

# TRANSFORMING EDUCATION SYSTEMS WHY, WHAT, AND HOW

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Today, the topic of education system transformation is front of mind for many leaders. Ministers of education around the world are seeking to build back better as they emerge from COVID-19-school closures to a new normal of living with a pandemic. The U.N. secretary general is convening the Transforming Education Summit (TES) at this year's general assembly meeting (United Nations, n.d.). Students around the world continue to demand transformation on climate and, not finding voice to do this through their schools, are regularly leaving class to test out their civic action skills.

It is with this moment in mind that we have developed this shared vision of education system transformation. Collectively we offer insights on transformation from the perspective of a global think tank and a national government: the Center for Universal Education (CUE) at Brookings brings years of global research on education change and transformation, and the Ministry of Education of Sierra Leone brings on-the-ground lessons from designing and implementing system-wide educational rebuilding.

This brief is for any education leader or stakeholder who is interested in charting a transformation, journey in their country or education jurisdiction, such as a state or district. It is also for civil society organizations, funders, researchers, and anyone interested in the topic of national development through education. In it, we answer the following three questions and argue for a participatory approach to transformation:

- **Why is education system transformation urgent now?** We argue that the world is at an inflection point. Climate change, the changing nature of work, increasing conflict and authoritarianism together with the urgency of COVID recovery has made the transformation agenda more critical than ever.
- **What is education system transformation?** We argue that education system transformation must entail a fresh review of the goals of your system – are they meeting the moment that we are in, are they tackling inequality and building resilience for a changing world, are they fully context aware,

are they owned broadly across society – and then fundamentally positioning all components of your education system to coherently contribute to this shared purpose.

- **How can education system transformation advance in your country or jurisdiction?** We argue that three steps are crucial: Purpose (developing a broadly shared vision and purpose), Pedagogy (redesigning the pedagogical core), and Position (positioning and aligning all components of the system to support the pedagogical core and purpose). Deep engagement of educators, families, communities, students, ministry staff, and partners is essential across each of these “3 P” steps.

Our aim is not to provide “the answer”—we are also on a journey and continually learning about what it takes to transform systems—but to help others interested in pursuing system transformation benefit from our collective reflections to date. The goal is to complement and put in perspective—not replace—detailed guidance from other actors on education sector system strengthening, reform, and redesign. In essence, we want to broaden the conversation and debate.

## Why is education system transformation urgent now?

*“We need a new social contract for education to repair injustices while transforming the future.”*

UNESCO, Reimagining Our FuturesTogether

Calls for fundamentally reimagining education systems are hardly new (See Box 1). But today, the topic of education system transformation has taken centerstage in a way not seen before globally. A growing call from large-scale global actors is putting the topic on the global agenda:

- In 2015, the **Organisation for Economic Co-operation and Development (OECD)** kicked off its Education 2030 initiative that puts well-being at the center of education systems and helps guide its high- and middle-income member states in reflecting on the knowledge, skills, attitudes, and values young people will need (OECD Future of Education and Skills 2030, n.d.).
- This year the **Global Partnership for Education** released its new “GPE 2025: Strategic Plan” that focuses on supporting system transformation in low-income countries toward “equitable, resilient, and inclusive systems fit for the 21st century,” with an eye toward improving access, learning, and gender equality (GPE 2025: Strategic Plan, 2022).
- The most comprehensive call for transformation comes from **UNESCO’s Futures of Education initiative** and its new report “Reimagining our futures together: A new social contract for education” (UNESCO, 2021). Advancing Sustainable Development Goal (SDG) 4 amid a world in flux calls for, the report argues, a new social compact that harnesses the transformative power of education to support our “sustainable collective futures” by maintaining education as a common good and harnessing—among other things—pedagogies of cooperation and solidarity that are needed to develop the broad suite of competencies young people need to thrive.

**“The world is at an inflection point.”**

Recovering from the worldwide COVID-19-related school closures in 2020 is the most visible reason the U.N. secretary general has elevated the topic of education system transformation onto the global stage with the TES. But it is hardly the only reason transformation is urgent. The world is at an inflection point. Climate change is here, with massive disruptions with its impacts already felt around the world and the future of a livable planet in 2050 in jeopardy (IPCC,

2021). Automation is changing the tasks of most jobs; strong literacy and numeracy skills, while an essential minimum for a successful career, are no longer enough, with employers looking for critical thinkers that can work collectively and creatively solve new problems (The Future of Jobs Report, 2020). Violence, conflict, displacement, and authoritarianism have been on the rise over the last 15 years (and inflamed by the infodemic of fake news) with the war in Ukraine most recently taking centerstage (Repucci & Slipowitz, 2022). Income inequality, once on a steady decline, has been

communities with limited financial resources, live in rural areas, and are ethnic and linguistic minorities. Gender intersects with all these characteristics, excluding girls in some places and boys in others (Wide Inequalities in Education, 2013). The pandemic gaps will seriously impact children—academically, socially, and emotionally—but not just today. Over their lifetime, children could earn \$17 trillion less because of the pandemic (World Bank, 2022; Dorn et al., 2021; World Bank, 2021).

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## “Education—and the systems to deliver it—have actively created the society we have today.”

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increasing steadily over the last several decades, and only a handful of people hold a majority of the world’s resources (Oxfam International, 2020). It is no wonder that our world’s children and youth are exhibiting poor mental health, with depression and anxiety increasing to worrying levels coming out of the pandemic (American Academy of Pediatrics, 2021).

This is the reality in which we are educating our children. But education leaders and educators are struggling to adapt learning to this reality because they are understandably overwhelmed with pandemic-related impacts. Before the pandemic, CUE argued that there is a “100-year-gap” between those poorly served and well served by education systems in the report “Why Wait 100 years? Bridging the Gap in Global Education” (Winthrop & McGivney, 2015). In other words, the pace of change is so slow within and across countries that it will take approximately 100 years—give or take depending on the context—for those farthest behind in terms of access, completion, and literacy and numeracy learning outcomes to catch up to those who are farthest ahead. Imagine how the 100-year-gap has grown today? The portion of 10-year-olds in low- and middle-income countries who cannot read a simple story is estimated to have grown from 50 percent before the pandemic to 70 percent today (Save our Future, n.d.). Those hardest hit are from

It is clear that new approaches are needed to address these existential challenges. Asking education leaders, school administrators, educators, and civil society partners to work harder in the face of these challenges, but using the same approaches that created the 100-year-gap before the pandemic, will not work. We need approaches that allow for the complex nature of the problem: namely, approaches that can redesign the what and how of teaching and learning so systems can deliver not only recovery from pandemic impacts but learning that meets the moment we are in globally.

### **RECOGNIZING EDUCATION’S ESSENTIAL ROLE IN SHAPING OUR WORLD**

To identify the path forward, it is always important to reflect on the past. Often in current policy debates, education systems are referred to as passive entities struggling to keep up with changes in the world at large. However, in many ways the opposite is true. Education, and the systems to deliver it, have actively created the society we have today. Sociologist David Baker has demonstrated how education shapes other large-scale social forces like the economy, politics, and religion by examining the impact of the growth of universal schooling on societies (Baker, 2014). Two centuries ago, no country in the world had an education system designed to ensure every young

person became literate and educated. No one would have thought that attending a school was better preparation for work than the participation in actual work activities or that universities—and by extension schools—would be the arbiters of truth, not religious, tribal, or family institutions. Education systems have existed for millennia, but their purpose was to train only a subsection of the population—namely the leaders

(e.g., select citizens in ancient Rome or civil servants in China)—and the idea that knowledge could be accessible to everyone did not exist. After only a handful of generations, all that changed as the idea of universal schooling spread around the globe and fundamentally altered the way children grow up, what counts as knowledge, and the pathways for social mobility.

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“While education systems have made people healthier and wealthier, it is unclear if they have made them wiser and better prepared to address the intractable challenges we face today and in the future.”

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**BOX 1**

## Calls for education system transformation from around the world and across time.

Many educators—from the Global North and South—have called for education system transformation over the past 100 years. The three examples below are merely illustrations of the diversity of voices advocating for transforming education:

- **John Dewey, U.S., early 1900s.** John Dewey argued that public education plays a central role in society for sustaining a young democracy and that classrooms should be interdisciplinary and take inspiration from social learning environments.
- **Educators and families, Italy, post World-War II.** The Reggio Emilia approach emerged amid reconstruction when parents and a local teacher, Loris Malaguzzi, called for imagining early education anew by making children the central knowledge holders and leaders of their own learning (Loris Malaguzzi, n.d.).
- **Ministers of education, Africa, early 2000s.** African ministers of education convening a decade ago under the Association for the Development of Education forum in Africa collectively called for a new education paradigm that centers sustainable development, including harnessing indigenous knowledge, as a central feature of education systems on the continent (Post-Triennale Activities in Support of Education for Sustainable Development in Africa, n.d.)

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**“Education system transformation must entail a fresh review of the goals of your system – are they meeting the moment that we are in, are they tackling inequality and building resilience for a changing world, are they fully context aware, are they owned broadly across society – and then fundamentally positioning all components of your education system to coherently contribute to this shared purpose.”**

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The rise of universal schooling across the globe has resulted in many positive outcomes. Increased levels of schooling have played a key role in helping people live healthier and longer lives—from reducing infant mortality to acting as a “social vaccine” against HIV/AIDS and malaria (World Health Organization, n.d.; Sperling & Winthrop et al., 2016). It has also contributed significantly to making people wealthier by reducing poverty, increasing individual wages, and growing the economy. But while education systems have made people healthier and wealthier in the last few centuries, it is unclear if they have made them wiser and better prepared to address the intractable challenges we face today and in the future. Educated people have all been part of constructing the world we now live in with models of economic growth that overlook planetary stewardship, allow for massive accumulation of capital at a scale never before seen, and support technological invention without the accompanying ethical understanding of its uses.

## **HARNESSING THE TRANSFORMATION MOMENT**

“Harnessing the evolving discussions on transforming education” is one of the motivations for the UN secretary general to convene the TES at this September’s UN General Assembly meetings. Leading up to the summit are a range of activities from a pre-summit in Paris, national consultations, regional and global dialogues, and commitments to transformation by countries. While there is clearly momentum behind transforming education systems, the question remains

what exactly is it and what steps can leaders take to advance it?

## **What is education system transformation?**

*“Is it the same as acceleration? Is it the same as innovation?”*

Minister of Education, An African Country

How is transformation distinct from the past and current work to reform systems? We argue that education system transformation must entail a fresh review of the goals of your system – are they meeting the moment that we are in, are they tackling inequality and building resilience for a changing world, are they fully context aware, are they owned broadly across society – and then fundamentally positioning all components of your education system to coherently contribute to this shared purpose. Carrying on with system strengthening work without re-examining where the system is headed may result in improved efficacy but not transformed relevance. It is impossible to transform, and utilize existing system strengthening tools for transformation, unless you know where you are headed.

This does not mean discarding the education system thinking insights or approaches developed over

the last several decades but rather using them to fundamentally redesign and align your system to a new shared vision and goals. There has been no one clear definition of system transformation but there has been much discussion and work on system reform. Hence, a short review of the concept of systems thinking and its influence on education change over time is a helpful place to start.

## THE RISE OF SYSTEMS THINKING

In CUE's recent report "*Systems thinking to improve and transform schools: Clarifying concepts and rethinking pathways*" Bruce Fuller and Hoyun Kim provide a useful overview (Fuller & Kim, 2022). Educationalists, they point out, have been debating how to build, strengthen, and reform education systems for at least the past 50 years. As universal schooling for all children emerged as a priority for the state, social activists and policy leaders drew upon the ideas of division of labor and specialization to consolidate loose affiliations of

schools into strong education systems that more equitably served all young people. Specialization and division of labor were concepts prevalent everywhere in modernizing societies. As an illustration, think of the transition from one craftsman that makes shoes bringing a wide range of skills to the job moving to many workers with one specialized skill that contributes to one small part of making a shoe (e.g., managers designing the timeline and process for manufacturing a shoe and factory workers responsible for one piece of making the shoe like cutting, nailing, and buffing). This specialization approach was seen to be more efficient and equitable (e.g., shoes could be produced more quickly and their quality would be similar) and was a hallmark of how universal education systems began to be organized (e.g., different people would develop the curriculum, teach it to children, design assessments of children's learning, monitor data across schools, and manage and organize timetables, etc.). The factory became a revered form of organization, creating wealth and raising standards of living.

### BOX 2

## What is a system? Ideas from general systems theory

- 1. Subsystem interaction:** The *interplay of subsystems* or system components reciprocally inform or help to animate one another.
- 2. Communication between subsystems:** The *glue or feedback loops* that allow subsystems to labor together; this is key to understanding systems.
- 3. Subsystem hierarchy:** Systems and component parts reflect a *hierarchical arrangement*, where "controls" or managing devices coordinate work and processing of inputs (yielding outputs) and require coordination.
- 4. Open systems:** Adaptive systems have a dynamic ecology typically operating as open systems, acquiring resources from outside the internal (bounded) system—feeding internal processing, stability, and sometimes growth.
- 5. Multiple goals:** Complex systems pursue *multiple goals*, often processing a variety of inputs to produce differing kinds of outputs (Fuller & Kim, 2022).



But to truly understand how a system works—and hence to be able to improve it—one needs to understand how all the component parts work together and affect each other. This is the main idea of general systems theory, which as Fuller and Kim point out, arose out of the fields of biology and engineering in the 1950s and has been deeply influential in guiding thinking across many disciplines (See Box 2). It is not enough to seek to understand and improve each part of a system separately because they ultimately are part of a larger whole, working (or not) in concert to produce the desired outcomes. The classic education example illustrating the limits of focusing only on one component of the system is the multiple cases of countries or jurisdictions pursuing curriculum reform that ultimately yield little results because the changes were misaligned with the way teachers are trained or students assessed (Care et al., 2018). As a whole, systems are composed of the dynamics and feedback loops between subsystem components that are arranged in a hierarchical order and need coordinating. “Healthy” or adaptive systems integrate ideas, resources, and inputs from outside of themselves, and are hence seen as “open systems.” Complex systems, like education, have multiple goals and outputs (e.g., educating children, serving as an important employer in communities, and providing infrastructure contracts to businesses).

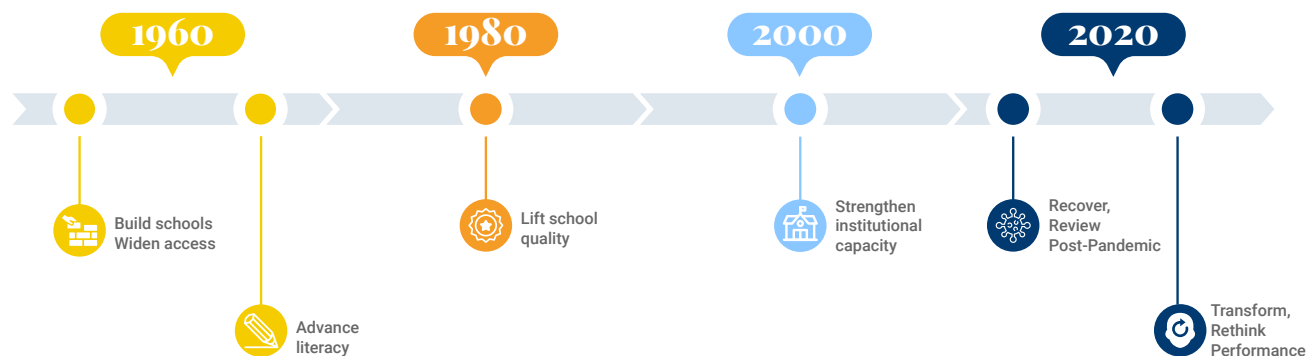
## THE MANY FLAVORS OF SYSTEMS THINKING IN EDUCATION

Education reformers have over the last several decades drawn on the core concept of understanding the interactions between the elements of a system to advance a range of approaches. Fuller and Kim trace the journey of education system reformers—from expanding access to improving quality in core academic competencies, such as literacy and numeracy—to strengthen systems management capacity to deliver on stated outcomes for today’s system transformation following a global pandemic (Figure 1). The authors are quick to point out that although these systems thinking reflects the broad areas of focus for system reformers over the last several decades globally, each country or jurisdiction may be grappling with a different focus depending on their particular context and circumstances. The current state and context matter for any transformation process.

Systems thinking has informed a wide range of education reform approaches over the years. One prominent approach has been what Fuller and Kim characterize as *standards-based accountability*, which tends to focus on centralized authorities setting learning standards for children and the related

FIGURE 1

### The focus of systems thinking in education over the last 7 decades



Source: Systems thinking to improve and transform schools: Clarifying concepts and rethinking pathways (FULLER AND KIM, 2022)

proficiency goals they need to meet, aligning school resources and inputs behind them, and implementing accountability and monitoring measures. This approach has had varying success depending on context and focus. A careful review found that the approach has lifted achievement levels, but only in low- and middle-income countries—with reformers pointing to success stories like Vietnam (Fuller & Kim 2022). The approach, originally pioneered in the 1980s in the state of Texas in the U.S., was seen as a successful model and hence replicated nationally for several decades in the No Child Left Behind legislation. While the approach did boost academic achievement in some states, Fuller and Kim point out how it is designed matters. The sharp focus on literacy and numeracy began to crowd out time for the arts, music, recess, and social studies—much to the consternation of parents and educators. Ultimately, much of the legislation was repealed in favor of a more ground-up movement where U.S. states develop and adopt Common Core Standards. Central to this approach, regardless of how it is implemented, is the belief that the different parts of education systems behave rationally, and getting them to work better together is a matter of top-down adjustments, “like tightening bolts on a bicycle,” as Fuller and Kim colorfully put it.

Other approaches to system reform have been based on the observation that different elements within education systems are not always motivated by top-down incentives for various reasons. In tracing the evolution of neo-institutionalism, Fuller and Kim highlight that human systems, like education systems, did not always behave like the well-oiled machines general systems theory would expect them to be. There is a distinct difference between biological or mechanically engineered systems and complex human systems, including health and education systems. Sometimes groups of people inside human systems (e.g., ministry officials, teachers, and school leaders) could be motivated by different incentives (e.g., re-election, keeping their jobs, and getting promoted), and their behaviors did not always result from efficiently aligning the components of a system to deliver on a stated goal. Other times, the communication between different parts of the system can be unclear and not nearly as easy as tightening a bolt on a bicycle (e.g., differing interpretations by teachers on pedagogical

guidance given from above), and hence the feedback loops do not always have the intended result. This leads Fuller and Kim to argue that “Unless we learn about what material incentives or deeper cultural habits and values animate educators on the ground, project designs or policy reforms may miss their mark.” They also go on to argue that education systems may work less like a factory floor and more like a network of artisans on the ground—in this case teachers—where both the knowledge of the craft and the power in the system reside, as at the end of the day, it is up to them how to do their work and, in the case of teachers, to educate their students.

## **LEVERAGING SYSTEMS THINKING FOR EDUCATION TRANSFORMATION**

Systems thinking and the debates on how to most helpfully apply it to advance education change should not be jettisoned as the global education community turns its eyes from education reform to education transformation following the pandemic. Education leaders around the globe should pull from the insights of system building and strengthening work that have been gained over the last several decades and bring them to bear in the transformation process. However, doubling down on system thinking to build and strengthen systems is no guarantee of transformation. It is quite possible to leverage systems thinking and develop a more effective and efficient version of a current system, which for us counts as education reform.

So how can you develop broadly shared goals for your education system that meet the moment and fundamentally align all the parts of your system behind these goals? We turn next to provide suggestions on three specific steps that leaders can take to advance this vision of system transformation in their countries or jurisdictions.



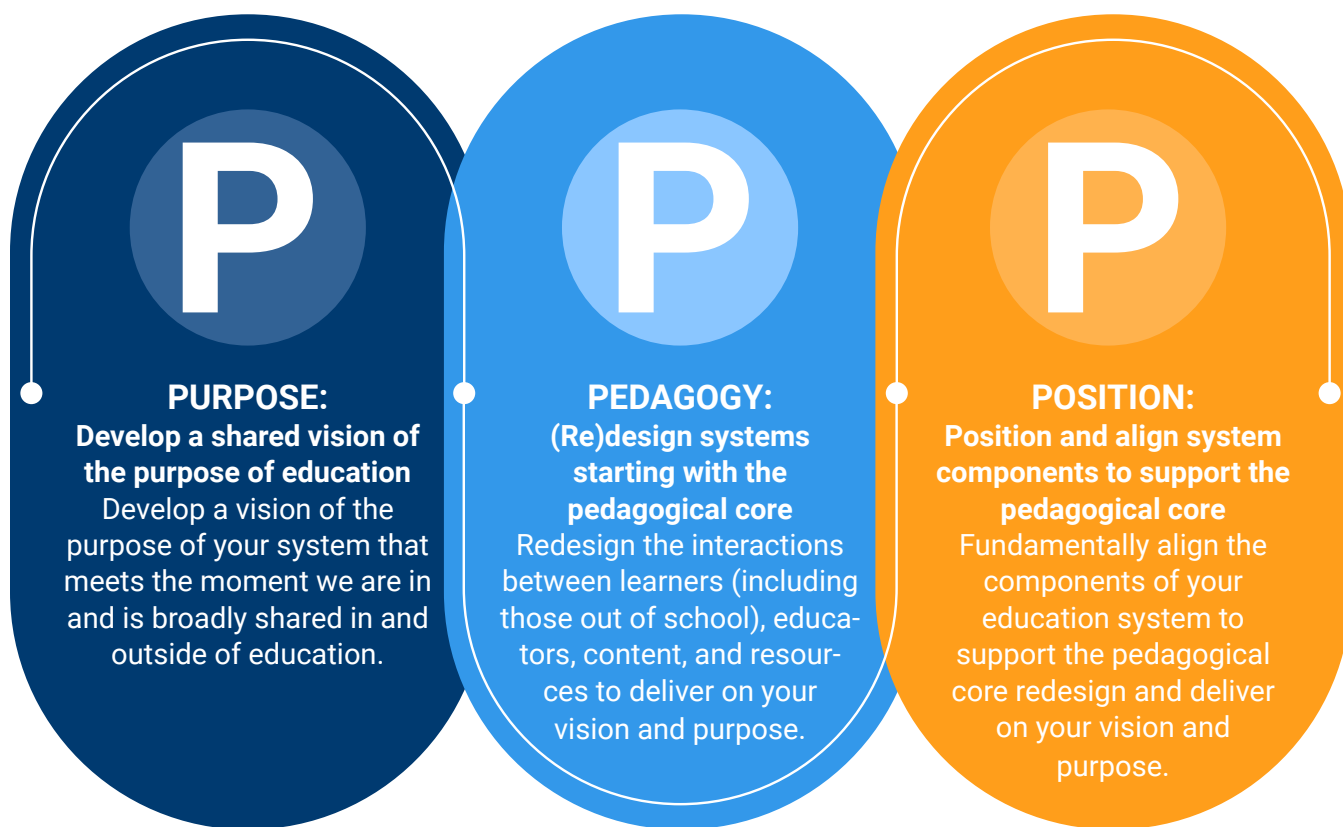
# How can education system transformation advance in your country or jurisdiction?

Every country benefits from its own heritage. The vision and journey of raising and educating children must be couched in local contexts to motivate students and families over time. Hence, we provide the following three broad steps to advance transformation as guidance that can be adapted to the context (Figure 2). The three steps in this “participatory approach to transformation” – the 3 Ps of purpose, pedagogy, and position - are important points of reflection either prior to implementing

transformation efforts or as a reflective check-in along the transformation process. Some leaders may have already started down this path while others are just beginning. Our focus here is on the systems educating children and youth from the crucial period of laying the foundations for education success in early childhood through primary and senior secondary.

FIGURE 2

The participatory approach to transformation: 3Ps – Purpose, Pedagogy, Position



# Step 1. Purpose: Develop a shared vision of the purpose of education

*“No institution or one actor can reinvent the education system by themselves. So you need to spend the time to develop an answer to the question: What is it that we want for our children in this community? Only once we agree on where we’re trying to go, can we then work in coordination and know what our respective roles are. Developing this shared vision is what good leaders do.”*

School District Superintendent, United States

The first and most important step on your journey toward transformation is to answer the question “transformation to what?” We argue that this vision should include two essential criteria: (1) It should be broadly shared in and outside of the education system, and (2) it should, for each context, meet the moment we are in globally.

## THE POWER OF A SHARED VISION

Multiple studies in and outside of education have highlighted the importance of developing a widely shared understanding of a system’s purpose and goals for enabling true transformation that endures over time and across political leadership changes and funding environments. One widely used system transformation theory, called the Leverage Points Framework, argues that shifting the goals, beliefs, and values orienting the system is the most impactful area to leverage because it has the power to guide the transformation of many other parts of a system—from resource allocation, to feedback loops, to what is measured (see Annex 1 for the Leverage Points Framework; Meadows, 2008). The framework, which comes out of the environmental movement, has been used across multiple sectors and is frequently cited as a path for impact and efficiency in sustainable development (Abson et al., 2017; Hjorth &

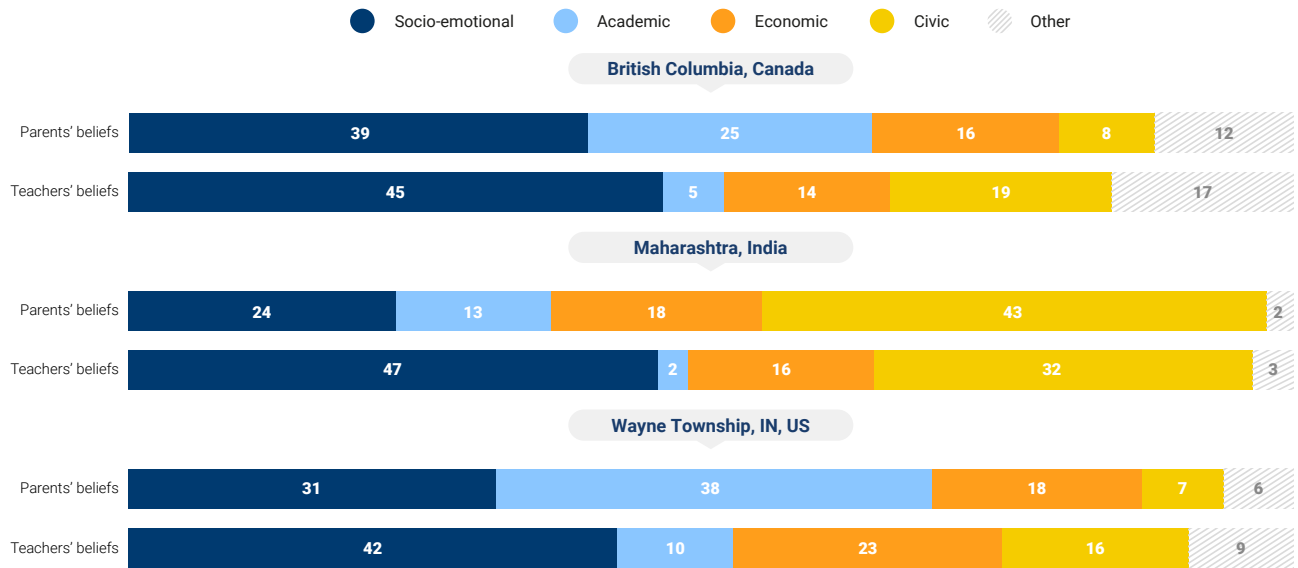
Bagheri, 2006). Shifting the beliefs and values guiding a system (e.g. teachers’ expectations of what children can do; what competencies are valued) is often referred to by system change scholars as shifting the “invisible” elements that drive a system. Many argue that leaders trying to make education change are frequently unsuccessful because they try and shift the “visible” elements of a system (e.g., resources, people, and metrics) without also shifting the invisible elements (e.g., mindsets, goals, beliefs, and values) (Gersick, 1991; Heracleous & Barrett, 2001; Munro et al., 2002).

## MISALIGNED BELIEFS ON THE PURPOSE OF EDUCATION

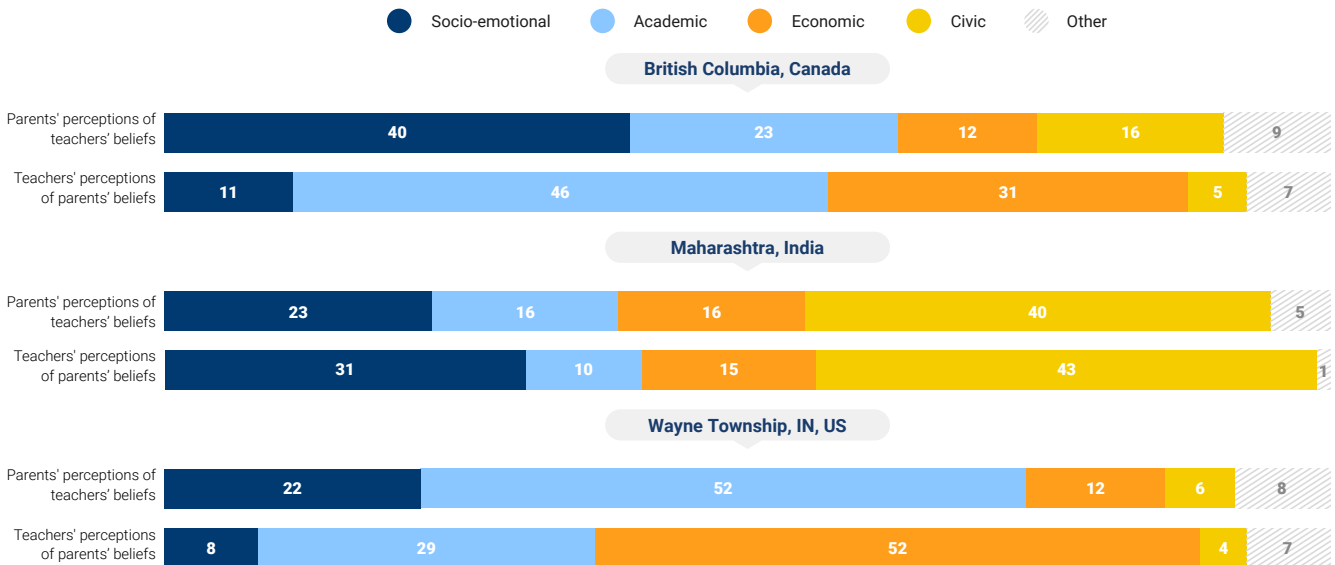
Most recently, CUE has used the Leverage Points Framework in its work on community-school collaborations. In its report “Collaborating to transform and improve education systems: A playbook for family-school engagement,” CUE examines the role of broadly shared beliefs—across students, families, communities, teachers, and education leaders—in the education change process (Winthrop et al., 2021). In interviews with education leaders attempting to shift systems across 15 countries from Asia to Africa and around the globe, CUE found that a failure to “get on the same page” with their communities about what a good quality education looks like was a major roadblock for transformation efforts (Winthrop et al., 2021). Detailed reviews of this issue have revealed similar findings. One study of decades worth of reform efforts in the U.S. found that system change was stymied by various factors including when communities, families, students, and teachers did not share the vision and values at the core of the reform effort (Cohen and Mehta, 2017). The U.S. has a highly decentralized system with multiple avenues for community voice, but a similar finding was also evident in a later study of barriers to education reform in countries with varying degree of centralized control—from Portugal to Finland to Canada (Barton, 2021; Winthrop et al., 2021). These studies also found the reverse was true: that system change benefits when there is broad alignment across communities and teachers and education leaders on the values and goals of the reform. In fact, one OECD study found this alignment is one of the keys to transformation in a complex world. Developing a strategic vision that results in common goals for the education system across a

**FIGURE 3**

**CUE Belief Map 1: Beliefs on the Most Important Purpose of School**  
 Parents' Beliefs and Teachers' Beliefs (In selected jurisdictions)



**CUE Belief Map 2: Perceptions on the Most Important Purpose of School**  
 Parents' and Teachers' Perceptions of Each Other's Beliefs (In selected jurisdictions)



**Source:** Collaborating to transform and improve education systems: A playbook for family-school engagement (Winthrop et al, 2021)

## BOX 4

# Conversation Starter Tools for mapping and discussing education beliefs

CUE's Conversation Starter Tools are a free-to-use resource in its playbook titled "Improving and transforming education systems: A playbook for family-school engagement." The tools are designed to help education systems and their stakeholders have a data-informed discussion about what makes for a good quality education. The tools facilitate this by gathering data about different stakeholder groups' beliefs and perceptions, providing a set of belief maps to show where there is or is not alignment, and offering guidance on having an open discussion about the findings. For those who are specifically interested in using the discussion to find new ways of fostering family-school collaboration, there is also a strategy bank to inspire action. But the process of mapping beliefs and perceptions can be used for a range of purposes, including informing discussions on the goals of a system. The tools are available in multiple languages and can be accessed by emailing [leapfrogging@brookings.edu](mailto:leapfrogging@brookings.edu).

broad array of stakeholders was one of three essential components for systems to successfully govern amid these unpredictable times (Burns and Köster, 2016).

It appears that in many education jurisdictions, there is not a broadly shared vision of the purpose and goals of education systems. After surveying approximately 25,000 parents and primary caregivers and 6,000 teachers across 10 countries in Latin America, North America, Europe, Africa, and Asia, CUE found a wide diversity of perspectives on what makes for a good quality education (Winthrop et al., 2021). Parents' and teachers' perspectives on the most important purpose of school—and importantly their perceptions of each other's beliefs—often revealed a misalignment or lack of shared values. Figure 3 highlights a selection of what CUE calls "belief maps" for some of the jurisdictions in the study. The maps show, that with the exception of India, most communities have or perceive they have divergent views on one of the most basic yet fundamental questions about education.

## **PARTICIPATORY POLICY DESIGN FOR A SHARED VISION**

Building off this research, CUE has developed a set of free-to-use [Conversation Starter Tools](#) to

help education leaders and communities map the educational beliefs and perceptions of different stakeholders—including parents, teachers, students, community members, and administrators—and then use the data to hold a series of conversations across stakeholders about the purpose and goals of their system (see Box 4) (Winthrop et al., 2021). When education leaders do take the time to have meaningful conversations with diverse stakeholders about the goals of education, it can help pave the way for a broadly shared vision. Participatory policy design approaches—where teachers, community members, students and partners had a seat at the table alongside education system leaders—were highlighted as important for successful reform in the study examining system change in Portugal, Finland, and Canada (Barton, 2021). This process of meaningful dialogue and conversations around the overarching purpose and goals of education helped cohere a broadly shared vision that supported system change efforts.

One example of education leaders benefitting from participatory policy design and then embedding it as an ongoing approach comes from the Sea to Sky School District in British Columbia, Canada (note: districts are where much of the education decisionmaking authority lies in Canada) (Winthrop et al., 2021). In response to

persistent inequalities between the district's students' performance—in 2006 only 35 percent of Indigenous students were graduating high school in six years versus 86 percent of non-Indigenous students—education leaders turned toward community leaders for help. In 2010, they embarked on an educational codesign strategy that brought parents, teachers, teacher unions, students, boards or trustees of schools, and Indigenous community leaders in as central partners. The district leaders used a combination of strategies from multistage surveys broadly collecting data on the purpose and values underpinning a high-quality education to multi-stakeholder working groups that brought all stakeholders to the table to develop a shared vision and a clear strategic plan. The strategy led to a shift in focus for the system's goals for educational success and paved the way for more ongoing engagement of community stakeholders in the implementation of the strategy. This process of inclusive policy dialogue is now done every several years using technology to survey stakeholders and map the emerging vision into concrete strategy and planning activities (see Box 5). District leaders credit this

process to helping advance a more equitable system where, by 2019, graduation rates were 92 percent and 96 percent for Indigenous and non-Indigenous students, respectively.

Bringing in partners such as community members in a participatory policy design process does not mean education leaders abdicate responsibility for developing a vision for their education system. Instead, it entails deep dialogue with families, community leaders, students, and teachers having a voice alongside education leaders and curriculum designers—each bringing their respective expertise to the table. This entails, as is described in “A New Education Story: Three Drivers of Transformation,” a shift in power by education leaders opening the policy dialogue and decisionmaking process to those that normally are not included (Goddard et al., n.d.). In the case of the Sea to Sky district, the dialogues revealed that academic outcomes were not seen as the main purpose of education for the Indigenous community, and dialogue with educationalists on the competencies needed for the future of work and citizenship led to

#### **BOX 5**

## **Harnessing technology for conversations on the purpose of education and participatory policy design: Sea to Sky School District, British Columbia, Canada**

One of the tools education leaders from British Columbia's small but highly diverse school district—housing students from a wide range of backgrounds, including 12 Indigenous tribes—used for surfacing education beliefs across the district was a technology platform that employed a backward design approach. The technology platform, called Thought Stream, disseminated in three phases digital surveys that asked community members to first identify their beliefs about the purpose of education and then answer additional questions on wide-ranging topics from curriculum content to vacation days. The visual organizing of the findings provided usable data to the broad-based community working group—including teachers, Indigenous leaders, parents, students, and education leaders—that was tasked with developing the new education vision and plan. It was an important part of helping co-construct a shared vision for the district and is repeated every several years to ensure ongoing dialogue is maintained (Winthrop et al., 2021).

redefining the system's goals that resonated locally and were relevant to broader changes in society. Academic skills—namely intellectual development—were positioned as one of four key dimensions of student learning and growth alongside emotional (i.e., belonging and connectedness to schools and communities), physical (i.e., living healthy lives), and spiritual (i.e., understanding and respect for culture heritage) dimensions. Working together, these four dimensions were crucial for students to do four things upon graduating: create and innovate, contribute, collaborate, and think critically.

In the policy dialogue process, education leaders should bring information from education debates and discussions that the broader community may not be able to access. This could include information on educational disparities alongside the insights on the role of education systems in shaping our society. Ultimately, education leaders will need the ambition to envision how education systems can not only recoup pandemic-related losses but also contribute to shaping a better world. The globally agreed upon SDGs can be a useful starting point for discussing the purpose of education. Taken together, the SDGs provide a broad vision of the range of issues society contends with today. SDG 4, focused on education, provides a useful lens for envisioning the education sector's role—from supporting lifelong learning beginning in early childhood alongside equitable learning across academic and global citizenship skills (United Nations, 2015). For the education of children and youth, there are three broad areas represented in the SDGs and referenced in multiple studies on the future of education (UNESCO, 2021) that education leaders should bring to policy dialogues around the purpose of education in today's changing world:

- **The foundations:** Early learning experiences help children develop socioemotionally and master literacy and numeracy, all of which lay the strong foundations for students' successful educational trajectory.
- **21st century skills:** Higher-order thinking skills, such as critical thinking and creative problem-solving, lifelong learning skills like metacognition,

and interpersonal skills like collaboration and teamwork, are all needed for young people to thrive today in work and life.

- **Sustainable citizenship:** Knowledge, mindsets, and skills enable young people to actively engage in promoting planetary stewardship, social justice, and ethical technology.

## Sierra Leone's pathway to locally rooted but globally informed education goals

Each country or education jurisdiction will have to decide for itself what the right approach is for building a vision that meets the moment. In Sierra Leone, for example, the education sector plan finalized in 2022 strikes a balance between investing heavily in strengthening the foundations while aspiring and building toward 21st century skills and sustainable citizenship (see Box 6). Given the deep inequality in students' foundational learning in Sierra Leone—64 percent of students in grade four cannot answer a single comprehension question on a basic text—the strategy prioritizes foundational learning not as an end goal but as the floor to give every child a chance for longer-term educational success. Through an extensive consultation that covered every single district and a broad cross-section of stakeholders—including parent organizations, teachers associations, disabled persons organizations, development and donor partners, and government personnel outside of education—Sierra Leone arrived at a plan with clear goals and broad support. The first objective of the ministry's Education Sector Plan is to strengthen the pedagogical core by ensuring that the curricula are effectively implemented across all schools. This includes investment in working with teachers, including training and support. It also includes adopting a set of new curricula with a set of ambitious goals so that the students who have the basics in place can remain excited about their



## BOX 6

# Sierra Leone's education system vision: Foundational learning on the road to citizenship competencies

The overall goal of Sierra Leone's 2022-26 Education Sector Plan is to "improve learning outcomes for all children and youth." Foundational learning is a top priority as evidenced by the fact that an important overall measure of whether Sierra Leone is on track with its transformation goals is the percentage of students in grade 4 who meet and exceed minimum benchmarks for reading and mathematics. The path to get there covers nine specific objectives, including "strengthen the instructional core," "recruit, retain, and support excellent educators," and "reduce gender and other disparities in educational access, experience, and outcomes for the most marginalized." However, while foundational learning is a central focus, the system aspires to help develop constructive citizens and has recently created a values-based civics curriculum and the National Council for Civic Education and Development. At the final stage of this curriculum, students should be able to do things like "Define the term 'global citizenship,' state and discuss the qualities of a global citizen, and examine the concept of a global village." While foundational learning is necessary to acquire these concepts, the Ministry is also setting a clear direction for the country as a whole and providing opportunities for those who have mastered the basics and are looking to become engaged citizens in the 21st century and perhaps even the country's future leaders. Foundational learning is a floor, not a ceiling, and Sierra Leone is preparing the education system so all learners can help support national development in their own capacity (Ministry of Basic and Senior Secondary Education, 2020).

education journey. For example, the basic education curriculum framework outlines the five areas where students should develop competence to thrive in work and life: comprehension, computational thinking, creativity, critical thinking, and civics. The secondary education curriculum framework outlines five streams students can follow: sciences and technologies, languages & literature, mathematics & numeracy, social & cultural studies, and economics, business & entrepreneurship.

Ultimately, young people need a full breadth of skills to thrive in today's world, and education leaders have an important role to play in co-constructing a vision of education that is relevant for the wide range of communities in their system but also responsive to the larger forces at play in society.

## Step 2. Pedagogy: (Re)design systems starting with the pedagogical core

*“The way one learns has an impact on politics, on citizenship, on democracy, on peace.”*

Former Vice-Minister of Education and  
Civil Society Leader, Colombia

The second step in your transformation journey is to (re)design teaching and learning experiences to ensure students achieve the system’s goals. This approach puts the pedagogical core at the center of system (re)design and includes two important dimensions: (1) identifying which children are not achieving the system’s purpose and goals and why, and (2) (re) designing teaching and learning experiences to help them do so.

### CHANGING SYSTEMS WHILE KEEPING THEM THE SAME

Redesigning education systems can, and often does, result in a lot of action with limited results for children’s learning and development. This, as multiple studies point out, is often because system reform efforts do not actually end up shifting the teaching and learning experiences of young people, which after all, is essential for any meaningful change in students’ outcomes. One scholar of U.S. education change notes, “Schools, then, might be ‘changing’ all the time—adopting this or that new structure or schedule or textbook series or tracking system—and never change in any fundamental way what teachers and students actually do when they are together in classrooms” (Elmore, 1996). Other scholars of education system change in high-, middle-, and low-income countries note that too often reforms focus on improving a series of inputs accompanied by a large dosage of hope that they will make a difference, which rarely works (Fuller and Kim, 2022; Kaffenberger et al., 2022). At other times, reform mandates made centrally do not account for the motivations of actors inside the system. In

the words of Amanda Datnow of the University of California San Diego, the approach to education reform in which the “causal arrow of change moves in only one direction from the statehouse to the schoolhouse” frequently ignores the many ways in which educators themselves mediate and have an impact on reforms (Datnow, 2020). Co-constructing system reforms with teachers is, she argues, frequently an important ingredient for successful reform efforts.

### START WITH THE PEDAGOGICAL CORE

Hence, we argue that starting with changes that are needed in the “pedagogical core” and mapping backwards out and up into broader systemic reforms is the more fruitful approach to system (re)design (Elmore, 1979). In an extensive review of several decades of education system reforms in the U.S., David Cohen and Deborah Ball noted that the reforms that had lasting impact were the ones that shifted in some way the “instructional core” (Ball and Cohen, 1999). It is the interactions among educators, students, and content that make up the instructional core. A shift in one component, such as new curriculum (content), will have limited impact if it does not change how teachers teach and students learn.

This insight on the importance of shifting the instructional core has proven to be a powerful lens for understanding pathways for education system change around the world. The OECD’s rigorous global research on innovative learning environments argues that “the common policy variables of structures, institutional arrangements, and resourcing are relatively far removed from pedagogy and practices on the ground that most directly influence learning” (OECD, n.d.). Adapting Ball and Cohen’s model, the OECD argues that education change should focus on the “pedagogical core,” adding resources (e.g., teaching and learning materials and physical spaces) as a new element (OECD, 2013). Therefore, the pedagogical core consists of the relationship and interactions among learners (who), educators (with whom), content (what), and resources (with what) (Figure 4).

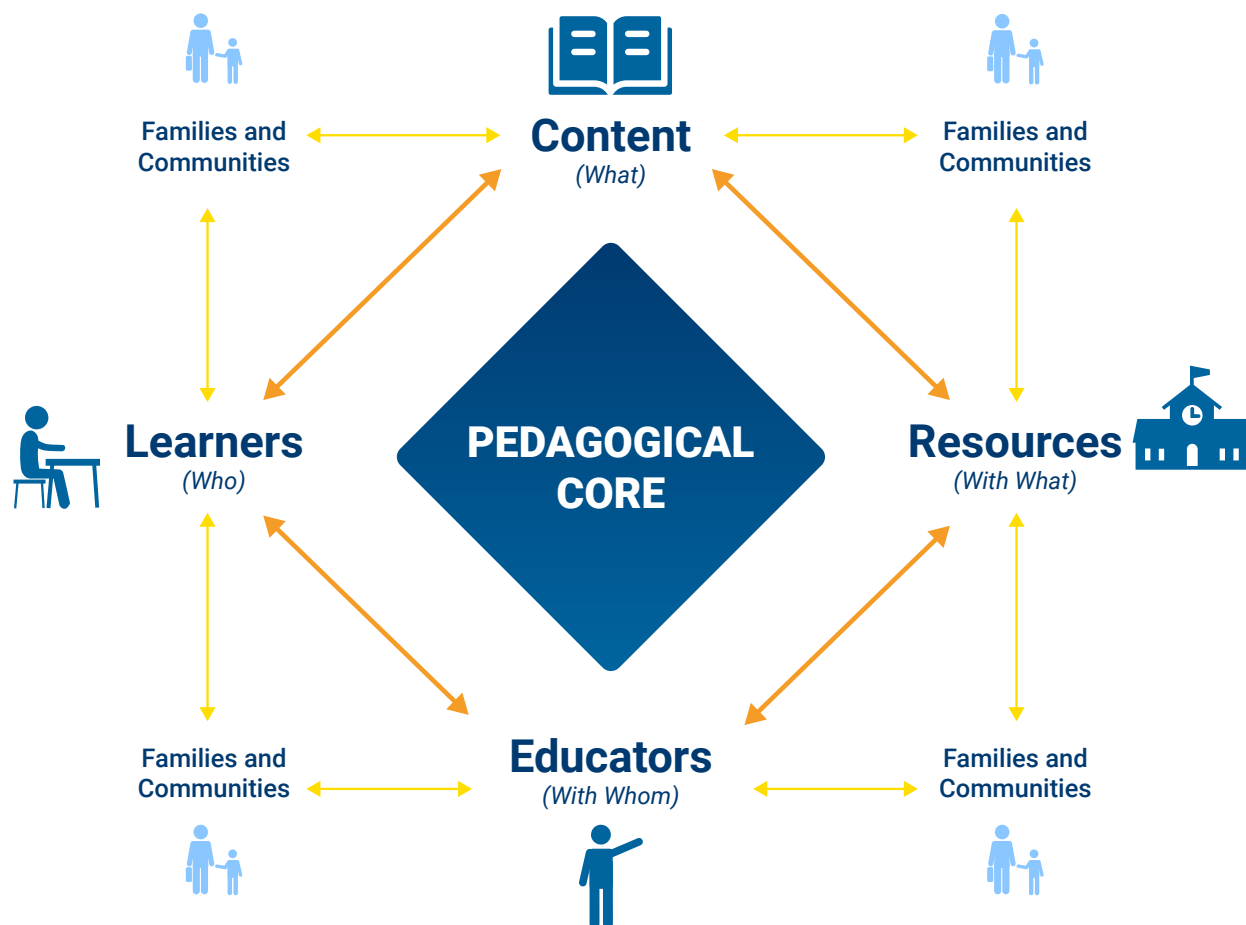
“Pedagogy is the engine room of education” and what drives the relationships between the different components of the pedagogical core, argues David

Istance and Alejandro Paniagua in CUE's report "Learning to leapfrog: Innovative Pedagogies to transform education" (Istance and Paniagua, 2019). Engaging teachers themselves in the process of redesign is crucial to shifting the interactions in the pedagogical core. Not only are teachers best positioned to share insights on what could or could not work in redesign, but additionally—as discussed above—motivating essential actors to embrace change is crucial to sustained system change. Additionally, the science of learning should inform the relationships and interactions in the pedagogical core. Engaging students is ultimately at the center of teaching and

learning regardless of subject matter, student age, or geography. Finding new ways to engage students is a core element of some of the most successful approaches to improving literacy and numeracy in low-income countries: Teachers meet children where they are and teach according to their level of understanding, not their grade. In high-income countries, it is also central to students developing civic action skills and teachers supporting students' ability to apply academic knowledge in solving local community problems (Dumont et al., 2010).

**FIGURE 4**

**The pedagogical core**



Source: Adapted by authors from OECD's "Innovative Learning Environments" (OECD, 2013).

As one global review of education systems notes, this focus on the process of improving students' learning experience gets too little attention even though it is one of the key criteria for system improvement. The authors go on to say that of the 20 Global North and Global South systems they examined, "improving systems generally spend more of their activity on improving how instruction is delivered than on changing the content of what is delivered" (Mourshed et al., 2010). Reforms that focus on shifting the pedagogical core have also been some of the most successful in improving literacy and numeracy in middle- and low-income countries, such as the Teaching at the Right Level approach pioneered in India (Banerjee et al., 2016), and advancing students' socio-emotional learning in places like Chile and Singapore as described below.

## **IDENTIFYING WHO IS NOT ACHIEVING THE SYSTEM'S GOALS AND WHY**

If every young, school-aged person is meeting your system's education goals, then there is no need to examine and (re)design the pedagogical core.

However, if some learners are not supported in a way that allows them to reach these goals and ultimately their fullest potential, it will be essential to understand who specifically is being left behind and why. As the scholars involved in the Research on Improving Systems in Education (RISE) Program have noted, understanding why systems are not delivering on their outcomes is the first step needed in advancing systemic reforms (Kaffenberger, 2022).

Given—as discussed above—the deep education inequalities around the globe, it is likely that most countries and education jurisdictions are leaving behind a segment of their population. Who those learners are depends heavily on context but often includes children from low-income families, rural areas, refugees or ethnic minorities who do not speak the language of instruction, and children with learning differences. Gender can also play a role—however, in some geographies it is girls and in others it is boys who are left behind. Why these children are excluded is crucial to understand before turning to pedagogical core redesign. There are a multitude of reasons

keeping children from achieving the educational goals set out for them. This could include the many reasons some learners are not even present enough in school to take part in the teaching and learning process. This is particularly true after the pandemic for marginalized students—many of whom have left and not yet returned to school. It could also be due to health and safety barriers. Some young people arrive at the school door with health concerns that limit their ability to learn—from malnutrition to poor eyesight to mental health concerns. Other learners may be unable to get to and from school or the school environment itself is not safe—ranging from armed conflict to gun violence to bullying and abuse. It could also be instructional barriers that impede students' learning. Children may be safely attending school and ready to learn, but their teaching and learning experiences are keeping them from developing the full range of competencies they need. This could be because of poorly trained teachers, outdated materials, or the pedagogical approaches used. For example, the pedagogical approach of direct instruction, a predominant approach in many classrooms around the globe, while essential is of limited use for developing 21st century or sustainable citizenship skills, or socio-emotional learning. Systems that have these types of competencies in their goals will hold students back from developing them unless they include innovative pedagogies alongside direct instruction (Istance and Paniagua, 2019).

## **REDESIGNING TEACHING AND LEARNING EXPERIENCES TO HELP THOSE LEFT BEHIND SUCCEED**

What countries or education jurisdictions will need to do to shift the teaching and learning experiences to support *all* children will vary widely depending on a system's goals, who is left behind and why, and contextual factors like resources and culture.

If, for example, a system has students safely arriving to school ready to learn but they fail to develop foundational competencies in the first several years of school and hence cannot successfully continue, then examining what needs to shift in the early primary grades teaching and learning experiences is needed. This was the case in India where children were falling behind in learning to read and unable to catch up—

mainly due to teachers closely following the sequenced textbook content, as they were incentivized to do, regardless if children understood it or not. An approach pioneered by the Indian nonprofit Pratham and used across multiple education systems fundamentally shifted the pedagogical core by administering rapid assessments, grouping children into levels of comprehension, and developing a series of interactive learning tasks that complemented direct instruction such as peer-to-peer practice (see Box 7).

On the other hand, a system that has young people attending school and excelling academically but with high levels of stress and anxiety requires another approach to redesigning teaching and learning. Indeed, inadvertent outcomes of an intense focus on academic achievement can include stress, burnout, and unhappiness in students that undermine (rather than support) national visions and purposes for education. For this reason, Singapore has advanced value-based,

student-centric policy initiatives beginning in 2011 that have focused on holistic student development by deliberately shifting equal focus to other dimensions of students' development, such as socio-emotional (Kwek, Ho, & Wong, Forthcoming; Box 8). Systems need not wait to have top-ranked academic performers to prioritize student well-being. There is growing recognition that effective teaching and learning encompasses attention to children's well-being and socio-emotional learning which helps drive academic development (National Commission on Social, Emotional, and Academic Development, n.d.). This is particularly crucial in the needs of students who are falling behind, as the country of Chile has found. Chile has launched a new voluntary evaluation tool, the Comprehensive Learning Diagnosis, that provides "timely information and guidance to monitor learning in the academic and socio-emotional areas of children and young people at three moments of the school year: diagnosis, monitoring and closure" (Weinstein & Bravo,

#### BOX 7

## Redesigning the pedagogical core to improve the foundations: Teaching at the Right Level in India

Over the last 20 years, the Indian nongovernmental organization Pratham has partnered with researchers at MIT's Poverty Action Lab to evaluate different approaches to improving students' literacy and numeracy skills in primary school (Teaching at the Right Level, n.d.). Over the years, regardless of who was tasked with implementing the approach—from community volunteers to teachers to district administrators—several key elements emerged as essential to improving student learning. Grouping children by ability level and conducting interactive learning activities for a period of time each day is at the core. Ongoing assessment provides data needed to move students onto higher level groups as they master skills. The approach is most effective for education systems that have large numbers of students failing to master literacy and numeracy by the end of primary school and where the default teaching approach is whole group instruction, even with very large class sizes. Shifting the ways in which teachers and students interact with content—namely redesigning the pedagogical core, engaging students, and developing what Michelle Kaffenberger and colleagues call "instructional coherence," even if only for a portion of each day—is at the heart of Teaching at the Right Level's success (Kaffenberger, 2022).

**BOX 8**

## Teaching and learning for holistic development in Singapore

The aim is to shift the broader societal focus on academic performance toward a holistic education that equips students with the knowledge, skills, values, and competencies that Singapore needs among its citizens in a rapidly changing world. The further emphasis on holistic education is to expand educational parameters beyond cognitive abilities and academic performance to other growth areas such as physical, socio-emotional, and artistic achievements. In 2016, then Acting Minister for Education (Schools) Ng Chee Meng stated that the Singapore Ministry of Education “will create an environment conducive for holistic development, by providing [students] the time, space, and opportunity to discover and nurture their talents, strengthen their character, and develop their lifelong love for learning” (Philomin, 2016).

Forthcoming, p. 3). Administering these assessments, which examine students’ personal, community, and citizenship learning in relation to social-emotional skills, at multiple time points throughout the year allow teachers to adjust their practices in real time in order to support students’ holistic development.

If on the other hand, a system is struggling to educate children well because they simply are not present, then an entirely different approach is needed to redesign the pedagogical core. *In Leapfrogging Inequality: Remaking Education to Help Young People Thrive*, CUE examined the question of how to rapidly accelerate progress for even the most marginalized communities (Winthrop, 2018). Would systems have to wait to enroll all children before building their foundational skills and only then developing their sustainable citizenship competencies? Ultimately, CUE determined that through redesigning the pedagogical core, including expanding resources such as spaces where learning takes place, that it is possible to provide even the most marginalized children access to learning experiences and simultaneously support their foundational learning and acquisition of 21st century and citizenship skills (see Box 9).

This reconfiguring of the resources harnessed by the pedagogical core is often referred to as building learning ecosystems (Hannon et al., 2019). Local learning ecosystems draw on the wide range of assets in a community and system—from families to businesses to nonprofits to religious educational institutions to community spaces. This approach is evident in networks like Big Picture Learning that primarily works with secondary schools in marginalized communities in high-income countries. Today Big Picture Learning is fundamentally redesigning the resources for teaching and learning in the almost 200 public and private schools they support across 11 countries by leveraging employers in the schools’ communities. They put students’ interests at the center of the teaching and learning experience by placing students in diversity workplace learning experiences for 40 percent of the school year (Bradly and Hernandez, 2019). But it is especially relevant for systems that have limited legacy infrastructure. For example, the Ministry of Education in Amazonas state in Brazil expanded access to secondary-school students living in remote areas by redesigning what a school looks like. After one year of consultation with teachers and community members, young people in rural villages could access secondary school in a community center with “mentoring teachers” managing the logistics and classroom and “lecturing



## BOX 9

# Leapfrogging in Education: Addressing Equity and Relevance at the Same Time

In *Leapfrogging Inequality: Remaking Education to Help Young People Thrive*, CUE examined if it was possible to close the 100-year-gap in education through approaches that simultaneously addressed access, academic quality, and relevance. By studying almost 3,000 education innovations across 160 countries, CUE found that there were multiple examples of children living in marginalized communities with access to education that both developed their foundational learning and competencies in 21st century skills and sustainable citizenship. This education was often delivered by focusing the content on foundational learning but harnessing innovative pedagogies that helped students develop a wide range of competencies. Most of the examples CUE found were on the margins of education systems, not at the center. But given that it is possible for education to address access, quality, and relevance, this is a useful approach, especially for marginalized communities and in the post-pandemic recovery.

teachers” broadcasting class by two-way video uplink from a TV station miles away in the state capitol. The ministry had collaborated with teachers from the state to adapt content, developing a distance learning curriculum that was relevant to the daily lives of rural children and the normal responsibilities of teachers— instruction on content and classroom management— were split in two (Cruz et al., 2016). Today, children who previously had no access to secondary school are accessing educational experiences right alongside their peers. Redesigning resources also includes other forms of digital learning environments, and the effectiveness of education technology is closely linked to how it changes the relationships in the pedagogical core (Ganimian et al., 2020). It can also include using community resources to fundamentally redesign schooling organization as in the case of Escuela Nueva’s work with rural communities in Colombia and around the world (Box 10).

In some cases, redesigning the pedagogical core to ensure students can participate in education is simply a matter of mapping backwards and identifying policies that must be changed centrally. For many years in Sierra Leone, adolescent girls’ participation in secondary education was limited by a ban on pregnant

girls taking secondary leaving exams. Given the high rates of teenage pregnancy, this—along with a range of other factors—has excluded girls’ from taking part in learning. Recently, this ban has been reversed and in March 2021, the Ministry of Education issued its National Policy on Radical Inclusion in Schools to comprehensively support girls and other marginalized children’s participation in school (Ministry of Basic and Senior Secondary Education of Sierra Leone, 2021).

## HARNESS GLOBAL EVIDENCE AND INNOVATION BUT ONLY IN CONTEXT

Regardless of the particulars of any given context, examining what needs to shift in the pedagogical core to transform the teaching and learning experiences of students who are not meeting the system’s goals is a useful place to start your transformation journey. It is only after this analysis drawing on the copious literature around “what works” in education (e.g., see the many useful databases from ERIC in the U.S. to the repositories of intervention evaluations and cost-effectiveness evidence from MIT and the World Bank) can be useful and instructive. Systems transformation efforts are not well served, however, when a particularly effective approach in one context is applied in another

without knowing if it addresses the root causes of why students are not achieving the goals set out for them. This usually ends up in what Marla Spivak calls the “symptom-only” approach to education system reform; she cites the example of trying to improve learning through textbook procurement, which addresses the symptom of few textbooks per student, when the real

problem was not lack of books but that the books were in a language that most students did not understand (Spivak, 2021). When you have a clear diagnosis of why the pedagogical core is not delivering the desired outcomes for students, global evidence can provide inspiration and know-how on redesigning teaching and learning to overcome your barriers.

#### BOX 10

## Redesigning pedagogical core resources for rural children in Colombia: The Case of Escuela Nueva

The Colombian nonprofit Escuela Nueva redesigned the pedagogical core’s resources to fit the lives of rural agricultural children who could not attend school for months at a time when they needed to help their families during harvest season. Central to the model are teaching and learning materials that allow for self-paced learning so students can pick up where they leave off, with teachers guiding children through the material in multiage classrooms rather than lecturing (Psacharopoulos et al., 1993). In addition to acquiring the foundations, this pedagogical experience enabled children to simultaneously develop a range of 21st century skills such as self-directed learning, collaboration, and civic engagement, demonstrating that a linear approach to system development (e.g., access first, foundations second, and 21st century skills and civic competencies third) is not the only way to build inclusive systems. The Escuela Nueva approach has been used around the world and adopted by governments, especially for children from the most marginalized communities.

## Step 3. Position: Position and align system components to support the pedagogical core

*“The sparrow may be small, but all its vital organs are present [a Chinese proverb]. Having the best teachers, schools, or policies is not sufficient. It is about having...the parts work together.”*

Educator and Academic, National Institute of Education, Singapore

The third step of your system transformation journey is to position the different components of your system to support the pedagogical core across the following six components: (1) Curriculum, (2) Human resources, (3) Data and assessment, (4) Governance, (5) Funding, and (6) Engagement of “winners” and “losers” in the alignment process.

## THE NEED FOR ALIGNMENT

Redesigning the pedagogical core draws on different components of an education system, namely the content (curriculum, the “what”), resources for children to learn (schools, community centers, and/or online), and the interactions between educators and students with these components. It is essential to position the full suite of education system components to support the shifts you desire in the pedagogical core. Without this, actors in the system can have conflicting incentives. The classic case is when teachers get mixed messages encouraging one pedagogical approach, but student assessments and teacher or school accountability measures incentivize another. For example, one scholar of Chinese education notes that part of the reason that more innovative instructional approaches have not been widely taken up, despite strong support from China’s central ministry, is due to teachers responding to what is required for good marks in the system’s centralized exams instead (Liu, 2020). This is hardly a unique case. CUE’s report “Education system alignment for 21st century skills” highlights the importance of harmonizing the three main system

components—curriculum, teacher pedagogical training, and assessment—for education systems to shift their goals toward 21st century skills (Care et al., 2018).

Teaching and learning are essential in education, and yet there are various on-ramps and roads for systems to move towards transformation. In CUE’s report “Education system reform journeys: Toward holistic outcomes,” Amanda Datnow, Vicki Park, Donald Peurach, and James Spillane argue that—rather than a singular approach that downplays the role of local contexts— it is important to develop and share knowledge across and between systems with the goal of improving teaching and learning for holistic student development. Whereas some education jurisdictions engage in transformative activities to align system components and support the pedagogical core themselves, other efforts involve networked ecosystems that include schools, districts, and community organizations (see Box 11).

Ultimately, Datnow and colleagues argue that redesign efforts should advance “instructionally focused systems” that align resources, infrastructure,

### BOX 11

## Leveraging the education ecosystem to transform: The International Baccalaureate

The International Baccalaureate (IB) is a nonprofit organization working with thousands of public and private schools around the globe. Essentially the IB is a networked educational system that aligns key educational elements to support instructional coherence across a large number of schools. The IB network of over 5,500 schools spans 160 countries across the globe. One of the organizing features of IB is an overarching instructional framework, informed by global transdisciplinary themes. The framework is flexibly designed so that schools can fit their local or national instructional standards within it. IB is also distinctive in that it is a whole school endeavor, rather than a niche effort that involves only a subset of classrooms. In this way, it calls for the alignment of policies, relationships, and shared goals to support holistic student development. A hallmark feature of IB instruction is that it is inquiry-based; teachers support students in addressing pressing questions of their own interest and of global significance. In making this shift, teachers report moving from “being a ‘sage on the stage’ to a ‘guide on the side.’” (Hegseth, Forthcoming, p. 8). This shift is supported through ongoing professional development and collaboration among teachers, as well as among students in the classroom.

relationships, and mindsets behind shifting the teaching and learning process (Datnow et al., 2022). They focus on issues of instructional coherence and capacity building, highlighting tensions that seven systems from around the world— from the U.S. and Ireland to Chile and India—negotiate. As students typically spend several hours each day in the classrooms, they argue that ensuring coherence in their instructional experiences is of utmost importance. Education systems play a critical role in supporting instructional coherence through a range of structures and activities, including standards, curricula, and assessments; hiring and professional development; and leading and managing instruction. Developing shared meaning about the content of instruction and the definition of quality teaching and learning are ongoing efforts that involve not only leaders and teachers but often other stakeholders, as well. In crafting instructional coherence, systems grapple with tensions regarding what should be centralized or decentralized and the balance between prescription and local adaptation, among other concerns.

## Aligning system components to support the pedagogical core

There is no one way to conceptualize the process of aligning system components behind the design of the pedagogical core and developing system coherence. The Global Partnership for Education, the global fund supporting education in low-income countries, has a new strategic plan focusing on transforming education systems (Global Partnership for Education, 2022). The Global Partnership for Education guides countries seeking funding to diagnose the problems, prioritize their actions, and align partners and actors behind the identified priorities with a particular focus on ensuring countries have sufficient financing (including from the country's own budget), functioning data systems, coordination mechanisms involving key actors from donors to civil society, and a commitment to use a gender lens in their planning process (Global

Partnership for Education, 2020). By contrast, CUE's Millions Learning initiative on scaling and sustaining education change inside systems highlights multiple system components that need to work together, including governance, human resources, curriculum and materials, information and data, finance, and stakeholder engagement (Perlman Robinson et al, 2021). Another approach taken in "Building a World Class Learning System" by Geoff Masters is derived from studying high-performing education systems in high-income countries. The publication highlights six major components of effective "learning systems" that must work together: a quality curriculum, informative assessment processes, highly effective teaching, comprehensive student support, strong leadership of learning, and a supportive learning ecosystem (Masters, 2022). Lant Pritchett and his RISE team take another approach altogether in their work to harness systems thinking to improve foundational learning in low- and middle-income countries (Spivak, 2022). Building off service delivery models, they articulate a series of actors (e.g., education authorities, teachers, government fiduciary authorities, and citizens) and the relationships between them (e.g., citizens elect the fiduciary government authorities and education authorities manage school administrators and teachers). They argue that in these relationships, there are five actions that are especially important: delegation, financing, information gathering and use, support to deliver a task, and motivation. Coherence across these relationships and lines of accountability is essential for systems to deliver on learning goals.

There are certainly many dimensions to developing system coherence, but at a minimum, education leaders and organizations should assess the alignment of six components. Do these six components, along with others that leaders may identify, work together to support the required shifts in the pedagogical core? Do the mindsets and motivations of the main actors working within each component support the redesign of the pedagogical core?

- **Curriculum.** Are curricula focused on the competencies and skills needed for students to meet the systems' goals and vision? Are there frameworks guiding teachers on how students develop the desired competencies and skills? Have teachers

been consulted and engaged in the curriculum development process? Do they believe all students can develop these competencies and skills?

- **Human resources.** Are there sufficient education personnel in the system to deliver on the pedagogical core design? Do educational personnel support the new design? Have they been involved in the redesign process? Do they have the knowledge and skills needed to support the pedagogical core redesign? Do they have opportunities to develop these skills in an ongoing way? Are they sufficiently and sustainably supported through professional development or resource provision to adequately carry out what is asked of them?
  - **Data and assessment.** Do student assessment systems indicate progress against the goals the education system has identified (and not just on a subset of outcomes)? Do data systems track implementation and progress? Is data disaggregated to provide visibility into how new strategies target and impact historically excluded groups? Is there a process to regularly feed relevant data to educational personnel and other actors in the system in a way that enables them to adjust their practice, and do they have the skills to do so? Are data transparent and made publicly available, including to families and students? (See Box 12).
  - **Governance.** Are senior leaders inside the system supportive of the redesign? Are they engaging educators, families, and students along with community members in the pedagogical core redesign? Are they coordinating actors engaged in the redesign implementation? Does policy support the implementation of the redesign (or at least not get in the way of it)? Do education planning activities support ongoing implementation of the redesign?
  - **Finance.** Are there sufficient financial resources available to implement the redesign? Is there a plan for sustaining the financial resources needed? Are resources directed toward removing identified barriers to access and learning? Are financial resources invested in strengthening the capacity of key implementers of the pedagogical redesign (teachers, supervisors, and local-level actors)?
- Do spaces or mechanisms exist for teachers, students, families, and other citizens to participate in decisionmaking around education spending? Are effective systems in place for planning, monitoring, and evaluation of education spending?
- **Engagement.** Is there a process for ongoing sharing and dialogue with key stakeholders—from communities and parents to students to civil society organizations and employers—on the redesign and how it is implemented? Do the conversations feed back to the actors implementing the redesign in a way that helps them adjust and pivot? Are there opportunities for addressing concerns and building sustained support for redesign by actors who stand to lose from the change?

**BOX 12**

## Aligning data to support inclusive learning in Sierra Leone

Before 2018, Sierra Leone had little detailed information about who its education system served and who it left out. Data collection used paper-based questionnaires, and, as a result, data was often lagging by up to a year and scattered across multiple government departments. Moreover, the data that did reach the Ministry was not disaggregated by gender or disability status. Informing parents about their children's results, including for the all-important transition exams, took months. It was not uncommon for a family to wait a quarter of a year or more to find out if their child could continue schooling. The Ministry also did not get regular assessments on whether students were obtaining the foundations for learning—the last Early Grade Reading and Math Assessment had been done in 2014. Finally, even when some of this data did get through the system, there were limited ways to assess competencies outside of a narrow set of indicators.

Starting in 2018, Sierra Leone's Ministry of Education began to revamp its data systems to better support the government's goals of providing quality learning experiences to all children. One crucial step was to have a data system that could effectively track who was being served by the education system. Sierra Leone set about digitizing its education data collection and did so in 10 weeks. By digitizing its data collection process and carefully updating the questions asked, Sierra Leone both increased the speed and relevance of its data collection, and also shed light on who was left out of the system. Now the Annual School Census is both gender-disaggregated and asks about the disability status of the students and the accessibility of the classrooms. Even more importantly, the Ministry digitized and linked education data going all the way back to 2015. This gave the Ministry a data-driven starting point for addressing disparities within the education system and was a crucial component supporting its goals of developing a more inclusive system, including for pregnant girls and children with disabilities.

Also, in 2021, Sierra Leone launched an SMS-based technology system—free of charge—to provide timely feedback to parents and caregivers on children's transitional exams, which determined if they could continue to junior secondary school, senior secondary school, and university. Prior to this effort, exam results were shared up to three months after the fact by physically posting the scores in schools, or parents could pay up to \$10 to buy a card that would allow them to check the results online. This simple intervention has shifted expectations of what is possible and helped show all learners and families what the norms of regular and transparent data sharing can look like.

Taken together, these initiatives are helping develop the data systems to support the work of systemwide goals such as identifying and supporting marginalized children, building closer community-school collaboration, and adequately assessing the competencies children should be developing.



# Conclusion

*“Every system is perfectly designed to get the results it gets.”*

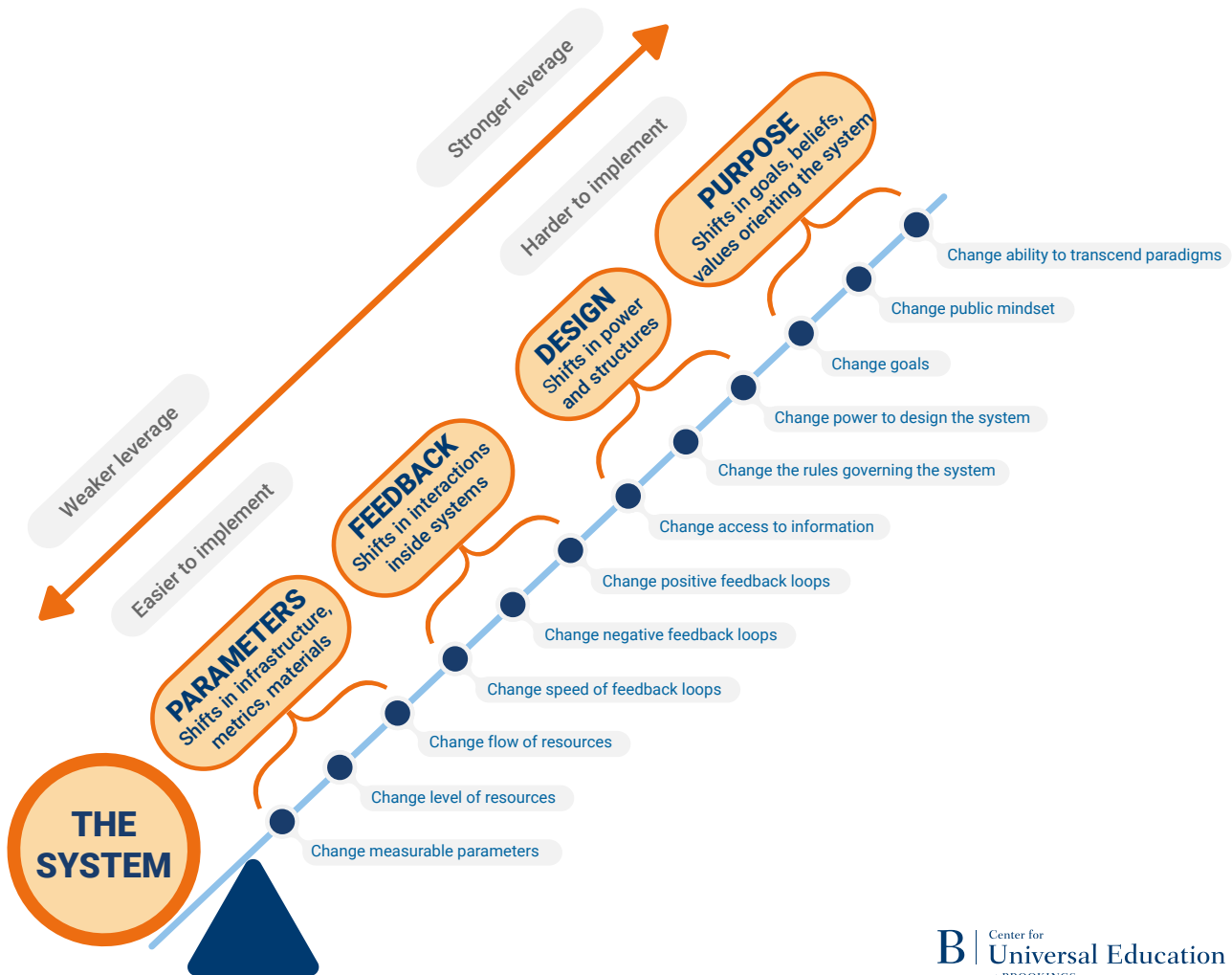
W. Edwards Deming, United States

A high-quality, relevant education can be a game-changer for young people. Children and youth who can effectively communicate, use mathematical reasoning to solve problems, build consensus across diverse viewpoints, and generate new ideas to address complex challenges are more likely to become healthy adults who constructively contribute to their communities, countries, and planet. Transforming education systems is a much-needed way of delivering on this vision and

helping shape the future of our communities at this inflection point in our planet’s history. We hope these insights will inspire you to take the transformation journey for yourself, and we look forward to adding your learnings and lessons to this collective effort to move from reforming systems to transforming them one child, one school, and one country at a time to achieve SDG4—quality education for all.

## ANNEX

### The leverage points framework for system transformation



Source: Adapted from Meadows (1999) and from conversations with Todd Rose and his colleagues at Populace (Winthrop, 2021)

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# References

- AAP-AACAP-CHA Declaration of a national emergency in child and Adolescent Mental Health. American Academy of Pediatrics. (2021, October 19). Retrieved June 13, 2022, from <https://www.aap.org/en/advocacy/child-and-adolescent-healthy-mental-development/aap-aacap-cha-declaration-of-a-national-emergency-in-child-and-adolescent-mental-health/>
- Abson, D. J., Fischer, J., Leventon, J., Newig, J., Schomerus, T., Vilsmaier, U., von Wehrden, H., Abernethy, P., Ives, C. D., Jager, N. W., & Lang, D. J. (2017). Leverage points for sustainability transformation. *Ambio*, 46(1), 30–39. <https://doi.org/10.1007/s13280-016-0800-y>
- Baker, D. (2014). *The Schooled Society: The Educational Transformation of Global Culture* (1st ed.). Stanford University Press.
- Ball, D., and Cohen, D. (1999). Developing Practice, Developing Practitioners: Toward a Practice-based Theory of Professional Education, in *Teaching as the Learning Profession: Handbook of Policy and Practice*. Pg 3-32.
- Banerjee, A., Banerji, R., Berry, J., Duflo, E., Kannan, H., Mukherji, S., Shotland, M., & Walton, M. (2016). Mainstreaming an Effective Intervention: Evidence from Randomized Evaluations of “Teaching at the Right Level” in India. National Bureau of Economic Research, working paper 22746, 1-41. <https://doi.org/10.3386/w22746>
- Barton, A. (2021, March). Implementing education reform: Is there a “secret sauce”? Dream a Dream. <https://dreamadream.org/report-implementingeducation-reform/>
- Burns, T. and Köster, F. (eds). (2016). *Governing Education in a Complex World*. OECD.
- Bradley, K. and Hernandez, L. (2019). *Big Picture Learning: Spreading Relationships, Relevance, and Rigor One Student at a Time*. Learning Policy Institute.
- Care, E., Kim, H., Vista, A., Anderson, K. (2018). *Education system alignment for 21st century skills: A focus on assessment*. Brookings Institution.
- Cohen, D. K., & Mehta, J.D. (2017). Why reform sometimes succeeds: Understanding the conditions that produce reforms that last. *American Educational Research Journal*, 54(4), 644-690. <https://doi.org/10.3102/0002831217700078>
- Cruz, P., Goulart, F., Kwuak, C. and Perlman Robinson, J. (2016). *Media Center: Innovating with Distance Learning in Amazonas, Brazil*. Brookings Institution.
- Datnow, A. (2020). The role of teachers in educational reform: A 20-year perspective, *Journal of Educational Change*, 21(1), 109-134.
- Datnow, A., Park, V., Peurach, D. and Spillane, J. (2022). *Education system reform journeys: Toward holistic outcomes*. Brookings Institution.
- Dorn, E., Hancock, B., Sarakatsannis, J., and Viruleg, E. (2021). *Covid-19 and education: An emerging K-shaped recovery*. McKinsey & Company.
- Dumont, H., Istance, D., Benavides, F. (2010). *The Nature of Learning: Using Research to Inspire Practice*. OECD.
- Elmore, R. E. (1979). Backward Mapping: Implementation Research and Policy Decisions. *Political Science Quarterly*, volume 94, number 4, Winter 1979-80.
- Elmore, R. E. (1996). Getting to scale with good educational practice. *Harvard Educational Review*, 66(1), 1–26. <https://doi.org/10.17763/haer.66.1.g73266758j348t33>
- Fuller, B., and Kim, H. (2022). *Systems thinking to improve and transform schools: Clarifying concepts and rethinking pathways*. Brookings Institution.

- Ganimian, A., Vegas, E., & Hess, F. (2020). Realizing the Promise: How can Education Technology Improve Learning for All? Brookings Institution.
- Gersick, C. J. (1991). Revolutionary change theories: A multilevel exploration of the punctuated equilibrium paradigm. *The Academy of Management Review*, 16(1), 10–36. <https://doi.org/10.2307/258605>
- Global Partnership for Education. (2020). GPE 2025 Operating Model Framework. Global Partnership for Education.
- Goddard, C., Chung, C. K., Keiffenheim, E., & Temperley, J. (n.d.). A new education story. Big Change. Retrieved June 10, 2022, from <https://big-change.org/new-education-story/>
- Hannon, V., Thomas, L., Ward, S., Beresford, T. (2019). Local Learning Ecosystems: Emerging Models. Innovation Unit, UK.
- Hegseth, W. (Forthcoming). Transforming Education Systems for Holistic Student Development: A Case Study of the International Baccalaureate System. Brookings Institution.
- Heracleous, L., & Barrett, M. (2001). Organizational change as discourse: Communicative actions and deep structures in the context of information technology implementation. *The Academy of Management Journal*, 44(4), 755–778. <https://doi.org/10.2307/3069414>
- Hjorth, P., & Bagheri, A. (2006). Navigating towards sustainable development: A system dynamics approach. *Futures*, 38(1), 74–92. <https://doi.org/10.1016/j.futures.2005.04.005>
- Istance, D. and Paniagua, A. (2019). Learning to leapfrog: Innovative pedagogies to transform education. The Brookings Institution.
- Kaffenberger, M., Silberstein, J., Spivack, M. (2022). Evaluating Systems: Three Approaches for Analyzing Education Systems and Informing Action. RISE Working Paper Series 22/093. 2022.
- Kwek, D., Ho, J. Wong, H. W. (Forthcoming). Transforming Education Systems for Holistic Student Development: A Case Study of Singapore. Brookings Institution.
- Liu, S. (2020). Neoliberalism, globalization, and “elite” education in China: Becoming international. Routledge.
- Loris Malaguzzi. Reggio Children. (n.d.). Retrieved June 10, 2022, from <https://www.reggiochildren.it/en/reggio-emilia-approach/loris-malaguzzi/>
- Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.). IPCC, 2021: Summary for Policymakers. In: *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 3–32, doi:10.1017/9781009157896.001.
- Masters, G. (2022). Building a World Class Learning System. National Center on Education and the Economy, Center for Strategic Education, and ACER.
- Meadows, D. (2008). Thinking in Systems: A Primer. (D. Wright, Ed.). Earthscan.
- Ministry of Basic and Senior Secondary Education. (2020). The new basic education curriculum for Sierra Leone. Government of Sierra Leone.
- Ministry of Basic and Senior Secondary Education of Sierra Leone. (2021). National Policy on Radical Inclusion in Schools.
- Mourshed, M., Chijioke, C., Barber, M. (2010). How the World’s Most Improved School Systems Keep Getting Better. McKinsey & Company.
- Munro, G. D., Ditto, P. H., Lockhart, L. K., Fagerlin, A., Gready, M., & Peterson, E. (2002). Biased assimilation of sociopolitical arguments: Evaluating the 1996 U.S. presidential debate. *Basic and Applied Social Psychology*, 24(1), 15–26. [https://doi.org/10.1207/S15324834BASP2401\\_2](https://doi.org/10.1207/S15324834BASP2401_2)
- National Commission on Social, Emotional, and Academic Development. (n.d.). From a nation at risk to a nation at hope. The Aspen Institute.

- OECD. (n.d.). Innovative Pedagogies for Powerful Learning (IPPL) – Approach. OECD.
- OECD (2013), Innovative Learning Environments, Educational Research and Innovation, OECD Publishing, Paris, <https://doi.org/10.1787/9789264203488-en>.
- OECD Future of Education and Skills 2030 - Organisation for Economic Co-operation and development. OECD Future of Education and Skills 2030 - Organisation for Economic Co-operation and Development. (n.d.). Retrieved June 13, 2022, from <https://www.oecd.org/education/2030-project/>
- Perlman Robinson, J., Curtiss Wyss, M., Hannahan, P. (2021). Institutionalization Tracker: Assessing the integration of an education initiative into a system. Brookings Institution.
- Philomin, L.E. (2016). Schools to foster love of learning, reduce focus on exam results: MOE. Today Online. <https://www.todayonline.com/singapore/more-time-students-pursue-broader-range-interests-moe>
- Post-Triennale Activities in Support of Education for Sustainable Development in Africa. Adeanet. (n.d.).
- Psacharopoulos, G., Rojas, C., and Velez, E. (1993). Achievement Evaluation of Colombia's "Escuela Nueva": Is Multigrade the Answer? Comparative Education Review, Vol. 37, No. 3, August 1993.
- Repucci, S., Slipowitz, A. (2022). The global expansion of authoritarian rule. Freedom House.
- Save our future averting an education catastrophe for the world's children. Save our Future. (n.d.).
- Sperling, G. B., Winthrop, R., Kwak, C., & Yousafzai, M. (2016). In What works in girls' education: Evidence for the world's Best Investment (pp. 29). Brookings Institution Press.
- Spivak, M. Applying Systems Thinking to Education: The RISE Systems Framework. RISE 2021/028.
- Teaching at the Right Level. Implementation Models: Evidence and Lessons from Randomized Evaluations. Teaching at the Right Level. (n.d.). Retrieved June 5, 2022, from <https://www.teachingattherightlevel.org/wp-content/uploads/2018/09/Implementation-Models.pdf>
- UNESCO. (2019a). Combining Data on Out-of-school Children, Completion and Learning to Offer a More Comprehensive View on SDG 4. UNESCO Information Paper No. 61.
- UNESCO. (2021). Reimagining Our Futures Together: A New Social Contract for Education. The International Commission on the Futures of Education, UNESCO.
- United Nations. (2015). Transforming Our World: The 2030 Agenda for Sustainable Development. Retrieved June 10, 2022, from <https://sdgs.un.org/2030agenda>
- United Nations. (n.d.). Transforming education summit. United Nations. Retrieved June 13, 2022, from <https://www.un.org/en/transforming-education-summit>
- Weinstein, J., & Bravo, J. (Forthcoming). Transforming Education Systems for Holistic Student Development: A Case Study of Chile's Comprehensive Learning Diagnosis. Brookings Institution.
- Wide inequalities in education. WIDE Inequalities in Education | Global Education Monitoring Report. (2013). Retrieved June 13, 2022, from <https://en.unesco.org/gem-report/wide-inequalities-education>
- Winthrop, R. (2018). Leapfrogging Inequality: Remaking Education to Help Young People Thrive. Brookings Institution.
- Winthrop, R., Barton, A. & Ershadi, M., (2021). *Understanding The Connection Between Family School Engagement and Education System Transformation*. Brookings Institution.
- Winthrop, R., Barton, A. Ershadi, M., & L. Ziegler. (2021a). *Collaborating to Transform and Improve Education Systems: A Playbook for Family-School Engagement*. Brookings Institution.
- Winthrop, R., & McGivney, E. (2015, June 10). Why wait 100 years? Bridging the gap in global education. Brookings Institution.
- World Economic Forum. (2020). The Future of Jobs Report 2020. World Economic Forum.

World Bank Group. (2022). Prioritizing learning during COVID-19: The most effective ways to keep children learning during and post-pandemic.

World Bank. The World Bank, UNESCO and UNICEF (2021). *The State of the Global Education Crisis: A Path to Recovery*. Washington D.C., Paris, New York: The World Bank, UNESCO, and UNICEF.

World Health Organization. (n.d.). Global Health Estimates: Life Expectancy and leading causes of death and disability. World Health Organization.

World's billionaires have more wealth than 4.6 billion people. Oxfam International. (2022, May 25).





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