The Role of Purpose in Education System Outcomes: A Conceptual Framework and Empirical Examples

Michelle Kaffenberger

Abstract

In many low- and middle-income countries that have achieved significant gains in learning outcomes, higher income and resources and greater knowledge of what to do to achieve learning cannot explain the differences in outcomes relative to lower performing countries. Such cases yield complex questions of "how" and "why" success was achieved. In this paper, I propose a conceptual framework for understanding drivers of education system performance and use it to argue that consensus-based commitment to the purpose of learning is a critical missing link to addressing the learning crisis. I then apply the conceptual framework to examples of successful system improvements. Finally, I propose efforts that can foster commitment to the purpose of learning in education systems.

The Role of Purpose in Education System Outcomes: A Conceptual Framework and Empirical Examples

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1. Introduction

That learning is in crisis is increasingly acknowledged globally. While many efforts attempt to address the proximate causes of low learning, such as teacher absenteeism or insufficient textbooks, lasting improvement requires addressing the underlying drivers of low learning – the causes of the proximate causes. What underlying drivers enabled high and sustained teacher absenteeism? And why have textbooks failed to reach all children?

In this paper I argue that at the root of the learning crisis is a crisis of purpose in education systems. Systems that were initially established to educate a small group of elite students have failed to pivot to a wider purpose of providing a quality education for all children.

Basic empirical facts demonstrate that it is not primarily lack of resources, such as funding or inputs, nor lack of knowledge of "what works" to improve learning that holds low performing countries back. Learning outcomes vary tremendously across countries for children from equivalent household and material conditions and equivalently resourced school systems. Furthermore, learning has stagnated or even declined within education systems that are increasingly well resourced and cannot be argued to have lost knowledge of how to enable children's learning.

In this paper I propose a conceptual framework, arguing that, like organizations, education systems have a technical core that produces their core value. The technical core includes the purpose for which the system exists and the technical practices for achieving that purpose. Surrounding the technical core are support functions that enable the technical core to do its work. While much effort in the education sector focuses on changes to technical practices (e.g. teacher training) or support functions (e.g. procurement of inputs), little attention is given to the purpose the education system is striving to achieve. This paper will argue that this is a critical missing link for improving learning outcomes.

I then apply the conceptual framework to examples of education systems that have achieved large improvements in children's learning outcomes. Finally, I present considerations for how commitment to the purpose of learning can and has been achieved.

2. The puzzle

There are two common explanations for the learning crisis, each of which implies its associated solution. One is that low learning is driven by a lack of resources, implying that more financing would resolve it. The second is that low learning is driven by lack of knowledge or evidence about "what to do" to improve learning, implying a need for more research and evidence on what improves learning. However, both of these explanations are inconsistent with empirical facts about learning outcomes within and across countries. To illustrate, I begin with a series of puzzles.

The first is the case of learning outcomes in Vietnam. Vietnam participated in the PISA process, which assesses in-school 15-year-olds, in 2015 and 2018 with impressive results. On some

measures of learning, Vietnam (a lower-middle income country according to World Bank classifications) outperformed most OECD countries.[1]

The PISA assessments collect data on students' socio-economic conditions allowing cross-country comparisons of children of similar conditions. Using new PISA-D data[2], Pritchett and Viarengo (2021) compared the performance of children in Vietnam to similar children in other middle-income countries.[3]

When looking at the subset of "advantaged" children (male, urban, native speakers, non-immigrants, and high socio-economic status) in PISA-D countries, Pritchett and Viarengo (2021) found that children with the same characteristics in Vietnam had mathematics scores 200 PISA points higher than the typical PISA-D country (Figure 1). This is an enormous gap. The PISA assessments are normed so that the standard deviation across students in a typical country is about 80 points. A rule of thumb from the education literature is that a typical year of school tends to improve learning by about 0.3 of a standard deviation (on a typical assessment, though obviously comparing standard deviations raises substantial technical concerns). This means that a typical year of schooling raises scores by about 24 PISA points, which means that the gap between Vietnam and these countries is about eight years' worth of learning. Taken literally, this would imply a grade 9 student in a typical PISA-D country is at only about a grade 1 or 2 level of competence in Vietnam.

The implication of these comparisons is that the large gap in learning outcomes between 15-year-olds in Vietnam and 15-year-olds in other middle-income countries cannot be explained by differences in education system resources or knowledge. Vietnam does not have access to special scientific knowledge or evidence unavailable to PISA-D (or OECD) countries. Moreover, studies of learning outcomes within countries typically show that the most important driver of learning outcomes is student SES background (through a variety of causal mechanisms), and the results in Figure 1 already hold that constant so the learning gaps cannot be explained by student inputs.

These findings are corroborated by other studies which find that Vietnam far outperforms what would be expected based on its GDP per capita, and that household- and school-level characteristics explain little of Vietnam's performance, all of which can be thought of as resource related inputs (Dang et al., 2020; Glewwe et al., 2021).

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[1] Even adjusting for possible non-representativeness due to fewer Vietnamese 15-year-olds being in school, Vietnam's performance is well above what would be predicted by its income level (Dang et al., 2020).
[2] A more recent application of PISA assessments to developing countries.
[3] For more on this analysis, see Pritchett & Viarengo (2021).

Figure 1: The gaps in learning outcomes for 15-year-old students between countries participating in PISA-D and the equivalent child in Vietnam are around 200 PISA points
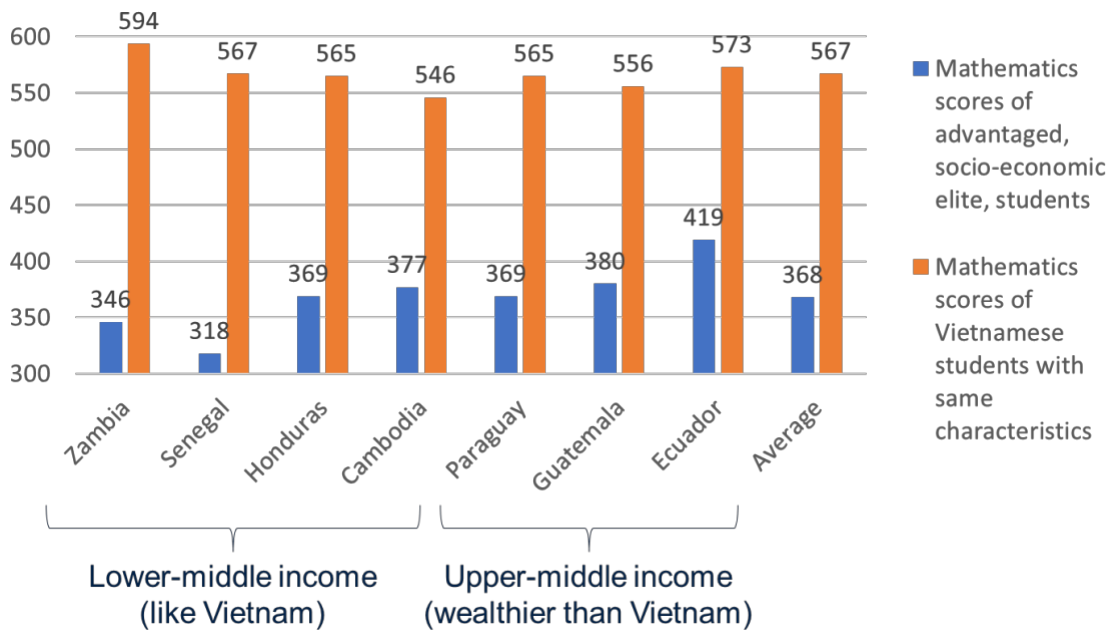
Source: Adapted from Pritchett & Viarengo (2021); "advantaged" = male, urban, native speaker, non-immigrant, and SES elite

A second puzzle examines learning outcomes trends in Indonesia. Beatty et al. (2021) use Indonesia Family Life Surveys (IFLS) to analyze learning trends between 2000 and 2014. IFLS is a household survey with a numeracy assessment, allowing analysis of changes in numeracy by children's ages and grades during this period. During the period 2000 to 2014, Indonesia substantially increased education spending and undertook major education reforms including raising qualification standards for new and existing teachers and effectively doubling civil servant teacher salaries. These efforts were expected and intended to improve outcomes. However, during this period, learning declined by approximately 0.25 standard deviations (Beatty et al., 2021). In 2014 the average grade 7 child had the learning level of the average grade 4 child in 2000 (Figure 2).

An experimental study evaluated a part of Indonesia's education reforms during this period: a doubling of teachers' base salaries. While the increased pay improved teachers' satisfaction with their income, it had no impact on student learning outcomes (de Ree et al., 2018).

The theory that the learning crisis is due to insufficient resources (and therefore increased spending can improve learning) implies that at the very least education spending and learning outcomes should move in the same direction. The Indonesia case counters this theory. While education spending increased between 2000 and 2014, learning actually dropped. Furthermore, the Indonesian education system clearly has the knowledge of "what works" to ensure children

learn at least at the levels achieved in 2000. It is unlikely this knowledge was lost, and instead that some other explanation is needed for a noted, significant decline in outcomes.

Figure 2. Numeracy outcomes in Indonesia declined between 2000 and 2014 amidst large increases in education spending: Grade 6 students in 2014 were at a similar achievement level as Grade 4 students in 2000
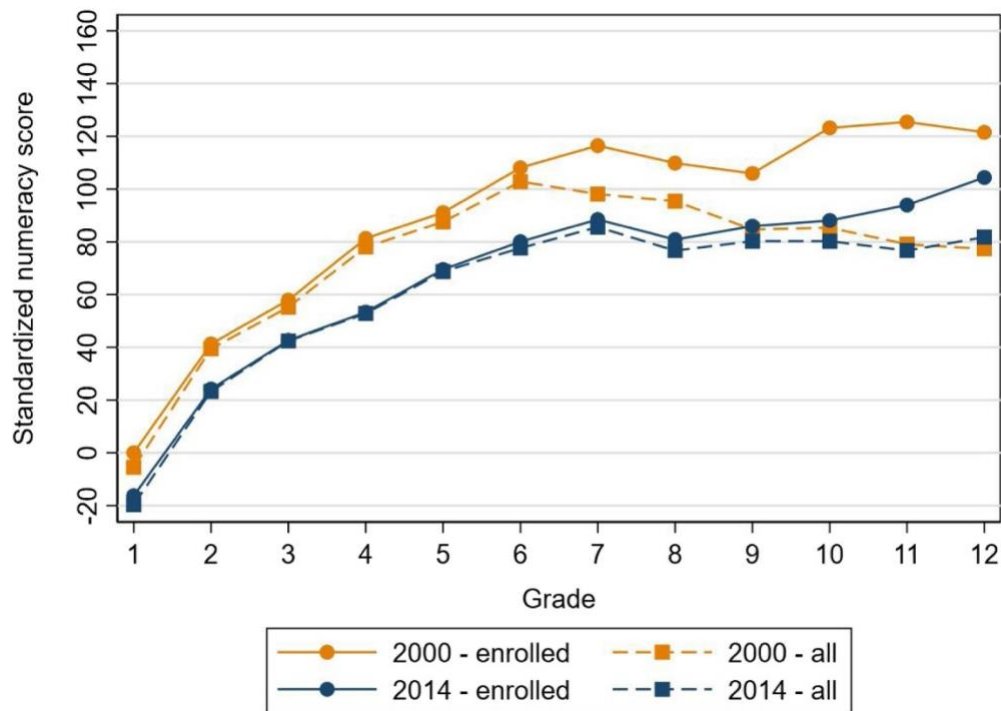
Source: Beatty et al. (2021). Figure shows standardized numeracy score in 2000 and 2014 by grade level completed (for enrolled children) or grade level they would have completed (for all enrolled and unenrolled children). Based on IFLS 3, 2000 and IFLS 5, 2014.

Finally, Indonesia is not alone. Other countries have also recorded declines in learning outcomes in recent years, despite education spending and reform efforts intended to improve outcomes. ASER studies have been assessing children's reading and numeracy in rural India since 2005. Between 2008 and 2018, the percent of children in Standard V in government schools who can read at a Standard II level dropped from 53.1 percent to 44.2 percent, and the percent who can do Standard II level arithmetic dropped from 34.4 percent to 22.7 percent (ASER, 2019), despite steady increases in government spending on education over the same period (World Bank, 2022).

These puzzles raise a set of questions. What drove the radically different outcomes in Figure 1? Why is it that in some countries learning outcomes have been declining, even amidst reform efforts intended to improve them? If resources and technical knowledge cannot explain the variation in learning across countries and across time, what can?

3. Purpose driven education systems

The central argument of this paper is that an underlying driver of learning outcomes lies at the core of an education system: its purpose.

Every organization has a purpose or purposes for which it exists. Sometimes that purpose is explicit: a coffee shop exists to serve coffee (and maybe muffins). Sometimes the true purpose is hidden from view: a front company whose nominal or visible purpose is to provide some good or service, but whose true purpose is to launder money. Often organizations' purposes evolve over time. A startup may initially have a purpose to generate new, innovative technology, but over time and with sufficient growth the purpose shifts to complying with corporate, bureaucratic norms, or simply perpetuating the same, old technology, resulting in losing its innovative edge.

I argue the same dynamics apply to systems. In this section I present a conceptual framework for understanding the role of purpose in education systems and trace how education system purpose has evolved over time. I then use the conceptual framework to argue that purpose is a critical missing link in addressing the learning crisis, and that this realization implies non-traditional approaches for improving learning outcomes.

3.1. An education system's technical core

The literature on organizational management has long held that organizations, whether public or private, are composed of a combination of a technical core and support functions (Thompson, 2003/1967) (the technical core is sometimes also referred to as "operating core" (Mintzberg, 1979)). The technical core is made up of the organization's purpose and the technical practices needed to achieve that purpose.

The same can be said for systems: at their core lies the purpose for which they exist and which they are aiming to achieve, and their technical practices for achieving this purpose. From the purpose and technical practices, the technical core produces value for the organization or system. The purpose and technical practices are then supported by a variety of support functions that enable the core to carry out its functions (Figure 5).

An organization's or system's purpose can be defined as the strongly held set of beliefs by those within the organization or system about why the organization or system exists and what it is supposed to achieve. Sometimes the purpose is explicit and clearly stated in documents like a mission statement or other formal articulations. Often though the true purpose of an organization or system is implicit. Organization leaders may claim one purpose nominally while the true underlying purpose differs substantially or perhaps is even at odds with the stated purpose (e.g. a technology company may claim its purpose is to change the world for the better, when the true underlying purpose is increasing revenue or advertising dollars regardless of other outcomes). The nominal purpose may still appear in the mission statement and in formal documents, but within the organization it is understood that the organization is working towards the implicit purpose.

The true purpose or mission is particularly important in organizations like public bureaucracies and nonprofit organizations that lack the market-based measure of profit to judge success (Besley and Ghatak, 2005). In these contexts, the purpose provides coherence for the organization's activities and practices. Commitment to purpose has enabled public sector organizations to achieve great accomplishments. The United States' National Aeronautics and Space Administration (NASA) successfully landed astronauts on the moon in 1969, following a 1962 commitment from President John F. Kennedy to do so by 1970. Purpose driven systems further provide an enabling environment for purpose driven organizations to be sustained and scaled within that system (Andrews et al., 2017).

Technical practices then support the achievement of the purpose. These are the technical skills and know-how necessary for achieving the purpose. Sometimes the technical skills within an organization can reveal the true purpose the organization is working towards. Often hiring and retention will align more with the implicit purpose than the stated/nominal purpose when these two differ.

Organizations and systems also have support functions, which create and maintain the infrastructure and operating conditions that enable the technical core to carry out activities (Figure 5). These support functions include roles like human resources, procurement, legal support, accounting, and IT. A hospital (whether public or private) may have a technical core with the purpose of and technical practices to provide high quality medical care to patients. Support functions then ensure the hospital has the adequate HR support, procurement, IT and more to for the technical core to produce its intended value.

Figure 5. A focus on purpose in an education system's technical core is a missing link to addressing the learning crisis.
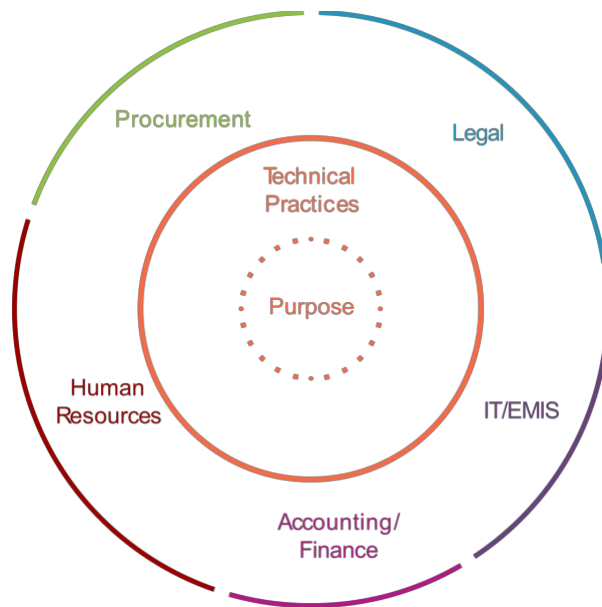
Source: Author's illustrative diagram.

An education system may serve multiple purposes and therefore hold multiple purposes in its core. Education systems often serve purposes such as supporting social cohesion, preparing students to enter the workforce, and ensuring children learn the skills, capabilities and competencies necessary to fulfill their many roles in adulthood. Problems of multiple purposes arise, however, when there are too many purposes such that not all can be achieved; when prioritization across purposes is not clear; or when purposes are contradictory, pulling the system in opposing directions; as discussed further in Section 3.2.

In a well-functioning education system, appropriate and effective technical practices reflect the agreed, consensus-driven purposes. Where the nominal or stated purpose differs from the true/implicit purpose, the technical practices that the system prioritizes can reveal these discrepancies. In an education system, for example, with the purpose to ensure universal learning through the primary school years, necessary technical practices will include a strong teaching force that is skilled in content knowledge and pedagogy and school, district, and regional leadership skilled in encouraging and supporting the achievement of quality learning outcomes. In an education system with a narrower purpose, for example of expanding schooling access (with little regard for learning), however, the necessary technical practices would include procurement and school construction skills and student and teacher recruitment skills.

The technical core (the combination of the purpose and technical practices) is then supported by the support functions to achieve outcomes. These support functions include human resources, including the recruitment, selection, and promotion of teachers and others involved in education provision; procurement, including of teaching and learning materials, school infrastructure, and other educational inputs; IT, including EMIS systems; and more. When operating effectively, these support functions help the technical core produce the intended education system outcomes.

Most education interventions focus on either technical practices, such as teacher training, or support functions, such as procuring more inputs or expanding EMIS systems. Evans and Popova (2016) conduct a "review of reviews" bringing together the breadth of evidence on interventions attempting to improve education in developing countries. To do so they analyzed the results from six separate systematic reviews of education interventions. Altogether the six reviews covered 300 studies from developing countries, 229 of which report on learning outcomes at the primary school level. Evans and Popova identify 15 classes of interventions among those included across the systematic reviews. Of these 15 classes, four relate to technical practices, 10 relate to support functions, and only one can be construed as relating to instilling purpose.

This paper argues that purpose is a critical component to education system success and is often a missing link in efforts to improve learning.[4] The technical practices for which individuals are recruited, hired, and retained and which are then enacted in a system often follow from the true/implicit purpose of the system. Therefore, I propose that shifting an education system from achieving one set of outcomes to achieving another set of outcomes requires a shift in the agreed and recognized *purpose* of the system. Writing about education system purpose, Reimer (2022)

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[4] In Section 5 I discuss ways a commitment to the purpose of learning has been fostered in a variety of contexts.

highlights the importance of societal "consensus on what it is that schools are expected to do" as a key component to successful education reform movements. This shift in purpose in turn can (though does not always) enable the needed changes to technical practices and support functions to successfully achieve the new purpose.

3.2. The evolution of education system purpose

Historically, in most countries, the original purpose of education systems was educating the elite of a nation and selecting high performing children for further education. Education systems trained an elite workforce, producing a small cadre of government and business leaders, while leaving most of the rest with little to no meaningful education access. When education was provided to a large proportion of the population, there were often two tracks, one for more elite students and one for mass education.

Reimer (2022) traces the evolution of education system purpose in higher income countries from being elite-focused to having more expansive aims. He shows how, beginning in the eighteenth century, the purpose of education systems in the United States and many European countries began to shift from educating an elite subset of society to a focus on educating most or all children in society. The ideas related to large public education systems expanded into South America in the nineteenth century.[5]

The purpose driving the expansion of schooling for the masses differed across countries, but often related to goals of nation-building. Paglayan (2022) reviews existing theories for the historical establishment of mass education systems in nondemocracies, with two primary strands. The first is that education served a progressive, redistributive function, benefiting the poor who supported the political rulers, such as in twentieth century USSR, China, Cuba, Ghana, and Brazil. The second is that nondemocracies used mass education to "mold the preferences, values, beliefs, and behavior of the masses" (Paglayan, 2022, 2). Finally, Paglayan proposes a new theory, arguing that internal conflict led to provision of mass education, particularly targeting the rebellious groups behind the conflict and disorder. She argues this was a common cause of education expansion in eighteenth and nineteenth century Europe and Latin America.

Historically, autocracies have tended to promote mass education more than democracies, particularly when autocracies are under threat by democratic revolutions (Alesina et al., 2021). Between 1830 – 2001, Aghion et al. (2019) find that across 137 countries, autocracies had higher primary school enrollment rates than democracies. The emphasis on education by autocracies is particularly evident in poorer countries. While Bursztyn (2016) finds a positive correlation between democracy and education spending in richer countries, he finds this relationship is negative in poorer countries – less democratic nations are correlated with greater education spending. Lott (1999), using data from 1985-1992, similarly finds that increases in totalitarianism are positively correlated with increases in public education expenditures but only in countries where GDP per capita was less than $12,767. These findings are consistent with

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[5] As public education systems to serve all children were established, nations tried to learn from other nations' attempts to significantly expand educational access, leading to the birth of the comparative education field (Reimer, 2022).

theories that mass education has been used as a tool to help autocratic rulers maintain power and that one of the primary drivers of education expansion is a desire to promote national identity and prevent revolt.

Notably, the theories and explanations for the historical expansion of education say little about serving the purpose of learning. Unlike modern day aims relating to education's role in social mobility and empowerment, more common in earlier stages of expansion were goals of national unity, promoting a common language and identity, and social control (Paglayan, 2022; Alesina et al., 2021).

In most of today's low- and middle-income countries, elite-focused education systems prevailed until the mid-twentieth century when schooling expansion began en masse. Between 1950 and 2010 the average years of schooling for adults in developing countries more than tripled from 2.0 to 7.2 years (Barro and Lee, 2013). This pace of expansion is astounding. What took high income countries about 100 years to achieve developing countries achieved in about 50 years (World Bank, 2018). This widespread schooling expansion was driven by an evolution of education system purpose, from educating a small group of elites, to providing basic schooling for nearly all children.

However, for many education systems this did not include concurrently expanding their purpose to ensure universal learning (Kaffenberger & Pritchett, 2020; Pritchett & Sandefur, 2020). In Tanzania, for instance, Opalo (2022) describes four phases of education policy evolution, beginning after independence in 1961 with a focus on training a small, elite government and business workforce. The second phase expanded access to primary school (while rationing secondary school) and included goals of nationalizing and centralizing education provision and using education for nation-building. Learning only gained salience in the fourth phase, resulting in learning-oriented education reforms in 2005 and 2013 (Opalo, 2022). The trends in Tanzania are mirrored in other African countries. Across the developing world, during the expansion period far more attention was given to schooling attainment and less attention was given to learning outcomes being achieved (World Bank, 2018; Pritchett, 2013).

During the period of schooling expansion, literacy levels among those with five years of schooling (and no higher) declined in most developing countries.[6] Le Nestour, Moscoviz and Sandefur (2021) analyze literacy data for women born between 1950 and 2000 across 87 countries and find declines in "education quality" – the likelihood of a child with exactly five years of schooling achieving literacy stagnated or declined during school expansion, particularly in South Asia and sub-Saharan Africa. Changes in composition of students, due to increased enrollments during the same period and more children continuing on to secondary school, explain part of the decline but cannot explain it all. These findings are consistent with the theories that schooling expansion was not primarily focused on expansion of learning.

In recent decades, various commitments have been made to universal education, to include both schooling and learning. The World Declaration on Education for all, or Jomtein Declaration, in

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[6] Literacy still increased in absolute terms, due to so many additional children attending school. But the likelihood of a child achieving literacy conditional on attaining exactly five years of school declined on average.

1990 stated that "Every person…shall be able to benefit from educational opportunities designed to meet their basic learning needs" (World Conference on Education for All, 1990). The Millenium Development Goals included a goal to "Achieve universal primary education" (MDG, 2000). While only schooling was measured as a target for the MDG, the assumption was that primary school completion would result in foundational learning outcomes. Most recently, the Sustainable Development Goals, in 2015, established the goal to "Ensure that all girls and boys complete free, equitable, and quality primary and secondary education leading to relevant and effective learning outcomes," explicitly stating a commitment to learning outcomes (SDG, 2015). All 193 countries of the UN General Assembly signed on to the Sustainable Development Goals.

However, while many countries have paid lip service to a commitment to the purpose of learning, this purpose is often not embedded in education systems. Furthermore, policymakers are often out of touch with the breadth and depth of the learning crisis in their country. A survey of 900 policymakers in 35 low- and middle-income country found that on average policymakers believed that twice the share of 10-year-olds achieve foundational reading skills in their country than actually do (Crawfurd et al., 2021).

Education system purpose takes many forms today. Below I describe four common examples. These are not intended to be exhaustive nor are they mutually exclusive; education systems' purposes take many forms and have many combinations. The examples are intended to provide a starting point for diagnosing education system purpose and identifying possible levers for reorienting education systems to achieve learning for all.

The first are education systems that maintain a (sometimes implicit) purpose of providing a quality education only to the elite. This can include expanding *schooling* access to the masses, while maintaining a system of *quality education* only for the elite. The second are education systems where the purpose is contested, so the system is pulled in too many directions to be successful at its aims. The third is education systems that have an (implicit/unstated) purpose orthogonal to children's learning achievement, such as providing rents to officials. Finally, the fourth is education systems that have expanded their purpose to include learning for all children.

i.   Maintenance of elite-focused education

Many education systems have maintained an implicit purpose of providing a quality education only to the elite, even as they have expanded access to schooling (with limited regard for learning outcomes) to most or all children. This is consistent with a variety of theories of schooling expansion. A continued focus on quality education for the elite, with mass schooling but limited learning provided to the rest of society, is consistent with theories that the primary objectives of schooling were building national identity and molding individuals' preferences and behaviors (Paglayan, 2022). It is also consistent with theories that schooling was provided primarily for political gains. Expansion of schooling is easily observable and therefore political leaders can receive significant political benefit for expanding access. Learning outcomes, on the other hand, are often harder to observe and therefore produce fewer political gains.

India, for example, is largely considered to be a "selection" system (Muralidharan and Singh, 2021): curriculum and examinations are pitched at a high (overambitious for most) level of learning, aimed at selecting only the top performers to continue their schooling and join the elite workforce.[7] Teachers are under immense pressure to complete the curriculum, covering all prescribed content even if most of the children in the class have fallen behind the level of instruction and are not learning (Aiyar et al, 2021). Teachers are further held accountable by students' passage rates on high-stakes exams. This leads teachers to focus on preparing the most promising students for the exams while leaving the rest of students behind (Aiyar et al., 2021).

This elite focus is common in other countries as well (Pritchett & Beatty, 2015). Banerjee & Duflo, in their book *Poor Economics*, find that both curriculum and teaching are often designed with elite students in mind, leaving most children learning little (2011). For example, a study in Kenya evaluated the learning impacts of providing additional textbooks, which were expected to raise test scores (Glewwe et al., 2009). The textbooks improved the scores only of the best performing students, with little to no impact on the learning outcomes of other students. The reason was that the textbooks were in English, which only the best performing students could meaningfully read and engage with. The authors conclude that both the textbooks that were evaluated and the curriculum more generally were pitched to top performers, leaving most children behind.

The focus on and priority given to the elite and high performers is often the implicit rather than explicit purpose. Indeed, in India the Right to Education Act in 2009 mandated provision of a "good quality elementary education" for all children (Government of India, 2009), making quality education for all the nominal, explicit purpose. However, technical practices by most curriculum designers, schools, and teachers align with the implicit, agreed, and understood purpose of the education system: educating the elite and selecting high performers.

ii.   Contested purpose.

The purpose of an education system is contested when key members of the organization do not share a sufficiently coherent vision of what the purpose of the system is. Different individuals or groups, including those in leadership positions, mid-level bureaucrats, frontline workers such as teachers, and other stakeholders including civil society organizations and international donors, may try to pull the system in different directions. Contested purpose can take multiple forms, including when there are too many purposes, contradictory purposes, or outright disagreement or infighting about purpose. When there are too many purposes, even when all are good, legitimate purposes, the system may be pulled in too many directions to deliver on all within budget and capability constraints.

In India, for instance, the District Information System for Education (DISE) was set up as a massive education management information system (EMIS) to support monitoring and implementation of primary schooling in all states and districts in the country. An analysis of the report cards that are produced by the system, however, revealed that in the state of Tamil Nadu,

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[7] See Beatty & Pritchett 2015.

817 distinct indicators are reported (Pritchett, 2014), more than is surely possible to meaningfully act on or improve upon. Furthermore, none of the 817 indicators related to any direct measure of learning. The state's education system was being pulled literally in hundreds of directions, with none of them related directly to learning.

In many education systems, teachers are under immense pressure to both complete all the content prescribed in the curriculum standards and to prepare children for high-stakes primary leaving exams which determine who may go on to secondary school. If the academic content of these two requirements is not well-aligned, teachers may struggle to achieve both purposes well. In Uganda and Tanzania, for example, a study of the content of primary school curriculum and primary leaving exams found high levels of content misalignment (Atuhurra and Kaffenberger, 2022). This leaves teachers with the difficult task of covering all curricular content while also preparing children for exams, and reduces children's opportunity to learn either set of content deeply.

Across an education system's many purposes, there may also be disagreement about how to prioritize. Some in an education system may wish to prioritize expanding access to tertiary education, while others wish to prioritize universal foundational skills, and still others wish to prioritize universal secondary schooling. While all may be good and valuable aims, it may not be possible within existing budgetary and capability constraints to achieve all.

Other implicit or explicit purposes may be contradictory, such as ensuring all children are taught by a high-capability teacher and ensuring ongoing employment and job security for the teaching force (Hwa & Pritchett, 2021). In Indonesia, for example, a major reform in 2005 aimed to improve student learning outcomes by overhauling the teacher career structure and "re-professionalizing" the teaching force (Kaffenberger & Spivack, 2022). The reform's initial form included new support, training, and certification for teachers and an external evaluation of teachers' pedagogical knowledge with additional training and support for those who failed (Chang et al., 2014; de Ree et al., 2018). Salary raises were tied to success in training and certification. While these reforms were in line with the purpose of improving teaching quality and ultimately student learning outcomes, they were at odds with the objectives of teacher associations which aimed to maintain employment and increase pay for teachers without the evaluation and certification conditions in the reform. Ultimately, the conditions were removed from the reform, nearly all teachers received a substantial pay raise, and student learning outcomes remained stagnant (de Ree et al., 2018).

Of course, all education systems serve multiple purposes. This is not to suggest that education systems could or should serve any singular purpose. However, without a shared vision of purpose and prioritization across purposes by actors within the system, there cannot be agreement on what technical practices are effective for advancing the purpose. With too many or contradictory purposes, disagreement and infighting about how to allocate effort and resources may result, and none of the many contested purposes may be achieved.

        iii.   Corrupted purpose.

In an education system with a corrupted purpose, the nominal purpose has been supplanted by another (usually implicit) purpose. A purpose of providing children with an education may be supplanted by purposes of providing rents to officials, teachers, or to contractors through procurement; maintaining bureaucratic compliance at the expense of meeting children's needs; or some other purpose orthogonal to the education of children.

Kingdon and Datta (2021), for example, analyze extensive data on teacher deployment in India. The government of India claims there is a shortage of approximately one million teachers, which it plans to fill "at the earliest" (Government of India, 2020). Kingdon and Datta (2021) find, however, that while there are indeed teacher vacancies in less desirable areas, there are surplus teachers in more desirable areas, and the government only tallies the vacancies, ignoring the surpluses, in their calculations. Once the figures are adjusted for surpluses and false student enrollments, Kingdon and Datta (2021) find there is actually a net surplus of about 100,000 teachers in the country. This indicates the plan to hire one million new teachers may be aligned with the purpose of producing political value (hiring teachers is good politics) and providing hedonic rents to teachers in desirable locations (who do not want to move), rather than educational value. Furthermore, filling the purported one million vacancies would involve an annual fiscal outlay of $8.7 billion dollars, finances that are then not available for other education system purposes.

In Pakistan, the National Corruption Perception survey, conducted by Transparency International, found that the education sector was perceived to be the fourth most corrupt sector in 2010 (Gilani, 2013). This was corroborated by the government's National Education Policy (NEP), which notes that governance in education is weak and corruption is common. The NEP states that the degree of corruption "reflects a deeper malaise where the service to the students and learners is not at the forefront of thought and behaviour processes in operating the system" (Ministry of Education, 2009); in other words, educating children is not the core purpose for which the system is operating.

Other examples of improper fees, rents, and corruption taking precedence over quality education for all children unfortunately abound. In Uganda, for example, one study found that only 13 percent of non-salary spending that was allocated to primary schools actually reached the schools, with poorer schools receiving even less than the average share (Reinikka and Svensson, 2004; WDR, 2004). The remainder was siphoned off before it reached frontline providers. Patronage, particularly in hiring teachers, is common (World Bank, 2018). Other examples include misappropriation of funds and improper procurement; hidden fees extracted from parents in contexts where primary school is free; bribes charged for enrollment into desired schools; and more (Transparency International, 2013).

        iv.   Repurposed to encompass learning for all.

Finally, some education systems emphatically changed their purpose to encompass educating all children. As discussed in Section 1, Vietnam has achieved strong learning gains, far surpassing learning outcomes that would be expected relative to its GDP per capita (Glewwe et al., 2021). A

significant contributor to these learning gains is the country's political commitment to education and high levels of societal engagement in the education system that make education – including learning for all – a top national priority (London, 2021). More examples of repurposed education systems are discussed in Section 4.

These descriptions of commonly observed education system purposes can help diagnose why efforts to improve education system outcomes often fail. Many interventions aiming to improve education outcomes target changes to technical practices or support functions without taking into consideration issues of purpose. When the education system purpose is unchanged from earlier periods and focused, for instance, on educating the elite; when the purpose is contested; or when the purpose has been corrupted, such efforts often fail.

Consider the case of a teacher training program that is intended to improve teachers' technical pedagogical practices. In an education system with a contested purpose, teachers may be responsible for many tasks across the contested purposes of the system, only some of which relate to pedagogical practices. Teachers may be responsible for completing the curriculum (as dictated by the curriculum development body); preparing children for a high stakes exam (with the content dictated by the exam body) (see, for example, Atuhurra and Kaffenberger, 2022); ensuring an adequate proportion of their students pass the high stakes exam; ensuring a variety of paperwork requirements are regularly completed (as required through various bureaucratic compliance processes); serving as election officers and other non-teaching related responsibilities; and more. Training in any one purpose, such as technical practices to improve learning outcomes, will easily be subsumed or entirely supplanted by the many other tasks and purposes teachers are expected to fulfill. Without consensus around a deeply held purpose, it is unclear to teachers and other frontline workers why or to what end their practices should change on a sustained basis.

Moreover, training (or other efforts to improve technical practices) may encourage compliance with a purpose, such as completion of bureaucratic paperwork requirements, that is poorly correlated with other outcomes such as student learning achievement. A large-scale experimental study in India evaluated an intervention intended to improve the quality of management practices in Indian schools. The intervention included many whta "best practices" that were expected to improve technical practices in a way that would produce learning improvements. However, in the end, the program had no impact on student outcomes, and the main reported result among frontline officials was an increase in reporting and paperwork requirements (Muralidharan and Singh, 2020).

Returning to the teacher training example, in an education system with a corrupted purpose, teacher training may be carried out through pure isomorphic mimicry (Pritchett, 2013). Teachers may arrive at the training location and sit through a training session, but the primary outcomes of the experience are the additional pay through travel vouchers paid to teachers and rents paid to trainers.

Furthermore, when the purpose of an education system is contested or is corrupted, efforts focused on improving support functions, without changing the purpose or technical practices of the technical core, will also fail to achieve fundamental changes to the functioning of the system. This includes efforts focused on the outside circle in Figure 5. Introducing new IT systems, for instance, may improve effectiveness of the specific IT support service, and may improve process compliance, but will not fundamentally change the effectiveness and outcomes of the system if the purpose or technical practices are not aligned for effectiveness. Many education reforms, for example, aim to improve the functioning of the EMIS system. If the technical core is oriented towards contested or corrupted purposes, however, then changes to the EMIS system on their own are unlikely to change system outcomes, and may simply reinforce compliance with existing ineffective practices.

4. Improving education system coherence for learning requires learning for all as a core purpose of the system

Consensus that learning for all is a core purpose of an education system may be a necessary feature, even if not sufficient on its own, for achieving the large-scale learning improvements needed in many low- and middle-income countries.

Stefan Dercon has made a similar argument for development more broadly, arguing that economic development requires a "development bargain;" in other words that it requires a commitment to development among a country's elite (Dercon, 2022). Among the features of a successful development bargain, he argues, is "first fundamentally a shared commitment…for wanting to really make a successful country," (Dercon, 2022). As one review of his book summarized it, "development happens most reliably when local elites…want it to happen" (Dissanayake, 2022). It is the commitment to the purpose of development that drives change.

Honig (2022) draws attention to the importance of commitment to purpose among bureaucrats. He argues that motivated, "mission driven" bureaucrats are critical for bringing about change in government systems, including the education sector. Honig further argues that being mission-driven or mission-motivated are changeable traits, and that leaders' and managers' commitment to mission and resulting management style can drive mission motivation throughout a bureaucracy.

The concept of "purpose" and "mission" in public sector bureaucracies, and specifically in lower income country contexts, is not new. Grindle (1997) analyzed 29 public organizations in six developing countries. One of the key factors differentiating the "good performers" (15 out of the 29 organizations) from the "bad performers" (14 of 29) was having a well-defined mission that was widely ascribed to by employees. In the strongest cases, "the mission amounted to a mystique about the organization and the importance of the task it was performing" (Grindle, 1997, p 486).

Section 1 discussed the case of Vietnam and its outlier status in terms of learning outcomes achievements. The Research on Improving Systems of Education (RISE) Programme has a

research team dedicated to investigating how and why Vietnam achieved such impressive learning levels. Their extensive analysis of PISA data found that differences in household and school level characteristics explain little of Vietnam's performance (Dang et al., 2020). Analysis of richer data from Young Lives surveys (including Vietnam, Ethiopia, Peru, and two states in India) finds that observable characteristics can explain somewhat more of the gap in learning outcomes, but other than for Peru, the majority of the gaps remain unexplained (Glewwe et al., 2021).

Rather than observable characteristics, London (2021) attributes Vietnam's success, in part, to something harder to measure: a societal commitment to education. One example of how the commitment to quality education plays out, London says, is that "teachers show up on time and are driven by a professional ethos" (London 2021, p31). This commitment to learning, he argues, stretches from political commitment at the top levels of government through to household level commitment and public engagement in education.

Aiyar (2021) reinforces the importance of commitment to learning throughout an education system – not just at the top. Through an in-depth, long-term ethnographic study, she studied a major education reform in Delhi. The reform had strong political support and commitment among government leadership, and she states that, "political will was firmly in place". However, the reform struggled to achieve change at the frontline. She argues that the disappointing results were due to difficulty in changing the norms and attitudes of those within the bureaucracy.

> "The problem of low student learning was recognized. However, teachers and administrators did not accept responsibility. After all, they too are victims of a system. In sum, what we encountered was a system that has lost all sense of public purpose. This is the challenge of governance and state capacity that must be at the forefront of all debates on reform." Aiyar (2021, p73).

Instilling the sense of purpose and commitment to learning was a critical missing piece to achieving reform success.

Levy (2022) articulates a framework that helps explain the role that purpose may play at different levels of the system depending on political/institutional context. In "dominant" political contexts, purpose flows from top leadership, and so shifting purpose requires shifting priorities at the top. In "fragmented" or "personalized competitive" contexts, the fragmentation can pose challenges to shared commitment but also present opportunities. Fragmentation can create opportunities for agency and local-level coalitions committed to the purpose of learning which can build islands of effectiveness. That same agency can also cultivate the idea that learning is everyone's business, and fuel requisite local-level activism. Finally, "impersonal competitive" contexts, typically contexts with functional bureaucracies, present opportunities for equipping and unleashing a bureaucracy that is committed to the purpose of learning.[8]

While commitment to the purpose of learning may be (and I argue is) a necessary condition for change, it is not a sufficient condition. As Figure 5 articulates, the system's Purpose must be

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[8] See also Levy (2014) for more on the political and institutional framework.

followed and backed by adequate and effective technical practices and support functions, in support of that purpose. This necessary-but-not-sufficient condition is evident in the title of Dercon's book, quoted above, *Gambling on Development*. He argues that committing to development is a long-term bet and success is not guaranteed, but that without such a commitment development will not occur; an archetypical necessary but not sufficient condition.

Several countries have undertaken reforms in recent years which succeeded in improving education system coherence for learning and ultimately improving learning outcomes. A common theme among these "success" cases is that each involved an explicit, established purpose to improve children's learning. Many of the established purposes combined clear foundational learning goals with the political commitment and agreement at multiple levels of the system necessary to achieve the goals. From the established purpose, actors in the education systems then worked to improve technical practices and support functions in line with the purpose.

i.   Sobral, Brazil

Sobral, Brazil, experienced large, rapid improvements in learning outcomes between 2005 and 2017. During this period, it rose from being the 1,366th municipality in the national basic education ranking to being the top performer in the country (Crouch, 2020). This was despite high levels of poverty; its scores were 80 percent higher than would be expected for its level of education expenditure.

Case studies and analysis identified that a key driver of Sobral's dramatic learning improvements was the establishment of explicit learning goals by Sobral's mayor and subsequent collective commitment to the goals (Cruz and Loureiro, 2020; Crouch, 2020; McNaught, 2022). In 2000-2001, an independent learning assessment conducted by the municipality revealed that 40 percent of primary school students could not read (Cruz and Loureiro, 2020). In response to these findings and others, Sobral's mayor established education goals, the top two priorities of which were achieving universal literacy in the first two years of primary school, and remediating children in higher grades who could not yet read (Becskehazy and Louzano, 2019).

The establishment of a clear purpose, to ensure all children learn to read, drove a series of policies and reforms to improve technical practices and support functions in line with the established purpose. Teachers received substantial support and training, including clear, sequenced learning objectives; sequenced curriculum with structured teaching and learning materials and student assessments; initial and ongoing training on the curriculum, learning objectives, pedagogical practices, and materials; and regular feedback and tailored support based on classroom observations (Cruz and Loureiro, 2020; Crouch, 2020). Support functions were also reformed in support of the newly established purpose, including new learning-based monitoring systems; new HR practices, including shifting to meritocratically appointed school principals and establishing monetary and non-monetary incentive structures for teachers and schools tied to learning results; and devolved financial autonomy with both increased financial independence and responsibility for achieving results (Cruz and Loureiro, 2020).

The common, explicit purpose of improving learning enabled the development and implementation of this large set of reforms which were both aligned with each other and coherent with the purpose of learning (Kaffenberger and Spivack, 2022).

ii.   Tanzania, 3Rs reform

In Tanzania, between 2006 and 2012, pass rates on the primary school leaving exams more than halved, with only 31 percent passing in 2012. This, combined with poor results in foundational skills on Uwezo assessments and subsequent EGRA and EGMA assessments, spurred the government to take action to improve learning outcomes (Todd & Attfield, 2017).

To address low learning, the government established the explicit purpose of improving reading, writing, and arithmetic in Standards I and II, as articulated in a major curriculum reform (Ministry of Education, Science and Technology, 2016). This reform, referred to as the 3Rs reform, placed 80% of curricular emphasis for Standards I and II on literacy and numeracy (Ministry of Education, Science and Technology, 2016).

From this clearly established purpose, the government undertook a number of efforts aimed at improving technical practices and support functions in alignment with the new curriculum. The government and an array of development partners provided teachers and schools support for implementing the new curriculum (Komba & Shukia, 2021). This included new textbooks, teacher instructional materials, in-service teacher training, school-based continuous professional development modules, and training for head teachers to support school leadership. Further, new information on learning outcomes, aligned with the learning goals, was introduced into the system through an annual Standard II assessment.

The government received financial support from the Global Partnership for Education (GPE), UNICEF, USAID, and others, all in support of the established purpose to improve literacy and numeracy in the early primary school grades. While the number of actors involved presented coordination challenges (Komba & Shukia, 2021), the clear, common purpose of improving foundational literacy and numeracy enabled many actors to undertake separate tasks and still achieve coherence to a common goal, and ultimately improve learning outcomes (Hwa et al., 2020). An external evaluation of the reform estimates that it achieved large, positive increases in children's learning in both Kiswahili and mathematics (Rodriguez-Segura & Mbiti, 2022).

iii.   Kenya, Tusome Program

Between 2009 and 2012 multiple learning assessments, including the Uwezo assessment and the baseline assessment for the Primary Math and Reading (PRIMR) pilot program, showed very low student learning levels, serving as a "wake up call" to education leaders in Kenya (Crouch, 2020). In response to these disappointing learning outcomes, Kenya invested in scaling up the successful PRIMR pilot as a national literacy programme called Tusome, with the explicit purpose of improving literacy in grades 1-3 nationwide (Piper et al., 2018).

Grounded in this purpose, Tusome established national benchmarks for learning outcomes, and these expectations were communicated down the system to schools. To reach the benchmarks,

the program implemented a holistic effort to improve technical practices and support functions in support of learning.

Teachers' technical practices were supported through a set of internally coherent materials including well-structured, year-long curriculum; teachers' guides; structured lessons; formative assessments for classroom use; and student textbooks (Crouch, 2020; Piper et al., 2018). Teachers were further supported through training on the use of the new materials and ongoing coaching by Curriculum Support Officers (CSOs). The role of CSOs was expanded and deepened to include more school visits, spot check assessments of student oral reading fluency during classroom visits, and more effective feedback to teachers focused on content and pedagogy in the new curriculum. The quality of the feedback fostered trust and professional accountability between coaches and teachers, and an attendant shift in school culture around the importance of good pedagogy (Crouch, 2020; Piper et al., 2018). To deliver this technical support to teachers, CSOs themselves received regular support in the form of thrice-yearly training and tablets equipped with classroom observation tools to enable effective feedback (Piper et al., 2018).

Support functions also improved in support of the newly established learning goals. Improvements to logistics systems achieved a 1:1 student-to-book ratio for both English and Kiswahili in 99 percent of classrooms and ensured 97 percent of classrooms had the teachers' guides (Freudenberger and Davis, 2017). New information systems included a mid-year Grade 2 assessment, allowing time to course correct before the end of the school year; assessments in Grade 5; and identification of at-risk children for targeted attention.

In these three examples, and more that have been left out because of space restrictions, a common sequencing emerges. Establishment of a clear, explicit purpose is followed by reforms to technical practices, and, to a lesser degree, support functions, in alignment with the established purpose. Establishment of purpose of course is not sufficient on its own to ensure learning improvements. Education leaders can pay lip service to learning goals without genuine commitment to the actions required to achieve the goals. Further, even full commitment at one level of the education system could fall short of achieving learning goals if there is not buy in and shared commitment at other levels of the system. And, even if commitment is sufficiently in place, it must then be followed by the necessary changes to technical practices and support functions to achieve intended outcomes. However, while a clearly established and agreed purpose of providing learning may not be sufficient for ensuring learning for all, I argue that in many of the contexts that have achieved learning improvements, it was necessary and pivotal to success.

5. Discussion

While countless education interventions have attempted to improve learning by changing an education system's technical practices or support functions, comparatively little attention has been paid to fostering or facilitating a *commitment to the purpose of learning*. Yet there are

examples, from both the education sector and other sectors, of how commitment to purpose has been fostered.

Such efforts typically involve longer time frames than standard development "projects", and their success may be harder to measure (or guarantee). But by fostering a commitment to improving learning throughout an education system they have the potential to produce large gains. Sengeh and Winthrop (2022), borrowing from Meadows (1999), argue that while shifting education system purpose through changing goals, beliefs, and public mindsets, may be hard to implement, such efforts hold the strongest potential leverage for achieving system-wide change. Here I describe three classes of approaches that have contributed to instilling a commitment to the purpose of learning.

The first is conducting or funding learning assessments to spur political and citizen-led attention and pressure to act on learning. Learning assessments and new information on learning outcomes can also empower champions within the system to bring about change. Findings from learning assessments appear in multiple examples in Section 4 as catalysts for spurring commitment to improving learning. Such learning assessments are focused on driving attention and action; they are not for management accountability, nor are they high stakes for teachers or students.

In Tanzania, Uwezo (a citizen led assessment), EGRA, and EGMA assessments drew attention to low learning, helping to spur the curriculum reform discussed in Section 4. In Kenya Uwezo results and the baseline assessment for an education pilot project similarly achieved attention and action for learning, ultimately resulting in the scaled-up Tusome program. Drawing on other examples, an EGRA assessment conducted in partnership with the government in Nicaragua spurred immediate actions to improve learning, while an EGRA assessment in Senegal that was implemented mostly independent from government was used by civil society to draw attention to low learning (Mejia and Pouezevara, 2011).

Participation in international assessments such as PISA and regional assessments such as LLECE in Latin America have also driven commitment to learning improvements. In Ecuador, poor performance on the LLECE assessment in 2008 became a political rallying cry, leading to a transformation of its basic education system, "with learning the central goal and learning measurement the central measure of system progress" (Bruns, Akmal, and Birdsall, 2019). By 2013 Ecuador had achieved the largest learning gains in the region. In Peru, a "PISA shock" occurred in 2001, in which Peru's 15-year-olds scored 200 points (five years of schooling) behind the OECD country average and nearly 100 points (two and a half years of schooling) behind Chile, Argentina, and Mexico (Bruns, Akmal, and Birdsall, 2019). In response, major education reforms were launched, including an "emergency program focused on literacy".

Of course, new information on learning does not always drive attention or action. Two states in India participated in the 2009 PISA, with disappointing results, and responded by withdrawing from later rounds of the assessment. The use of such assessments are often more politically feasible or desirable at the beginning of a new government than in the middle of an administration. In some places the effectiveness of such assessments to drive policy priorities may rely on the presence and prominence of civil society actors that can use the results to

advocate for change. But awareness of low learning levels, even if not a sufficient condition for change, may be a necessary condition for beginning the change process.

Second is supporting domestic think- and do-tanks. Domestic think tanks and evidence-informed, action-oriented civil society actors have in many cases had an outsized influence on what politicians and others in an education system prioritize and commit to. These entities create domestically relevant research and knowledge, develop and maintain ongoing relationships with government actors, and advocate for reform from within a country.

Pratham, and their associated ASER assessments, for instance, have successfully driven attention and action on foundational learning in India. While tracing a precise causal chain may not be possible, it is reasonable to believe that the regular ASER assessments and ongoing government partnerships and advocacy work by Pratham contributed to the central government's new national mission to ensure "universal acquisition of foundational literacy and numeracy" by 2027. Rukmini Banerji, Pratham's CEO, gave input and feedback on the government's literacy and numeracy plan.[9] Central Square Foundation, also in India, implements education programs, engages with education decision-makers, and advocates for a focus on foundational learning. Leaders from CSF also contributed inputs and technical support to the new foundational literacy and numeracy mission.

The Centre for the Study of the Economies of Africa (CSEA), in Nigeria, provides not only research and analysis, but a forum for policy dialogue between government stakeholders, private sector, and civil society actors. SMERU, in Indonesia, similarly produces policy-relevant research and engages with the education ministry on improving learning. The INOVASI program works directly with Indonesia's Education Ministry to implement education programs and partnered with and advocated for government officials to prioritize learning, and especially foundational skills, as schools reopen following the Covid-19 school closures. In Nicaragua, the success of EGRA results in bringing about political action to improve learning is in part attributed to a local NGO, CIASES, that RTI, the project lead, partnered with to implement the assessment. CIASES' high-level connections with the ministry and ongoing presence and influence on the ground enabled the new information on learning to translate into government commitment to the purpose of improving learning (Mejia and Pouezevara, 2011).

Third is funding programs and scholarships for tomorrow's leaders. Many of the successful examples in Section 4 were driven by the commitment of a small set of leaders or bureaucrats, at various levels of an education system, to learning and quality education. To support future leaders today, there are promising examples from within and beyond the education sector to learn from.

Teach for All organizations "recruit promising leaders" and train and support them to teach in classrooms for at least two years. Through this experience in the classroom, and through cultivating ongoing connections for alumni, communities, and partner organizations, they seek to encourage young people to dedicate themselves to leadership in education. The Echidna Global

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[9] https://www.thehindu.com/news/national/literacy-numeracy-mission-deadline-pushed-back-two-years/article35136526.ece

Scholars Program, hosted at the Brookings Institution, selects leaders and scholars from developing countries, provides a residency at the Institution for them to conduct research on improving learning outcomes in their country of focus, and provides support for them to take action when they return to their country.

Beyond education, Vanderbilt's Graduate Program in Economic Development was established (in 1954) to provide students from developing countries training in economic development. It has trained future finance ministers, ambassadors, heads of central banks and a Nobel Peace Prize winner.[10] Developing or facilitating access to similar, high-quality programs for education could support future education leaders. Similarly, the World Bank runs an Africa Fellowship Program for young African scholars, a model which could be tailored for those focused on education.

The African Leadership Academy, in South Africa, trains young people with the goal of "[transforming] Africa by developing a powerful network of young leaders who will work together to address Africa's greatest challenges". A consortium of universities, including the Lahore University of Management Sciences (LUMS), University of Cape Coast, Ghana, and University College London, have partnered to offer an "education systems" course, training current masters students on education systems change.

All three of these approaches lend themselves to coalition-building as a mechanism for bringing about change. Champions of a learning-oriented approach to education may do well to give enhanced attention to building multistakeholder coalitions or alliances, centered around a shared commitment to the idea of a learning-oriented education system, to build political saliency and drive change (Levy, 2022). Such coalitions can be spurred on by new information on low learning, by civil society actors active in advocacy or engagement, and by leadership from both within and outside the education system.

Such efforts are undertaken with a long-term view. Facilitating commitment to quality education and learning by investing in future leaders is not a "quick fix" and cannot be evaluated through approaches like impact evaluations. However, leaders play a critical role in driving change in mindset and action, and therefore the payoff could be large.

Improving education systems and learning outcomes is hard. There are no easy solutions, and there are few quick solutions. But change is possible, and the short list of success cases where education systems have shifted purpose to include a commitment to learning for all is slowly growing. There are steps that can be taken to support not just "education interventions," but shifts in education systems. These will take dedication and a willingness to invest in the long run. But such system shifts are necessary for the large-scale learning improvements that are needed to begin to ensure every child a quality education.

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[10] For more see "Program History" in https://as.vanderbilt.edu/economics/about-ma-economics/; and https://news.vanderbilt.edu/2007/05/02/vanderbilts-graduate-program-in-economic-development-producing-movers-and-shakers-for-half-a-century-58621/

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