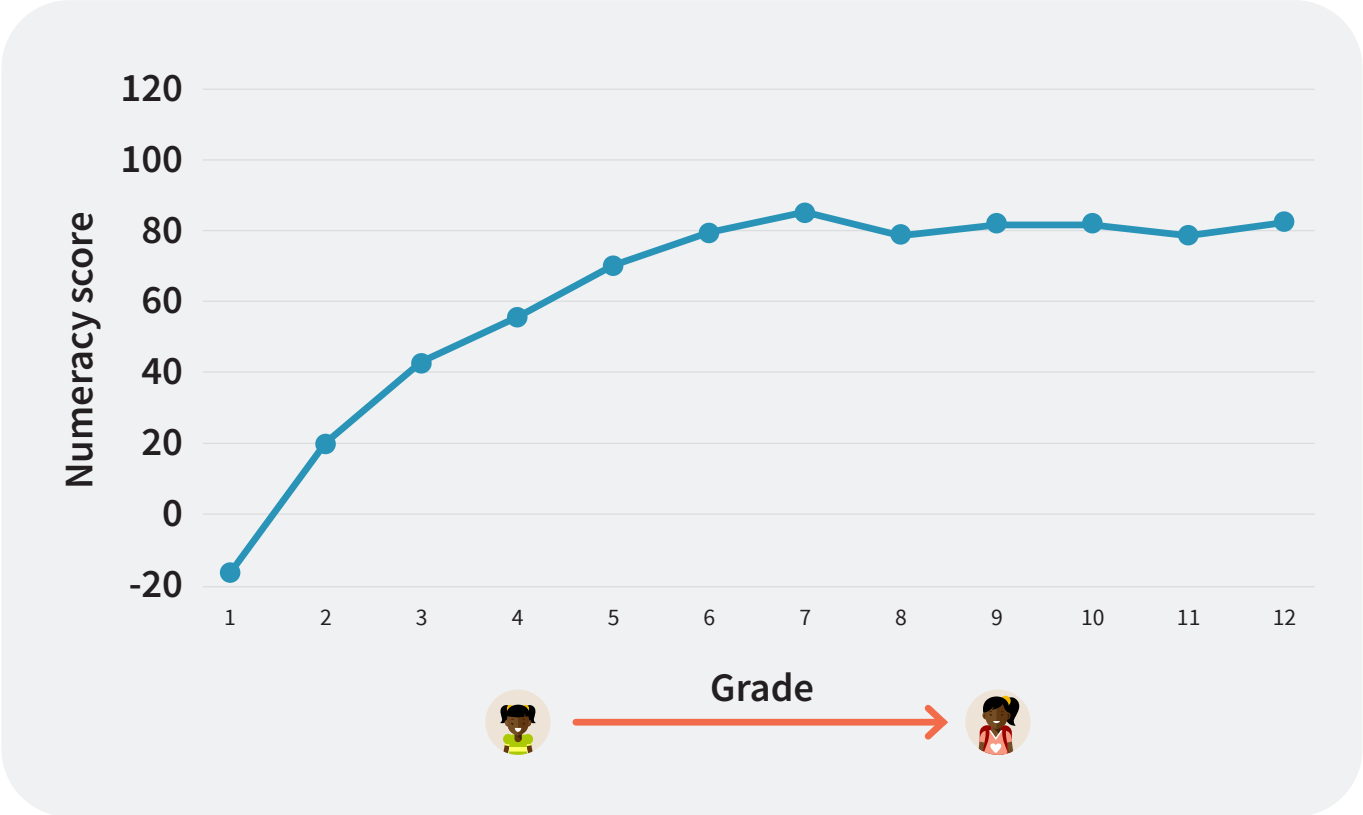
- The learning trajectories generated by assessments of foundational learning—such as the ASER surveys pioneered by Pratham, the citizen-led assessments adopted more widely by the PAL Network, and the most recent 6th round of the UNICEF MICS survey (as in Figure 2 above)—are instrumental in demonstrating the very low levels of learning of foundational literacy and numeracy in the early grades. These large early grade deficits

refocus systems toward prioritising early mastery of foundational skills.

- Learning trajectories, like the one in Figure 10 below from Indonesia (Beatty et al., 2021), reveal that learning can slow or even stop if children have not gained early mastery of foundational skills. Children who had not mastered basic arithmetic operations by Grade 6 did not gain them later and hence some youth, even those who persisted in school through Grade 12, never mastered primary school arithmetic. Measuring learning regularly throughout school refocuses attention on the crucial dynamics of learning across grades, and toward interventions early in school when children's learning progress begins to slow.
- Learning trajectories allow for analysis of the difference between what children in a given grade know and can do and the pace of the curriculum. When children fall behind in the early years of school, they are often faced with an advanced curriculum in the later years for which they are unprepared (see Figure 12 below under Action 3, "Align"). While they may remain in school, they cannot meaningfully engage in instruction that is too advanced for their learning level and eventually cease learning new content.
- Learning trajectories are essential for realistic planning to achieve learning targets. Policy simulations run using learning trajectories show that even achieving idealised levels of enrolment and attainment would, on its own, be a much weaker strategy for raising performance than is commonly assumed. In contrast, the simulations reveal that increasing the pace of learning per grade to match leading low- and lower-middle-income countries would have large impacts on learning levels (Kaffenberger and Pritchett, 2021; Global Education Monitoring Report, 2022).
- Learning trajectories built from panels of individual children over time are a specialised tool for understanding the dynamics of the learning process. Bau, Das, and Chang (2021) used a bespoke long-term panel from Pakistan (LEAPS) to show that learning appears to be much less stable than previously imagined. They proposed the term "fragile learning" to describe children who in one period appear to have learned a concept but cannot correctly answer questions covering the same concept in later periods. They also show that in their sample children who are relatively behind tend to catch up to their peers. Using both LEAPS and other panels, RISE teams used the learning trajectories of individual children to estimate the learning "value added" of teachers and schools, a concept central to evaluating teachers and schools that is very difficult to recover accurately from data gathered at one point in time (e.g., Andrabi et al., 2022; Tiruneh et al., 2021).

Using trajectories to track learning progress through school should become a routine part of the way in which education systems measure, analyse, and improve their performance.

Figure 10: Learning trajectories, like this one from Indonesia, can identify where learning of key skills and concepts stops, even though children continue in school



Source: Beatty et al., 2021

Systems should measure learning and track progress over time (regular), in ways that accurately reflect student capabilities (reliable), and that information should be useful and used by actors at all levels of the system from Ministers to headmasters or classroom teachers (relevant).

Align around learning commitments

Laser light can do amazing things—from cutting through the hardest materials, to reading information, to the mundane utility of laser pointers—not because lasers have "more" light but because their light is focused. In contrast, other sources of light produce rays that are more diffuse or diffracted. Even the same total light as in a laser, when traveling in many different directions on many different pathways, can be too weak to illuminate anything well.

The property of "coherence" is about how different parts of a thing relate to each other and whether they are aligned. To offer another familiar metaphor, the speed of a boat being rowed by a crew isn't determined primarily by the power of any individual rower, but by how well they row together. Eight powerful rowers rowing out of sync produce much less effective propulsion than less powerful individuals who are aligned.

3.1 Identify and fix misalignment in the system

Education systems deliver learning when all of their different parts are pulling towards learning (i.e., aligned with the purpose of learning) and pulling in the same direction (i.e., aligned with each other) (Pritchett, 2015). However, most developing countries' education systems are currently aligned around very different goals than learning, and their various organisational parts are pulling in different directions.

For example, alignment around the goal of universal schooling, and the particular approach to implementation it demanded, has brought amazing success at system expansion. But the purely "logistical" approach that can produce success in expanding a system is at odds with the alignment and approach to implementation needed for accelerated progress in learning. This is the deep reason why so many countries have experienced stagnating–or even deteriorating—levels of learning for so many decades. Low foundational learning is not a logistical problem amenable to a top-down bureaucratic approach to implementation (Pritchett, 2014). The tension between prevailing alignments around non-learning goals and the alignment and approach to implementation needed to achieve strong learning outcomes surfaced in multiple pieces of RISE research:

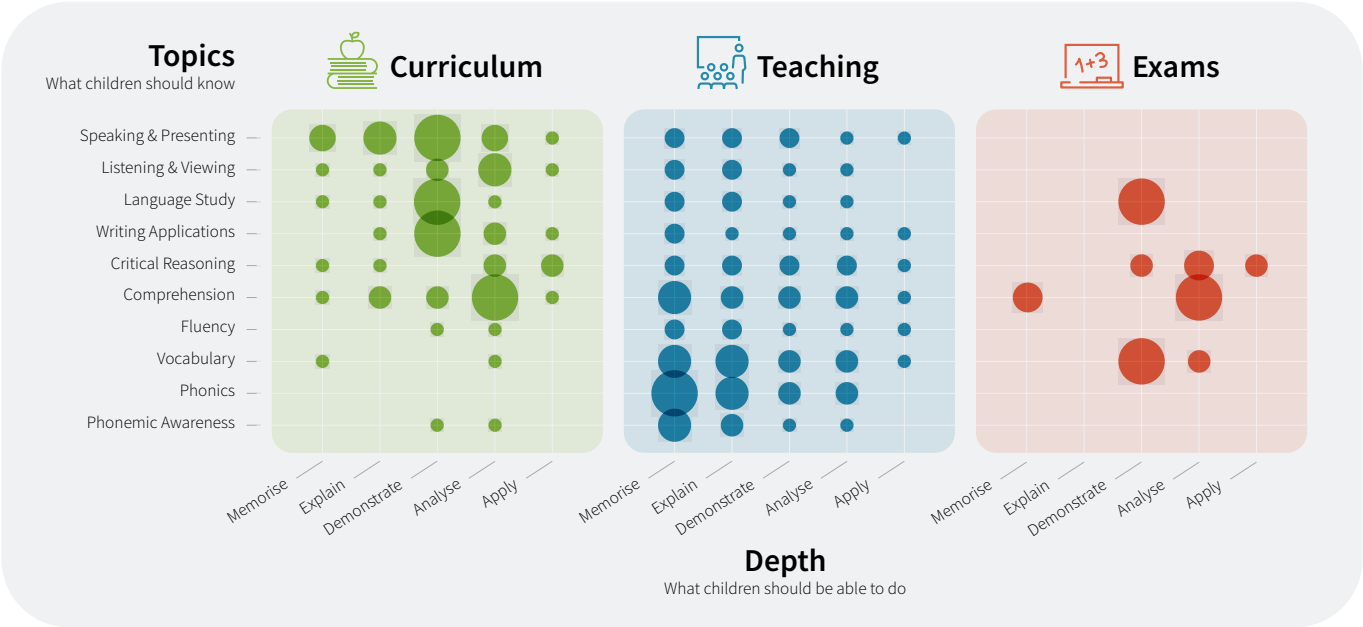
- Banerji (2015), reflecting on why a learning initiative using a "disruptive" pedagogical approach in Bihar, India was successful at the district level but stalled when it attempted to move to state-wide scale, argues that the nature of bureaucratic governance prioritised top-down control and uniformity of inputs over improvements in learning.
- Aiyar, Davis, Govindan, and Kapoor (2021) conduct an embedded study of pro-learning reforms in elementary school in Delhi, India and find that the very "grammar of the state" meant that *what* the reformers wanted to say (e.g., that teachers should be empowered and creative agents in the classroom) was incompatible with how they communicated with teachers. The modes of communication within the bureaucracy were "directives" and "instructions" that were, by their nature, the opposite of empowering.
- Efforts to improve accountability through the use of top-down information systems often only strengthen "accounting", those aspects of accountability that can be reduced to standardised, quantitative information. This weakens the central pillar of effective accountability in purpose-driven organisations, which is "accounts" by professionals of what they are doing and why (Honig and Pritchett, 2020).

> The top-down nature of government "schooling" bureaucracies often inhibits, rather than promotes, effective front-line management. Lemos, Muralidharan, and Scur (2021) find that management practices in schools in India are much, much lower than those of schools in developed countries; that management in public schools is much worse than in that in private schools; that this difference in public-private school management is largely because of weak management of personnel, in particular that public schools are not able to compensate or retain more effective teachers; and that weak school management is associated with low school productivity in learning.

Often, education interventions attempt to fix a part of a dysfunctional system or implement a specific policy or programme without considering how that part fits into the whole. Without understanding what purpose an education system is currently aligned to pursue, reformers cannot tack on new projects, programmes, or policies (even those that have been shown to "work" in other contexts) and expect them to sustainably improve learning at scale. In misaligned systems, "more" is not automatically "better", as documented by studies such as Muralidharan and Singh (2020) of the paper-thin school improvement plan reform in India.

Once a system has committed to pulling towards the purpose of learning, it must ensure all its constituent parts are pulling in that direction. Many poorly performing education systems are plagued by internal misalignment. For example, in some systems the curriculum standards, examinations, and actual teaching practices are out of sync. This is often symptomatic of the fact that national curriculum and exams are set by different bodies that may operate in organisational siloes. Teachers are left to triangulate between the different expectations embodied in the curriculum and exams, as well as other constraints pulling their teaching in other directions. For instance, neither the overambitious curriculum nor selection-oriented exams used in many countries are well aligned with the actual learning levels of students. Atuhurra and Kaffenberger (2022) use the Surveys of Enacted Curriculum tool to systematically describe and quantify the misalignment between curriculum, exams, and instruction in the Ugandan and Tanzanian school systems. Their results, in Figure 11 below, show that each part of the system emphasised

Figure 11: In Uganda, the national curriculum, classroom teaching, and exams cover vastly different topics and depths of cognitive demand in primary school English.



Source: Adapted from Atuhurra and Kaffenberger, 2022

Education systems deliver learning when their different components pull in the same direction: towards learning.

different topics at different levels of depth, with the curricular expectations of topics and depth of understanding far removed from actual classroom teaching.

The misalignment between curriculum, exams, and instruction is an important example, but it is far from the only kind of internal misalignment within education systems. Tools such as the RISE system framework (Pritchett, 2015; Spivack, 2021) offer a common vocabulary for diagnosing these misalignments, emphasising the multiple relationships that may be misaligned within an education system, and the multiple dimensions of each relationship that may be misaligned and weaken the relationship. Kaffenberger and Spivack (2021) map the well-known success of Sobral, a municipality in Brazil, in raising foundational learning outcomes onto the RISE framework, and demonstrate how the reform effort brought multiple disparate parts of the city's education system into alignment with the goal of learning and with each other. Sobral's success did not come from implementing a single programme, but from aligning political and bureaucratic goals, and then aligning multiple parts of the system – including teaching and learning materials; student assessments; teacher professional development; teacher incentives; and funding levels and autonomy—around these goals in a concerted way. The analysis by Crouch (2020) of case studies that improved foundational learning at scale—covering Sobral; the Mexican state of Puebla, and a set of national reforms in Kenya (scaled-up as Tusome)—similarly emphasises how each set of reforms brought greater alignment within and between key "sub-systems" that were previously poorly coordinated with each other and relatively incoherent. Mbiti et al (2019) offer an experimental demonstration of the power of alignment, and find that changing one part of the system (school capitation grants) or another part of the system (the structure of teacher pay) in isolation had five times less impact than changing both parts in concert, due to the "complementarities" between the parts.

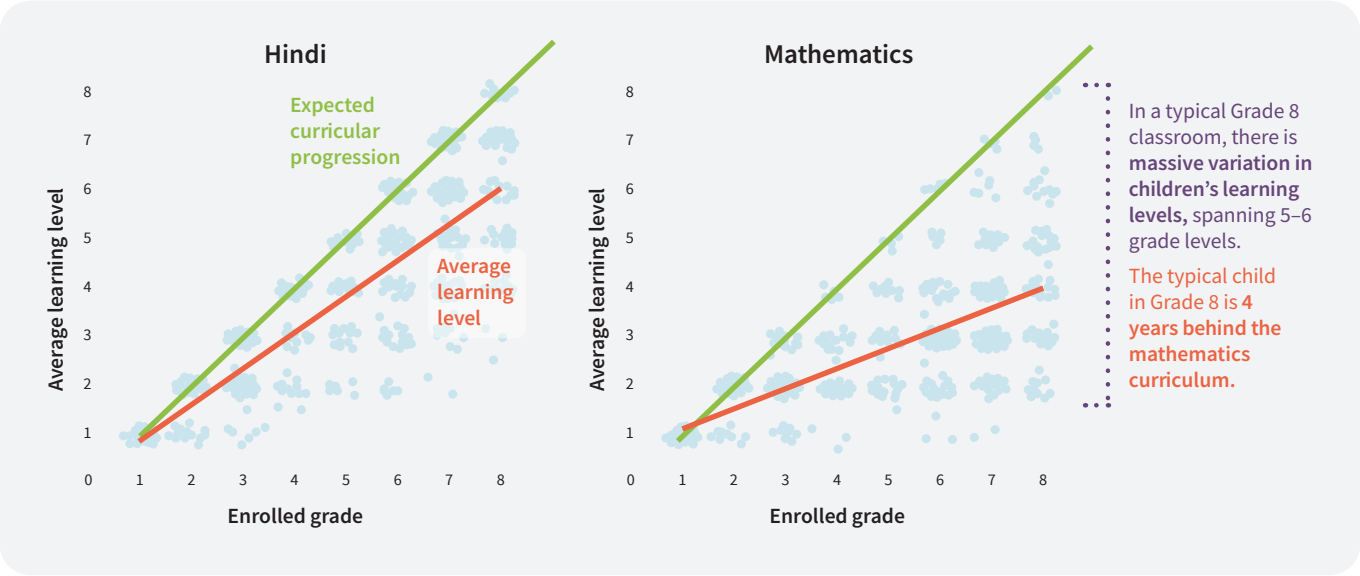
To sustainably improve foundational learning, systems must have laser-like alignment around the purpose of learning, and structural alignment between their multiple actors and parts.

3.2 Align teaching with children's existing levels and learning goals

Alignment for learning also needs to be considered at the classroom level. RISE research highlights the all-too-common consequences of teaching that is misaligned with learning levels. In systems that are unable to inculcate universal, early mastery of foundational skills, the curriculum and instruction often nevertheless assume that children have mastered them. They then advance to material with which children, lacking prerequisite skills, are increasingly unable to engage. As vividly shown in Figure 12, this can create classrooms with enormous spreads in student learning levels, and a significant subset of students traveling on persistently lower learning trajectories as they progress from grade to grade but are unable to benefit much from instruction on topics they are unprepared to study (Muralidharan and Singh, 2021).

This dynamic means that relatively small gaps between instruction and students' learning levels risk accumulating over time. This was visible in different RISE studies that examined the long-term impact of school closures due to crises. Three months of missed school following a devastating earthquake in Northern Pakistan had, 4 years later, accumulated into 1.5-2 years of lost learning (Andrabi, Daniels, and Das, 2021). RISE modelling of recovery from the

Figure 12: In Rajasthan, India the curriculum is misaligned with the learning levels of all except the most advantaged children



Source: Muralidharan and Singh (2019). Each dot represents 10 students.

Covid-19 pandemic emphasised that if schools ignored lengthy school closures and did not reorient the curriculum and instruction to children's new learning levels after they returned to school, potential learning losses could widen over time (Kaffenberger, 2020). While remediation can benefit children at any point during school, even heroic efforts may be "too little, too late" to overcome the gaps that have opened in later grades between learning levels and the expectations of curriculum or exams (Chiplunkar, Dhar, and Nagesh, 2021). Remedial instruction aligned with children's learning levels needs to begin in the earliest grades so that children do not fall as far behind to begin with.

Effective teaching is aligned with:

- Children's current levels of learning, so that it builds on what they know already but is not too difficult for them to understand, and
- Learning goals, so that it develops the specific knowledge and skills they are expected to acquire (Hwa, Kaffenberger, and Silberstein, 2021).

There are many levers to realign teaching with children's learning levels that may be more or less feasible in different contexts. For example, a paper from the RISE Tanzania team evaluated the impact of a national reform to early grade curriculum which, by reducing the number of subjects and reserving 80 percent of instructional time for foundational skills, led to learning gains (Rodriguez-Segura and Mbiti, 2022). Other programmes may not have the opportunity to reform the curriculum but can concentrate instead on changing one or more of the other components of instruction, including teacher autonomy over how they enact the curriculum; assessments; teaching and learning materials; and teacher training and coaching. These programmes include the array of

Alignment of teaching with the level of learning and learning goals is key to improving learning outcomes.

approaches of either "teaching at the right level" or structured pedagogy that have improved learning at scale (Hwa, Kaffenberger, and Silberstein, 2021; Banerjee et al., 2016).

A common feature of systems and programmes that are committed to addressing misalignment is the increased use of learning data to inform better teaching. Due to limited measures of learning available in most systems (see Section 2, "Measure"), teachers often do not have accurate perceptions of their students' learning levels (Wadmare et al., 2022; Djaker, Ganimian, and Sabarwal, 2022). In these systems, more frequent formative assessments of learning can be a powerful tool to allow teachers to tailor instruction to children's current levels. However, even if these assessments are done, this does not guarantee that teachers will see them as relevant to their day-to-day teaching or use them for formative purposes. Teachers may follow administrative protocols to conduct continuous assessments of their students, but do so out of compliance (Mushkin, 2017). Instead, teachers should be supported to view such assessments as feedback loops for realigning teaching in the context of a widely shared commitment to learning, rather than as box-ticking accountability exercises.

Alignment of teaching with the level of learning and learning goals is key to improving learning outcomes.

Support teaching

If it doesn't happen in the classroom, it won't impact learning.

The previous three actions are all in service of increasing the number of children in school who are exposed to effective teaching and actively engaged in learning. This requires that education systems support effective teaching.

Existing teachers in low-performing education systems are products of those systems. Most teachers' experience with teaching and learning practices occurred in weak basic education systems, followed by weak pre-service training, followed by weak professional development. The evidence from the World Bank Service Delivery Indicators, which tested teachers' own cognitive skills, showed that in many African countries teachers do not adequately master the material they are expected to teach (e.g., Bold et al., 2011).

The teaching profession entails day-to-day engagement in a very complex craft. It is both unrealistic and unfair to expect that teachers, given a lifetime of exposure to weak pedagogical practices, can miraculously improve their own teaching through the introduction of high-powered incentives alone. Support is also a critical dimension of accountability for learning. Teachers need to experience and understand what effective teaching looks like, be supported to build their skills to deliver it, and be embedded in a system that motivates them to sustain good teaching practices.

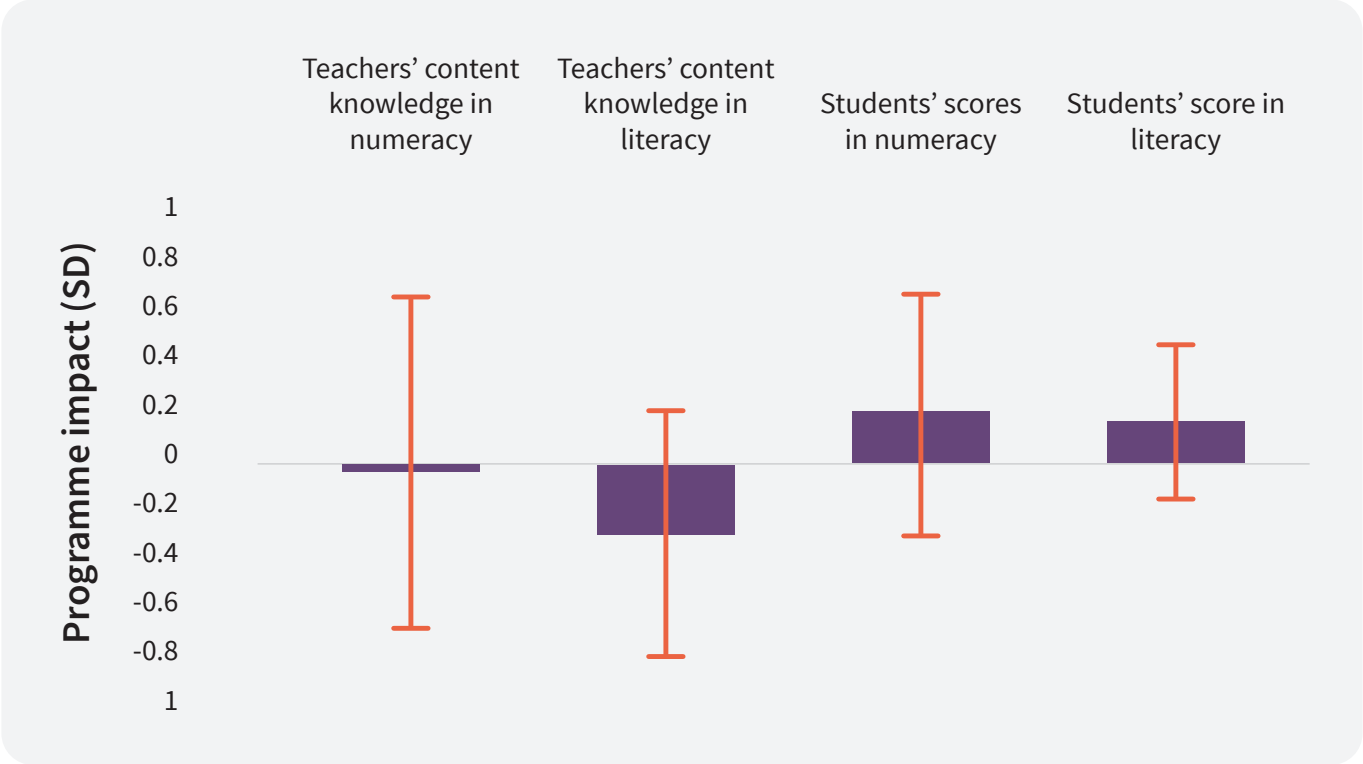
4.1 Refocus professional development on the craft of teaching

Given the overall approach of education systems pursuing expansionary goals through top-down bureaucratic modes of implementation, there has been far too much emphasis on promoting "quality teachers"—defined using narrow, easily observable criteria with little demonstrated association with student learning outcomes—and far too little attention to "quality teaching." Research shows that much existing teacher training, both pre-service and in service, does not lead to improved practices or learning outcomes, but it also sheds light on the types of integrated support to teaching that can work.

The RISE Indonesia team examined the entire system of teacher training, from pre-service training to the experience of new teachers through to in-service professional development. Their overall conclusion, which resonates with a large cumulative body of previous research, was that "the game was not worth the candle":

- Pre-service training was too theoretical and inadequately prepared teachers for the realities of the classroom. When hiring civil service teachers, Indonesia gave priority to candidates who completed a one year preservice training programme. However, results from an evaluation of the programme (Figure 13) found that the training had no discernible impact on student learning in the classrooms of trained teachers (Yusrina et al., 2022). The pre-service training was too theoretical and inadequately prepared teachers for the realities of the classroom (Akyeampong et al., 2011).
- The history of in-service training was a series of programmatic initiatives that, in the interests of reaching large number of teachers at low cost, relied on "cascade" models with too many levels, so that what happened at the end of the "cascade" was only distantly—and ineffectively—related to the training goals at the top (Revina et al., 2020).

Figure 13: In Indonesia, a one-year pre-service teacher education programme had no impact on either teachers' or students' learning



Source: Yusrina et al. (2022)

Improving the teaching of existing teachers is possible.

- A study by the Vietnam RISE team used direct observation of effective teachers who were producing globally high-quality learning results in a resource constrained setting. The study showed that these teachers enacted a variety of specific pedagogical practices to produce effective (and equitable) outcomes in their classrooms (DeJaeghere, Duong, and Dao, 2021; Duong and DeJaeghere, 2022).
- These findings support the idea that there are strong associations between specific teaching practices and student learning outcomes. Teacher training needs to focus on these practices, including expanding teachers' own content knowledge and their mastery of concrete pedagogical practices that can realistically be adopted (Filmer, Nahata, and Sabarwal, 2021).
- Teachers have entrenched norms and practices that are difficult to shift. Professional development that is effective in changing teacher behaviour in lasting ways both offers teachers the chance to try out good practices and provides follow-up to gradually build new ways of teaching (Popova et al, 2021; Revina et al., 2020).
- Ongoing support is necessary to reinforce new practices (Cilliers et al., 2022). There are promising examples of countries reimagining the middle tier (the officials who connect schools to the upper tiers of the bureaucracy) as instructional leaders rather than as monitors or inspectors (Childress et al., 2020). For example, a teacher training programme to encourage teaching aligned with students' learning levels in Ghana had a sustained impact—on both classroom practices and student learning—only when done in concert with a school manager training that helped push principals and circuit supervisors to serve as instructional leaders (Beg, Fitzpatrick, and Lucas, 2022).

Treating teaching like a professional craft means not only cultivating teachers' practical skill at teaching, but also giving them the autonomy to pursue learning goals in ways that best meet the needs of the children in their classroom. Empowering teachers requires balancing tight support, especially at first, with the discretion an experienced craftsperson or professional needs to do their job well (Evans and Piper, 2020).

To change teachers' classroom practices, governments and development partners need to dramatically change their focus from teachers to the craft of teaching.

4.2 Reform teacher careers to attract, retain, and motivate quality teaching

To sustain progress, learning-oriented education systems will need to redesign how teachers' careers are structured—for instance, in terms of entry, exit, placement, responsibilities, appraisal, pay, promotion, and recognition—so that they attract, retain, and motivate quality teaching. In many countries, significant reform is needed to establish a system that produces and maintains an effective and motivated teaching workforce.

The RISE Indonesia country research team evaluated a landmark experiment in teacher compensation. Indonesia effectively doubled teacher salaries in an effort to improve teacher quality, but the reform was stripped of performance incentives intended to accompany the salary rise. This resulted in billions of dollars of new spending on education, but no perceptible gains in learning, at least in the short term (de Ree et al., 2018). Indonesia's "double for nothing" experience highlights that simply spending a lot on teacher salaries is no guarantee of higher student learning unless other aspects of teacher careers are simultaneously redesigned to serve learning goals.

Another example of seemingly attractive teacher career reforms that do not translate into learning outcomes comes from the RISE Pakistan team's research into teaching hiring practices (Bau and Das, 2020). Using sophisticated estimates of teacher value added (TVA), or the gain in learning which individual teachers produce for their students, they found that there was substantial variation in teacher effectiveness: students with effective teachers learned much more than students with an ineffective teacher. However, they showed that the standard characteristics which determine hiring had little to no correlation with whether teachers had high or low TVA. This implied that standard "meritocratic" hiring criteria (e.g., degrees received), while perhaps an improvement on patronage-based hiring, would not, in and of itself, produce much better teaching. Bau and Das (2020) also found that teacher pay in the public sector was completely uncorrelated with TVA in learning, although there was an association between pay and TVA in the private sector.

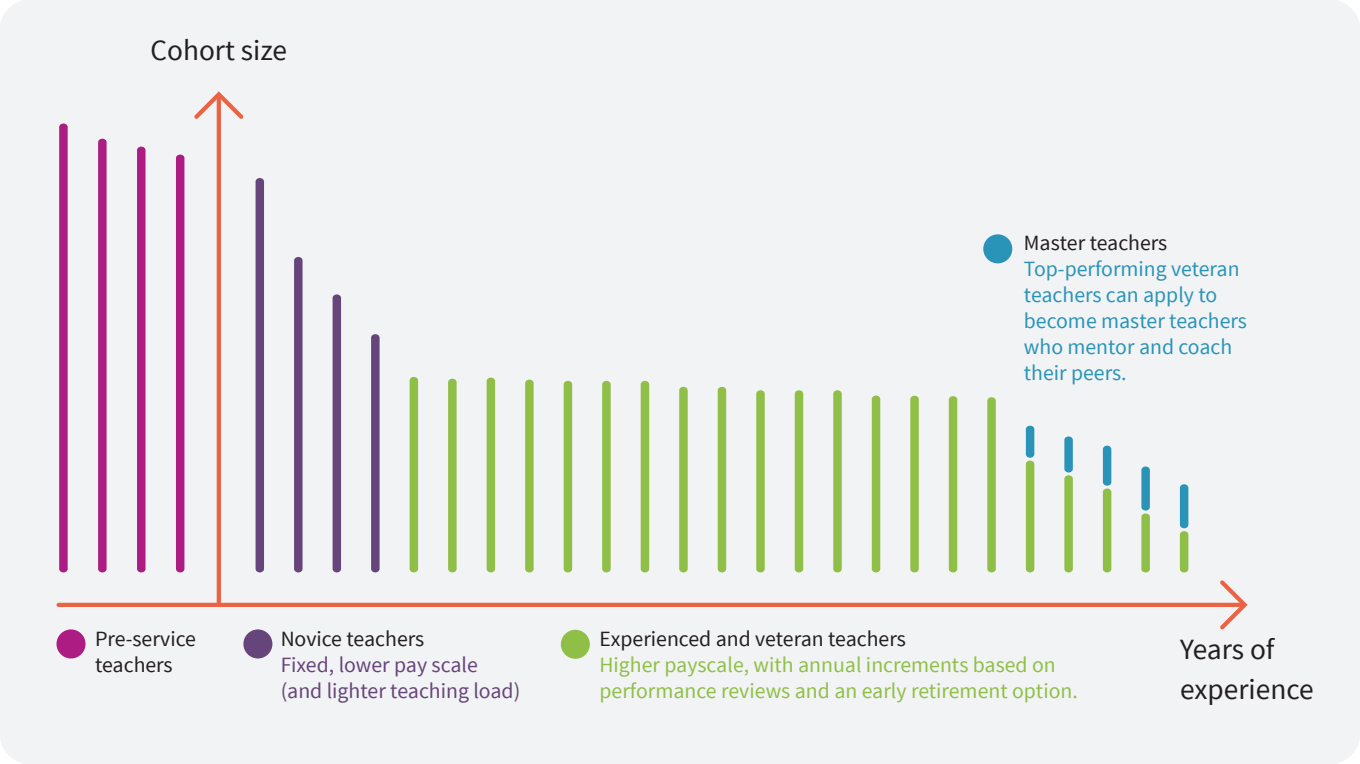
A separate RISE study from Pakistan offered an ethnographic description of the local politics of education in Khyber Pakhtunkhwa province and how these politics shaped teachers' career choices and professional identity. The study detailed the struggle between the bureaucracy, which was striving to select and promote teachers who complied with regulatory processes, and local politicians, who wanted teachers who were responsive to local communities and able to produce good learning outcomes. In the face of career incentives for recruitment and progression that were delinked from any clear definition of quality teaching, teachers adopted a hybrid identity between "teacher" and "bureaucrat" (Siddiqi, 2022).

> **"…when we previously got trained, we were never actually taught how to teach. We were taught philosophy and we were taught sociology, but the actual professional skills of teaching were not taught to us."**
>
> Luis Crouch (quoting teachers) in Hwa (2022)

Figure 14 illustrates a proposal to restructure teacher careers around good teaching (Hwa and Pritchett, 2021). It incorporates:

- More support alongside more selectivity during the pre-service and novice teacher phases
- Long-term employment commitments for experienced teachers who have demonstrated capability and dedication, and
- Compensation structures that appeal to and reward the teachers who are most committed to and effective at improving children's learning.

Figure 14: A schematic proposal for teacher career reform



Source: Hwa and Pritchett (2021)

Adapt what you adopt as you implement

The four previous actions to commit, measure, align, and support teaching are broad principles for an overall strategy to improve early mastery of foundational learning. Enacting each of these principles will require years of detailed policies, programmes, and projects. We have explicitly kept our recommendations at the level of principles because there is no single blueprint for transforming an education system. One cannot simply adopt "what works" from elsewhere or faithfully implement a master plan. Rather, a shared trait of successful efforts is that they build in the capability to continually adapt to the circumstances. All countries have a unique history and hence a unique future. Those committed to accelerating progress in learning will need to not just adopt reforms but iteratively adapt them until they find locally effective ways to achieve their goals (Figure 15).

5.1 Embrace adaptation and iteration as the key to success

A review of the repeated failures of education programmes in Mozambique (Andrews, 2021) illustrates that:

- Typical "plan and control" approaches to programmes are not suitable for tackling the complex policy challenges that are necessarily part of education system improvement, and
- Implementers need to be allowed to respond to feedback, data, and changing conditions to adapt and iterate in order to achieve impact.

These lessons are not specific to Mozambique. There is no way that all of the detailed particulars inevitably encountered during implementation can be anticipated, and hence plans for course correction need to be built into plans for implementation (Moore and Spivack, 2022).

Figure 15: Adaptation should not be seen as a sign of failure but rather as a precursor of success

… research and practical experience demonstrate that scaling is not a linear process but requires ongoing iteration and adaptations to fit different contexts and local needs, mechanisms to address problems and opportunities as they arise, and space for data-driven course corrections.

Center for Universal Education, Brookings, 2021

SPDI [Smart Policy Design and Implementation] is an iterative approach, where the lessons learned at each stage are used to refine existing designs and identify the next set of objectives and challenges.

Evidence for Policy Design, Harvard Kennedy School, 2022

Iterate study design decisions with stakeholders.

Research Resources, J-PAL, 2021

Source: Building State Capability, 2018. For examples of iteration and adaptation in practice, see Samji and Kapoor (2022); McNaught (2022); and Barjum (2022).

> **Ignoring our ignorance and pretending we know what we do not know may help us define and sell a project or policy today, but it will also ensure we are still working on the same policy challenges in years to come.**
>
> Matt Andrews (2021)

One way to move systems closer to this goal is to create both space and capacity for adapting research to local problems. External "best practices" are often imported and pursued with an emphasis on fidelity of implementation, but have little impact. In contrast, a more adaptive strategy to implementation might incorporate good ideas or research from elsewhere, but using a process through which they are tailored and applied to locally nominated problems, and translated into homegrown, emergent approaches and knowledge (Building State Capability, 2018).

5.2 Seek to understand both "what works" and "how change happens"

Each country needs to transform its education system in organic ways consistent with its history, society, and politics. It is useful to know what works in one place, but the same programme may not work in another place because a different context will cause the programme to function differently. Research can help understand both what to change and, just as importantly, how change can be supported or impeded.

- An ethnographic study of a learning-oriented reform in Delhi, India showed how, despite strong political backing, the reform's impact was heavily mediated by the lower tiers of the system. The study identified unexpected influences—such as the particular language of bureaucratic circulars, and the unwritten consensus among teachers on the exam-centric purpose of teaching—as major determinants of the reform's mixed success (Aiyar et al., 2021).
- A study focused on understanding the success of Pratham, one of the world's largest and most impactful civil society organisations working on foundational learning, illuminated the lengthy, non-linear process of engagement required to successfully integrate its innovative model into the daily operations of multiple Indian states at scale. For example, Pratham's long-term operational durability, unlike many time-bound donor-funded NGO projects, allowed it opportunistically engage with government during windows of political will for reform. Pratham also helped the government to adapt its model by supporting implementation down the tiers of the bureaucracy all the way to frontline bureaucrats and teachers (Bano, 2022a).

Knowing "what works" is useful. However, we will only succeed in shifting entrenched ways of doing things in a particular system if we look deeply at how change happens.

Conclusion: transformational progress on learning is possible

The world needs to acknowledge the depth and severity of the learning crisis and acknowledge that "more of the same" will just postpone, not promote, the needed changes. And these changes will be hard. If it were easy, we would not have the crisis we have and there would be many more success cases. But this paper is not an exhortation to reach for the impossible. In fact, hope is justified. A growing number of success stories, such as the three examples in Figure 16, show that education systems with low learning outcomes can be reoriented to deliver learning (Crouch, 2020; Kaffenberger, 2022). There are at least three particular reasons for optimism.

First, there are cost-effective ways to get children to learn foundational skills at scale. While a minimum amount of resources is necessary to provide an adequate education, the main characteristic that distinguishes higher-performing systems is not that they spend more, but that they spend differently. Even with current teachers and limited budgets, systems can be reoriented to achieve learning goals (Bano, 2022c). Some low- and lower-middle income countries today deliver high levels of learning, showing that what matters is the design and functioning of a country's education system, not just the wealth of the country (Silberstein, 2021).

Second, the know-how to improve foundational learning already exists. Humankind has developed ways to teach children to read and do mathematics. The interventions that work to get children learning do not need to be new-fangled or high-tech. For example, integrated system reforms like targeted instruction and structured pedagogy are proven ways to accelerate learning at scale (Global Education Evidence Advisory Panel, 2020; Angrist et al., 2020).

Third, after a system commits to learning, it is possible to initiate gains relatively quickly. Once children receive effective teaching, they can become literate in a short span of time, so tangible change and quick wins are possible on the longer path to reform.

Figure 16: Where learning outcomes are bleak, it is the system—not the kids—at fault, and the system can be transformed

Note: Data on learning outcomes from the Brazilian Education Quality Index (2022), the OECD (2020) PISA results, and new time series data based on USAID and UNICEF data (Le Nestour, A., Moscoviz, L., and Sandefur, J. 2022).

Transformational progress on learning is possible, but the transition from a low to higher-performing system is hard—really hard. To initiate and steer this transition, we have offered five principles for action grounded in systems research. Systems must first build sustained political and societal commitment to universal early mastery of foundational skills. This will allow systems to then measure, align, support, and adapt in ways that serve this purpose. Awareness of the learning crisis has never been higher; there is gathering resolve to do something about it, and the actions required are eminently doable. Nothing less than the dignity, self-worth, and potential to flourish of millions of children is at stake.

Commit to universal, early foundational learning
Measure learning regularly, reliably, and relevantly
Align systems around your commitments
Support teaching
Adapt what you adopt as you implement

Endnotes

1. Explanation of sources and methods for Figure 3.

(a) The proportion of youths who did not complete primary school and have not mastered foundational learning:
- For 2020, (a) is based on UIS data on primary school completion, estimated as the approximate midpoint between actual data for 2015 and projected data for 2025;
- For 1990, (a) is based on the approximate midpoint between the share of those born in the 1970s who completed at least 5 years of schooling in Le Nestour, Moscoviz, and Sandefur (2022) and UIS data on survival to the last grade of primary school in 1990;
- For 1960, (a) is based on the same sources as for 1990 but drawing on those born in the 1950s for Le Nestour, Moscoviz, and Sandefur (2022) and UIS data for 1970, both of which were the earliest available data points in the respective sources and both of which were revised downward assuming a roughly linear trend to address the time lapse. All of the estimates for (a) are based on an assumption that youths who have not completed primary school would not have mastered foundational learning.

(b) The proportion of youths who completed primary school or higher but have not mastered foundational learning:
- For 2020, (b) is based on the share of all children below basic skills in Gust, Hanushek, and Woessmann (2022), rounded down slightly to account for progress in learning levels since the 2006-2019 assessments in their dataset;
- For 1990 and 1960, (b) is what remains after subtracting (a), (c), and (d) estimates for each respective year from 1.00.

(c) The proportion of youths who have mastered foundational learning:
- For 2020, (c) is what remains after subtracting the (a), (b), and (d) estimates for this year from 1.00;
- For 1990 and 1960, (c) is estimated very roughly by assuming change of literacy share per decade of approximately 8 percentage points, as in Le Nestour, Moscoviz, and Sandefur's (2022) calculations for Sub-Saharan Africa (as the median rate of change compared to South Asia and East Asia), and then subtracting (d).

(d) The proportion of youths who have gone beyond foundational learning:
- For 2020, (d) is estimated by combining, firstly, the Pritchett and Viarengo (2021) PISA-D average of country-level proportion of youths with PISA-D scores at or above PISA Level 2 scaled by the non-OECD share of the world's population and, secondly, the proportion of children reaching Level 2 in PISA 2018 in OECD countries (Table I.10.1 in OECD, 2019) scaled by the OECD share of the world's population;
- For 1990 and 1960, (d) is a guess assuming a linear gain of approximately 0.05 in each time point.

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Citation:
Pritchett, L., Newman, K., and Silberstein, J. 2022. Focus to Flourish: Five Actions to Accelerate Progress in Learning. Research on Improving Systems of Education. https://doi.org/10.35489/BSG-RISE-Misc_2022/07

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