Center for Universal Education at BROOKINGS

REPORT
SEPTEMBER 2022

TRANSFORMING EDUCATION FOR HOLISTIC STUDENT DEVELOPMENT

LEARNING FROM EDUCATION SYSTEM (RE)BUILDING AROUND THE WORLD

AMANDA DATNOW, VICKI PARK, DONALD J. PEURACH AND JAMES P. SPILLANE

Center for
Universal Education
at BROOKINGS

TRANSFORMING EDUCATION FOR HOLISTIC STUDENT DEVELOPMENT

LEARNING FROM EDUCATION SYSTEM (RE)BUILDING AROUND THE WORLD

AMANDA DATNOW is professor and Chancellor's Associates endowed chair in the Department of Education Studies and associate dean of the School of Social Sciences at the University of California, San Diego.*

VICKI PARK is an associate professor at San Diego State University's College of Education in the Department of Educational Leadership.

DONALD J. PEURACH is a professor of educational policy, leadership, and innovation in the University of Michigan's School of Education

JAMES P. SPILLANE is the Spencer T. and Ann W. Olin professor in learning and organizational change at the School of Education and Social Policy at Northwestern University.

**Names of the primary authors are listed in alphabetical order. The primary authors contributed equally to this report.*

With

JUAN BRAVO, National Quality Agency of Education, Chile.

WHITNEY HEGSETH, Boston College.

JEANNE HO, National Institute of Education, Nanyang Technological University.

DEVI KHANNA, University of Manchester.

DENNIS KWEK, National Institute of Education, Nanyang Technological University.

ANGELA LYLE, University of Michigan.

AMELIA PETERSON, London Interdisciplinary School.

THOMAS K. WALSH, Maynooth University.

JOSÉ WEINSTEIN, Universidad Diego Portales, Chile.

HWEI MING WONG, National Institute of Education, Nanyang Technological University.

CONTENT

CONTENT

EXECUTIVE SUMMARY

Motivation and framework

The period since the founding of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) in 1945 has been marked by an accumulating global agenda for transforming education for students in fundamental ways—including the recognition that education is a human right and a public good, that access is not tantamount to learning, and that academic learning is but one dimension of holistic student development. Each of these calls for global educational transformation has been invoked in response to crises regarding educational equity, quality, and purpose. These crises have been underscored by the COVID-19 pandemic, which brought the needs of the whole child to the forefront.

The global education policy arena is a crowded space, with many interests and voices competing for priority in motivating and framing agendas for improvement and innovation. In search of common ground, this report centers on two critical questions that should be matters of universal concern.

The first question is rhetorical, aiming to engage both heart and mind in considering efforts to build and rebuild academically focused education systems into humanistic education systems that also support the social, emotional, moral, and civic development of students.

> ***What would it mean—and what would it take—to build education systems that develop every child as would that child's own parents?***

The second question is empirical, aiming to draw a diverse global audience into productive, evidence-informed conversation about complex and contentious issues of collective interest, one central issue being potential synergies between the pursuits of academic and holistic student development.

> ***Is there evidence that it is even possible to (re)build academically focused education systems to support holistic student development?***

The Focus

In anticipation of the United Nations Transforming Education Summit in September 2022, this report explores the work of building and (re)building education systems to support holistic student development. It focuses specifically on the journeys of seven education systems—situated in high-, middle-, and low-middle-income countries with democratic traditions—as they make the whole child the center of their work. They include national initiatives in Singapore, Ireland, and Chile; provincial, territorial, and local initiatives in Canada, India, and the United

States; and a cross-national initiative in the International Baccalaureate. All seven systems operate in policy contexts pressing for measurable gains in students' academic learning, and none seeks to compromise academic rigor. Yet all seven aim to go further by supporting the intellectual, physical, emotional, social, cultural, and moral development of students.

These are initiatives in which multiple stakeholders, in different positions and from different perspectives, are recognizing and heeding aspirations and logics, making meaning and sense, assuming agency and taking action, experiencing and learning, and adapting and coordinating. Indeed, in the work of building and (re)building education systems, these initiatives also function as learning systems that produce the knowledge and capabilities needed to do all of these things, and more.

The Findings

While different in many ways, the seven systems bear remarkable similarities in their efforts to (re)build education systems to support holistic student development. Each is working in policy contexts pressing for academic quality and equity while also facing additional incentives to support holistic student development.

Moreover, in these seven systems, efforts to (re)build education systems for *holistic student development* bear remarkable similarity to system (re)building for *academic development,* though imbued with new concern for *moral legitimacy and responsibility* alongside established concern for *pragmatic legitimacy and technical effectiveness*.

In these seven systems, education system building is multifaceted and involves 10 key lessons across three interrelated domains or forms of common work. Indeed, among the primary contributions of this report is a practical framework to guide diverse stakeholders in working together to transform education systems.

These seven systems work to manage their environments to build support for holistic student development among diverse stakeholders; address different institutional, cultural, and technical demands; and build partnerships for supporting reform. In so doing, they offer these key lessons for managing environments:

1. *Engage diverse stakeholders*: Engage and coordinate among diverse stakeholders and leverage partnerships.
2. *Construct coherence*: Create opportunities for diverse stakeholders to deliberate on different cultural norms, cognitive frameworks, and regulatory environments that inform schooling.
3. *Manage equity-and-rigor tension*: Engage the perceived tensions between equity and rigor in deliberation about holistic development.

These systems also work to build or rebuild an educational infrastructure to enable approaches to instruction that can support holistic student development in schools. The following lessons are key for (re)building educational infrastructures for holistic student development:

4. *Build social infrastructure*: Build a social infrastructure that engages stakeholders about holistic student development and the entailments for instruction.
5. *Develop instructional designs*: Develop instructional designs that recognize and support instruction as a coproduction between students and teachers.
6. *Design educational infrastructure*: Design educational infrastructure to support new visions for instruction, and mobilize this infrastructure to support instructional improvement.

Finally, these systems work to integrate educational infrastructure with everyday practice in schools and classrooms. Their work highlights the following lessons:

7. *Balance common conventions with local discretion*: Balance common systemwide

conventions with the need for local discretion to promote and encourage reform.

8. *Distribute leadership*: Develop and distribute leadership for instruction by, among other things, cultivating educator and student agency.
9. *Support infrastructure use*: Support the use of educational infrastructure in school and classroom practice through professional learning.
10. *Monitor practice and performance*: Conduct consistent, ongoing monitoring of practice and performance for continuous improvement and professional learning.

The domains of system-building work are interrelated and overlapping, involving continual attention to constructing coherence as institutional environments are in constant flux. Further, the work of different domains does not happen in any particular order: although managing environments is important early in a reform journey to build support for holistic student development, it remains just as crucial later in the journey.

These three domains of education system building played out consistently in initiatives that otherwise varied in terms of the level of operation (cross-national, national, provincial, territorial, or local); their unique historical, societal, and policy contexts; and their different approaches to supporting holistic student development. Moreover, in no case did these seven systems put digital or information technologies in the first position as primary drivers of educational transformation, as efficient, quick alternatives to the difficult, long-term work of institution building. Rather, each placed *instruction*—the collaborative work of teachers and students—in the first position, and each engaged deeply in the development of infrastructures and organizations to support holistic student development at a large scale.

Considerations for collective conversation and action

Our findings provide high-level perspective on complex, large-scale systems transformation. Further research is needed to examine how the work of system (re)building is playing out throughout these seven systems, how those doing the work are managing successes and challenges, and how the work is bearing on the daily lives of students and teachers. Moreover, further research is needed across countries at varying levels of development—especially in low-income countries striving to increase access to schooling and to establish institutions supporting foundational literacy and numeracy, all while managing the dire consequences of the COVID-19 pandemic and climate change.

Even so, these portraits of system (re)building toward holistic student development across the seven case studies present educators, policymakers, and researchers with key initial lessons for undertaking this work. The systems take diverse on-ramps and multiple pathways toward holistic student development. Their points of departure and connection suggest that critical leverage points enable forward movement as they take moral, technical, and institutional cues from the larger environment.

A large part of managing the environment will be for systems to explicitly connect technical values for educational quality and equity with moral values for holistic student development, deliberating on and negotiating dilemmas with diverse stakeholders. Nurturing teaching and learning for holistic student development will take not only ambitious vision and goals but also education system building and (re)building efforts to support everyday practice. If the goals are ambitious, so too must be the infrastructures for supporting their enactment. Infrastructure use in everyday school and classroom practice must be deliberately cultivated and supported.

With these lessons in mind, we encourage diverse stakeholders in systems to engage in collaborative conversations and action centered on the three domains of practical framing for systems transformation that have emerged from our exploration:

- Manage environments and relationships.
- Build educational infrastructure.
- Integrate educational infrastructure in practice.

Supporting diverse stakeholders in doing this work, in turn, will depend on researchers' continuing exploration of diverse system transformation efforts—especially in systems being pressed to support holistic student development while also striving to increase access and support foundational learning. It will involve developing new types of collegial, global learning and networking among system leaders at all levels. And it will require developing creative new ways to draw local education professionals, parents, community members, and students into cross-national learning opportunities that create present new possibilities, build their knowledge and capabilities, and fuel their agency. For—as captured by the journeys of the seven systems explored here—much of the burden of transforming education systems rests on the shoulders of local education professionals, parents, community members, and students.

INTRODUCTION

The period since the founding of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) in 1945 has been marked by an accumulating global agenda for transforming education for students in fundamental ways, even as the systems supporting their education continue to emerge and evolve. This agenda signifies an evolution in three respects:

- Recognition of education as a human right, a public good, and a public responsibility is driving the development of *school systems* that provide increasing *access* to instruction for more (and more diverse) students.

- Recognition that *access* is not tantamount to *learning* is underscoring the distinction between *school systems* and *education systems* and is driving efforts to organize, manage, and improve the educational work of schooling—instruction—to raise quality and reduce disparities in academic learning in core content areas.

- Recognition that academic learning is but one dimension of holistic student development is broadening *academically focused* education systems into *humanistic* education systems that also support the social, emotional, moral, and civic development of students.

Each of these calls for global educational transformation has been invoked with cries of crises in educational equity, quality, and purpose, with the crises begetting urgency. Each has been touted as a categorical advance beyond the educational status quo. Yet none is a fait accompli. Rather, each is a work in progress, with layers of educational transformation playing out concurrently in high-, middle-, and low-income countries.[1] These layers are being championed by global and national elites who develop nations, build economies, and broker power and resources; they are being championed by students poised to assume stewardship of a planet increasingly overwhelmed by those efforts.

Against that backdrop, in anticipation of the United Nations (UN) Transforming Education Summit in September 2022, this report explores the work of building and (re)building education systems to support holistic student development.[2] It focuses specifically on the journeys of seven education initiatives around the globe—situated in high-, middle-, and low-middle-income countries with democratic traditions—as they make the whole child the center of their work. They include national initiatives in Singapore, Ireland, and Chile; provincial, territorial, and local initiatives in Canada, India, and the United States; and a cross-national initiative in the International Baccalaureate.

All seven systems operate in policy contexts pressing for measurable gains in students' academic learning, and none seeks to compromise academic rigor. Yet all seven aim to go further, by supporting the intellectual, physical, emotional, social, cultural, and moral development of students. Indeed, in these seven systems, efforts to (re)build education systems for *holistic student development* bear remarkable similarity to system (re)building for *academic development*, though imbued with new concern for *moral legitimacy and*

responsibility alongside established concern for *pragmatic legitimacy and technical effectiveness*.

Lessons learned from the journeys of these seven initiatives have potential to cultivate mutual awareness, increased trust, and positive collaboration among diverse education stakeholders—policymakers, education leaders, teachers, parents, families, community members, and students—in building and (re)building education systems to support holistic student development. Lessons learned also provide perspective on the potential to build and rebuild education systems in ways that bring into positive relation (a) long-standing *national* education agendas for advancing economic, political, and societal development; and (b) a rapidly emerging *global* education agenda for advancing mutual understanding, collective responsibility, and environmental sustainability.

Our report is structured in four parts:

- **Motivation and framework:** We begin with a thought experiment to motivate and frame our exploration. In keeping with the theme, one aim is to engage both heart and mind in considering efforts to build and rebuild education systems to support holistic student development. Another aim is to quickly draw a diverse global audience into productive conversation about complex and contentious issues of collective interest—one central issue being contemporary tensions and potential synergies in the pursuit of academic and holistic student development. For those anticipating that we would begin, instead, with the customary review and analysis of relevant literature, please see our background paper on research foundations (Datnow et al., 2022) as a complement.

- **Systems overview and case summaries:** We continue with brief summaries of the seven education initiatives that are the subjects of our exploration. The summaries draw from detailed case reports crafted by colleagues around the world whom we enlisted to understand the work of building and (re)building education systems to support holistic student development. Our collaborators include Juan Bravo, Whitney Hegseth, Jeanne Ho, Devi Khanna, Dennis Kwek, Angela Lyle, Amelia Peterson, Thomas K. Walsh, José Weinstein, and Hwei Ming Wong. The individual case reports will be released serially following the publication of our summary report. Please see the appendix for more information about our colleagues, their approaches to constructing their case reports, and a description of the report's methods.

- **Cross-case analysis:** We then proceed with a cross-case analysis of the seven initiatives to identify linchpins, challenges, and dilemmas in the work of building and (re)building education systems. Despite the vast differences in these seven initiatives in their global distribution, their contexts and histories, and their aims and approaches, all are heeding both moral and technical imperatives to build and rebuild their education systems. Moreover, all are engaging in three core domains of work in their efforts to support more holistic student development while maintaining academic rigor: managing complex environmental relationships, building educational infrastructure, and integrating educational infrastructure into instructional and school practice.

- **Considerations for collective conversation and action:** We conclude by discussing potential considerations of our inquiry for the diverse stakeholders engaged in defining and pursuing global educational transformation: global and national policymakers; education professionals (both teachers and leaders); and students, parents, and communities. Our aim is to cultivate mutual awareness, increased trust, and positive collaboration in collective efforts to build and rebuild education systems to support holistic student development.

MOTIVATING AND FRAMING OUR EXPLORATION

The global education policy arena is a crowded space, with many interests and voices competing for priority in motivating and framing agendas for improvement and innovation, and with formidable power differences among them. In search of common ground and a level playing field, we motivate our analysis with a fundamental question that centers what should be (if it is not already) a matter of universal concern:

What would it mean—and what would it take—to build education systems that develop every child as would that child's own parents?

The power of this fundamental question is that its careful consideration leads quickly down a path to matters at the center of global education transformation: the essential educational contract, the broader education ecology, contemporary policy discourses, and potential synergies between these discourses. Those matters, in turn, frame our exploration of efforts to build and rebuild education systems to support holistic student development, focused on answering not a rhetorical question but instead an empirical one:

Is there evidence that it is even possible to (re)build academically focused education systems to support holistic student development?

We thus begin by traveling that path.

The essential educational contract

Imagine a child dear to you, one whose innocence, potential, and fragility overwhelm you. That child—indeed, every child—is born into the world at its mercy.

To be a loving parent of a dear child is to take full responsibility for the child's well-being and for the child's intellectual, physical, emotional, social, cultural, and moral development. Yet no matter how loving, every parent faces limits in enacting this fundamental responsibility—limits in their own experiences, knowledge, capabilities, and time. To fulfill this fundamental responsibility, the parent seeks more for the child than they could possibly provide on their own.

So the parent packs the child's backpack and takes the child's hand. Together, hand in hand, the parent and child leave home and walk to school, where a teacher greets them outside. The parent places the child's hand into the teacher's hand. And with that gentle act of love, humility, and trust, the parent and teacher witness a metamorphosis: the very moment that the child becomes a student.

With that gentle act, the parent and teacher also execute the essential educational contract: the sharing of responsibility for the child's well-being between the parent and the teacher. From that point forward, the teacher serves *in loco parentis*—in place of the parent—in developing the child intellectually, physically, emotionally, socially, culturally, and morally while the child is in the teacher's care. This teacher, and the others who follow, will serve in this role and shoulder that responsibility for a portion of the child's life that is, in many countries, second only to the time spent at home: six or more hours per day, nine or more months per year, for 12 or more years.

Together, the student and the teacher will collaborate in the essential educational work: instruction, both in classrooms and beyond, with the student learning and the teacher teaching in close relationship. Through this work, the teacher guides the student beyond the home and into the world. It is the work of setting directions and selecting approaches, of exploring and investigating, of studying and scribing, of resolving uncertainty and discovering patterns, and of gauging progress and celebrating accomplishment. And through this work, the teacher provides more than the child's parents could provide on their own.

The broader education ecology

Together, hand in hand, the teacher and student walk through the doors of the school, down the hall, and into their classroom—the child's second home, ideally a place of sanctuary and of wonder—to set about their work. Once through the school doors, they enter a portal

into another world, a broader ecology that supports, but also constrains and undermines, the work of the teachers in enacting the essential educational contract.

The education ecology includes interests, initiatives, movements, and resources advanced by branches, agencies, and agents of governments; by for-profit, nonprofit, and professional organizations; by philanthropies, universities, and research centers; and by interest groups, advocacy organizations, and think tanks. Within the education ecology, influence gains authority through laws, regulations, and court cases; through professional certification, school accreditation, and performance standards; and through cultural legitimacy, power of ideas, and evidence of effectiveness. Some in the educational ecology view themselves as operating in the child's and teacher's interests; others, in the nation's and society's interests; and still others, in their own interests.

The education ecology is referred to as "the education sector" by some and as "the education system" by many others, in part because people don't seem to know what else to call it. After all, it has characteristics commonly associated with systems: lots of components and parts that, at least from a distance, appear to move more or less in relation, with more or less coordination. And, for some students and teachers, these components and parts actually do move and coordinate in ways that support the essential educational contract—the teacher serving *in loco parentis* and nurturing students' intellectual, physical, emotional, social, cultural, and moral development.

Yet from the perspective of other students and teachers, the education ecology does not function as an education system at all. The sheer number of components and parts, the rapid rate of movement, and the lack of coordination among them complicate the essential educational contract, with ever-churning interests, resources, requirements, and expectations providing little clarity regarding exactly what the students and teachers are to do, how they are to do it, or toward what ends. For still others, the components, parts, movement, and coordination are designed in ways that undermine the essential educational contract by segregating some students from others, labeling and stigmatizing them, marginalizing them, limiting their access to resources, and blaming them when they struggle.

The broader education ecology is relentless. It pounds at the classroom door with such steady force that many teachers bolt their doors shut, their energy and attention focused on enacting the essential educational contract as best they can with the students for whom they are responsible, using resources that they create, cobble, and master. For many teachers, the broader education ecology is a world from which to *protect* students, not a world to *embrace*.

Contemporary policy discourses

Considering the relationship between the essential educational contract and the broader education ecology leads quickly to two contemporary policy discourses that have currency in the global context: discourses of holistic student development and of systemic education reform. The former seeks to elevate the essential educational contract; the latter seeks to put the broader education ecology in its service.

HOLISTIC STUDENT DEVELOPMENT

The logic and principles of holistic student development analogize "child with parent in home" to "student with teacher in school." The child/student is whole: body, mind, and spirit, developing synergistically. The parent/teacher nurtures the whole child/student: body, mind, and spirit, synergistically. The home/school becomes both curriculum and context—that which the whole child/student recognizes, engages, and experiences, and in which the whole child/student develops. The essentials follow: positive, caring relationships between the child/student and parent/teacher; responsibility, capability, and creativity in the parent/teacher; and safety, resources, and opportunity in the home/school.

The contemporary policy discourse of holistic student development has evolved rapidly since 2020. The COVID-19 pandemic has laid bare the intimate and

immediate relationship between child and ecology as well as the destructive effects on children of a threatening, relentless, inescapable ecology. From stark transparency follows moral responsibility to structure relationships and contexts that mediate between child and ecology and that nurture and develop the whole child.

Even before the pandemic, there was growing attention in the research literature to developing a wider range of student capacities or a "breadth of skills" that include—but also transcend—academic achievement in core subjects.[3] Scholars in the education field are arguing for an integration of learning and well-being and for conceptualizing cognitive, socio-emotional, and identity development as overlapping constructs.[4] These calls for holistic student development go far beyond romanticized notions of student-centered learning, and they incorporate, rather than lose sight of, academic rigor and development. Importantly, they also recognize that fostering students' positive identity development requires honoring their diverse cultural repertoires.[5] The elements of and interconnections between the various domains of holistic development are represented in Figure 1.

FIGURE 1

Dimensions of holistic student development

Source: Authors' analysis.

While they are gaining currency in contemporary policy discourse, the logic and principles of holistic child/student development are not new. Rather, they stretch back millennia, to ancient traditions of holistic child development among Indigenous communities. The logic and principles were elevated, celebrated, and elaborated by Enlightenment philosophers, early psychologists, and industrial-era pragmatists. They were operationalized in education systems built by Buddhists, Jesuits, and Quakers, and by educationalists such as Steiner, Montessori, and Malaguzzi.

They also have long been integral to education policy in some countries with social democratic leanings. In other countries, they entered and endured in policy discourse within progressive reform movements, social justice movements, and the cognitive revolution. In the contemporary global context, they have recently become integral to policy discourse that anchors humanistic values of social-cultural learning, global citizenship, and environmental stewardship in the UN Sustainable Development Goals (SDGs).[6]

Around the world, the logic and principles of holistic student development are being pressed even more deeply into contemporary policy discourse by neuroscience, climate science, social science, and learning sciences that together theorize, evidence, and underscore the intimate and immediate relationship between child and ecology, the essential mediation of relationships and contexts, and the wisdom of holistic child/student development.[7]

SYSTEMIC EDUCATION REFORM

The discourse of systemic education reform is comparatively recent, having gained and sustained currency as a dominant global policy discourse only in the past 40 years. The logic and principles of systemic education reform center on putting the broader education ecology in the service of—and not at odds with—the essential educational contract.

For example, the discourse of systemic reform emerged in the U.S. in the 1980s and 1990s.[8] This was a time when the U.S. federal courts at last ensured universal access to public education for all children; when new evidence and analytic methods made transparent the disparities in educational opportunities and outcomes among students; when other evidence and methods began to benchmark educational quality among countries (including the launch of the Programme for International Student Assessment [PISA] by the Organization of Economic Cooperation and Development [OECD]); and when political and public confidence in public education began to wane. This is also a country in which deep distrust of government has fostered a complex education ecology characterized by highly decentralized education governance; a vast array of professional associations and interest groups; and a long-standing dependence on education markets for material, knowledge, and human resources.

With that, the policy focus shifted to the essential educational contract: teachers' responsibility for students' development. The policy goals also shifted, going beyond increasing access to schooling to ensuring excellence and equity in the essential educational work of teachers and students: instruction. The policy instruments began to parallel those of countries that, at the time, were leading in international comparisons: standards for instructional content, assessments of instructional outcomes, and accountability for increasing quality and reducing disparities in those outcomes.[9]

The policy logic was that these instruments would structure attention, decisions, and action throughout the broader education ecology, such that the *education ecology* would function as an *education system*—its components and parts moving in tighter relation, and with more coordination, to support the essential educational work of teachers and students: instruction. The policy logic of systemic education reform has played out in interaction with other policy logics that have amplified this instructional focus: logics of professionalism, markets, evidence, and evaluation centered on increasing quality and reducing disparities.

The policy discourse of systemic reform stretches around the globe and into the very SDG targets that

champion humanistic values for education and that call for holistic student development.[10] With access to schooling integral to measures of human capital, and with measures of human capital predicting prospects for national prosperity and security in a rapidly changing world, the global press for increased access to schooling continues—for students of all gender, racial, ethnic, and gender identities; for those who learn similarly and differently; from earlier to later in their lives; and in poor and rich nations.

Yet recognition is growing among global policy elites that access is not tantamount to learning and that measures of access can increase while learning poverty remains.[11] Moreover, concern is growing among these same elites that the COVID-19 pandemic and its adverse effects on access to schooling have exacerbated learning poverty and thus created new urgency to address it.[12] With that, the call is to transform national education ecologies by moving beyond building *school systems* that provide access to instruction to *education systems* that ensure quality and equity in the collaborative work of learning and teaching.[13] In these education systems, the gaps between national ambitions and classroom life are increasingly mediated by "middle tier" organizations that collaborate with teachers and school leaders to organize, manage, and improve instruction.[14]

Potential synergies

From one perspective, the discourses of systemic education reform and holistic student development are categorically distinct. Each has different roots and logics, has developed along different timelines and trajectories, and has different champions and critics. From another perspective, these discourses are potentially synergistic, with signature strengths of each playing to signature vulnerabilities of the other.

SYSTEMIC EDUCATION REFORM

Systemic education reform is a means to an end. Its strength lies in the coordination and use of macro-level policy instruments to disrupt the status quo and to drive the building and (re)building of education systems that organize, manage, and improve instruction to improve quality and reduce disparities. This signature strength has been instrumental in the rise of systemic education reform in high-, middle-, and low-income countries as they compete for prestige in cross-national comparisons; draw on that prestige to attract foreign investment; and seek to establish institutions needed to increase educational access while also supporting foundational learning.

Yet, as operationalized in many policy contexts, the signature vulnerability of systemic education reform is that it has been directed toward narrow ends: measurable academic outcomes of national interest and for which there is policy consensus (typically literacy and mathematics) and not content areas and societal issues still under open debate (such as science and climate change as well as social studies and social justice) or activities that may not yield immediate, measurable academic returns (such as art, music, and physical education).

One result of this vulnerability is a press for pedagogies favoring efficiency, certainty, and accountability (development of basic skills and transmission of tested academic content) and not for pedagogies favoring exploration, uncertainty, and reason (open-ended inquiry and argument around complex issues and problems). Another result is a press for students to compete for success and opportunity within narrow lanes absent commensurate opportunities to explore their diverse interests and aspirations.

Indeed, even if centered squarely on the essential work of teaching and learning, systemic education reform risks being more technical and rational than moral and nurturing, with the focus squarely on the academically tested child rather than the developmentally unabridged child.[15] The risk is exacerbated in high-accountability contexts whereby schools seek to address "learning loss" as a consequence of the COVID-19 pandemic by allocating additional time and resources to foundational learning in literacy and mathematics, thus drawing time and resources away from addressing the pandemic's social and emotional consequences for students.

From the perspective of many teachers and students, this narrow academic focus only amplifies the fundamental problem that systemic education reform seeks to mitigate: The broader education ecology continues to pound relentlessly on the classroom door, but with even more and steadier force, and with a new policy warrant in hand.

HOLISTIC STUDENT DEVELOPMENT

By contrast, holistic student development places a keen focus on the ends. Its signature strength is the breadth of its ambitions, with equal attention to students' intellectual, physical, emotional, social, cultural, and moral development. Developed holistically, students thus become stewards of themselves, of others, of their communities, and of the world.

Yet the signature vulnerability of holistic student development is that, as a policy discourse and logic, it has long struggled for the means of realizing such ends at a large scale, for thousands and millions of students. Some nations and education systems have successfully operationalized the logic and principles of holistic student development (as sketched above), but they are the exception and not the rule.

Consider, for example, the progressive reform movement in the U.S., with its arc from early-1900s pragmatism to the midcentury cognitive revolution focused squarely on the development of the "whole child in society" with the aim of "child as agent of social-change". The movement was frustrated, in part, by the absence of understandings, infrastructures, and political support to realize ambitions for holistic student development in large numbers of classrooms in large numbers of public schools. The movement was also frustrated by the very societal problems that it aimed to solve, including social, political, and economic inequalities that privileged the instrumental interests of patrons and constituents in the broader education ecology over the holistic development of students.[16]

But, again, the broader education ecology is in the throes of profound change, with more and more of these patrons and constituents in league with many others, from the marginalized to the privileged, in championing the logic and principles of holistic student development. Their concerns and motivations may vary—from the local (addressing inequities in students' daily classroom experiences), to the national (decolonizing education systems, addressing systemic racism, and legitimizing repressed cultural identities), to the global (cultivating global citizenship in a conflicted and warming world). But the tie that binds these motivations is the shared goal of holistic student development.

Operationalizing the potential synergies

Enabling conditions in the broader education ecology draw new attention to the potential synergies between holistic student development and systemic education reform. More specifically, they raise new questions about the possibility of leveraging leading theory, research, and principles that have developed alongside (and in interaction with) systemic education reform to operationalize such reform in new ways—that is, in the service of holistic (rather than narrow) goals for students.[17] A brief review provides hints and clues.

INSTRUCTION, TEACHING, AND LEARNING

For education systems intent on enabling holistic student development, transforming learning will be essential, and teaching and instruction are the primary means they have for doing that. Precision in defining teaching, learning, and instruction will be important. Although these terms are often used interchangeably, they are not synonymous. Rather, teaching, learning, and instruction are distinct *forms of practice* that contribute to students' development: *teaching* as work enacted by teachers, *learning* as work enacted by students, and *instruction* as work coenacted by teachers and students as they teach and learn in interaction with each other.

Education systems intent on promoting holistic student development will need to focus on *instruction* as a social practice coenacted by teachers and students using intellectual, cultural, and material resources that are situated in their classroom, school, and community contexts.[18] Seeing instruction as both a social and situated practice is essential if schools are to embrace and build on the diverse cultural repertoires of students and families and engage in culturally responsive instruction.[19] Culturally responsive instruction not only recognizes but actively engages children's cultural resources in instruction, allowing them to develop an identity and sense of belonging, which is essential for their holistic development.[20] Recognizing instruction as a social and situated practice that is coproduced by teachers and students also reframes the challenge for education systems intent on pressing for holistic student development, as it necessitates not only providing new-and-better resources to classrooms but also supporting both teachers and students in using these resources in instructional practice.[21]

BUILDING AND (RE)BUILDING EDUCATION SYSTEMS

For education systems intent on enabling holistic student development, more nuanced conceptions of instruction go hand in hand with more nuanced attention to the values that animate system (re)building efforts.

For example, in the U.S., one outcome of systemic education reform is that it is motivating middle-tier organizations (e.g., local school districts and charter school networks) to transform themselves from *school systems* into *education systems* by working to build and rebuild themselves around their core educational work: *instruction*.[22] In the U.S., these (re)building efforts go further, to include both private systems (i.e., Catholic school systems) and hybrid systems (i.e., the International Baccalaureate and Montessori). Central to public and nonpublic system (re)building efforts are five core domains of work:[23]

- *Managing environments* by strategically both bridging and buffering their cultural, political, and technical environments while managing diverse stakeholders.
- *Building educational infrastructure* to support a shared vision for instruction and developing and deploying instructional and social resources for improving instruction.
- *Supporting educational infrastructure use in practice* by mobilizing educational infrastructure for instruction through such means as coaching, mentoring, and professional learning.
- *Managing performance* by measuring and monitoring progress to support continuous improvement and professional accountability and learning.
- *Developing and distributing leadership for instruction* by creating formal and informal leadership sources and structures that enable systemwide leadership practice.

These system (re)building efforts are commonly driven by concern with maintaining *pragmatic legitimacy*, given the need to demonstrate technical effectiveness in improving achievement and reducing disparities in content areas that are the focus of standards and accountability policies.[24] Yet, in some systems, these efforts are also being driven by concern with maintaining *moral legitimacy* and the commitment to ensuring that all students, regardless of circumstance and background, can learn and develop in schools. This turn toward moral legitimacy is being motivated by structural inequities laid bare by ongoing system (re)building efforts; by broader societal inequities bearing upon students (including those exposed by the COVID-19 pandemic); and by the same cultural responsiveness that animates instruction as a situated practice.

DEMANDS ON EDUCATION LEADERS

The journey toward systemic education reform for holistic student development will place new demands on leaders, pushing them to consider and reconsider novel ways of approaching their work and broadening

the scope of how and in what ways they engage in system transformation. Policymakers, educators, and stakeholders will need to grapple with the multifaceted nature of leadership for change that integrates distinct (but potentially synergistic) principles and logics of educational innovation and improvement at the field, organizational, group, and individual levels—including the framing and negotiation required to induce shifts in beliefs and behaviors.

Such change efforts will require leaders to integrate these new understandings with knowledge of how to support the building of capacity and capabilities, especially for teaching, learning, and instruction for holistic student development.[25] Further, they will require that leaders rethink the scope of their work and the means by which they engage in enacting system-level change—beyond managing the political and administrative responsibilities that have long been their purview to engaging deeply in organizing, managing, and improving instruction. Still further, they will require developing and distributing leadership to cultivate broader ownership and sustainability for system transformation.[26] Success and failure will likely turn on how well leaders understand and manage the changing social-political contexts in which they and their education systems are embedded.[27]

THE GLOBAL CONTEXT

While much of the preceding analysis draws on organizational and policy research in the U.S., these same themes stretch deep into cross-national research. Reports on high-performing school systems across the globe underscore the importance of leadership, coherence, and building capacity for instructional improvement.[28] In recent years, there has also been an increasing emphasis on "systems thinking," with researchers unpacking the system features and interactions that support coherence in instruction.[29] For example, a recent Brookings report argues that that system transformation requires purpose, pedagogy, and position, thus aligning key elements of the system to support a pedagogical core that reflects a shared vision.[30]

Increasingly, researchers are identifying global systems that are learner centered and oriented around the needs of the whole child.[31] Along these lines, a new LEGO Foundation report highlights systems that recognize socio-emotional well-being as fundamental both to education and to supporting positive changes in society.[32] Parents are key stakeholders, along with educators and policymakers, in these system change efforts.

Our exploration

And the path down which we ventured returns us to the motivating question with which we began: *What would it mean—and what would it take—to build education systems that develop every child as would that child's own parents?*

Our engagement with this thought experiment provides grounds for speculation:

- It would mean building and (re)building education systems to support holistic student development.

- It would take education systems that are actively developing historically novel capabilities to support students' academic development (in accord with the logic and principles of systemic education reform) to go further, by also developing capabilities to support students' physical, emotional, social, cultural, and moral development (in accord with the logic and principles of holistic student development).[33]

That speculation, in turn, invites an empirical question: *Is there evidence that it is even possible to (re)build academically focused education systems to support holistic student development?*

To answer that question, we explore efforts to leverage potential synergies between two contemporary (but distinct) policy discourses: holistic student development and systemic education reform. If possible, leveraging these synergies would be transformative—resulting in a broader *education ecology* in which *education systems* support the

essential *educational work* in service of the essential *educational contract*. We say "transformative" because, in such an integration, the moral/nurturing aspects of holistic student development would harmonize with the technical/rational aspects of systemic reform in ways unfamiliar and uncommon in national and global educational contexts.

Our approach is to examine the journeys of seven education initiatives that operate at the nexus of holistic student development and systemic education reform and that seek to support the physical, emotional, social, cultural, and moral development of students while maintaining academic and intellectual rigor. These seven initiatives have circumscribed different components and parts of the broader education ecology to call their own, to design and fashion, to coordinate and use, and to evaluate and improve. *That is the work of building and (re)building education systems.*

Examining the work of these seven education initiatives as they build and rebuild education systems requires shifting the frame. These are not initiatives in which authorities make policies that are then administered, implemented, evaluated, and judged. They are initiatives in which multiple stakeholders, in different positions and from different perspectives, are recognizing and heeding aspirations and logics, making meaning and sense, assuming agency and taking action, experiencing and learning, and adapting and coordinating. Indeed, in the work of building and (re)building *education systems*, these initiatives function as *learning systems* that produce the knowledge and capabilities needed to do all of these things, and more.

Shifting the frame goes hand in hand with calibrating expectations. None of these seven education initiatives is fully realized by either its own standards or the standards of our motivating question. Rather, each is working and learning in its own ways to (re)build a more fully realized education system that supports the development of more students, more holistically, with more academic and intellectual rigor. Moreover, each has different aims and points of departure and has circumscribed different components and parts from which to fashion its education system.

Differences in the active work and learning in these seven initiatives create opportunities for comparing variation and similarity in how they define and pursue holistic student development; for observing convergence and divergence in ways of working and in lessons learned; and for imagining more fully realized collages and composites across education systems.

SYSTEMS OVERVIEW AND CASE STUDIES

The seven initiatives that are the focus of our exploration are being undertaken in seven education systems that have already moved well beyond simply providing access to schooling to working actively to organize, manage, and improve instruction with the aims of improving educational quality and reducing educational disparities. These systems operate at different levels and serve populations of different sizes, as follows:

- National level
  - » Singapore: 5.7 million people
  - » Ireland: 5 million people
  - » Chile: 19.1 million people
- Provincial, territorial, and local levels
  - » British Columbia: 5.1 million people
  - » Delhi: 19.8 million people
  - » Cedar Rapids/Iowa BIG: 133,000 people
- Cross-national
  - » The International Baccalaureate (IB): 160 countries

The number of students served varies by orders of magnitude, from the hundreds (Cedar Rapids/Iowa BIG) to the millions (Chile, Delhi, and IB).

How systems conceptualize holistic student development

Developing visions for holistic student development is a central component of system (re)building. Here we describe how the systems conceptualize holistic student development. In essence, what is it that the systems are moving towards? What is foregrounded and what is backgrounded in their priorities for holistic student development?

The educational systems in this study are all moving towards a more expansive vision of holistic student development as part of their system (re)building efforts. The systems are extending their focus beyond academic development to include a breadth of skills that, according to our cross-case analysis, fall into three general domains: self and well-being; orientation to others/community; and learning dispositions. For example, in the domain of self and well-being, these systems aim to cultivate students' socioemotional skills, mindfulness, confidence, and positive personal identity. In the domain of orientation to others/community, these systems seek to cultivate social responsibility, empathy, and intercultural understandings. These systems also seek to support students in developing a set of learning dispositions including critical thinking, collaboration, communication, and creativity.

At the same time, these systems are anchored by a focus on academic content and quality, attending to international/national/provincial/state standards and assessments. Rather than shifting away from a focus on academic development, their visions for the purpose of education have become broader and more inclusive, with measures of progress and learning following suit. As their institutional environments shift, so, too, will the systems actively evolve and adapt. That has been their history.

The systems are at different points and have different onramps to this work. None of the systems identify all three domains of holistic student development and their various elements as their goal. More typically, they prioritize subsets of them. For example, the Chilean Comprehensive Learning Diagnosis (DIA) and the Happiness Curriculum in India foreground socioemotional well-being as a key domain of holistic student development, whereas Ireland foregrounds student agency as part of its national education system (re)building effort. British Columbia foregrounds the development of social responsibility and a positive personal and cultural identity, along with a host of learning dispositions. Iowa BIG aims for students to develop critical thinking, collaboration, and community engagement, and backgrounds student well-being. International Baccalaureate also foregrounds students' learning dispositions and student engagement with the world around them, with different emphases on socioemotional dimensions at different levels of the program.

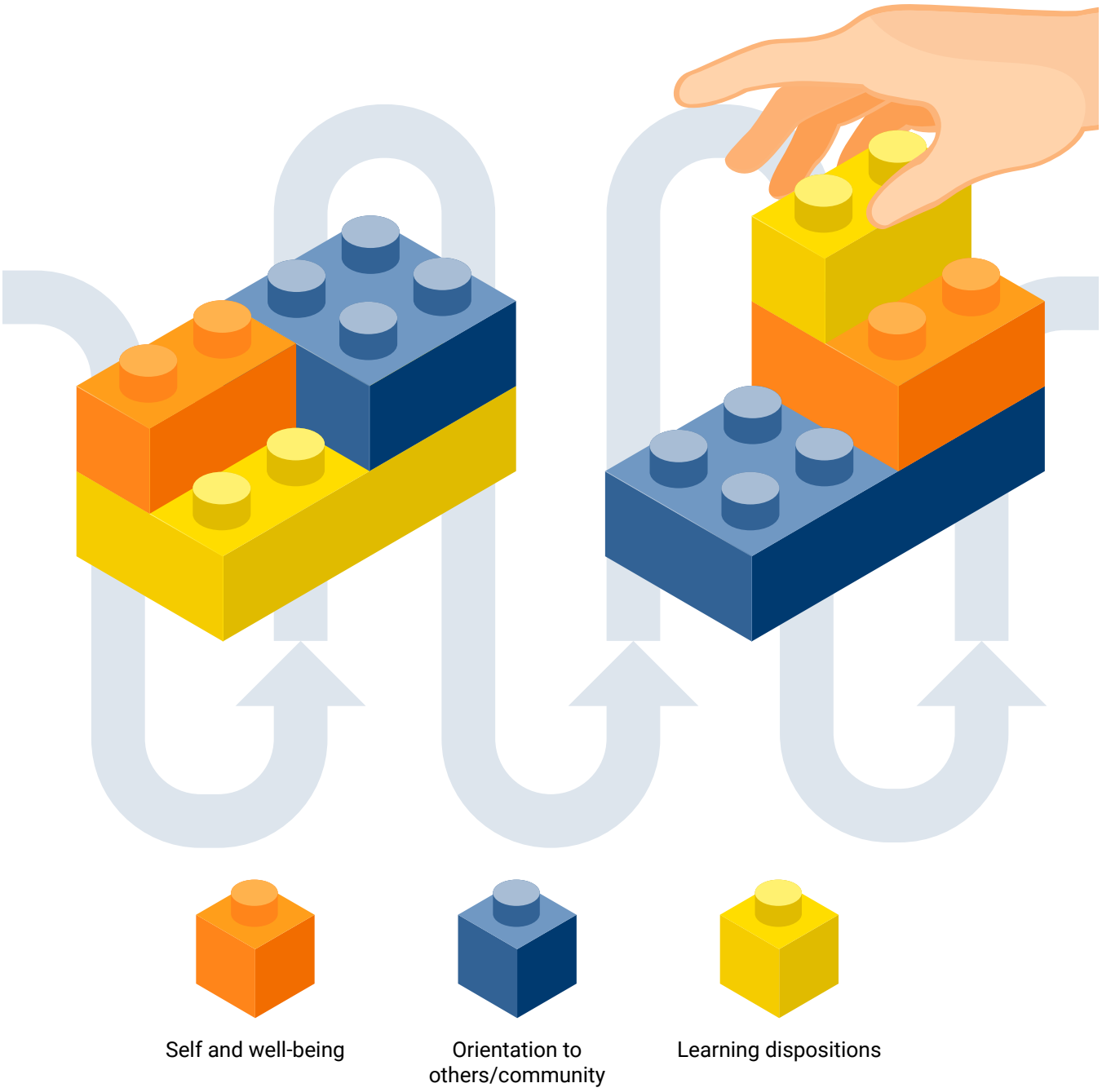
While different in many ways, these seven initiatives bear remarkable similarities in their efforts to (re) build education systems to support holistic student development. Each is working in policy contexts pressing for academic quality and equity while also facing additional incentives to support holistic student development. That, in turn, has them imbuing the work of system (re)building with both technical and moral values as they seek to improve academic effectiveness and while also taking increasing responsibility for more holistic student development.

The result is more evolutionary and revolutionary, with earlier and ongoing efforts to re(build) systems to support students' academic development extended and adapted in ways that support more holistic student development. Each is mobilizing leadership to (re)build educational infrastructure that is both responsive to the press for holistic student development and adapted to its specific national, regional, and local contexts; supporting teachers and students in using that

educational infrastructure in their daily classroom work; and adapting and improving infrastructure and its use over time. While making progress, each is also facing questions and tensions that will require attention as they continue their journeys.

FIGURE 2

Varying emphases on dimensions of holistic student development



Source: Authors' analysis.

The seven case studies

We begin with overviews of the journeys of our seven educational initiatives, starting with the initiatives that operate at the national level: Singapore, Ireland, and Chile. We continue with those that operate at the provincial, territorial, and local levels (British Columbia, Delhi, and Cedar Rapids/Iowa BIG, respectively). We conclude with the initiative that operates cross-nationally (International Baccalaureate).

Singapore

(BY DENNIS KWEK, JEANNO HO, AND HWEI MING WONG)

Singapore is widely recognized for its educational success, including its strong PISA performance. Established as an independent nation only in 1965, the national government immediately made public education central to its strategies for national development, economic development, and the social integration of its diverse populations. Since then, the Ministry of Education and the National Institute of Education have worked in close coordination to devise and implement a series of policy initiatives that have moved the national education enterprise from one that provides access to schooling for all students, to one that focuses on consistency and quality in instruction, and ultimately to one that continuously learns and improves both locally (via collaboration within school clusters and networks) and nationally (via collaboration between the Ministry of Education, the National Institute of Education, and schools).

Singapore's journey toward (re)building its national education enterprise to support more holistic student development began in 1997 and continues, motivated both by recognition of the diverse knowledge, capabilities, and skills needed to support continued national development in a global knowledge and information economy and by concern for student health and well-being. Initial efforts centered on the development of macro-level educational infrastructure supporting holistic student development, including a Holistic Health Framework, a Socio-Emotional Learning Framework, and a Character and Citizenship Education curriculum as complements to the Ministry of Education's detailed guidance for (and assessments of) academic learning. Beginning in 2011, subsequent efforts have centered on relaxing an overemphasis on academic performance and competitiveness; increasing teacher discretion and agency in classroom instruction; and valuing a diversity of student talents, skills, and strengths in structuring students' secondary school experiences.

While efforts to support holistic student development continue, a challenge lies in Singapore's education ecology: specifically, a deeply entrenched market providing educational materials and tutoring services to parents who continue to value strong performance on national examinations as a primary means of educational and social mobility for their children.[34]

Ireland

(BY THOMAS K. WALSH)

Like Singapore, Ireland's national education enterprise is centralized: the national Department of Education has ultimate policy responsibility for the education system, and it devolves this responsibility to a number of bespoke agencies. For example, the National Council for Curriculum and Assessment has statutory responsibility to advise the minister on all aspects relating to curriculum and assessment policy. However, unlike Singapore, Ireland has a tradition and legislative provisions by which the Department of Education works in close social partnership with the broader education ecology, including patron organizations, parent organizations, teacher unions, and school management bodies. Spanning three policy iterations since the state's independence in 1922, the cornerstone of Ireland's macro-level educational infrastructure has been a centrally developed, detailed, and prescriptive curriculum document to be enacted in all state-recognized schools, with modest provisions for local flexibility and adaptation.

Ireland's journey toward more holistic student development gathered momentum in the early 2010s, with a fourth policy iteration that included a review and reconsideration of the primary school curriculum. Among other things, national financial engagement with the OECD and European Union amid an economic downturn interacted with concerns about PISA results to sustain academic performance as a priority, including drives to improve foundational literacy and numeracy. Even so, other considerations drove holistic student development to the fore, including the traditional focus on holistic outcomes since the 1970s, new research on child development, increasing national diversity, and teachers' attention to a prescriptive and increasingly overloaded national curriculum.

Concerns with the holistic development of students, in turn, were central to a fundamental redesign of the Ireland's primary school curriculum, including shifting to outcome-based specifications for both academic and holistic development; redesigning the curriculum framework to include more flexible and open-ended content; and including provisions for enhanced student and teacher agency regarding curriculum and pedagogy. Curriculum development was a coconstructed process, involving input from many stakeholders. The substantial redesign of the curriculum, in turn, is driving fundamental change throughout the national education system in several ways—for example, a shift in focus among middle-tier organizations from inspection to improvement; recognition of a need for sensemaking among teachers to understand curriculum as shaped by their judgment and as constantly evolving, adapting, and developing; and efforts to engage parents and their perspectives in developing and enacting curriculum.[35]

Chile

(BY JOSÉ WEINSTEIN AND JUAN BRAVO)

The Chilean national education enterprise resembles Ireland's in some ways and deviates in others. Much like Ireland, the Ministry of Education has maintained a long-standing focus on advancing educational quality and equity in a plural education ecology—in the case of Chile, an ecology in which education is provided largely by a subsidized private sector. In contrast to Ireland's focus on a comprehensive curriculum, the primary macro-level educational infrastructure in Chile centered on a high-stakes, academically focused assessment and accountability framework created in 2011 and operated by the national Education Quality Agency, which was established at the same time. The framework was responsive to concerns that Chile's performance on PISA was lagging other countries; it was also responsive to concerns with social and educational inequality in Chile.

Chile's journey toward holistic student development had a tipping point with the onset of the COVID-19 pandemic in 2020 and with recognition of the dire effects on students and families (especially those at society's margins). Whereas Ireland's journey has centered on reconsidering its long-standing curricula, Chile's journey has centered on reconsidering its assessment and accountability framework. Specifically, the Education Quality Agency placed a moratorium on its high-stakes framework and implemented the newly created Comprehensive Learning Diagnosis (DIA) assessment. The DIA is a voluntary assessment tool that is made available to all Chilean schools to provide timely information and guidance on students' academic as well as socio-emotional development through the school year. The DIA includes indicators of students' personal learning, community learning, and citizenship learning as well as students' assessments of their schools' support for their socio-emotional learning.

The DIA has been widely embraced by teachers and leaders in schools; incorporated by the new Chilean government into a four-year national plan for advancing both academic and socio-emotional learning post-COVID; and used to support greater collaboration at the local, intermediate, and national levels to support educational improvement. One challenge, however, is that the DIA is also providing more comprehensive evidence of learning inequities among Chilean students that will require more collective attention and effort to address. Another challenge is that the teachers and leaders responsible for the holistic development of students in the aftermath of the COVID-19 pandemic are also experiencing its dire effects. The most important challenge will be to reshape the entire assessment system after the interruption of the pandemic, with particular attention to reorganizing the balance between (a) national and local evaluation, and (b) the assessment of academic and socio-emotional learning. This discussion is currently underway in different spheres of the Chilean education and political systems.[36]

British Columbia, Canada

(BY AMELIA PETERSON)

In Canada, public education is, constitutionally, a provincial responsibility. Canada does not have a federal ministry of education, and limited federal influence is exercised primarily through the courts. With that, the province of British Columbia operates a public education enterprise comparable in size to that of Singapore and Ireland.

Although the Ministry of Education and Child Care in British Columbia serves as the central policymaking and administrative agency, it does not have comparable capabilities to support school-level improvement as its analogs in Singapore and Ireland (or, for that matter, other Canadian provinces). Nor does it operate in close partnership with a higher education or quasi-governmental organization that provides supplemental capabilities. Rather, the Ministry is responsible for two core components of macro-level educational infrastructure: a provincewide core curriculum in all content areas and a formal framework for reporting and planning that supports evidence-driven continuous improvement and innovation. Responsibility for operationalizing the curriculum and leveraging the framework lies with 60 diverse local districts and their schools, each with a locally elected board and each with teachers organized in both local and provincial unions.

British Columbia's journey toward holistic student development began in 2010 within a 10-year curriculum review-and-revision cycle. The cycle was not driven by concern with academic performance. Indeed, at the time, British Columbia was recognized for its history of strong PISA performance. Rather, the process was driven by concerns about technological change; a desire to increase student engagement; concerns about educational inequities between Indigenous and Non-Indigenous students; and increasing social commitment to prioritize the values and practices of Indigenous populations, including the values of holistic student development.

As in Ireland, one result was an inclusive, democratic review-and-revision process that engaged not only Indigenous communities but also teachers' unions, professional associations, advisory groups, and local networks. Another was a revised curriculum framework that elaborates core competencies (such as communication, creative and critical thinking, and personal and social responsibility) and essential learnings (such as key content, concepts, skills, and ideas that foster higher-order thinking) while also retaining attention to foundational literacy and numeracy (which continue to be assessed for high school graduation).

One unresolved matter lies in devising means of assessing variation in implementation and outcomes as districts and schools operationalize the curriculum in more holistic, locally responsive ways. An emerging complication is that efforts to revise and enact the new curriculum framework have played out amid declines in the 2018 PISA outcomes in all tested content areas.[37]

Delhi, India: The Happiness Curriculum

(BY DEVI KHANNA AND AMELIA PETERSON)

Although the national and state or territorial governments in India share responsibility for education, Delhi is a unique jurisdiction. As the National Capital Territory, Delhi is to India as Washington, D.C., is to the U.S., and it is simultaneously governed both locally and nationally. As a result, Delhi's education enterprise is operated by a territorial Ministry of Education in closer geographic and political coordination than other states or territories with the national Ministry of Education. Both the territorial and national Ministries, in turn, coordinate closely with a broader education ecology that includes strong representation from nongovernmental organizations (NGOs).

The national, macro-level educational infrastructure has traditionally featured structured, content-based curriculum and a competitive, exam-oriented assessment system. Yet beginning in 2005 and accelerating to the present, the national Ministry has begun to match its long-standing emphasis on students' cognitive development with a complementary emphasis on holistic student development.

Delhi's journey toward holistic student development began in 2017, with the development of the "Happiness Curriculum" as a complement to the long-standing content-based national curriculum. This curriculum was built in the context of significant increases in the education budget and investment in educational infrastructure in 2015, with the election of a new government. Led by the Delhi Ministry of Education in collaboration with five NGOs, the aim was to develop a scalable, effective social-emotional learning program that was responsive not only to the needs of Delhi's diverse students (many of whom experience inequities and stress in their daily lives) but also to global conversations about the need to advance students' social-emotional learning, well-being, and life skills. The curriculum supports a "happiness triad" of momentary happiness (encompassing physical feelings), deeper happiness (feelings within relationships), and sustainable happiness (learning and awareness) to promote development in areas such as cognition, language, and literacy while also addressing students' well-being and happiness.

Implementation of the Happiness Curriculum was launched throughout the territory in 2018 as a mandatory stand-alone subject taught from Nursery to Grade 8 across all 1,024 government-run schools in Delhi. To do so required overcoming resistance and building buy-in among teachers, building extensive supports for using the curriculum at scale, and developing capabilities for continuously improving a curriculum that had been implemented at scale without any small-scale pilots. It also required managing these and other challenges amid the onset of the COVID-19 pandemic, which exacerbated the very hardships and needs that the Happiness Curriculum was seeking to mitigate.[38]

Cedar Rapids, Iowa, U.S.: Iowa BIG

(BY ANGELA LYLE)

Although the U.S. does have a federal Department of Education, the country's education governance otherwise parallels that of Canada—characterized by limited federal authority over public education; primary responsibility for public education lying with the states (like provinces), albeit with variable capacity to support improvement; local districts being responsible for organizing, managing, and improving instruction; and all of the preceding operating in interaction with expansive and active education ecologies.

Over the past two decades in the state of Iowa, this structure has required the state Department of Education to leverage federal resources and incentives to create a macro-level educational infrastructure that includes learning standards in mathematics and language arts (i.e., reading and writing); assessments aligned with those standards; and the means of holding districts and schools accountable for quality and equity in student outcomes. In the Cedar Rapids Community School District (as in all local districts), much work has centered on organizing, managing, and improving instruction in response.

In Cedar Rapids, the journey toward holistic student development began in 2013, with the launch of Iowa BIG as a locally managed initiative supporting student-driven, community-embedded, project-based learning for high school students. The aim is for students to develop both academic knowledge in core content areas and an "agile mindset" that includes purpose, responsibility, honesty, respect, creativity, and leadership. Iowa BIG emerged from community efforts to recover from catastrophic flooding in 2008 that devastated much of Cedar Rapids, creating an opportunity to reconsider and rebuild civic institutions to support a more sustainable, globally connected community. In education, in a series of meetings among teachers, leaders, and community members, concerns arose that students' conventional high school experiences were disconnected and unmotivating and that students would benefit from high school experiences that engaged them with this newly sustainable, globally connected community.

Whereas the Happiness Curriculum in Delhi began with a territory-wide launch, the Iowa BIG initiative has proceeded as a series of smaller steps aimed at building essential infrastructure and capacity:

- Initial establishment of a new high school in which to center the Iowa BIG program, with students spending half a day in the new high school and half a day in their original high schools.
- Subsequent inclusion of four neighboring districts as participants in Iowa BIG.
- Further engagement with a national initiative, the XQ Institute, aimed at reimagining American high schools.

For leaders of Iowa BIG, the result is the need to manage a self-constructed education ecosystem pursuing holistic student outcomes in interaction with a state policy context that continues to emphasize standards and accountability.[39]

International Baccalaureate

(BY WHITNEY HEGSETH)

Whereas the six preceding initiatives operate in or across levels of educational governance within countries, the International Baccalaureate (IB) is categorically different: IB operates in the broader education ecology and works in interaction with both governmental and nongovernmental systems and schools—not in any one country but around the world. IB was founded in 1968 in Geneva, with its original Diploma Programme designed to support students ages 15–18 from families of global elites in gaining university admissions. IB has since evolved to include a Primary Years Programme (ages 3–12), Middle Years Programme (ages 11–14), and Career Related Programme (ages 15–18) and to serve diverse students, from the elite to those in poverty. Responsibilities for developing, supporting, and continuously improving IB's educational infrastructure are distributed among central organizations in Geneva, The Hague (Netherlands), and Cardiff (Wales); a global IB Educator Network; and regional and informal offices, associations, and networks.

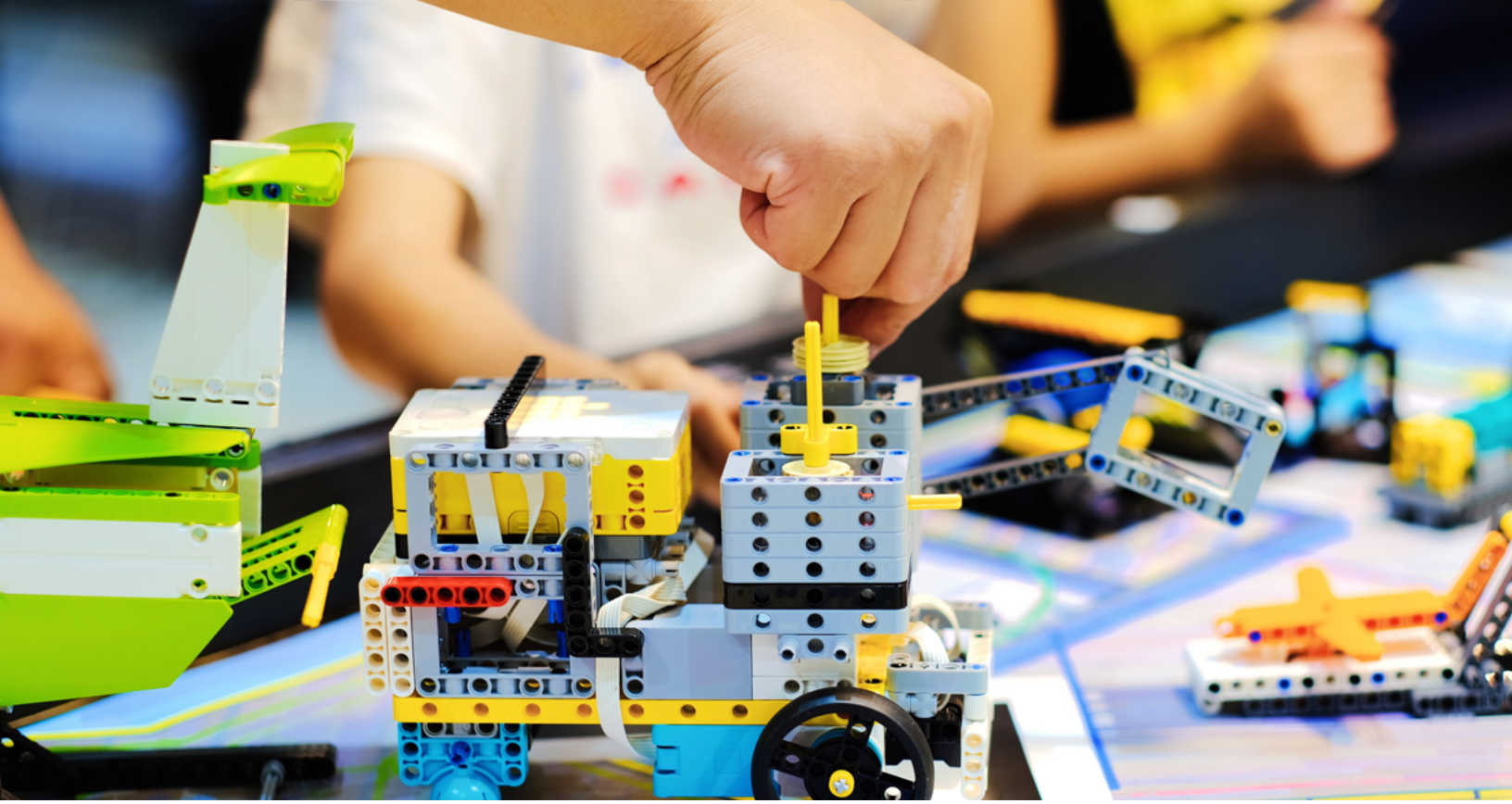
IB has been on a journey toward holistic student development throughout its history, with efforts to support rigorous academic learning, intercultural understanding, and mutual respect. It aims for instruction that is challenging, transdisciplinary, inquiry-based, and concept-based, with the goal of helping students to draw connections across subjects and to act on local and global issues of personal significance. The comparative emphasis on holistic and academic development shifts from the former to the latter as students progress through the Primary Years Programme, the Middle Years Programme, and either the Diploma Programme or the Career Related Programme. In 2018, IB initiated a redesign of the Primary Years Programme with the aim of maintaining its philosophical and pedagogical foundations while, at the same time, increasing both its focus on student agency and its supports for teachers in adapting to individual students and local contexts.

Throughout its journey, IB has needed to manage three central challenges:

- Maintaining its commitment to academic rigor while meeting the needs and challenges of increasingly diverse students.
- Balancing its commitments to academic learning and holistic student development in a global context in which national, regional, and local education systems are, themselves, just beginning to understand and to manage this balance.
- Providing schools and teachers the infrastructure and supports needed to maintain fidelity to IB's philosophical and pedagogical foundations while also providing infrastructure and supports for local discretion and adaptation.[40]

DIFFERENT MOTIVATIONS, COMMON AMBITIONS: HOLISTIC STUDENT DEVELOPMENT

As is evident in the summaries of each system's journey, these seven systems had different motivations for engaging in system (re)building to support holistic student development as well as different catalysts and time frames for their work. To be sure, academic development is still front and center in the work of all of these systems. However, for a variety of reasons, they are developing more holistic visions that include other dimensions. In the following section, we turn to a cross-case analysis of how systems are (re)building to support holistic student development.



CROSS-CASE ANALYSIS

EDUCATION SYSTEM (RE)BUILDING TO SUPPORT HOLISTIC STUDENT DEVELOPMENT

Though essential, developing and articulating visions for holistic student development, as sketched above, is only one part of any reform journey. As education systems embark on reform journeys to advance equitable, holistic child development, they engage familiar and new challenges within and across three domains of education system building and (re)building: managing environments, education infrastructure (re)building, and supporting educational infrastructure in use. In essence, education systems respond not only to pragmatic legitimacy in pressing for academic rigor but also to moral legitimacy in pressing for student care, thus grappling with both familiar and novel (re)building challenges.[41]

The work of education system building is multifaceted and involves 10 key lessons across several interrelated domains or forms of work. This section compares across the seven cases to unpack the work of education system (re)building, describe its core components, and identify similarities and differences in three core domains or areas of practical work across system types.

In the first domain, the systems in these seven cases work on *managing their environments* to build support for holistic student development among diverse stakeholders; address different institutional, cultural, and technical demands; and build partnerships for supporting reform. In so doing, they offer these key lessons for managing environments:

1. *Engage diverse stakeholders:* Engage and coordinate among diverse stakeholders and leverage partnerships.
2. *Construct coherence:* Create opportunities for diverse stakeholders to deliberate on different cultural norms, cognitive frameworks, and regulatory environments that inform schooling.
3. *Manage equity-and-rigor tension:* Engage the perceived tensions between equity and rigor in deliberation about holistic development.

In the second domain, these systems work to *build or rebuild an educational infrastructure* to enable approaches to instruction that can support holistic student development in schools. The following lessons are key for (re)building educational infrastructures for holistic student development:

4. *Build social infrastructure:* Build a social infrastructure that engages stakeholders about holistic student development and the entailments for instruction.
5. *Develop instructional designs:* Develop instructional designs that recognize and support instruction as a coproduction between students and teachers.
6. *Design education infrastructure:* Design educational infrastructure to support new visions for instruction, and mobilize this infrastructure to support instructional improvement.

In the third domain, these systems work at *integrating educational infrastructure with everyday practice* in schools and classrooms. Their work highlights the following lessons:

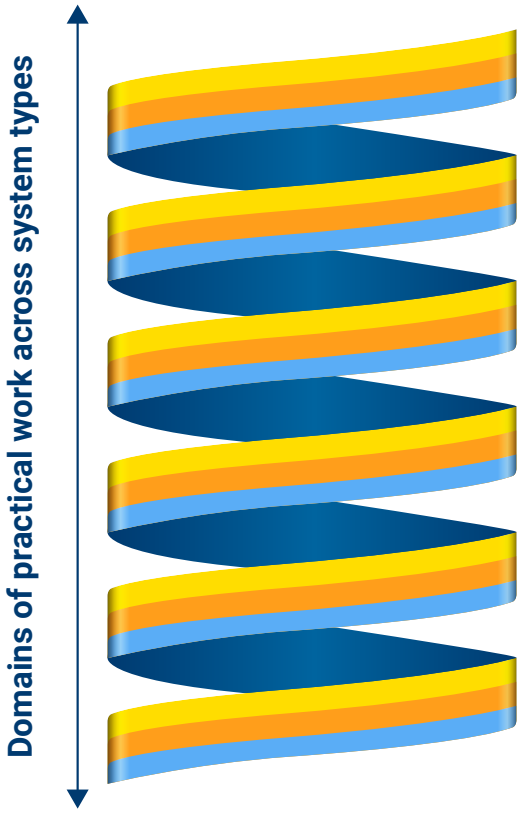
7. *Balance common conventions with local discretion:* Balance common systemwide conventions with the need for local discretion to promote and encourage reform.
8. *Distribute leadership:* Develop and distribute leadership for instruction by cultivating educator and student agency.
9. *Support infrastructure use in practice:* Support the use of educational infrastructure in school and classroom practice through professional learning.
10. *Monitor practice and performance:* Conduct consistent, ongoing monitoring of practice and performance for continuous improvement and professional learning.

These three domains of system-building work are interrelated and overlapping (see Figure 3); developments in any one domain can shape and be shaped by developments in the others. Further, the work of different domains does not happen in any particular order: although managing environments is important early in a reform journey to build support for holistic student development, it remains just as crucial later in the journey. For example, it is often during the implementation phase—as teachers and students work with new instructional designs and materials—that parents and other stakeholders become concerned about a reform effort.[42] Moreover, technical and institutional environments are in constant flux so that education systems must constantly engage in constructing coherence over time. As captured in Figure 3, we need to think about these three broad domains of work as overlapping at any one moment in time in a reform journey and also across time.

Based on our analysis of the case studies, we organize this section of the report around these three domains of work for (re)building education systems for holistic student development. We use examples from the cases to capture various aspects of the work and the tensions therein. In doing so we concretize and elaborate upon concepts of system (re)building theorized in prior work[43] and discussed in the "Research Foundations" paper accompanying this report (Datnow et al., 2022).

FIGURE 3

Three core domains of system (re)building work



1 Manage environments

- Engage and coordinate among diverse stakeholders and leverage partnership
- Construct coherence
- Attend to perceived tensions between equity, rigor, and holistic development

2 Build infrastructure

- Build social infrastructure
- Develop instructional designs
- Design and mobilize educational infrastructure

3 Integrate infrastructure into practice

- Balance conventions and discretion in promoting and encouraging reform
- Develop and distribute leadership
- Support infrastructure use in practice
- Manage performance for continuous improvement and professional accountability

Source: Authors' analysis.

Managing environments

All seven systems, regardless of type or size, depend on their environments (what we described at the outset as the "education ecology") for essential resources, including their very legitimacy as education systems. Rather than being closed systems buffered from institutional, political, and technical goings-on in their broader environments, the systems were engaged in reform journeys as open systems actively engaging their broader educational and social-cultural ecologies. Indeed, shifts in the environment often catalyze change or fundamentally shape the focus of change efforts by priming systems to rethink their focus and commence a reform journey.

At the same time, efforts to develop and pursue more holistic notions of student development depended on gaining the support and involvement of diverse stakeholders. For some, like IB, this challenge differed depending on the particular country they were operating in, whereas for others such as Ireland, British Columbia, Chile, and Singapore, it meant engaging a relatively bounded group of stakeholders. Further, engaging government and nongovernment actors as well as the public writ large was also crucial in developing educational infrastructure and supporting the use of that infrastructure in practice. As education systems advance more holistic notions of student development, they face the need to couple equity and holistic student development with perceptions of academic rigor.

1. ENGAGE DIVERSE STAKEHOLDERS

Among the first moves each system made in their efforts to support holistic student development was engaging and coordinating with diverse stakeholders as well as leveraging partnerships. These are critical components of managing the environment in the process of system (re)building. As systems began their initiatives, they cultivated engagement with broader and more diverse groups of stakeholders to solicit varied perspectives, feedback, and support. They also partnered with organizations, locally and nationally, that brought gravitas and specialized expertise.

In British Columbia, the Ministry of Education and Child Care invited many stakeholder groups to be core partners in a multiyear reform design process. A wide swath of people including academics, professional associations, network leaders, ministry staff, teachers, and parents were involved from the start in writing the curriculum. In promoting the notion of a partnership rather than a fait accompli, leaders in British Columbia were deliberate in their framing and language to discuss the work. Rather than framing the initiative as a "curricular reform," the leaders framed it as "a process." Such involvement helped both to cultivate a sense of shared ownership in supporting the reform from the beginning and to buffer it from resistance. Moreover, this partnership among stakeholders persisted over time to support curriculum enactment and adaptation.

Although Delhi's Ministry of Education was focusing its efforts on supporting the whole child, the development and implementation of the Happiness Curriculum could not have occurred without the collaboration of five NGOs referred to by the Ministry as "knowledge partners." India has a highly developed NGO sector that focuses on well-being, mindfulness, and socio-emotional development. The NGOs contributed expertise and support in areas that were formerly deemed as extracurricular but have since become key components of students' education. These organizations were pivotal in creating the curriculum at the beginning, supporting its implementation, and adapting it for an online environment during the pandemic. Parents were also positioned as important stakeholders from the outset, both providing ongoing input and engaging with the curriculum through their children.

In Cedar Rapids, Iowa BIG began a new constellation of relationships between districts, community organizations, students, and teachers when it launched. These partners sought to promote a vision of student-centered learning driven by student passions and community connections. Working together across institutional boundaries helped initially to ensure a broad base of support for Iowa BIG and, over time, to navigate the complexities of system change. This ecosystem approach to transformation supported sustainability both locally and nationally. The XQ Institute, a national organization funded by a prominent philanthropic organization, provided funding and added "legitimacy and prestige by association."[44] Despite occasional tensions between the various districts involved in Iowa BIG, the presence of outside community partners has helped to provide a sense of stability. In shepherding student projects, community partners also become directly vested in the transformation work.

Which stakeholders are engaged and *when* they are engaged in the reform journey (i.e., during development, implementation, or adaptation) differs across cases. Whereas Ireland's curriculum reform effort resembles British Columbia in terms of engaging key diverse stakeholders from the outset, other cases vary in this respect. For example, although Chile's Education Quality Agency was the primary developer of the DIA, it actively engaged a more diverse set of stakeholders including teachers, school leaders, and students in the DIA implementation. The agency is a service dependent on the Ministry of Education (but not part of it), and it has a governing board with more ample representation. In contrast, both system and nonsystem actors were actively engaged in the development and design of Delhi's Happiness Curriculum and the Iowa BIG initiatives.

As these examples suggest, engaging and coordinating with diverse stakeholders and leveraging partnerships in support of holistic student development is a key aspect of managing the environment, both at the beginning of a reform effort and beyond. Constructing coherence,

particularly given the broader dynamics at play, is another important element, which is addressed next.

2. CONSTRUCT COHERENCE

Systems have undertaken various approaches to aligning technical and institutional elements to support holistic student development. By "technical" we mean those elements of the environment bearing on the means, ends, and evaluation of instruction—that is, the core educational work. By "institutional" we mean the cultural norms, cognitive frameworks, and regulatory requirements that give meaning to (and that frame understandings of) schooling and education.

Alignment between the technical and the institutional often comes through creating opportunities for constructing coherence across stakeholders. Regardless of the size and scale of the effort, constructing system coherence involves considerable energy, particularly as there are many forces within and beyond systems that pull toward the status quo. British Columbia has been deliberate in creating a model that would achieve institutional and technical coherence across the entire province. It did so through consensus building rather than a top-down approach. The commitment to consensus building reflects not only a deep respect for the education profession but also the fact that a top-down approach was not practical given the province's lean Ministry administration. From the beginning, its aim was to have all parties rowing in the same direction at the same cadence, ensuring that all students experience education in a fundamentally changed way. A driving motivator has been to address the colonial history that subordinated Indigenous populations—a goal for which there is increasing social and political cohesion.

Like British Columbia, Ireland has taken great care to attend to and align aspects of its environment to construct coherence. Although the new draft curriculum framework was developed over the past few years, it has roots in a long history of education policy development in Ireland stretching back to the 1990s. Institutional coherence has in part been achieved through the use of large-scale reviews of the curriculum and how it should support children to meet societal goals. Strategic efforts built support for the principles guiding the framework and simultaneously addressed structural elements such as typical time allocations for subjects in schools, so that attention to technical and institutional elements go hand in hand.

Whereas British Columbia and Ireland represent systemwide efforts to achieve coherence, Iowa BIG represents a small-scale effort engaging 200 students across four high schools. As such, it is a niche program that engages a small proportion of the possible students attending those schools. Since the program is small, it can also rely on handpicked teachers and students who opt in. In spite of these features, a great deal of work, inventiveness, creativity, resourcing, and legitimizing still needed to be done to create an education system supporting holistic student development. Educators still had to cross organizational and jurisdictional borders, carve out space and time, and secure national funding, as they would in a much larger program.

The Happiness Curriculum in Delhi represents another approach to aligning institutional and technical elements of the system to support student well-being, rapidly going to scale across the state. The Happiness Curriculum was an "effort to make the curriculum both 'science-based' and distinctly Indian," balanced with the need to be inclusive of diverse sects, languages, and communities.[45] Rooted in the work of the Indian philosopher Agrahar Nagraj and the science of mindfulness, the goal is to reorient the Delhi education system toward pathways for student success that are less individualistic and materialistic and that build on Nagraj's concept of coexistence. The focus on rapid and wide scaling was part of the strategy to enable people in the system to quickly master the curriculum, develop shared teaching practices, and engage in cycles of improvement. The curriculum has spread to every school in Delhi, and it is undergoing its third iteration and review.

In Chile, the development of the DIA provided an opportunity to align around the goal of addressing students' holistic development. While addressing the socio-emotional needs of students had been a goal of

educators for some time, studies showed that schools approached it in a wide variety of ways, often with little guidance, training, or assessment connected to the goal.[46] The new assessment helped support coherence in both how socio-emotional learning is addressed and measured, and it also fostered coherence between the different levels of the system. The school is now cast as the locus for charting plans for improvement, with the local education agencies and the Ministry of Education playing supporting roles by providing technologies for evaluation. That the DIA collects and communicates students' perspectives on school practices that promote their well-being can be seen as another way to promote coherence; student voices can also alert educators about a lack of coherence.

Aligning the institutional and technical elements of a system is also evident in efforts to make school cultures more collaborative for teachers. This shift away from a traditional culture of teaching as an individualistic activity requires not only cultural shifts but also structural shifts. Systems have recognized this as an important element of creating schools that support students' holistic development. This is particularly evident in systems such as in Ireland and Iowa BIG, where teachers are expected to engage in joint problem solving around the curriculum. One institutional shift that facilitates the desired shift in the culture of teaching is to set aside collaboration time for teachers. Teachers in Iowa BIG meet for two hours daily at the "family table" where teachers collaborate to discuss teaching and learning. Similarly, the IB system provides routines for teacher collaboration in schools.

While supporting a culture of collaboration is a common technique for teacher capacity building, here it is important to distinguish that the purpose is oriented around supporting holistic student development in ways that reflect a push against typical notions of teachers' professional lives. Thus, managing the environment involves not only achieving coherence in the local context but also pushing against broader forces that help to keep the status quo in place. These forces raise obvious challenges as changes are underway. Value conflicts can also come into play and must be managed, as we discuss next.

3. MANAGE EQUITY-AND-RIGOR TENSION

As education agencies move from school systems to education systems, they face the dilemma of actively coupling equity and holistic student development with conventional perceptions of academic rigor. Across the systems, there is a value to ensuring equity—an explicit driver of reform, as described earlier. In centering holistic student development, systems may need to pay attention to how it also serves academic quality and equity, especially in national contexts with secondary school levels under high pressure to prepare students for competitive schools and universities.

In some instances, the public and various stakeholders hold to the perception that equity goals are in tension with academic rigor rather than the view that commitment to equity strengthens learning and teaching. Instead of recognizing all as necessary and complementary elements of holistic student development, system actors and stakeholders may view equity and quality as opposing goals; perceive academic development as different from comprehensive child development and socio-emotional learning; or consider assessment, evaluation, and standards for accountability to be separate from assessments for learning and continuous improvement. These critical differences in perceptions can derail, stall, or subvert the vision for holistic development.

Despite the differences across the seven systems, these perceived tensions between equity, rigor, and holistic student development exist across contexts. The implementation of the Happiness Curriculum has recently raised tensions between the focus on academic versus socio-emotional development as concerns arose regarding "learning loss" during the pandemic. Although there is recognition and concern about students experiencing socio-emotional consequences from the pandemic, teachers have reported feeling pressured to use some of the allotted Happiness Curriculum time to focus on remedial teaching of math, science, or English. In these instances, interviews with the Happiness Curriculum's NGO "knowledge partners" highlight that the focus on academic and well-being outcomes may be seen

as a "zero-sum" as teachers are pushed to make up lost time with their students.[47] These dynamics may play out in other systems where the pandemic brought new urgency to addressing students' well-being. In most systems, educators must balance attention to well-being with ensuring that academic competency standards are being met.

The Singapore case highlights the system's history and attempts to shift from a "scarcity" mindset to an "abundance mentality," paved with multiple pathways for student success. There is also an increasing awareness that equity issues must be addressed through an ecological model that involves not just education but also social services, health services, and financial support.[48] However, parental perceptions of academic rigor—or what counts as academic rigor (e.g., school rankings and student test results)—have been challenging, leading to the formation of a "shadow educational system" operated beyond the government-run education system that continues the previous approach to school classification and ranking. This has caused Singapore's education leaders to push for parental engagement and involvement to work through shared understandings of the system's educational goals.

British Columbia also grappled with perceived tensions between equity, rigor, and holistic development. System leaders encountered pushback from the public, including parents, about a perceived "dumbing down" of the curriculum.[49] The province's 10th–12th Grade Graduation Program was a particularly contested process because some perceived the reduction of testing as a "lowering of standards." For British Columbia, this raised the need to continue to educate the public about the role of assessment for learning and to directly work with universities on their entry requirements. In contrast with British Columbia's provincewide reform, Iowa BIG operates as a niche program serving a small number of students. Thus, operating counterculturally is more possible while still allowing the traditional high school model to remain intact. By contrast, transforming entire high schools would likely involve surmounting additional institutional and cultural barriers.

As IB has broadened access over time, it increasingly reflects a system attempting to bridge values for serving diverse learners and providing academic quality. Although it began as a program catering to elite groups of students who needed a diploma (and high test scores) for university admissions in their home countries, it is now viewed as a viable college pathway for all students. Some argue that IB developed the holistically focused Primary Years Programme (PYP) (ages 3–12) as an antecedent to the academically focused Diploma Programme (ages 5–18) as a way to manage the tensions between holistic development and academic rigor.[50] Developing the PYP also enabled IB to serve a more diverse student population at the primary level.

As these systems embrace holistic student development, they will need to continually manage contested perceptions about academic quality, holistic development, and equity. The cases of British Columbia, IB, and Singapore also suggest that holistic development at the primary levels may be able to gain traction in ways that differ from efforts at the secondary school levels—in part because of cultural values that favor a nurturing disposition toward younger students. The differences also partly reflect pressures on older students to gain admissions into competitive high schools and then to perform well on high-stakes assessments to gain admissions to elite universities. In managing the environment, systems will need to figure out how to engage with families and postsecondary systems to determine how to align around a vision for holistic student development.

Educational infrastructure (re)building

Ambitious goals and visions for holistic student development are one thing; realizing them in everyday instructional practice is another. To do so, education systems build or rebuild their educational infrastructures to transform and support the sorts of instruction, teaching, and learning needed for holistic student development. Developing a vision of instruction is a foundational step in educational infrastructure building, because instruction is the chief mechanism that education systems have for nurturing holistic student development. Recognizing that holistic student development is context sensitive, education systems are seeking to support instruction as a situated practice that is coproduced by teachers and their students while identifying the new demands this places on educators.

To support visions for instruction, education systems devise and coordinate designs for instructional practice; for instructional resources including curricula, assessments, and other materials; and for social instructional resources such as norms and values. For some systems, such as Iowa BIG, this work involves building new educational infrastructures. For others, as in Ireland and Chile, it involves (re)building and transforming existing educational infrastructures to support new ambitions for instruction.

4. BUILD SOCIAL INFRASTRUCTURE

The preceding section discussed the importance of garnering the support of stakeholders and of building partnerships. Relatedly, systems have engaged in various social infrastructure building activities to support collective sensemaking around the idea of holistic student development and its entailments for instruction. Sensemaking processes and shared understandings both enable and constrain reform enactment. In combination with educational infrastructure building, these systems work to develop shared purpose, vision, and norms. The systems reflect different approaches to building social infrastructures as well as the elements of the system that people chose to couple and decouple for improving instruction.

British Columbia's approach to designing a new curriculum and assessment that centers student learning for personal and cultural identity departed from the top-down implementation approaches evident in some other Canadian provinces and other parts of the world. Key leaders decided to explicitly move away from notions of piloting, implementing, and scaling—instead shifting toward "nested communities" (i.e., communities of practice, communities of engagement, and communities of interest). Rather than presenting a new learning plan, the province's leaders focused on building social infrastructures that embraced the "messier" process of engaging with community members across the system for collaboration and feedback.[51] For example, the Ministry of Education and Child Care created a public website inviting feedback and widely disseminated the first draft of the standards so that more than 100,000 people viewed the draft. In addition to the First Nations Education Steering Committee (FNESC), teachers' unions, principals' associations, and superintendents, the development of the curriculum and assessment included political leaders, educationalists, and learning scientists.

Ireland's curriculum redevelopment process also heavily engaged a wide range of people in its efforts to build systemwide social infrastructures for instruction. The National Council for Curriculum and Assessment (NCCA) used systematic reviews of research on curriculum, pedagogy, and related topics as a way to shape collective sensemaking. It commissioned 14 research papers, some of which were discussed at forums with stakeholders and used to guide the joint development of change processes. A series of NCCA-led consultations with students, parents, and teachers over the course of a decade have been instrumental in both shaping the structure of the curriculum framework from the outset and then providing ongoing feedback on the draft framework. Collective sensemaking has been facilitated by the NCCA through a Schools' Forum in which educators from 60 schools across the country

meet regularly throughout the school year to discuss the successes and practical challenges they face in their unique contexts. The NCCA also established a board of international experts to advise the Ministry on curriculum enactment.

In addition to relying on NGO partners, Delhi involved government civil servants, teachers, and school staffs in the design and implementation of the Happiness Curriculum. The NGOs contributed expert knowledge about socio-emotional learning while civil servants brought knowledge about the education system. Feedback loops and communication channels were established so that regular input from teachers, mentor teachers, and designated Happiness Coordinators in schools could inform curriculum implementation and adaptation. Within schools, School Management Committees also provide a vehicle for parent feedback about the curriculum.

Similarly, Singapore has developed a robust social infrastructure embedded within its overall "ecological infrastructure" to support its vision for school improvement. The close partnership between the Ministry of Education, National Institute of Education, and schools functions not only to spread initiatives but also to provide an ongoing avenue for feedback and continuous improvement. In particular, the school cluster structure—whereby a superintendent supports 11–13 schools—was designed to promote a culture of school improvement that enabled educators to collaborate and learn from one another.

5. DEVELOP INSTRUCTIONAL DESIGNS

In (re)building education systems for holistic student development, these seven systems are devising instructional designs that recognize instruction as a coproduction between students and teachers. Consistent with prior research on systems that are broadening their focus to incorporate a breadth of skills,[52] these systems both identified a focus on learner-centered education and framed instruction as a collective and situated practice. Seeing instruction as a collective and situated practice contrasts with traditional notions that center on the teacher's efforts to transfer a relatively fixed, typically academic, codified knowledge base to students. By contrast, a collective, situated approach to instruction is especially important for fostering positive student identities, among other goals. The cultural resources that students acquire through their lived experience are critical building blocks for teaching and learning.

Iowa BIG exemplifies the notion of instruction as a coproduction. It has deliberately attended to shifting teacher-student relationships so that students are in the driver's seat. Learning in Iowa BIG is not only student-centered; it is student-driven. Teachers function as resources whom students can draw upon in completing their student-led, community-engaged projects. Teachers collaborate to address problems of practice, and time and space have been reconfigured to support instruction as a collective and situated practice.

British Columbia has also embraced inquiry and project-based approaches to instruction across the province. However, in contrast to Iowa BIG, the Canadian province's approach would be characterized as student-centered rather than student-led. This student-centered approach has meant that teachers take students' needs into account when designing instruction, and students are much more aware of the learning process.

In the IB program, teachers have also transitioned from being a "sage on the stage" to a "guide on the side".[53] Teachers in IB schools guide students in answering their own questions and engaging in a process of inquiry. Although IB provides a framework, teachers and students collectively shape the curriculum to fit the local context and students' own interests. Similarly, in Ireland, the intention is for teachers to gear instruction around students' choices and interests. The new curriculum framework is clear on the purpose of primary education but offers considerable flexibility, recognizing that the curriculum should be constantly adapting and developing in response to students' needs.

In Singapore, the shift from "from teacher-proof instructional strategies to increasingly learner-centric pedagogies" brought with it guidance both for

moving to inquiry-based and experiential instructional approaches and for perspective-taking to encourage empathy.[54] Similarly, in India, the collaborative methods of learning that accompany the Happiness Curriculum marked a departure from past practice, requiring support for teachers to learn how to provide more opportunities for student reflection and discussion. Interestingly, some teachers have now begun to use these same methods in their core content instruction.

At the same time, the shift toward instruction as a coproduction between students and teachers raises a set of tensions and questions. In Singapore, as noted earlier, student-centered instructional approaches are more prevalent in the early grades and less apparent at the high school level, when students receive more direct instruction in preparation for high-stakes exams. Some teachers are also slow to embrace the autonomy that comes with the notion of instruction as a coproduction and wish for more guidance on what to do. Finally, ensuring that learner-centered approaches are actually present across large numbers of schools is a challenge, particularly in large systems such as British Columbia and IB.

6. DESIGN EDUCATIONAL INFRASTRUCTURE

Systems are designing and mobilizing their educational infrastructures to support instruction—and the improvement of instruction—toward the goals of holistic student development. They have accomplished this through a combination of resource-forward and practice-forward approaches, with some emphasizing one or another, and others focusing on both. In a "resource-forward" approach, educational resources that ensure quality, access, and equity are the primary drivers of improvement, whereas in a "practice-forward" approach, instructional practice and its contexts are the drivers of innovation and improvement.[55] Ultimately, both approaches are necessary for system transformation.

The Happiness Curriculum and IB place twin emphases on resources and practice. The Happiness Curriculum operates as an educational infrastructure that provides a vision for student development, a set of formal organizational resources, and social resources in the form of supporting norms. As part of wider infrastructure investments that supported the curriculum, and recognizing that students should receive more individual attention, the minister allocated resources to hire more teachers to support lower student-teacher ratios. The aim was to ensure that classes were limited to 40–50 students, as some classes in rural areas were more than double that size. Financial support has also provided for the initial and ongoing training of teachers and principals. These investments not only provided material support; they also communicated to educators that the Happiness Curriculum was a high priority.

Adaptations of the Happiness Curriculum are underway in several other states of India. While supported by a fully articulated curriculum—and thus built to "travel" to some degree—implementation has been mixed so far, partly because of differential resource allocations. At the same time, the "mixed implementation" helped facilitate deliberation, because enough teachers were mastering the curriculum in their practice who could contribute to its adaptation and improvement. Perhaps just as important, implementation failures in other cases contributed to adaptation and improvement.

The Happiness Curriculum also provides a useful example of how a system promotes holistic development at scale through clearly articulated expectations for curriculum and instruction. Despite the variation in implementation, the Happiness Curriculum is now part of the daily lives of more than 800,000 students in grades K–8 in 1,024 government schools. Curriculum prescriptions are not new for India, where the Central Board of Education in Indian states mandate what is taught. However, now that it is being implemented, the Happiness Curriculum is not entirely a top-down endeavor; it is continually revised and improved based on ongoing teacher feedback. The infrastructure facilitates communication in different directions within the education system—from the Ministry down; from NGOs into the system; and, especially important, from teachers and schools in

the form of ongoing feedback about their efforts to implement the Happiness Curriculum.

An important dimension of enabling improved communication within and beyond the system is not just the structures that are in place but also how the Happiness Curriculum itself anchors and focuses these deliberations. Teachers and students in more than 1,000 schools are striving to implement the curriculum, which helps to focus the conversations in ways that facilitate communication and ongoing improvement. This relates to the topic of managing performance, which we turn to in a subsequent section, and it also speaks to the ways in which the domains of system building work overlap and interact.

Similarly, the IB program provides support for operationalizing its vision of holistic student development through a robust infrastructure that includes instructional frameworks, assessments, training, and teacher forums enabled by an online "Programme Resource Center." IB maintains consistency by offering official examples of lesson plans and other resources on this platform that serve as templates, models, and exemplars. Another key function of this platform is to help teachers adapt and respond to their broader educational environments. For example, in the U.S. when the Common Core Standards were adopted, IB provided resources and messaging to support alignment. The ultimate goal is for IB to help teachers in schools achieve program fidelity, even when faced with conflicting local policies regarding accountability and standards.

British Columbia led with a practice-forward approach, developing a provincial curriculum to support a vision for learning that attends to holistic student development. Owing to wide stakeholder involvement and strategic framing and rollout processes, there is strong social and political support for the curriculum. Ireland also began with a practice-forward approach to reform, garnering broad support around a new vision for holistic student development that is supported by a comprehensive plan to address primary school curriculum, pedagogy, and assessment. British Columbia and Ireland also attended to the use of the curricula in practice. Their aim is not to disseminate these as static resources but to integrate them in day-to-day work in classrooms and schools.

In contrast, Chile has supported students' socio-emotional well-being through a resource-forward approach that includes the DIA assessment to drive continuous improvement. Social resources also support the implementation of the DIA, brought about both by allowing schools to decide whether to administer the assessment and by allowing educators to decide how to use the results, offering a menu of supports for instructional use.

Iowa BIG has also led with a resource-forward approach, but the emphasis is different as it focuses on organizational and structural elements to operationalize its vision for student-centric learning. A federation of organizations collaborates to ensure that students and teachers have the flexibility in time, space, and routines to engage in student-led interdisciplinary learning. As a niche program, Iowa BIG also supports its vision for instruction through careful selection of teachers who favor their student-centered model. The system worked with the XQ Institute to develop an applicant screening process, based on its educational paradigm, to gauge the applicants' level of commitment to learner-centered instruction.

These seven systems have much to teach us about how a combination of resource- and practice-forward approaches can support educational infrastructure (re)building for holistic student development. Although a resource-forward approach has been predominant historically in most jurisdictions around the world and also continues to be powerful strategy for national-level improvement efforts, the systems profiled here provide a glimpse into how this approach can be complemented by efforts to improve instructional practice and the contexts that surround it.

Supporting educational infrastructure use in practice

For educational infrastructure to support and shape instructional practice for holistic student development, it must be used by students, teachers, and school leaders in their everyday practice. Infrastructure use in school and instructional practice is never a given. Instead, education systems must actively work to support the use of educational infrastructures for instruction and its improvement and to construct systemwide coherence. To do so, as this section explains, systems need to:

- Manage the balance between providing a set of conventions and allowing for local discretion relevant to local needs.
- Develop and distribute leadership, formally and informally, in ways that respect and cultivate educator and student agency.
- Ensure professional learning, including coaching, mentoring, and professional development.
- Manage performance, both for continuous improvement and professional accountability.

Taken together, these efforts help enable education systems to integrate their educational infrastructures into school and instructional practice, thus supporting instruction for holistic student development.

7. BALANCE COMMON CONVENTIONS WITH LOCAL DISCRETION

System building and (re)building requires all involved to work within a set of (often centrally developed) conventions to support coherence and leverage extant knowledge. It also requires local discretion in situating system resources and practices in local contexts, elaborating or extending system resources and practices, and correcting for errant or problematic system resources or practices.

The seven systems found different ways to balance conventions with discretion in promoting holistic student development. Although conventional strategies typically rely on getting school actors and other stakeholders to change their behavior through an appeal to positional authority or the use of incentives and sanctions (for example, funding tied to student achievement on standardized tests), a more discretion-centered approach involves developing a sense of joint ownership and commitment to a reform. In some respects, this tension is historical in nature, reflecting a shift from more conventional strategies to more discretion-based strategies. As might be expected, we see these strategies playing out together in efforts to transform teaching and learning in these education systems. The systems represented in the case studies vary in the relative emphasis placed on these strategies in reform efforts and in how these strategies are deployed.

Ireland has been clear in its move toward a more discretionary approach in promoting its reform. While the country has been moving toward this direction over time, there is still new terrain to navigate as it balances former ways of operating that relied on centrally developed conventions. With the new curriculum framework developed by the NCCA, the teacher has been reimagined as a "curriculum maker." This shift away from teacher as implementer has implications for how those within the traditional hierarchies of the education system relate to local schools and teachers. Although teachers will need the time and space to engage in curriculum-making, it will also take time for leaders within the system to adjust to enabling teacher discretion within the new curriculum framework and find the most productive ways to work together in support of teacher and indeed student agency.

Chile also relies chiefly on local discretion for schools to opt into using the new DIA, which is a shift from past, more conventional practice. Teachers also voluntarily draw upon the Education Quality Agency's guidelines and webinars to address socio-emotional

well-being in the classroom. In contrast, Delhi's Happiness Curriculum prominently employs a conventional strategy in mandating 35–45 minutes per day for teaching the prescribed curriculum. Still, for the most part, these reform efforts combine and attempt both types of approaches. Specifically, the Happiness Curriculum combines cohesion in the form of mandated time for teaching the curriculum with local discretion by encouraging feedback from teachers, through various structures, about adapting and improving the curriculum. Delhi's reform also included a shift toward principals and parents having more discretion over money through the School Management Committee and an overall increase in education investments.

These systems, in part reflecting their varied types and histories, approach the how of supporting local discretion differently:

- Iowa BIG's approach to building commitment relies heavily on students, teachers, parents, and community members opting into the system's vision, as well as on recruiting teachers who share the vision for instruction.

- IB also relies on schools opting into their system, combined with the use of educational infrastructures that provide professional development, teaching materials, and training across its network of schools to support shared understanding of practice balanced with the need for adaptation to local contexts.

- Chile and Singapore have shifted away from an emphasis on conventional approaches at the national level to approaches that enable more local flexibility and improvements driven by school-based needs.

- The British Columbia and Ireland cases capture efforts to employ an approach from the early stages of the reform journey—conceptualizing and developing a new vision or curriculum—by engaging a diverse array of stakeholders in an effort to build ownership for the reform from the outset.

Overall, the key consideration for policymakers engaged in education system (re)building here is not whether to focus on conventional or discretionary approaches but how to combine them and manage the tensions that emerge between them in developing, designing, implementing, and supporting reform. Balancing conventions and discretion is especially important when it comes to cultivating teacher and student agency, a key goal in several of the systems.

8. DISTRIBUTE LEADERSHIP

Education system (re)building relies in part on distributing leadership within the system. In the seven systems, one way of distributing leadership was through the cultivation of educator and student agency. Although extant research has made it abundantly clear that teachers must be active agents in education reform to realize improvements, top-down reform policies have historically stifled teacher agency and diminished their power.[56] More recently, reform efforts aim to bolster both educator and student agency.

A cornerstone of Ireland's new curriculum framework is promoting teacher and student agency regarding teaching and learning in schools by advancing more open-ended curriculum content. While promoting student voice has been a goal in Ireland since 1999 and even earlier, it has recently taken center stage. The intention is that students will have a much greater voice in informing their own learning journeys. Within the context of the new curriculum framework, students have more opportunities for leadership, creativity, and decisionmaking. Concomitantly, teachers also have more freedom and agency to shape the curriculum to address students' needs and interests. Because the curriculum enactment in Ireland is still in the relatively early stages, those involved are still in dialogue about what it fully means to have an "agentic" teacher and student.

Similarly, Iowa BIG is predicated upon the importance of student agency in realizing the goal of holistic student development. Recognizing that learning need not be confined to classroom settings, the organizers of Iowa BIG decided to bestow students

with the responsibility to choose, design, and lead interdisciplinary projects in open spaces within a school. Students are also responsible for documenting their learning in these projects, tracking their progress toward the Iowa state standards in a competency-based database. Fostering teacher agency is also central to the Iowa BIG model, since teachers guide students in carrying out their projects as well as guide their own joint professional learning, as described in the next section.

In recent years, IB has increasingly emphasized student and teacher agency as part of its aim to promote equity and support the needs of diverse learners. A document describing the changes to IB's Primary Years Programme (PYP) explains, "In the enhanced PYP teachers will, as creative professionals, have greater freedom to design learning engagements and teach in ways that enable their students to take greater control over their own learning".[57]

Chile's DIA created an opportunity for student voice to be a meaningful component of education decisions through the development of a tool, the student survey, through which students provide feedback about their well-being. Teachers and administrators can use this information to strengthen their pedagogical and social work. The shifting relationships that have come with the implementation of the DIA have also increased educators' empowerment in the process of system transformation. Educators can now make school-level changes that are informed by data and fit the needs of their student population. In these ways, we see both student and educator agency being fostered.

As education systems promote teacher and student agency as a critical dimension of their change efforts, they work to distribute leadership in new ways. Systems have supported professional learning through the establishment of a variety of formal and informal networks both within and across schools. This move also has implications for how systems support infrastructure use in practice through teacher professional learning, as new models are respectful of teacher wisdom, autonomy, and creativity.

9. SUPPORT INFRASTRUCTURE USE IN PRACTICE

In addition to cultivating educator empowerment in a variety of ways, these seven systems have supported infrastructure use in practice through a variety of professional learning opportunities. In some cases, the systems have established new entities, including networks and learning institutes. In other instances, they have created new roles for professionals who function as mentors and coaches in supporting the work of others. Contracting with outside groups, such as NGOs, to provide training for participating teachers is another strategy systems have used. Overall, we see a move toward approaches that are classroom-embedded, harness educators' professional knowledge, and allow local flexibility, marking a departure from more traditional professional development models.

Systems have supported professional learning through the establishment of a variety of formal and informal networks both within and across schools. In British Columbia, various educator networks support different school types (e.g., rural schools), specialist roles, and particular practices such as formative assessment. These networks facilitate collective work among educators to both shape the process of change and solve problems. Routines such as the "Spiral of Inquiry"[58] support learning and empowerment within the networks. In the IB program, the IB Educator Network (IBEN), typically composed of IB-trained teachers, supports implementation and professional learning of other educators across the system. Over time, IB has closely attended to quality control in the support provided by these IBEN teacher leaders. They must now undergo a rigorous training program themselves and use standardized materials in the workshops they deliver. Implementation is further supported by regional networks typically led by PYP coordinators. Similar to IB and British Columbia, Singapore has also established networked learning communities across schools and professional learning communities within schools.

Often the networks that systems create cut across various roles. For example, Ireland is in the process of

planning the professional learning that will be required for teachers to enact the redeveloped curriculum. Notably, it has recognized not only that teacher learning is required but also that *systemwide* learning is required that extends beyond teachers to include leaders at multiple levels. Ireland is promoting the concept of "everyone learning together" in supporting holistic student development.[59] Its approach builds upon recognition of the importance of engaging a wide range of stakeholders, a theme we discussed at the beginning, which Ireland has done with pilot initiatives such as Bringing Education Alive for Communities on a National Scale (BEACONS).

Although most systems have used networks to support infrastructure use in practice, Singapore has also invested in institutes to support professional learning. This system's efforts at professional learning occur within the context of a centralized national education system. Thus, while increasing school autonomy for pedagogy, curriculum, and assessment, this system has also strengthened its infrastructures for educator learning and development by providing teachers with multiple and varied opportunities to build both an individual and a shared meaning of instructional practice.

For example, Singapore has established the Academy of Singapore Teachers (AST) and the Center for Teacher and Learning Excellence (CTLE). The AST website states its mission as "building a teacher-led culture of professional excellence centred on holistic development of the child."[60] Thus, while it is a training institute, it still maintains the focus on teacher-driven learning guided by nationally recognized teacher leaders. The CTLE provides on-site teacher learning opportunities within the context of classroom teaching, using a model that involves master teachers from AST, teachers from the CTLE, and experts from the National Institute of Education. Professional development efforts reflect the goals of closing the gap between research and practice and supporting educators in developing an inquiry mindset.

In Delhi, the NGOs have played a central role in providing professional learning support for teachers. Five NGO partners provide training to Happiness Coordinators and Mentor Teachers, who in turn provide support to other teachers in their schools to implement the curriculum. Every school has 1 Mentor Teacher for every 20 classroom teachers implementing the curriculum and 1 Happiness Coordinator. In addition to this school-based mentorship and coaching support, each teacher receives one to two days of training from the NGOs. That said, some teachers reportedly do not find this to be sufficient. As noted earlier, the mode in Delhi is somewhat unique among the cases in that the NGOs play such a central role in core dimensions of the educational infrastructure, including providing professional development and developing and revising curriculum with the local Ministry.

In contrast to the more comprehensive set of supports offered by the IB, Singapore, and Delhi systems, Iowa BIG has employed a more organic approach to teacher capacity building, notably by building on teachers' collective wisdom. As discussed earlier, in Iowa BIG, teachers drive their own professional learning in the context of collaboration, working together to address practical challenges that arise in the course of student projects. In the case of the DIA in Chile, schools that choose to administer the assessments have the opportunity to view training videos to support their understanding of the data and how it can be used to inform pedagogical decisions. Thus, supports are voluntary and provided in an online format.

Professional learning is integral to supporting infrastructure use in practice. Managing performance for continuous improvement and aligning accountability to support holistic student development are additional components.

10. MONITOR PRACTICE AND PERFORMANCE

The seven systems engaged various strategies to monitor practice and performance in an effort to promote continuous improvement and professional learning not only from research but also their own ongoing data collection and deliberations on these data. They repurposed and created structures and processes to help them function as learning systems

and revisited how—and what—they assess and monitor in measuring student and system progress toward their visions.

The systems sought to systematically study and monitor practice through various forms of data collection such as pilot studies and sustained work with subsets of schools. They also created structures for deliberating on analyses of these data to support ongoing professional learning. These efforts to learn from practice were not without their challenges, particularly given the need to attend to competing goals within their environments.

The case of Chile is somewhat unique in that the accountability system is at the center of its system transformation for holistic student development. The preexisting accountability system, which prioritized student achievement on tested subjects, became "unworkable" during the COVID-19 pandemic because student subsidies could not be calculated based on test scores or attendance.[61] Concomitantly, schools also found that they needed to address students' well-being given the socio-emotional toll of the pandemic. This confluence of events brought on by the pandemic—the accountability system's inability to function as students were learning virtually and concerns about students' socio-emotional state—stimulated system transformation through a seismic shift in the accountability system.

Chilean law has supported a "comprehensive view of people's development" since at least 2009, but the Quality Assurance System—with two-thirds of each school's score based on standardized tests on cognitive learning—resulted in an "operational definition of quality," and by extension goals of schooling, that were centered on cognitive development. Even in systems where more holistic goals of development are espoused and legislated, the design of the education infrastructure (in this case, the assessment and accountability components) fundamentally shapes (narrows) which goals are pursued in practice.

In the past two years, Chile has measured holistic student outcomes through student surveys on their socio-emotional well-being made available by the Education Quality Agency. Though voluntary, the surveys had a very positive response, with 75 percent of schools administering them. The DIA's goal is to enable schools to gather and use data at three time points to better support students' socio-emotional development within the context of the classroom and the school more generally. Like many jurisdictions across the globe, Chile was heavily invested in an accountability system that linked school funding to student achievement outcomes, and this was called into question during the pandemic.

The shift in Chile not only broadens what is measured (for example, socio-emotional development); it also reflects a tilt in the balance toward continuous improvement processes, in particular through formative assessment. Whereas previously assessments were summative and tied to funding, the incentives for schools to use the DIA assessments of socio-emotional development and academic learning are based on their utility. Indeed, teachers report that the data from the DIA are useful for informing pedagogical decisions. It will be important to monitor how this shift plays out post-pandemic as the system manages possible tension between different goals of assessment systems—between summative evaluation of schools based on student achievement measures and the more formative uses of assessment with the DIA.

While Chile provides perspective on managing for accountability, Ireland, Singapore, British Columbia, and IB each provide perspective on balancing accountability with generating data and information about practice for continuous improvement. Indeed, as they build and rebuild themselves as education systems, all four are going still further, by developing capabilities to operate as learning systems that engage in evidence-driven continuous improvement for educators across different levels of the system. These other systems also differ from Chile's in that assessment is not a major feature of their efforts to support holistic student development. However, they have recognized the need to think carefully about new ways to monitor performance, gather information from and about practice, and ensure

accountability in their efforts toward continuous improvement.

Ireland has shifted to incorporate a more supportive model for accountability in which the Inspectorate of the Department of Education provides support visits regarding school self-evaluation processes in addition to continuing external evaluations. The Irish case captures how education systems can use multiple sources of information to inform both the design and implementation of their reform efforts. These information sources have included syntheses of extant research, new research (conducted themselves or commissioned), and structured consultations with various stakeholders as well as piloting and ongoing structured deliberations with a purposeful sample of schools. For example, the NCCA's Schools Forum (involving 60 early childhood settings from across Ireland) is designed to support the NCCA's curriculum redevelopment work as members explore big ideas in the curriculum development proposals and discuss opportunities and challenges for implementing these ideas in practice in their respective schools. Further, system leaders used findings from their various research efforts to design professional learning opportunities, such as the NCCA's Leading Out seminar series, for different stakeholders.

Ireland is also pondering how to best gauge progress on student outcomes (particularly those that capture the goals of holistic student development) at a national level when the curriculum is intentionally built so that it can be shaped according to local needs. This deliberation has also raised the issue of shifting toward more formative assessments that can be used to inform improvement processes locally.

Singapore's "cluster" model (as mentioned in the earlier discussion on building a social infrastructure for improvement) engages schools in networking to support locally responsive continuous improvement. One cluster group across schools, for example, uses a lesson study approach to inform ongoing improvement in mathematics. In addition to supporting continuous improvement within and across schools, the Ministry of Education, National Institute of Education, and cluster interactions also support system-level learning and improvement. In shifting how they hold schools accountable for student achievement, Singapore has also moved to a model of school self-evaluation that involves rubrics-based, formative performance measures. Schools have the freedom to choose which outcomes to focus on, empowering them to measure performance in relation to their own goals.

Delhi has also built in processes that support ongoing learning and continuous improvement with the Happiness Curriculum by providing multiple feedback loops, as explained earlier. Educators have ample opportunities to shape ongoing improvement and adaptation of the curriculum, learning from successes and challenges. Regular feedback from teachers, mentor teachers, and Happiness Coordinators has enabled system leaders to learn from and about practice in schools that could then shape both curriculum implementation and adaptation. Further, as also noted earlier, the School Management Committees have allowed parents an opportunity to provide feedback on the curriculum. At the same time, educators and NGO partners are having to reconcile the Happiness Curriculum with India's well-established, rigorous exam-based system in which access to higher education is based on performance on competitive exams in core academic subjects. NGO partners are clear that the Happiness Curriculum should be disconnected from the emphasis on grades or exams, which may work at cross-purposes with the curricular goals. There is discussion of developing assessments of student well-being and attitudes or tracking the progress in some other ways such as studying model schools.

Throughout its curriculum redesign, British Columbia has resisted using assessment-based accountability as a lever to force change, instead relying on a district-based model of continuous improvement and pedagogical innovation. While the province points to rising graduation rates, they are also trying different models of professional accountability that go beyond assessing student outcomes. For example, the province has promoted narratives (e.g., stories, blogs, and case studies) as a way to capture change processes,

particularly from the perspective of teachers. Networks are also evident in British Columbia, as discussed earlier, and they function to promote ongoing improvement. As in Singapore and Chile, we see the empowerment of educators as important components of continuous improvement and the system (re)building process. In the case of Iowa BIG, students track their own learning in relation to state standards, which shifts the accountability to them and away from educators as is typically the case. These examples capture how education systems manage for improvement in different ways and evolve as learning systems.

The IB program represents a hybrid of these various approaches and indeed perhaps the most comprehensive model of continuous improvement and accountability across the seven systems. Like in Singapore, IB promotes professional accountability for teachers and leaders by encouraging them to engage in ongoing self-assessment. Schools are also required to engage in a self-study every five years as part of an evaluation by the IB system. IB also takes the position that local educators in IB schools are best positioned to determine which student assessments work best to inform teaching and learning. While this flexibility does exist, all schools implementing the Primary Years Programme (PYP) must assess learning via the PYP exhibition in students' final year and via student-led conferences on an ongoing basis.

A tension with IB, however, is a lack of alignment with standardized test measures that public schools are required to administer. These assessments typically do not measure the holistic competencies that IB values, and teachers find themselves having to prepare separately for them, occupying valuable instructional time. Consequently, public school IB teachers in the U.S. report that it is difficult to balance IB with federal and state requirements for instruction and frequent standardized testing, which tends to emphasize skills and content.[62] These dilemmas reinforce the importance of attending to the institutional environment and also provide evidence of the interdependence between the three domains of education system-building work.

Given education policy and long-established patterns, managing performance to support continuous improvement and shifting measures of accountability are among the most challenging aspects of system transformation for holistic student development. There is much work to be done in reconciling or even dismantling systems of accountability that do not cohere with new visions of teaching and learning. In general, we see a shift toward local accountability, assessment methods that go beyond typical ways of measuring progress in a narrow set of subjects, and a push toward more formative uses of assessment that inform continuous improvement. At the same time, we see some systems not just monitoring performance but also engaging in efforts to collect data on school and classroom practice through structured engagement with teachers, school leaders, students, parents, and other stakeholders. Some systems have sought to learn from and about practice by studying and monitoring it using various approaches.

CONSIDERATIONS FOR COLLECTIVE CONVERSATION AND ACTION

The portraits of system (re)building toward holistic student development across the seven case studies present educators, policymakers, and researchers with considerations for engaging in collective conversation and action about education system (re)building. In the journey toward system transformation, involving stakeholders in a dialogue about the purposes and ambitions for education is often a first step, as is honest conversation about whether holistic student development is among those ambitions and, if so, what form or forms it might take. Assuming shared ambitions, that vision for student holistic development then serves as a compass, but deciding on the pathway forward as a system is no small feat. *Education system (re)building is a process, not an event*.

Our cross-case analysis suggests that transformation efforts need to attend to the 10 key lessons across three key interrelated and overlapping domains for system (re)building: managing environmental relationships, building educational infrastructure to enable

teaching for holistic development, and integrating this educational infrastructure with everyday school and instructional practices. These three domains of system-building work played out consistently in initiatives that otherwise varied remarkably in terms of their level of operation (cross-national, national, provincial, territorial, or local); their unique historical, societal, and policy contexts; and their different approaches to supporting holistic student development. Moreover, in no case did these seven systems put digital or information technologies in the first position as primary drivers of educational transformation. Rather, each placed instruction—the collaborative work of teachers and students—in the first position, and each engaged deeply in the development of infrastructures and organizations to support holistic student development at scale. In doing so, people in the seven systems made meaning of reforms, engaged with stakeholders, and managed tensions.

Rather than offer prescriptions, we sketch some lessons that are intended to prompt and structure the sort of conversations necessary for collaborative and collective action on (re)building education systems to support holistic student development. For these conversations to work, they will have to engage, value, and respect the perspectives of diverse stakeholders, especially students and parents. While engaging in these conversations, different stakeholders will likely take different positions on some of the following questions, depending on their positionality, experiences, and perspectives. A core responsibility of system leaders will involve ensuring that collective sensemaking and decision making processes elevate all voices, especially those of the marginalized.

Manage environments and relationships

Our cross-case analysis suggests that education system building requires system leaders to carefully attend to and manage their institutional and technical environments to build support for holistic student development among diverse stakeholders and build the essential partnerships for supporting such transformation. It also requires attention to potential different and contested beliefs about equity, academic rigor, and holistic development. A large part of managing the environment will be for systems to explicitly connect values for educational quality and equity with holistic student development.

The cases highlight the importance of thoughtfully thinking through a system's history and community. To that end, we encourage diverse system stakeholders to reflect collaboratively on the following questions:

- What is our current system's approach to managing the environment toward holistic student development?
- Who are our "knowledge partners," key collaborators, and communities of engagement?
- Whose voices are currently missing but should be included and elevated?
- Whose principles and values will drive our interactions and conversations?
- How are we communicating with diverse stakeholders about ways in which holistic student development can serve equity and academic excellence?

Build educational infrastructures

Another set of lessons from our cross-case analysis suggest that nurturing teaching and learning for holistic student development will take not only ambitious vision and goals but also education systems building and (re)building efforts that are embodied in everyday practice. If the goals are ambitious, so too must be the infrastructures and supports. Building social infrastructures—especially shared beliefs among stakeholders about holistic student development and its entailments for teaching—will be critical for these endeavors.

Holistic student development also requires embracing instruction as a situated practice that teachers and students coproduce. This places new demands on educators that will require devising and coordinating designs for instructional practice; developing instructional resources including curricula and assessments; and cultivating social resources such as norms and values.

These lessons raise the following questions for consideration:

- What are the strengths of our existing systems for supporting holistic student development?
- Which elements of the system—including educational infrastructure, resources, and practice—must be redesigned or dismantled to support holistic student development?
- What is our current system's approach to building social infrastructures to support the work?
- Which processes will enable the development of collective sensemaking and action among diverse stakeholders given our history of reform and existing practices?
- In what ways do our instructional designs recognize teaching as a coproduction between students and educators?

Integrate infrastructure in practice

Another set of lessons from our cross-case analysis suggest that infrastructure use in everyday school and classroom practice has to be deliberately cultivated and enacted. Constructing systemwide coherence while simultaneously supporting local adaptation will require systems to balance "central" conventions with local discretion. Systems will need to pinpoint and build on the strengths of their current educational infrastructures while also identifying areas in need of improvement.

Education systems may also need to dismantle old conventions that no longer serve the needs of students and pave new terrain by designing novel relationships between curriculum, instruction, and assessment, guided by values for student voice and teacher empowerment. This process will necessitate new ways of supporting professional learning and building systems of accountability that serve holistic student development.

To integrate educational infrastructure with everyday practice in schools and classrooms, diverse system stakeholders should consider the following questions:

- What sets of conventions support or hinder systemwide coherence for holistic student development?
- Which aspects of the educational infrastructure need to allow for local discretion?
- In what ways do our systems, infrastructures, and practices distribute leadership for instruction that cultivates educator and student agency?

- How does our current professional learning infrastructure build educator capacity?

- What is the current role of assessment policies and accountability measures in enabling or constraining holistic student development?

We hope these questions will help spark a conversation among stakeholders within systems as well as in broader spaces for global exchange. Through building trust and awareness, we aim to stimulate dialogue about collaborative efforts to build and rebuild education systems to support holistic student development.

LOOKING FORWARD

We began this exploration by asking what it would take to build education systems that develop every child as would that child's own parents. The context for this work includes pressing global concerns regarding educational equity, quality, and purpose that have been amplified by the COVID-19 pandemic. These concerns are likely to feature centrally in the UN's Transforming Education Summit in September 2022—a seminal gathering that is certain to further elaborate an accumulating global agenda for transforming education dating to the founding of UNESCO.

How this agenda develops and plays out will depend, in part, on the Summit's success in galvanizing political, policy, and public commitment to transforming education. It will also depend on sustaining support for holistic student development in a sprawling global education ecology that often favors discord over solidarity and in which support for a more narrow, academic focus is increasingly institutionalized. Our exploration provides evidence of possibility that, we hope, will contribute to efforts to sustain support. Yet it provides only a high-level perspective on complex, large-scale systems transformation. Further research is needed to examine how the work of system (re)building is playing out throughout these seven systems, how those doing the work are managing successes and challenges, and how the work is bearing on the daily lives of students and teachers.

Even so, an essential insight from the journeys of these seven systems is that the distinctions between transforming systems for academic and holistic student development are blurrier

than many realize. Indeed, system (re)building for holistic student development bears many of the characteristics and features of system (re)building for academic development. A crucial difference, however, is the way that this work is imbued with moral legitimacy and concern for the whole child. These serve as new values that sit alongside the pragmatic legitimacy and concern for technical effectiveness that have been so instrumental in orienting systems toward organizing, managing, and improving their essential educational work: instruction. The addition of moral values makes a critical difference in the ways that the usual system (re)building work is enacted, since it broadens the fundamental purpose of education. The cases profiled here provide critical lessons that fill out the middle space between education policy and instructional practice by providing a practical framework detailing core domains of work integral to building and (re)building systems for both academic and holistic student development.

With that, the journeys of these seven education systems bring us to the brink of a new frontier in cross-national research, policy, and practice in several ways:

- Their journeys suggest a need to expand the scope of inquiry to include a broader array of system (re)building efforts within and among countries engaged in the work of building and (re)building education systems, especially in systems that are being pressed to support holistic student development while striving to increase access to schooling and to support foundational learning. Our exploration of their journeys provides evidence of the power of bringing diverse research teams into tight collaboration around common questions and shared frameworks to learn from them.

- Further, their journeys suggest a need for new types of collegial, cross-national learning opportunities among system leaders at all levels, so that they can learn together about the work of building and (re)building systems to sustain academic rigor and to support holistic student development.

- Finally, their journeys suggest potential power in finding creative new ways to draw local education professionals, parents, community members, and, especially, students into cross-national conversations and learning opportunities that expand their field of view, provide evidence of new possibilities, build their knowledge and capabilities, and fuel their agency. For, as made clear by the journeys of the seven systems explored here, much of the burden of transforming education systems rests on their shoulders.

ACKNOWLEDGMENTS

We are grateful for our colleagues who have contributed to the development of this report, most notably the case study authors: Juan Bravo, Whitney Hegseth, Jeanne Ho, Devi Khanna, Dennis Kwek, Angela Lyle, Amelia Peterson, Thomas K. Walsh, José Weinstein, and Hwei Ming Wong. We also wish to thank Mary Anderson and Benjamin Kennedy for their editing support. We are deeply appreciative of the team at Brookings, especially Rebecca Winthrop, as well as others including Brad Olsen, Omar Quarga, Andreína González, Marian Licheri, Katherine Portnoy, Sophie Partington, and Annalies Goger, who have provided valuable support and perspectives. We also appreciate the generative conversations that Brookings has organized with scholars across the globe, including Anthony Mackay, Bruce Fuller, Hoyun Kim, Olli-Pekka Heinonen, Geoff Masters, and Michael Stevenson. Finally, we are indebted to the educators and system leaders across the globe, who generously gave of their time to share their experiences and lessons learned engaging in system (re)building efforts.

The Brookings Institution is a nonprofit organization devoted to independent research and policy solutions. Its mission is to conduct high-quality, independent research and, based on that research, to provide innovative, practical recommendations for policymakers and the public. The conclusions and recommendations of any Brookings publication are solely those of its author(s), and do not reflect the views of the Institution, its management, or its other scholars.

Brookings gratefully acknowledges the support provided by the BHP Foundation and the LEGO Foundation.

Brookings recognizes that the value it provides is in its commitment to quality, independence, and impact. Activities supported by its donors reflect this commitment.

References

Austin, J. E., Grossman, A. S., Schwartz, R. B., & Suesse, J. (2006). *Managing at scale in the Long Beach Unified School District*. Harvard Business School Publishing.

Biesta, G., Priestley, M., & Robinson, S. (2015). The role of beliefs in teacher agency. *Teachers and teaching, 21*(6), 624–640.

Childress, D., Chimier, C., Jones, C., Page, E., & Tournier, B. (2020). *Change agents: Emerging evidence on instructional leadership at the middle tier*. Education Development Trust, the Education Commission, and United Nations Educational, Scientific, and Cultural Organization.

Coburn, C. E. (2001). Collective sense-making about reading: How teachers mediate reading policy in their professional communities. *Educational Evaluation and Policy Analysis, 23*(2), 145–170.

Coburn, C. E. (2003). Rethinking scale: Moving beyond numbers to deep and lasting change. *Educational researcher, 32*(6), 3–12.

Cohen, D. K. (1988). Teaching practice… plus ça change… In Jackson, P. (Ed.*), Contributing to educational change: Perspectives on research and practice* (pp. 27–84). McCutchan.

Cohen, D. K. (1998). Dewey's problem. *Elementary School Journal*, 98(5), 427–446.

Cohen, D. K. (2011). *Teaching and its predicaments*. Harvard University Press.

Cohen, D. K., & Ball, D. L. (1999). *Instruction, capacity, and improvement*. (Consortium for Policy Research in Education Rep. No. RR-43). University of Pennsylvania, Graduate School of Education.

Cohen, D. K., Peurach, D. J., Glazer, J. L., Gates, K. E., & Goldin, S. (2014). *Improvement by design: The promise of better schools*. University of Chicago Press.

Cohen, D., Raudenbush, S., & Ball, D. (2003). Resources, instruction, and research. *Educational Evaluation and Policy Analysis, 25*(2), 1–24.

Cohen, D. K., Spillane, J. P., & Peurach, D. J. (2018). The dilemmas of educational reform. *Educational Researcher, 47*(3), 204–212.

Cuban, L. (2013). *Inside the black box of classroom practice: Change without reform in American education*. Harvard Education Press.

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. (2009). Conceptualizing policy implementation: Large-scale reform in an era of complexity. In G. Sykes, B. Schneider, & D. Plank (Eds.*), American educational research association handbook of education policy research* (pp. 348–-361). Routledge.

Datnow, A., Park, V., Peurach, D. J., & Spillane, J. P. (2022). *Research foundations: Transforming education for holistic student development – Learning from around the world*. The Brookings Institution.

Delpit, L. (1995). *Other people's children: Cultural conflict in the classroom*. The New Press.

Dow, P. B. (1991). *Schoolhouse politics: Lessons from the Sputnik era*. Harvard Education Press.

Farkas, G., Grobe, R., Sheehan, D., & Shaun, Y. (1990). Cultural resources and school success: Gender, ethnicity, and poverty groups within an urban district. *American Sociological Review*, 55, 127–142.

Freire, P. (1970). *Pedagogy of the oppressed*. Continuum Publishing.

Fuller, B., & Kim, H. (2022). *Systems thinking to improve and transform schools: Clarifying concepts and rethinking pathways*. The Brookings Institution.

Fullan, M. (2021). *The right drivers for whole system success*. Centre for Strategic Education.

Giannini, S. (2022). UNESCO and the Futures of Education. In M. Suárez-Orozco & C. Suárez-Orozco (Eds.), *Education: A global compact in a time of crisis* (pp. 361–377). Columbia University Press.

Glazer, J. L., Greany, T., Duff, M., & Berry, W. (2022). Networked improvement in the United States and England: A new role for the middle tier. In D. J. Peurach, J. L. Russell, L. Cohen-Vogel, and W. R. Penuel (Eds.), *The foundational handbook on improvement research in education* (pp. 165–188). Rowman & Littlefield.

Hargreaves, A., & Goodson, I. (2006). Educational change over time? The sustainability and nonsustainability of three decades of secondary school change and continuity. *Educational Administration Quarterly*, 42(1), 3–41.

Hawkins, D. (2007). *The informed vision: Essays on learning and human nature*. Algora Publishing.

Hegseth, W. (Forthcoming). *Transcending borders: The International Baccalaureate's systemic approach to educating the whole person*. The Brookings Institution.

Herbert, A., Saavedra, J., Marr, L., & Jenkins, R. (2021, November 15). The urgent need to focus on foundational skills. *Education for Global Development*. https://blogs.worldbank.org/education/urgent-need-focus-foundational-skills

Hopkins, D., Stringfield, S., Harris, A., Stoll, L., & Mackay, T. (2014) School and system improvement: A narrative state-of-the-art review. *School Effectiveness and School Improvement, 25*(2), 257-281. doi: 10.1080/09243453.2014.885452

Hopkins, M., Spillane, J. P., Jakopovic, P., & Heaton, R. M. (2013). Infrastructure redesign and instructional reform in mathematics: Formal structure and teacher leadership. *The Elementary School Journal, 114*(2), 200–224.

International Baccalaureate Organization. (2018, March). Learning & teaching in the enhanced PYP–Part 2. *The Sharing* PYP Blog. https://blogs.ibo.org/sharingpyp/files/2018/04/2018-April-Learning-and-teaching-part-2-eng.pdf

International Commission on the Futures of Education. (2021). *Reimagining our futures together: A new social contract for education*. UNESCO.

Johnson, S. M., Marietta, G., Higgins, M. C., Mapp, K. L., & Grossman, A. S. (2014). *Achieving coherence in district improvement: Managing the relationship between the central office and schools*. Harvard Education Press.

Kaffenberger, M., Silberstein, J., & Spivack, M. (2022). *Evaluating Systems: Three Approaches for Analyzing Education Systems and Informing Action*. RISE Working Paper Series 22/093. https://doi.org/10.35489/BSG-RISE-WP_2022/093

Kaser, L., and Halbert, J. (2017). Teachers leading reform through inquiry learning networks: A view from British Columbia. In A. Harris, M. Jones, & J. B. Huffman (Eds.), *Teachers Leading Educational Reform* (pp. 32–50). Routledge.

Kwek, D., Ho, J., & Wong, H. M. (Forthcoming). *Singapore's Educational Reforms towards Holistic Outcomes: (Un)intended Consequences of Policy Layering*. The Brookings Institution.

Khanna, D., & Peterson, A. (Forthcoming). *Education reform in Delhi, India: The Happiness Curriculum*. The Brookings Institution.

Ladson-Billings, G. (1995). Toward a theory of culturally relevant pedagogy. *American Educational Research Journal, 32*(3), 465–491.

Learning Policy Institute. (n.d.) *Whole Child Education*. https://learningpolicyinstitute.org/issue/whole-child-education

Lee, C. D. (1995). A culturally based cognitive apprenticeship: Teaching African American high school students skills in literary interpretation. *Reading Research Quarterly, 30*(4), 608–630.

LEGO Foundation. (2022). *Rebuilding systems – national stories of social and emotional learning reform*. The LEGO Group.

Lyle, A. (Forthcoming). *Building systems for community-centered education in Cedar Rapids, Iowa: The case of Iowa BIG*. The Brookings Institution.

Marsh, J. A., Kerr, K. A., Ikemoto, G. S., Darilek, H., Suttorp, M., Zimmer, R. W., & Barney, H. (2005). *The role of districts in fostering instructional improvement lessons from three urban districts partnered with the institute for learning*. Rand Corporation.

Masters, G. (2022). *Building a world-class learning system*. Center for Strategic Education. https://ncee.org/quick-read/building-world-class-learning-systems/

McDonnell, L. M., & Weatherford, M. S. (2016). Recognizing the political in implementation research. *Educational Researcher, 45*(4), 233–242. https://doi.org/10.3102/0013189X16649945

McKinney de Royston, M., Lee, C., Nasir, N. S., & Pea, R. (2020). Rethinking schools, rethinking learning. *Phi Delta Kappan 102*(3), 8–13.

Miles, M. B., Huberman, A. M., & Saldaña, J. (2018). *Qualitative data analysis: A methods sourcebook*. Sage.

Nasir, N. I. S. (2002). Identity, goals, and learning: Mathematics in cultural practice. *Mathematical Thinking and Learning, 4*(2–3), 213–247. https://doi.org/10.1207/S15327833MTL04023_6

Nasir, N. S., & Saxe, G. B. (2003). Ethnic and academic identities: A cultural practice perspective on emerging tensions and their management in the lives of minority students. *Educational Researcher, 32*(5), 14–18. https://doi.org/10.3102/0013189X032005014

Nasir, N. S., Bang, M., & Yoshikawa, H. (2021). Reimagining American education: Possible futures: What might we accomplish in 25 years? *Phi Delta Kappan, 103*(2), 54–57.

National Center on Education and the Economy. (2021). *NCEE's blueprint for a high-performing education system*. NCEE.

Oakes, J. (1992). Can tracking research inform practice? Technical, normative, and political considerations. *Educational Researcher, 21*(4), 12–21.

Payne, C. M. (2008). *So much reform, so little change: The persistence of failure in urban schools*. Harvard Education Press.

Peurach, D. J., Cohen, D. K., Yurkofsky, M. M., & Spillane, J. P. (2019a). From mass schooling to education systems: Changing patterns in the organization and management of instruction. *Review of Research in Education, 43*(1), 32–67.

Peurach, D. J., Yurkofsky, M. M., & Sutherland, D. H. (2019b). Organizing and managing for excellence and equity: The work and dilemmas of instructionally-focused education systems. *Educational Policy, 33*(6), 812–845.

Peurach, D. J., Foster, A. T., Lyle, A. M., & Seeber, E. R. (2022). Democratizing educational innovation and improvement: The policy contexts of improvement research in education. In D. J. Peurach, J. L. Russell, L. Cohen-Vogel, & W. R. Penuel, *The foundational handbook on improvement research in education* (pp. 211–240). Rowman and Littlefield.

Peterson, A. (Forthcoming). *Education transformation in British Columbia*. The Brookings Institution.

Saavedra, J., Aedo, C., Arias, O., Pushparatnam, A., Bernal, M., & Rogers, H. (2020). *Realizing the future of learning: From learning poverty to learning for everyone, everywhere*. World Bank Group. https://documents1.worldbank.org/curated/en/250981606928190510/pdf/Realizing-the-Future-of-Learning-From-Learning-Poverty-to-Learning-for-Everyone-Everywhere.pdf

Sarason, S. B. (1996). *Revisiting the culture of the school and the problem of change*. Teacher College Press.

Saxe, G. B. (1988). Candy selling and math learning. *Educational Researcher, 17*(6), 14–21. https://doi.org/10.3102/0013189X017006014

Sengeh, D., & Winthrop, R. (2022). *Transforming education systems: Why, what, and how*. The Brookings Institution. https://www.brookings.edu/research/transforming-education-systems-why-what-and-how/

Smith, M. S., & O'Day, J. A. (1991). Systemic school reform. In S. H. Fuhrman and B. Malen (Eds.), *The politics of curriculum and testing: The 1990 yearbook of the Politics of Education Association* (pp. 233–267). Falmer Press.

Spillane, J. P., Blaushild, N. L., Neumerski, C. M., Seelig, J. L., & Peurach, D. J. (2022). Striving for coherence, struggling with incoherence: A comparative study of six educational systems organizing for instruction. *Educational Evaluation and Policy Analysis*. https://doi.org/10.3102/01623737221093382

Spillane, J. P., Hopkins, M., & Sweet, T. M. (2018). School district educational infrastructure and change at scale: Teacher peer interactions and their beliefs about mathematics instruction. *American Educational Research Journal, 55*(3), 532–571.

Spillane, J. P., Morel, R. P., & Al-Fadala, A. (2019). *Educational leadership: A multilevel distributed perspectiv*e. World Innovation Summit for Education. https://www.wise-qatar.org/app/uploads/2019/10/wise-rr.6.2019-report-web.pdf

Spillane, J. P., Reiser, B. J. & Reimer, T. (2002). Policy implementation and cognition: Reframing and refocusing implementation research. *Review of Educational Research, 72*(3), 387–431.

Spillane, J. P. & Sun, J. M. (2020). The press for technical rationality and the dilemmas of professional practice: Managing education in a pluralistic institutional environment. In L. Moos, E. Nihlfoors, & J. M. Paulsen (Eds.*), Re-Centering the Critical Potential of Nordic School Leadership Research* (pp. 71–88). Springer.

Spivack, M. (2021). *Applying systems thinking to education: The RISE systems framework*. Research on Improving Systems of Education. https://doi.org/10.35489/BSG-RISE-RI_2021/028

Stern, J., Jukes, M., Piper, B., DeStefano, J., Mejia, J., Dubeck, P., Carrol, B., Jordan, R., Gatuyu, C., Nduku, T., Punjabi, M., Van Keuren, C. H., & Tufail, F. (2021). *Learning at scale: Interim report*. Research Triangle Institute. https://ierc-publicfiles.s3.amazonaws.com/public/resources/Learning%20at%20Scale%20Interim%20Report%20-%20Final%20Draft.pdf

Tarc, P. (2009). *Global dreams, enduring tensions: International Baccalaureate in a changing world*. Peter Lang.

Taylor, E. V. (2009). The purchasing practice of low-income students: The relationship to mathematical development. *The Journal of the Learning Sciences, 18*(3), 370–415.

Tyack, D., & Cuban, L. (1995). *Tinkering towards utopia: A century of public school reform*. Harvard University Press.

United Nations. (2021). *Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all*. SDG Knowledge Base, *United Nations Department of Economic and Social Affairs*. https://sdgs.un.org/goals/goal4

Walsh, T. (Forthcoming). *Redeveloping the primary school curriculum in Ireland*. The Brookings Institution.

Weast, J. (2014). Confronting the achievement gap: A district level perspective. In K. McCartney, H. Yoshikawa, & L. B. Forcier (Eds.), *Improving the odds for America's children: Future directions in policy and practice* (pp. 101–120). Harvard Education Press.

Weinstein, J., & Bravo, J. (Forthcoming). *Chile: The comprehensive learning diagnosis – A system for schools to assess socio-emotional learning with an improvement approach*. The Brookings Institution.

Winthrop, R., Barton, A., & McGivney, E. (2018). *Leapfrogging inequality: Remaking education to help young people thrive*. Brookings Institution Press.

World Bank. (1999). *Education sector strategy*. World Bank. https://documents1.worldbank.org/curated/en/406991468178765170/pdf/196310REPLACEM0cation0strategy01999.pdf

World Bank. (2021). *What is learning poverty?* Education brief, April 28, World Bank. https://www.worldbank.org/en/topic/education/brief/what-is-learning-poverty

World Bank. (2022). *The state of global learning poverty: 2022 update*. World Bank. https://thedocs.worldbank.org/en/doc/e52f55322528903b27f1b7e61238e416-0200022022/original/Learning-poverty-report-2022-06-21-final-V7-0-conferenceEdition.pdf

Yosso, T. J. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth, *Race Ethnicity and Education, 8*(1), 69–91.

APPENDIX: METHODS

Case Selection

The synthesis report draws on data from a cross-case analysis of seven systems purposefully sampled to represent variation in types of systems and geographic regions while also sharing some common features. We initially nominated and solicited potential case studies across the globe, drawing on expert knowledge of international colleagues who were familiar with systems reform efforts in various contexts. This process yielded 22 initiatives as potential cases. We then narrowed our list based on types of system, variation in length of time on their reform journeys, and emphasis on holistic student development. Three of the cases—Iowa BIG, the Happiness Curriculum, and British Columbia—were recommended for inclusion by the Brookings Institution, as they believed these cases would offer important insights.

During our sampling process, we used a typology of system forms[63] as part of our selection criteria. We looked for the differing patterns of organizational arrangements that participants build and rebuild to support students' holistic development. This typology includes:

- Formal systems: Conventional school systems in which hubs have governance, administrative, or other authority over schools, and in which hubs and schools are coevolving to actively organize, manage, and improve instruction.

- Networked systems: Arrangements (often voluntary) that operate outside of the hierarchical or bureaucratic structure of conventional school systems but that seek to develop educational or other capabilities within those systems.

- Ecosystems: Federations of organizations (possibly including schools, districts, and local community organizations) that develop capabilities outside of conventional school systems to provide supplemental educational support to students, teachers, and leaders.

This typology provided an initial mapping of the array of system forms that are initiating and supporting education system (re)building efforts. These system forms are not mutually exclusive but instead can be developed as hybrids. For example, networked systems may exist within formal systems, and formal systems can participate in ecosystems or in networked systems. We aimed for a mix of systems that were emerging in their integration of holistic student development as well as those that were further along in their journeys.

Our final sample includes four formal systems engaged in diverse system (re)building approaches (British Columbia, Chile, Ireland, and Singapore); one networked system crossing multiple national contexts (International Baccalaureate); and two ecosystems collaborating with community organizations on very different implementation scales (the Happiness Curriculum in Delhi, India, and Iowa BIG in the United States). The cases are at different points in their reform journeys, with some systems having undertaken reform efforts a decade or more ago (e.g., British Columbia) and others at the early stages (e.g., Chile). All of the initiatives distribute responsibility and authority throughout the system, from central organizations to classrooms, albeit in different ways and to different degrees. Although all systems are moving toward holistic student development, they vary in which aspects they chose to foreground (as we explain in the report).

Data collection and case report development

Data collected from case reports rely on a combination of sources, including review of publicly available documents, prior research and evaluation studies, and interviews with key informants. Some cases also included site visits, observations, and participant-observations. All of the cases are led by authors with experience conducting research on educational systems. Some of the authors have additional expertise on the systems on which they report through multiyear research projects and/or involvement on advisory panels. Case authors submitted preliminary drafts of their reports to the lead authors of the summary report for feedback and refinement.

BRITISH COLUMBIA. The British Columbia case report was written by Dr. Amelia Peterson, who is Associate Professor at the London Interdisciplinary School. Her research focuses primarily on qualification reforms in a comparative perspective, with a long-running focus on reforms in British Columbia. The case report is based on 10 visits to BC from 2013 to 2019, during which Dr. Peterson spent time with seven different school district offices in varying parts of the province, conducting over 100 interviews with teachers, principals, ministry officials, students, and parents. She conducted follow-up interviews in 2020 and 2022 and drew on extant research and documents on the BC system. The draft case was sent to key individuals for triangulation.

CHILE. The Chilean case report was written by Dr. José Weinstein and Mr. Juan Bravo. Dr. Weinstein is currently an academic of Diego Portales University, and Mr. Bravo is a high executive of the National Quality Agency of Education. Both have expertise in education policies as researchers and public servants. The authors developed this report based on document analysis of both national and international policies and theoretical literature about educational assessment. All of the existing reports that the National Quality Agency has produced about the Comprehensive Learning

Diagnosis (DIA) have been examined, compared, and integrated in the report.

DELHI (HAPPINESS CURRICULUM). The case report on the Happiness Curriculum was written by Ms. Devi Khanna, Ph.D. Researcher at the University of Manchester, and Dr. Amelia Peterson, Associate Professor at the London Interdisciplinary School. Ms. Khanna's research focuses on measuring young people's well-being in schools and on education policy interventions to improve mental health. Dr. Peterson has researched the Happiness Curriculum and reforms in Delhi as part of prior work on the changing purposes of education. This case relies on semistructured interviews conducted in 2022 with ministry and NGO staff in addition to prior interviews conducted over 2017–2020. The case also draws on evaluation reports conducted by key NGO partners and external organizations and on policy documents outlining the Happiness Curriculum framework.

IOWA BIG. The case report on Iowa BIG was written by Dr. Angela Lyle, a Postdoctoral Research Fellow in the School of Education at the University of Michigan. Her research and scholarship focus on educational system building, large-scale instructional reform, and policy implementation, including studies of network-based instructional improvement and of system building to support elementary science instruction. The Iowa BIG case is an initial exploration of a complex enterprise. The case report draws primarily on digital and material sources, including program descriptions on the Iowa BIG and XQ websites, 18 podcasts describing the Iowa BIG program and its development, promotional videos, and written and oral perspectives from Iowa BIG students and staff. These materials provided perspectives on the history of Iowa BIG, its evolution and development over time, and lived experience from those that are a part of the enterprise. The digital and material sources are complemented by an interview with an Iowa BIG executive with historical and contemporary perspective on the development of the program.

INTERNATIONAL BACCALAUREATE. The author of the International Baccalaureate case report is Dr. Whitney Hegseth, who is a Visiting Fellow at the Lynch School of Education and Human Development at Boston College. Her research focuses on the (re)building of education systems to scale more mutually respectful learning experiences for diverse groups of learners. Dr. Hegseth began studying the IB education system in 2015, often comparing IB with other types of systems (e.g., Advanced Placement, Montessori, traditional public). In addition to her review of the literature on IB, Dr. Hegseth has conducted two comparative studies of education systems, which included IB schools and the IB system. For these studies, she engaged in depth with IB practitioners in different regions of the U.S. and in Toronto, Canada. The case report draws on both the literature and data sources from her previous projects, which include IB school and system documents (e.g., evaluation rubrics, curriculum binders, and system standards for IB classrooms and schools); ethnographic observations in IB schools; semistructured interviews with IB teachers and school leaders; and video-cued focus groups with IB students, teachers, and school and system leaders.

IRELAND. The Ireland case report was written by Dr. Thomas Walsh, who is Senior Lecturer and Acting Head of Department in the Maynooth University Department of Education in Ireland. Dr. Walsh has academic expertise in the historical development and contemporary landscape of primary curriculum policy in Ireland. This experience has been drawn upon by invitations to author research papers and make seminar presentations as part of the redevelopment process since 2018. The case report was compiled based on document analysis of both national and international policy and theoretical literature. Dr. Walsh's membership on the Advisory Panel, which supports the National Council for Curriculum and Assessment (NCCA) in the redevelopment of the primary school curriculum since 2020, provided further insights in terms of the review process. An earlier draft was reviewed by a senior official within the NCCA, and very useful insights have been incorporated within the case study report.

SINGAPORE. The case report on Singapore was written by Dr. Dennis Kwek, Dr. Jeanne Ho and Dr. Hwei Ming Wong of the Centre for Research in Pedagogy and Practice

(CRPP), National Institute of Education (NIE), Nanyang Technological University, Singapore. Dr. Kwek is the Centre Director of CRPP and an Associate Dean in NIE, with research expertise in large-scale pedagogical research, systems research, and policy analysis. Dr. Wong is Senior Research Scientist in CRPP, with research expertise in assessment research and interventions. Dr. Ho is a Senior Teaching Fellow in CRPP, with research interests in teacher professional learning and school leadership. The case study report draws on research literature on Singapore's educational development, document analysis of national policies, and extant theoretical understandings of education systems. Dr. Kwek's involvement in Singapore's education research for close to two decades, and his contributions toward research policy planning with NIE and the Ministry of Education, Singapore, have provided insights that are integrated into the report. Dr. Ho, a senior officer of the Ministry of Education, reviewed the report.

Cross-case analysis

Building on extant research literature and theories on systemic reform and informed by reports on holistic student development across the globe, our analysis of the case reports employed a mixture of inductive and deductive strategies. Starting from whole to part, we analyzed the individual cases through an iterative process, first highlighting emerging themes, then using the emerging themes to develop memos and preliminary cross-case narratives.[64]

To further hone our analysis, we used a framework developed by two of our co-authors in studies of system building for instructional improvement.[65] Specifically, we leveraged this framework to examine the three core domains of practical work being enacted across all seven cases in their journeys toward holistic student development: managing the environment, building educational infrastructures, and integrating educational infrastructure into everyday practice. We examined interdependencies between these three core domains of work as well as ways that other domains of work identified in prior studies (e.g., managing performance and developing/distributing leadership) were incorporated into them.

We also documented patterns of tensions across cases to examine the dilemmas that systems experienced in enacting these core domains of work. This had us leveraging a second framework developed by two of our coauthors in the same prior studies of system building.[66] Specifically, we examined tensions in the evolution of the technical and institutional environments of education; in balancing pragmatic and moral legitimacy in building and (re)building education systems; and in supporting instruction for students' academic and holistic development. This tension extends puzzles and dilemmas identified in prior research as endemic to the work of building and (re)building educational systems—research conducted in collaboration with Prof. David K. Cohen, who passed away in September 2020 and to whom the work reported here owes a deep debt of gratitude.[67]

Throughout the development of our preliminary findings and summary report, our weekly team meetings enabled us to question our assumptions, refine analytical points, and develop shared understandings to support salient lessons for policy, professional, and local communities. Further, toward grounding our summary report in contemporary global policy discourse, one of our coauthors participated in the June 2022 UN Pre-Summit on Transforming Education at UNESCO in Paris. Finally, to ensure that we accurately captured the details, work, and dilemmas of each system, we shared a draft of our summary report with case study authors for feedback in advance of its publication.

End Notes

1 For more on this conceptualization of accumulating layers of educational reform; on the typology of school, education, and learning systems; and on their implications for cross-national research, see Peurach et al. (2022).

2 For an example of global policy discourse in anticipation of the United Nations Transforming Education Summit that foregrounds the imperative to develop students intellectually, morally, and socially, see International Commission on the Futures of Education (2021).

3 On breadth of skills, see Winthrop et al. (2018).

4 See, for example, Fullan (2021); Learning Policy Institute, n.d.; and McKinney de Royston et al. (2020).

5 See, for example, McKinney de Royston et al. (2020) and Yosso (2005).

6 See, for example, United Nations Sustainable Development Goal 4, especially Target 4.7: "By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development" (United Nations, 2021).

7 See, for example, Nasir et al. (2021) and Giannini (2022).

8 For the research syntheses underlying this account of systemic education reform in the United States, see Peurach et al. (2019a) and Peurach et al. (2022).

9 For a seminal analysis marking the onset of systemic education reform in the United States, see Smith & O'Day (1991).

10 Regarding early attention to systemic education reform in global policy discourse, see World Bank (1999). For contemporary goals for systemic education reform, see the UN Sustainable Development Goal 4, especially Target 4.1 ("By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes") and Indicator 4.1.1 ("Proportion of children and young people (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex") (United Nations, 2021).

11 Regarding the concept of "learning poverty" and its relationship to systemic education reform, see Saavedra et al. (2020) and World Bank (2021). Regarding the early recognition that access to schooling is not tantamount to learning, see Fuller & Kim (2022).

12 Regarding the impact of the COVID-19 pandemic on learning poverty, see, for example, World Bank (2022).

13 For an overview of foundational learning as central to contemporary approaches to systemic education reform, see Herbert et al. (2021).

14 For more on increasing recognition of the role of middle-tier organizations in the evolution of education systems and learning systems, see Childress et al. (2020); Glazer et al. (2022); Peurach et al. (2019a); and Peurach et al. (2022).

15 For more on the "academically tested child" and the "developmentally unabridged child," see Spillane & Sun (2020).

16 See, for example, Cohen (1998); Dow (1991); and Tyack & Cuban (1995).

17 See Datnow et al. (2022) for a comprehensive review of the research summarized here.

18 On instruction as a *social* practice, see Cohen (1988); Cohen (2011); and Cohen and Ball (1999). On instruction as a *situated* practice, see Delpit (1995); Freire (1970); and Hawkins (2007).

19 Regarding culturally responsive instruction, see Ladson-Billings (1995) and McKinney de Royston et al. (2020).

20 For more about engaging children's cultural resources in instruction, see Lee (1995); Nasir (2002); Saxe (1988); Taylor (2009); Farkas, et al. (1990); and Nasir & Saxe (2003).

21 Regarding resources for instruction and their use, see Cohen et al. (2003) and Peurach et al. (2022).

22 On the evolution of school systems as educational systems, see Austin et al. (2006); Cohen et al. (2014); Hopkins et al. (2013); Johnson et al. (2014); Marsh et al. (2005); Peurach et al. (2019a); Spillane et al. (2018); and Weast (2014).

23 For a fuller elaboration of these common domains of work, see Peurach et al. (2019a) and Peurach et al. (2019b).

24 On technical and moral legitimacy as bearing on system (re)building, see Spillane et al. (2022).

25 Regarding the building of capacity and capabilities, see Coburn (2001); Cuban (2013); and Spillane et al. (2002).

26 On developing ownership and sustainability, see Coburn (2003).

27 On managing social-political contexts, see; Datnow & Park (2009); Hargreaves & Goodson (2006); Oakes (1992); Payne (2008); Sarason (1996).

28 For more on high-performing education systems, see Hopkins et al. (2014) and National Center on Education and the Economy (2021).

29 For more on systems thinking, see Kaffenberger et al. (2022); Spivack (2021); and Stern et al. (2021).

30 Like this report, the Brookings report from Sengeh & Winthrop (2022) was also prepared in anticipation of the UN Transforming Education Summit in September 2022.

31 See, for example, LEGO Foundation (2022); Masters (2022); and Sengeh & Winthrop (2022).

32 See LEGO Foundation (2022).

33 The thought experiment with which we began our exploration is earnest. We encourage readers to play it out—on their own, with colleagues, and with diverse groups—to see the different places where it takes them. Ours is but one possible reflection to emerge from it. We anticipate that the thought experiment will elicit a range of perspectives. After all, different parents develop their children very differently, and under very different circumstances. Further, some children don't have a parent or other loved one to care for them, and considering their development is likely to elicit additional perspectives. Still further, some are likely to find themselves thinking about such fundamental issues as the purposes of schooling, the distribution of responsibility for children between parents and teachers, the relationship between parents/citizens and nations/states, and how power is distributed among this full array of actors. Further yet, some are likely to see what we have represented as potential *synergies* between systemic education reform and holistic student development instead as deep *tensions*, with a narrow and increasingly institutionalized academic focus a product of precisely the type of economic and political privilege that has long frustrated the pursuit of holistic student development. While no doubt challenging, eliciting and reconciling diverse perspectives will be fundamental to the work of building and (re)building education systems to support holistic student development.

34 See Kwek et al. (forthcoming) for a detailed case report on Singapore.

35 See Walsh (forthcoming) for a detailed case report on Ireland.

36 See Weinstein & Bravo (forthcoming) for a detailed case report on the DIA in Chile.

37 See Peterson (forthcoming) for a detailed case report on British Columbia.

38 See Khanna & Peterson (forthcoming) for a detailed case report on the Happiness Curriculum.

39 See Lyle (forthcoming) for a detailed case report on Iowa BIG.

40 See Hegseth (forthcoming) for a detailed case report on the International Baccalaureate program.

41 See Datnow et al., 2022 for a detailed review of research on this topic

42 See McDonnell & Weatherford (2016).

43 See Peurach et al. (2019a); Peurach et al. (2019b); Spillane et al. (2019); Spillane et al. (2022)

44 See Lyle (forthcoming).

45 See Khanna and Peterson (forthcoming).

46 See Weinstein & Bravo (forthcoming).

47 See Khanna & Peterson (forthcoming).

48 See Kwek et al. (forthcoming).

49 Peterson (forthcoming).

50 See Hegseth (forthcoming); Tarc (2009).

51 See Peterson (forthcoming).

52 See Datnow et al. (2022) for a research synthesis.

53 See Hegseth (forthcoming).

54 See Kwek et al. (forthcoming).

55 See Peurach et al. (2022) for more information on

resource- and practice-forward approaches.

56 On the topic of teacher agency, see Biesta et al. (2015); Datnow (2020).

57 See International Baccalaureate Organization (2018), p. 1 as cited in Hegseth (forthcoming).

58 See Kaser & Halbert (2017); Peterson (forthcoming).

59 See Walsh (forthcoming).

60 See "About AST," Academy of Singapore Teachers website: https://academyofsingaporeteachers.moe.edu.sg/.

61 See Weinstein & Bravo (forthcoming).

62 See Hegseth (forthcoming).

63 For more information on system forms, see Peurach et al. (2019a).

64 See Miles, Huberman, & Saldaña (2018).

65 See Peurach et al. (2019a); Peurach et al. (2019b).

66 See Spillane et al. (2019); Spillane et al. (2022).

67 See Cohen et al. (2014); Cohen et al. (2018).

BROOKINGS

1775 Massachusetts Ave NW,
Washington, DC 20036
(202) 797-6000
www.brookings.edu