Chapter 1
What Can We Learn from the Educational Effects of the COVID-19 Pandemic?

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Abstract This chapter provides a conceptual foundation for the book, discussing how the COVID-19 pandemic created an opportunity to re-examine the relationship of schools to society. The chapter introduces the study, examines the educational effects which could have been expected from the pandemic, reviews some of the available empirical evidence about such effects, introduces each chapter, and discusses the theoretical implications of the study.

The question of how schools relate to society, in the dual sense of how they contribute to society and how they are affected by societal structures, processes and changes, is central to the understanding of educational institutions. The study of how societies and schools shape each other involves questions such as: Can schools make societies more prosperous, equitable or democratic? What are the similarities, and the differences, in how different societies educate their children? How much have schools changed over time and is the pace of change greater or smaller than the pace of change of other societal institutions? The COVID-19 pandemic created the opportunity to add these questions to that list: how did schools respond to the changes created by COVID-19? How will schools mediate the impact of COVID-19 on the lives of those who lived through the pandemic?

Moments of rapid change, either in schools or in society, are singularly interesting to advance our understanding of the relationship between schools and society because they help us examine questions such as: How do sudden societal changes translate into new demands on schools? How do schools respond to such new demands? For instance, what happens to schools during transitions in regime type such as from autocratic to democratic government, or during periods of economic crisis, or during the creation of new political boundaries defining nations, or because of political or societal conflict and volatility? These sudden and significant changes can help expand our understanding of how societal change shapes schools. Conversely, the understanding of how schools shape societies is advanced as we

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study how education reforms reshape societal structures and practices. When they teach students who have previously been denied an education, for instance, such as when they teach girls and women in societies where they have been previously denied this right; or when they bring together children who are otherwise segregated by other social structures or norms; or when they teach subjects which challenge established social ideas, such as the relationship between human actions and climate change, or the challenges that racism and discrimination present to life in a democracy.

The global public health crisis created by the pandemic of COVID-19, starting in 2020, created a significant sudden transition in the societal context of schools. It is hard to overstate the gravity of this global crisis which, as of August 23, 2023, had infected 769,774,646 people and taken the lives of 6,955,141 (World Health Organization, 2023).The pandemic shocked populations the world over, impacting not just health, but many other social institutions. The functioning, finances, and priorities of families, workplaces, and governments were all changed, mostly for the worse. These shocks created by the pandemic are interesting for the study of the relationship between schools and society because of how rapidly they spread throughout the globe, impacting virtually all humans. In a matter of weeks, human populations had to make adjustments to their lives to preserve them. For many people such adjustments were significant, reducing their participation in many of the activities that were previously habitual: circulating in cities, congregating and interacting with others, shopping for food, working, earning a living, or having to adjust to the impact of illness or loss of life of relatives. Each of these changes to the social context in which schools operate affected schools –creating new demands for students and teachers and families and altering the support families could provide students and teachers to carry on their work. In addition, there were direct changes in how schooling was delivered resulting from the limitations placed in the ability to congregate caused by the pandemic. The scale and magnitude of these contextual changes created by the pandemic are therefore of special interest to further our understanding of how schools and societies relate to each other, capitalizing on the extreme changes brought about by this rare event. Among the questions of interest are: did these changes influence the societal priority given to education? Did they influence the priorities, goals, and purposes of schools? Did they influence how schools worked, what they teach, and how they teach it? Did they impact the organization of schools and school systems? What do these changes teach us about educational institutions as systems, about their capacity to respond to changes in their external environment, and about their capacity to coherently integrate the various components and processes that are involved in their functioning? Which of these changes were short-lived and which were long lasting?

The goal of this book is to further such understanding of how the COVID-19 pandemic transformed education systems. We take stock of how educational opportunity changed in various education systems around the world because of the pandemic, and we examine what education systems and societies learned from the educational changes that took place during the pandemic. Our focus is not just on the first order effects, the changes brought about by the pandemic during the moment

of the crisis when schools closed, but on effects three years after the onset of the pandemic.

This work is the product of the Global Education Innovation Initiative, a global collaborative created to advance understanding of how to make education systems more relevant to the needs of a changing world. We study how education systems seek to stay relevant in the face of societal changes, how schools change as societal goals change, and how schools try to support societal change. Since 2014 we have conducted a series of comparative studies of large-scale system level change: a study of national reforms to broaden the goals of the curriculum (Reimers & Chung, 2016), a study of large-scale programs of teacher professional development to support teachers in effectively teaching to a broader set of educational goals (Reimers & Chung, 2018), and a study of ambitious education reforms around the world (Reimers, 2020). When the pandemic broke out in 2020, we turned our focus to researching how it was impacting educational opportunity, conducting the first comparative education study of education during the pandemic (Reimers 2022). That first study, conducted between May and December of 2020, focused on the immediate effects of the pandemic. The results presented in this book build on that earlier work, this time looking at medium term impacts of the pandemic three years into it. In these pages, we seek to discern what were the educational consequences of the pandemic, what did governments do sustain education during the pandemic and with what results and, finally, what did education systems learn from it all.

As in our previous studies, we rely on mixed methods to write national case studies that look in depth at such impact, integrating and synthesizing various sources of evidence, trying to create an integrated and complete overview of how the relationship between schools and society fared during this global health crisis. We attempt to take a long view in our analysis, asking not just what was lost and what was disrupted, but also what was gained. Each case study, presented in this book as a chapter, was conducted by a team of scholars with deep knowledge of the system they were studying. We met as a group several times during the research, first to agree on our goals and methods and subsequently to discuss drafts of the chapters. Final revisions of the chapters benefited from feedback provided by authors of other chapters and from each author being able to read the complete manuscript.

As with previous studies of the global education innovation initiative we have focused on national education systems that are diverse in size, level of economic resources, and degree of institutionalization. The reason such diversity is important is because the relationship between schools and society is shaped by existing structures, policies, and capacities that differ across systems. We do not claim that the education systems in these countries are representative of those in any other group of countries, but they reflect some of the variability which characterizes the diversity of education systems around the world. The case studies refer to Brazil, Chile, Finland, Japan, Mexico, Norway, Portugal, Russia, Singapore, Spain, South Africa, and the United States. This study focused on the formal education systems in the compulsory cycle of education, emphasizing public schools. We did not examine higher education, technical education, pre-school education, adult learning, or non-formal education.

In this introductory chapter we conceptualize how the pandemic could have been expected to impact education systems, review what previous research has revealed about the effects of the pandemic on education - including some silver linings - introduce the studies in the book and theorize the significance of this knowledge for the understanding of the relationship between schools and society.

What Educational Impacts Could We Have Expected from the Pandemic?

Conceptually, it could be expected that the COVID-19 pandemic would shock the entire ecosystem that supports school attendance and learning. We can think of this ecosystem as an interlocking arrangement of various subsystems, all interacting with each other: students in families, in classrooms, and in schools, schools in systems, and national systems in interaction with each other and with international agencies as part of a global education system.

The pandemic would have impacted the students themselves, their well-being, their engagement with school, their learning, their opportunity to interact with peers and to access the stabilizing routines of the school day, and their own sense of purpose, agency, and outlook on life. It would also have impacted students' parents and families, including their own health and wellbeing, their interactions with students, the demands they made of students, their support for students' engagement with schools and learning, and their own engagement with teachers and other school personnel. The pandemic would also have impacted teachers, their own well-being, sense of purpose and agency, their own ability to engage with students effectively, to support their learning and their own opportunities for professional development, and in some cases also their own satisfaction with and commitment to the profession. Particularly affected would have been pedagogies which involve students in experiential learning, or which require group work, as the shift to remote teaching, with limited professional development, would have led most teachers to default to a content transmission mode. Similarly, the pandemic would have impacted school leaders and administrators, their own priorities for what schools should teach, the way in which they related to students and to teachers, their ability to carry out functions such as assessment, or to stay the course with ongoing efforts of improvement. The very organization of schools would have been impacted, beginning with reorganizing how to deliver instruction within the constraints created by measures to contain the spread of the virus, but also the processes to make decisions, the way to relate to other organizations such as technology companies or community partners. At a systemic level, the pandemic would have impacted high level priorities, financing, the use of information to make decisions, labor-management relations, the focus on delivery, and the ability to achieve coherence across the multiple systemic priorities, challenges, and ongoing efforts of improvement. Education systems are usually nested in complex arrangements of inter-governmental relations –across

different levels of government, and across sectors—and those too would have been impacted by the pandemic. Finally, the global education system, too, was impacted by the pandemic. This is a construct to refer to the many transnational organizations, inter-governmental, non-governmental, commercial, that interact with education systems, or school networks, such as the United Nations Agencies, the bilateral international assistance agencies, transnational education charities or advocacy organizations, multinational education companies, etc. Table 1.1 summarizes these expected impacts of the pandemic on the education eco-system.

It is hard to imagine a more disruptive set of forces of the entire education eco-system than those unleashed by the pandemic. Furthermore, those effects unfolded in at least three-time frames:

Table 1.1 Ecological model of education actors and sub-systems impacted by COVID-19

Actor and sub-system	The pandemic would have impacted…
Students	Their Well-being, their engagement with school, their learning, their opportunity to interact with peers and to access the stabilizing routines of the school day, and their own sense of purpose, agency, and outlook on life
Families	Their health and wellbeing, their interactions with students, the demands they make of students, their support for students' engagement with schools and learning, and their own engagement with teachers and other school personnel
Teachers	Their Well-being, sense of purpose and agency, ability to engage with students effectively, to support their learning and their own opportunities for professional development, and in some cases also their own satisfaction with and commitment to the profession
Pedagogies	Their ability to involve students in experiential learning and group work, as the shift to remote teaching, with limited professional development, would have led most teachers to default to a content transmission mode
School leaders	Their priorities for what schools should teach, the way in which they relate to students and to teachers, their ability to carry out functions such as assessment, and to stay the course with ongoing efforts of improvement
School systems	How to deliver instruction within the constraints created by the measures to contain the spread of the virus, but also the processes to make decisions and how to relate to other organizations such as technology companies or community partners High level priorities, financing, the use of information to make decisions, labor-management relations, the focus on delivery, and the ability to achieve coherence across multiple systemic priorities, challenges, and ongoing efforts of improvement
Inter-governmental relations	Education systems are usually structuted as complex arrangements of inter-governmental relations – Across different levels of government (national, state, local), and across sectors —And those too would have been impacted by the pandemic
The global education system	This is a construct to refer to the many transnational organizations - inter-governmental, non-governmental, commercial - that interact with education systems or school networks. They include the United Nations agencies, the bilateral international assistance agencies, transnational education charities or advocacy organizations, multinational education companies, etc

- First Order Results of the Crisis: immediate changes such as the suspension of in-person instruction, the creation of alternative arrangements to deliver instruction and support to students and families, or to evaluate student knowledge and decide how to promote students from one grade to the next.
- Medium Term Effects: those taking place after the immediate onset of the crisis, the efforts to remediate the learning loss caused by the pandemic, to regain a sense of normalcy after the pandemic, the adjustments to the instructional process to respond to the impacts of the pandemic on students or teachers.
- Long Term Effects: those that seem more or less permanent in the various elements of the eco-system described earlier, such as the increasing familiarity with the use of online technology, or the changes caused by loss of talent, caused by teachers and administrators who ended their education careers.

These multilevel and multi-staged educational effects of the pandemic define a total shock to the education ecosystem, impacting students the world over. Understanding the impact of the pandemic requires therefore understanding its systemic and global impact, not just examining such impact in a piecemeal manner, in a singular group of students or teachers, or in a narrow set of outcomes.

The pandemic of COVID-19 was the most significant shock to education systems globally since public education was first 'invented' as one of the institutions of the enlightenment (along with public research universities and with democracy). This shock interrupted learning opportunities for most children, in many cases during a very protracted period. There is reason to be concerned about the long-term consequences of such educational losses because they will diminish the life opportunities for individuals and their ability to contribute to their communities. However, just as important were the efforts exerted during the pandemic by educators, communities, organizations of civil society, governments, and international organizations to sustain educational opportunity, and the efforts they continue to exert to recover opportunity in the face of the grave challenges created by the pandemic. These efforts created and deepened new and significant forms of collaboration and of educational innovation among teachers, among organizations of civil society and government agencies, and among international organizations, and reopened important conversations about the purposes of schools and the priorities they should pursue. In some cases, the responses to the pandemic reshaped ongoing efforts of improvement, and stimulated efforts to transform education systems to address preexisting shortcomings.

In some respects, the crisis created by the pandemic brought the whole world together in an attempt to sustain the powerful idea - universally adopted in the wake of World War II, another global tragedy - that all people have a right to be educated. Paradoxically, a plague that brought about much loss in educational opportunity, and that made painfully visible the gravely unequal conditions in which different children fared during the crisis, also renewed the hope that education was the cornerstone to build a more just and sustainable world. It reminded us that the global education movement comprises not just governments, but local and transnational actors, teachers, students and communities, and that the process of educational

change depends not just on top down government initiatives, but on bottom up innovation and on lateral collaborative initiatives. As the chapters in this book will show, these responses varied across countries, as the impact of the pandemic was mediated by existing structures, priorities, resources, and efforts of improvement.

What Is Known About the Educational Impact of the Pandemic?

Relative to the total educational impact of the pandemic just hypothesized, what is known to date is relatively little, and rather piece-meal. Much of what has been studied has focused on the impact of the pandemic on school access and learning in a few subjects, on student well-being and mental health, and on a few countries. Much of what is known is limited because it draws on national level analyses, for instance of learning loss. In doing so, it ignores the considerable heterogeneity of responses at the subnational level and the variation in implementation of national mandates and policies - including variation in efforts to mitigate the impact of the crisis or to recover learning loss. Such analysis of 'policy intent' ignores also the policy responses of individuals such as parents and teachers, obviating the fact that many of them chose not to, or were unable to, attend school or engage with alternative modalities of education. Another limitation of that knowledge is that much of it adopts a 'black box' approach to computing learning loss by calculating 'averages' that obviate the important contexts which define existing systems: their levels of preparedness to teach remotely, the levels of professionalization of their teaching force, their institutional capacity to coherently implement policy, the levels of resources, or ongoing efforts of improvement. As a result of these limitations, such studies accounting for the extent of learning losses can offer little guidance on how systems should be transformed either to address the learning loss, to prevent it in the future, or to address preexisting shortcomings. Research on learning losses doesn't really tell us much about what education systems 'learned' during the pandemic, other than confirm, with more precision, what could have been expected as the pandemic broke out.

In March 2020, soon after the World Health Organization declared COVID-19 a pandemic, a group of almost 200 system level education authorities and administrators from around the world were surveyed in a cross-national survey inquiring about the anticipated effects of the pandemic. Most respondents acknowledged that the plans were insufficient and anticipated great difficulty in continuing to educate for as long as in person instruction was interrupted (Reimers & Schleicher, 2020a). Furthermore, respondents foresaw increased educational inequality as the result of the differential effectiveness with which the plans to educate during the pandemic would be reaching poor and socially marginalized children. The survey revealed that few education authorities had, at that moment, a coherent education strategy

(or any strategy for that matter) for how to educate during the pandemic. These early predictions proved, for the most part, accurate.

For example, several reports have calculated the number of days in person instruction was suspended in each country, though they do not account for the fact that many subnational levels, and schools, followed such guidelines to varying degrees. UNESCO, for instance, created a dashboard noting how many weeks schools had been fully or partially closed in each country during the years 2020 and 2021, based on reports from national governments. Analysis of those data show that there were differences across regions in the duration of school closures, and that schools were closed for longer periods in low-income countries than in high income countries, with closures lasting about half the time in high income countries than in low- and middle-income countries (UNESCO, 2023). Four UNESCO-UNICEF-World Bank-OECD cross-national surveys carried out between 2020 and 2022 revealed considerable differences in country education responses by level of income of the country and by world region. In the first two years since the outbreak of the pandemic, schools were closed, on average, 20 weeks; however, school closures were much longer in South Asia (35 weeks) and Latin America (37 weeks) (UNESCO, UNICEF, the World Bank and OECD, 2022).

An early review of research on the global educational impact of the pandemic noted that most studies focused on higher education. The review of the studies focused on elementary and secondary education concludes that the shift to remote learning constrained instruction, led to learning loss, challenged assessment and experiential learning, and affected the psychosocial well-being of students. Those effects were compounded by inequalities in the distribution of resources and in the social background of students (Tan, 2023).

There have been empirical studies of the learning loss[1] that took place during the pandemic. A review of 40 studies on learning loss and dropout conducted in 2022 found that most of the evidence indicated learning loss among poorer students and increased dropout for older students. The evidence on learning loss was more consistent for high income countries (Australia, Belgium, Germany, Italy, Netherlands, South Africa, Switzerland, United Kingdom, United States) and more heterogeneous in low- and middle-income countries (Bangladesh, Brazil, Burkina Faso, Burundi, Côte D'Ivoire, Ghana, India, Kenya, Mexico, Pakistan, Senegal, Uganda, and Zambia) with some studies showing no learning loss and lower learning loss than predicted. The evidence on dropout rates pertains primarily to low- and middle-income countries (Brazil, Ethiopia, Ghana, India, Kenya, Liberia, Malawi, Nigeria,

[1] The term 'learning loss' refers not just to what students 'forgot' during the pandemic, but to the knowledge and skills they did not learn, during the pandemic. It has been typically calculated by comparing the level of skills and knowledge on curriculum-based assessments of students in a given grade, with equivalent assessments administered to students in the same grade in years prior to the pandemic. While the implicit assumption of most of those studies is that such loss is a reflection of the inadequacy of the educational arrangements made to teach during the pandemic, it should be considered that many other conditions changed in the lives of students during that period which could have also impacted their learning.

Pakistan, Senegal, Sierra Leone, Uganda) plus South Africa, and all those studies showed increases in dropout rates, ranging widely from 1% to 35% (Moscoviz & Evans, 2022).

A recent meta-analysis of such studies shows that, by the end of 2022, there were still relatively few methodologically sound studies: only 42 studies covering 15 countries - Australia, Belgium, Brazil, Colombia, Denmark, Germany, Italy, Mexico, Netherlands, South Africa, Spain, Sweden, Switzerland, UK, and the United States - were found to be accurate and effective, with most studies covering high income countries (Betthauser et al., 2023). That review reports that the available studies are not adequate to examine variation of school closures within countries, across grade levels, or with respect to different modes of instruction (Ibid). The average learning loss across studies and grades is equivalent to a third of a school years' worth of learning (0.14 standard deviations). Looking at the date of those estimates, the review concludes that learning deficits occurred early in the pandemic and did not close or widen over time: "This implies that efforts by children, parents, teachers and policy makers to adjust to the changed circumstance have been successful in preventing further learning deficits but so far have been unable to reverse them" (Ibid). Most of the studies reviewed show that inequality increased during the pandemic and that the learning deficits are larger for math than for reading. The review does not identify variation in learning deficits across grade levels but finds larger learning deficits in middle income countries (Brazil, Colombia, Mexico, and South Africa). Another study of school enrollments before and after the pandemic in 12 countries in Latin America estimates that by the end of 2020 enrollment rates were 2% lower than in 2019 (Bracco et al., 2022, 3).

In the United States, assessments carried out by the National Center for Education Statistics show that student performance in math and reading assessments in grades 4 and 8 declined during the pandemic. For mathematics, in fourth grade declines were greater for the lowest performing students, and differed across states, with declines in 43 states but no changes in 10 states. In the eighth grade all but two states showed declines. In grade four the greatest declines in math were for Black and Hispanic students, for Native Americans, and for those children of two or more races. For grade 8, similar declines were observed across all groups. Declines were much lower for reading, and greater for the lowest performing students in grade 4. There was more variation across states, with 30 of them showing declines and 22 of them no changes in grade 4, and 33 of them showing declines and 18 no changes in grade 8. The percentage of students who began the school year behind grade level, which averaged 36% before the pandemic, increased to 50% in 2021–22 and to 49% in 2022–23. The same study shows variation across schools in how they were attempting to recover losses from the pandemic: 88% were using diagnostic assessments to identify student needs, 81% were using remedial instruction, 29% were extending class time on targeted areas, 19% extended the school day, 85% identified academic needs with formative assessment data, 59% tailored accelerated instruction, 10% extended the school year and 4% extended the school week (Carr, 2023).

Longitudinal studies focusing on reading and math, following cohorts of students in grades 3, 4, 5, 6, 7 and 8, in the United States show that most of the learning

loss occurred in the academic year 2020–2021. Learning gains in the next academic year, 2021–2022, were like learning gains before the pandemic, modestly helping to recover some of the learning loss. However, learning gains during the year 2022–2023 were lower than gains before the pandemic, and progress in closing pandemic learning loss stalled. At the end of the 2022–23 academic year substantial achievement gaps remained, relative to pre-pandemic levels, and they had increased during the academic year. The authors of the study estimated that recovering learning loss would require, on average, 4.1 months of additional schooling in reading and 4.5 months in math. They also projected that the amount of additional instructional time necessary to recover learning loss would be higher for the students in higher grades (Lewis & Kuhfeld, 2023).

Variations in learning loss across the United States are likely the result, not only of education policies, but of contextual factors including how the health pandemic affected the population of different states. An analysis of variation across states in health policies and outcomes finds important differences across states in infections and deaths, related to poverty rates, years of education of the population, levels of interpersonal trust and percentage of the population who are racial minorities, and to state health protective mandates (Bollyky et al., 2023, 1341).

Besides these differences across contexts, it was not just the deficient approaches that different schools, sub-systems, and systems adopted to educate during the pandemic, and the compounding effects of the pandemic on income and health that limited the educational opportunities of poor children. The segregation of students of various social strata into different streams also magnified the losses for impoverished children, with poor children often segregated into schools of low quality and with less resources to mitigate the impact of the crisis.

Furthermore, the educational responses of governments around the world to the pandemic varied widely, with some governments prioritizing education and school openings, while others kept schools closed for much longer periods of time. These differences also manifested across varying education authorities and levels of government within the same countries. These differences, across countries and jurisdictions, persisted over time as some governments eventually implemented programs to support teachers and students, whereas others did not. These differences reflected policy choices, levels of institutional capacity, and contextual differences resulting from varying levels of resources and infrastructure such as the percentage of the population vaccinated (Reimers, 2021).

In Guatemala, for example, the government advocated a differentiated municipal education strategy during COVID-19, including teaching in person, teaching in person with various distancing requirements, or teaching fully remotely - depending on the spread of COVID-19 in each of the 341 municipalities in the country. An analysis of the relationship of these various education strategies to varied educational outcomes shows that the municipalities with greater exposure to COVID-19 experienced greater dropout rates, lower promotion rates, and greater shifts from private to public schools (Ham et al., 2023, 3).There were also variations across schools and systems in what goals they prioritized for education systems. In the State of California (USA), for example, the implementation of a new science curriculum,

which had been adopted in 2013, was delayed during the pandemic, as most districts tended to deprioritize science in favor of English and Math (Gao & Severance, 2022).

Our earlier comparative study of the educational effects of the pandemic in Brazil, Chile, Finland, Japan, Mexico, Norway, Portugal, Russia, Singapore, South Africa, and the United States concluded that the education losses were the result of impacts of the pandemic on poverty and household conditions, as well as the result of insufficient capacity of remote instruction to adequately sustain opportunities to learn (Reimers 2022). The study showed different educational consequences of the pandemic by country and social class. The mechanisms through which the pandemic influenced educational opportunity, augmenting inequality, included both the responses of the education system as well as the direct health and economic impact of the pandemic on students, teachers, families, and communities. The main direct pathway limiting education comprised the interruption of in-person instruction, the duration of such interruption, and the adoption of a variety of education modalities during the suspension of in person schooling of varied efficacy. A secondary direct pathway included the constraints on education spending caused by the reduced fiscal space resulting from the unforeseen need to finance the health and economic response to address the health crisis. This finding is congruent with a recent cross-national study which documents that the pandemic diminished levels of education spending, particularly in low and lower middle-income countries (UNESCO, UNICEF, the World Bank and OECD, 2022). Other pathways influencing students, their families, and teachers directly included the impact on health as well as the impact of the pandemic on income.

Our earlier comparative study also showed that education systems were in varying stages of readiness to sustain educational opportunity in the face of the disruptions such as those caused by the pandemic. Those differences included access to connectivity at home and skills to learn and teach online, as well as the level of resources, capacities, and institutional structures needed to meet gaps during the emergency. Similar gaps were observed in teachers' capacity. Institutional fragmentation and school segregation contributed to augmenting inequality.

This comparative study and other studies of the effects of the pandemic show that the story of the educational effects of the pandemic is not a single story. It is a story largely mediated by country of residence –as national policy choices and institutional capacity and resources shaped the duration of school closures and the effectiveness of policy responses—and by social class –as the social circumstances of students shaped the educational institutions they had access to and the support they received from parents and from their schools. The educational impact of the pandemic proved then to be a quintessential 'Matthew effect', a term coined by sociologist Robert Merton (1968) that draws on the parable of the talents to describe how unequal initial conditions often compound inequalities:

> For unto everyone that hath shall be given, and he shall have abundance: but from him, that hath not shall be taken away even that which he hath (— Matthew 25:24–30).

As has been mentioned, the disproportionate educational impact of the pandemic on marginalized children was compounded by the impact of the pandemic on other

factors influencing their lives, such as health, family income and impact in their communities. A recent expert report of the Board on Children, Youth, and Families (BCYF) of the National Academies of Sciences, Engineering, and Medicine (the National Academies) reported a multifaceted and disproportionate impact of the pandemic on minoritized children:

> Over the course of the COVID-19 pandemic, Black, Latino, and Native American people have experienced a disproportionate burden of cases, hospitalizations, and deaths in comparison with their White counterparts. Families with low incomes have also been disproportionately affected by the pandemic. Perhaps the most pronounced disparities are among bereaved children: children of racial and ethnic minorities account for 65 percent of those who have lost a primary caregiver because of COVID-19, with Native American children 4.5 times as likely as White children to have lost a parent or caregiver, Black children 2.4 times as likely, and Latino children 2.0 times as likely (Hillis et al., 2021) (National Academies of Science, 2023, 2).

The same report concludes that the pandemic saw increases in dysregulating behaviors, decreases in adaptive behaviors and self-regulation, increases in concern about the present and future and in unhappiness and depression, lack of connection and anxiety, and increases in parents' stress, household chaos, mental health challenge and parent-child conflict (Ibid, 3).The report also documents decline in early childhood program enrollments, with those programs serving racial minority, low-income families, and families that did not speak English at home experiencing the largest enrollment declines. Declines in enrollment in elementary and secondary education, increases in chronic absenteeism, and declines in high school graduates enrolling in college were also recorded (Ibid, 3). The same report shows "increases in diabetes type 1 and type 2 among children during the pandemic, increase in maternal mortality rates, increases in the proportions of children with symptoms of depression and anxiety; increased rate of substance overdose deaths among adolescents, a majority of which were fentanyl related, with highest rates among Native American youth; increases in household food insecurity and childhood obesity; and delayed preventive care and immunizations, with lower rates of both for Black and Latino children." (Ibid, 4).

The differences between the disruption that the pandemic caused to educational opportunity in the Global North and the Global South mirror differences in addressing the public health crisis, and in the prospects of social and economic recovery. As a result, students in the Global South experienced the combined effects of the disruption on their schools, on their health systems, economies, and home circumstances. In addition, education systems in the Global South were already experiencing more serious education challenges of access, low effectiveness, and relevance prior to the pandemic, all while their education systems experienced greater funding gaps. The resulting interactions of these various processes caused the most significant setback in educational opportunity to occur in the Global South.

Several simulations have been developed of the long-term economic impact of such setbacks. A simulation of the impact of a full year of learning loss, conducted in the early months of the pandemic, estimated it as a 7.7% decline in discounted GDP (Hanushek & Woessmann, 2020). More recently, the World Bank and other

organizations estimated the cost of the education disruption as $21 trillion dollars in lost lifetime earnings in present value over time for the current generation of students, or 17% of today's GDP (World Bank et al., 2022). Learning loss has also been estimated to translate into a decline in intergenerational education mobility, and thus in an increase in inequality (Azevedo et al., 2023, 3). These declines in education mobility would worsen preexisting trends in Upper-Middle Income and High-Income countries and reverse improvements in mobility for Low-Income and Lower-Middle Income countries (Ibid, 3).

The long term impact of the pandemic will also be shaped by the way in which the pandemic influences public spending. In countries with high levels of external indebtedness –which increased in order to address the short term economic and public health needs created by the pandemic—the repayment of principal and interest on this public debt will limit available public resources for education. A recent World Bank study estimates that a 1% increase in external debt will translate into a 1.4% decline in education spending per child. In Low- and Middle-Income countries, a 5 percent increase in external debt would lead to a $12.8 billion decline in education spending. This is equivalent to all official development assistance to education in 2021 (Miningou, 2023, 1).

In making education more unequal, the pandemic diminished the capacity of schools to be an avenue of hope for the poor, providing their children with more opportunities than they had in life, and to disrupt the intergenerational transmission of poverty. But paradoxically, in making such inequalities and vulnerabilities visible, the pandemic also stimulated new thinking about education, new partnerships, and increased attention to the importance of education and of equity in educational opportunity. This renewed hope in education, and the innovation dividend generated during the pandemic, will become increasingly important to address the deep education crisis accelerated by COVID-19.

Beyond Learning Loss. The Education Silver-Linings of the Pandemic

It should not be surprising that the pandemic produced an educational calamity - arguably the worst crisis in the history of public education. After all, shocks such as natural disasters or wars typically interrupt the functioning of schools and the lives of students, negatively impacting their learning. What should really surprise us is that during a global crisis of such intensity, there would be so much interest, effort, and collaboration to sustain educational opportunity, even if those efforts did not achieve their intended results. International development and civil society organizations demonstrated extraordinary leadership focusing on the importance of sustaining education during the crisis and offering various forms of support. These efforts made the global education movement - which emerged when education was included as one of the rights included in the universal declaration of human rights adopted in

1948 - visible as a movement of *collective leadership* that includes governments at all levels, international governmental and non-governmental organizations, civil society organizations, teachers, students, and parents. They also reminded the world that education is more of a *whole of humanity* effort than a government effort.

International organizations such as UNESCO, UNICEF, the World Bank, and the OECD increased inter-agency coordination, resulting, among other things, in four waves of surveys to monitor the government responses to the pandemic through various policy frameworks that offer guidance to respond to the pandemic. These and other international development organizations launched specific COVID-19-related initiatives during the pandemic to support governments in sustaining educational opportunity. The United Nations convened a global summit on education in September of 2022 to call for a renewed priority to education in the wake of the pandemic. At the summit, UN Secretary General Antonio Guterres issued a vision statement calling for a deep transformation of education as an urgent political imperative of our collective future. He underscored the crisis represented by the large number of children excluded from education and in the lack of relevance of education - challenges that were aggravated by the pandemic. He also called for a reimagining and transforming of education so that individuals would be empowered to build a more just, sustainable, resilient, and peaceful future (Guterres, 2022).

These themes echoed those included in *Reimagining Our Futures Together: A New Social Contract for Education,* UNESCO's international commission report on the futures of education, chaired by Ethiopia's president Sahle-Work Zewde and written during the pandemic. This report calls for a new social contract of education which guarantees each person a quality education throughout life, for a bold reimagining of the culture of education, and for a transformation of curriculum, pedagogy, the teaching profession, the organization of educational institutions, and the ecosystem of organizations that support lifelong learning. To achieve such transformation, the report proposed four catalytic actions: broad and inclusive societal dialogue that would empower each person as a changemaker, more educational research and innovation, greater involvement of universities with the rest of the educational ecosystem, and a reimagined international cooperation architecture (UNESCO, 2021).

Similarly, national, and international civil society organizations as well as businesses, marshaled resources and innovations to support education. Governments, at the local, state, and national levels, advanced novel ways to sustain education. The latest interagency report documenting governments' responses to the pandemic based on responses collected between May and July of 2022 shows both decisive steps in sustaining education and heterogeneity in governments' responses. For instance, half of the countries took special measures to re-enroll all students in school, such as automatic re-enrollment, mobilization campaigns, and cash transfers for poor families. Most countries implemented programs to provide support to students affected by the pandemic. Over four in five countries implemented programs of teacher professional development to support remote instruction. About 70% of the countries continued programs to assess student learning, but less than half conducted studies of the impact of closures on learning outcomes, and only

half of those assessed non-cognitive skills. Half of the countries re-prioritized curriculum to help students recover learning loss. About two thirds of the countries implemented programs to provide psychosocial and mental health support to students (UNESCO, UNICEF, the World Bank and OECD, 2022).

The World Bank developed a framework (the RAPID framework) to guide education responses to recover from the school closures which recommended reaching every learner and enrolling them in school, assessing student learning regularly, prioritizing foundational learning, increasing the efficiency of instruction, and supporting the development of psychosocial health and wellbeing (World Bank, 2023). A study of the education policies of 60 low- and middle-income countries in response to the pandemic showed that all of them had put in place programs to support learning during and after the pandemic, even though only a minority of them had followed the guidance of the RAPID framework in doing so. For example, only 27% had implemented targeted instruction programs and only 15 percent had implemented structured pedagogy programs, which are part of the framework recommended by the Bank (World Bank, 2023, 12).

The educational impact of the pandemic should thus be evaluated not just with respect to the counterfactual of a world in which COVID-19 would not have infected 10% of the world population and taken the lives of 1% of those infected - as it had up until August of 2023 - but also against a counterfactual in which education could have been ignored until the health crisis could be brought under control. The fact that education was not ignored while 769,774,646 people were sick and 6,955,141 people were dying, and that it was in fact one of the top priorities of educators, education authorities, governments, and societies, speaks to the normalization of the idea that education is indeed a human right and to the crystallization of the global education movement.

It is also misguided to estimate the educational effects of the pandemic by reference to some standard of education before the pandemic, because educational opportunity before the pandemic was barely adequate. Too many children failed to learn, and too many learned knowledge and skills of little consequence to improve their lives or to contribute to improving their communities (World Bank, 2018). In 2015 the global community had agreed to an ambitious set of development goals, including the goal of "Ensuring inclusive and equitable quality education and promote lifelong learning opportunities for all". An analysis of progress against the targets set for this goal between 2015 and 2020 shows most countries were not making sufficient progress to achieve their set targets. Just 29% of countries were on track to achieve their goals in upper secondary completion rate and only 43% were on track to achieve their goals in preschool enrollment, and most of these were high income countries. A third of the countries did not reach their targets for education public expenditure (UNESCO, 2023, 32).

It is therefore necessary to keep in mind that such impact happened to education systems which were, in many ways, failing students. Not only did systems fail through the low levels of school efficacy in instructing the basic literacies of reading and math, but their low levels of relevancy in defining too narrowly the outcomes of schools and in failing to educate the whole child, addressing cognitive as

well as socio-emotional dimensions of development. If the pandemic made those preexisting failings more visible, and if it caused governments to increase the priority of addressing them, the 'learning loss' which undoubtedly took place should be weighed against this positive impact on the system.

Paradoxically, in disrupting the functioning of schools and education systems and upending the rules that ordinarily govern such institutions, the pandemic created the occasion to rediscover the importance of having clear and relevant school purposes, as well as experimentation with new and different ways of teaching and learning, as well as novel forms of organization and collaboration which resulted in pedagogical and curricular innovations. The fact that education systems had to respond to a rapidly changing context was a salutary development for the many systems in which schools were too insulated and unresponsive to their social contexts. While these efforts were insufficient to prevent the educational effects which have been documented, these 'positive outliers' - or the programmatic and policy interventions to educate during the challenging context created by the pandemic - are of interest because of what they can teach us about the capacity of educational institutions to innovate during extremely challenging contexts. They represent potential solutions to pre-existing deficiencies of the education system, contributing to more ambitious aspirations to transform education.

The significant disruption, or unprecedented scale, represented by the pandemic tested the organizational resiliency of education and upended many of the bureaucratic norms that govern education systems. Such disruption of education systems created a rare event which suspended the normal boundaries, constraints, and roles that regulate the behavior of individuals in education organizations. In this way, the practices and interactions among educational actors and institutions created new forms of collaboration and led to novel ways to teach and learn. Even as the pandemic created other, new constraints and challenges –resulting for example from the social distancing norms instituted by public health authorities to contain the velocity of the spread of the virus, or from inadequate resources or infrastructure to rapidly shift to digital platforms— it was precisely the existence of those new challenges and constraints, together with the temporary freedoms from ordinary bureaucratic rules and routines, which created the occasion for educational innovation. Recognizing this innovation dividend of the pandemic is essential because recovering from the pandemic will require not that we find a way to bring education systems to their levels of pre-pandemic functioning, but to greater levels of effectiveness and relevance. Such an education renaissance will require innovation.

During the period between April 2020 and June of 2021, my colleagues in the Global Education Innovation initiative and I, in partnership with colleagues in several international education institutions, conducted a series of studies of some of the innovations which had been generated during the pandemic. The first was an effort to document emerging efforts of education continuity during the early phase of school closures, beginning in April of 2020. Between April and July 2020, we wrote 45 case studies of innovations to sustain educational continuity. Our approach was inspired by some of the basic tenets of appreciative inquiry, an approach to action research and organizational change that consists of identifying and leveraging areas

of strengths in organizations, to support further improvement (Cooperrider et al., 2004). The 45 case studies covered education responses to the crisis in thirty-four countries, from municipal, state, and national governments, from school networks, and from private and public institutions. The countries we covered varied in terms of resource level, infrastructure, size, and other characteristics. They included: Belgium, Brazil, Chile, Colombia, Egypt, Finland, France, Ghana, India, Japan, Jordan, Kenya, Latvia, Lebanon, Liberia, Mexico, Netherlands, New Zealand, Nigeria, Pakistan, Peru, Russia, Samoa, Sierra Leone, Spain, Taipei, Turkey, Uganda, Ukraine, United Kingdom, United States of America, Uruguay, Vietnam, and Zambia (Vincent-Lancrin et al., 2022).The case studies included initiatives such as using radio, printed materials, educational television, and a variety of digital platforms, with and without internet, to sustain educational opportunity. They also included initiatives to develop the capacities of teachers to teach remotely, and to support parents as they helped their children learn at home. Some of them focused on novel ways to assess student knowledge remotely. The 45 innovations focused on a range of educational outcomes, from maintaining students' engagement with learning – in various ways such as reviewing previously covered material- to covering new content in academic subjects and supporting the well-being and socio-emotional development of students. Most of these cases address competencies beyond cognition, recognizing perhaps the salience of socio-emotional well-being during the crisis and the foundational nature of attending to such well-being before any other form of learning could be productive. Among the conditions which enabled the innovations examined in these cases were preexisting networks across schools, and in some cases across schools in different countries. The cases also illustrate the power of collaboration, as the innovations involved, in many cases, collaboration among teachers and with other stakeholders: members of the community, civil society organizations, and the private sector. To some extent, the case studies illustrate collective leadership in which various stakeholders come together to collaborate for the purpose of improving the performance of the education system.

Such was the case, for instance, in the State of Sao Paulo in Brazil which developed in a matter of weeks a multi-media center, which delivered education content via TV, radio, an app and printed materials, to sustain educational continuity during the period of school closures as a result of establishing partnerships with private providers and organizations of civil society. Of particular interest is the fact that this invitation to share leadership and responsibility extended by the State Ministry of Education to some of the most influential business leaders in the State, was followed by donations of services from telecommunication and education companies, which allowed the creation of the center, amounting to 0.6% of the annual education budget of the State. Several different organizations collaborated in providing access to various elements of the education platform to students, for example, police officers visited the homes of the most marginalized students to deliver printed materials, and donated cloud computing time to host the technology platform. Many of the cases involve using digital platforms to support teacher collaboration - among teachers and administrators, within and across schools, and of education resource digital networks - in sharing practices they had found effective in teaching remotely, and in

problem solving together. While there is nothing novel in the creation of professional learning communities or in shared repositories of education resources, the pandemic immersed teachers in the use of digital platforms to teach and to participate in such professional learning communities.

Between June and December of 2021, we conducted a second study of 31 educational innovations generated during the pandemic, this time examining to what extent those innovations aligned with the recommendations of UNESCO's most recent report on the Futures of Education. Our intent was to examine whether the context of disruption created by the pandemic had allowed innovation dividends aligned with transformational aspirations (Reimers & Opertti, 2021). These thirty-one case studies of innovations focused on innovations to support learning from home. Some of them involved multimedia platforms or other technological platforms to support students, teachers, and parents, while others focused particularly on socio-emotional wellbeing and development of students or on helping teachers develop new skills to engage students, to provide them feedback, or to design learning experiences. Most cases are multidimensional – for example, including a platform to deliver digital content- but also support teachers to develop digital pedagogies. A number of these innovations focused on developing student competencies and providing them with more agency over their learning. These case studies shared several distinctive elements. They all supported student-centered learning, socio-emotional development and wellbeing, teacher, and principal professional development, and family engagement in schoolwork.

Chapters of This Book

The twelve chapters that follow present comprehensive accounts of the educational impact of the pandemic in different countries. They examine the immediate education responses to the pandemic, as well as the enduring policy and programmatic changes. The chapters investigating Spain and South Africa show examples of 'policy learning' as ongoing reform efforts were informed by what was learned during the pandemic. In other countries–such as Finland, Japan and Singapore– the pandemic created awareness of needs and opportunities not sufficiently addressed by policy. For example, the pandemic brought a focus to the needs of marginalized groups of students and students with special learning needs, as well as highlighted the necessity of addressing mental health and well-being of students and teachers. While none of the cases offer a comprehensive account of the pandemic's impact on the entire education ecosystem, they offer important insights that go well beyond the simple accounting of learning loss that characterizes much of the research on this topic to date. Importantly, the case studies focus not just on what policy attempted to do, but on implementation and the challenges to executing it. The cases make visible what the pandemic changed, what was gained, and the emerging new priorities in response to the pandemic.

In Chap. 2, *Brazil. How two municipalities achieved above-average results in reading in the early years of elementary school during the COVID-19 pandemic,* Carlos Palacios and Alicia Bonamino examine the considerable learning loss in literacy that early grade students in ten states in Brazil experienced, losses which were greater in the earlier grades. They also highlight how such loss varied across municipalities and how some municipalities were able to achieve greater gains in recovering learning loss than others. The authors attribute the heterogeneity in learning losses to variations in resources across state and municipal networks and their ability to create effective forms of remote education, as well as attribute these gains to preexisting education policies and programs. An analysis of learning loss and learning gains during the pandemic in two municipal networks serving primarily socioeconomically disadvantaged students, which had made considerable gains in literacy prior to the pandemic, shows that those networks experienced relatively lower levels of learning loss and recovered faster. These networks had invested in the capacity of mid-level bureaucrats (pedagogical coordinators) to support literacy instruction prior to the pandemic, creating systems to support formative school visits that focused on specific literacy instruction. The three components of those systems were: (1) a system of monitoring and supporting schools, which relied on student assessments, frequent formative visits to school with an instructional focus as well as tutoring, and effective family engagement to support students in literacy acquisition, (2) student assessments, which were used to support formative visits to schools and the development of structured instructional materials, and (3) supplemental instruction from teachers, in the form of tutoring offered to students individually or in small groups.

In Chap. 3, *Post-pandemic crisis in Chilean education. The challenge of re-institutionalizing school education*, Cristián Bellei and Mariana Contreras provide a comprehensive overview of the educational impact of the pandemic on education, which included learning loss, diminished student attendance, increased mental health challenges for students and teachers, increases in school violence, and increased teacher absenteeism and abandonment of the profession. All these effects reinforced pre-existing inequalities in educational opportunities for students from different socioeconomic backgrounds. The authors explain that these outcomes are the result of the deficient policy initiatives to sustain education during the pandemic and to return to in person instruction once the health pandemic had been contained. They are also the result of the fragmented nature of the highly decentralized and privatized school system and a lack of trust in public institutions and the government during the crisis. They characterize their findings regarding education as a process of the deinstitutionalization of education, which is also associated with the weakening of the teaching profession.

In Chap. 4, *The Switch to Distance Teaching and Learning in Finland During the COVID-19 Pandemic (2020–2022) Went Technically Well but was Emotionally Challenging*, Katariina Salmela-Aro and Jari Lavonen show that, while the brief transition to distance learning in Finland was relatively successful due to prior teacher professional development in the use of technology and the availability of devices and connectivity, there was still learning loss, reduced engagement, and an

impact on well-being for students, as well as for teachers and principals. In particular, the most marginalized groups were most affected. There was also increased stress and burnout among teachers and principals. The pandemic did, however, contribute to the development of digital competence for students, digital pedagogical skills for teachers, and innovation in teacher collaboration.

In Chap. 5, *What Japan's education has lost and gained after almost succeeding in preventing the spread of COVID-19 infection and guaranteeing academic achievement*, Kan Hiroshi Suzuki discusses Japan's comprehensive approach to mitigate the educational impact of the pandemic and support of students and teachers during remote teaching, while also providing guidance to schools, including protocols for testing and vaccination to contain the spread of the virus. Several government agencies implemented extensive monitoring of the conditions of students and families during the pandemic, which informed timely policy responses to support children. In response to evidence of mental health challenges and increases in suicides, policymakers recognized the important role of schools in supporting well-being and attempted to create policy that minimized the duration of school closures. As a result of these measures, students experienced no learning loss during the pandemic, but student mental health still deteriorated (furthering trends before the pandemic) and student absences from school increased. The chapter also discusses how the mental health of parents deteriorated during the pandemic –related in part to job insecurity–which translated into worsened parent-child relationships and increases in child abuse. Finally, the chapter highlights some silver-linings from the pandemic, in terms of improved learning environments and interpersonal relationships.

In Chap. 6, *Understanding potential causes of learning loss: Teachers´ perceptions regarding educational challenges during the COVID-19 pandemic in Mexico*, Sergio Cárdenas, Ignacio Ruelas, and Edson Sánchez examine how teachers experienced the various components of the remote learning strategy. These reports show that teachers were insufficiently prepared and lacked support to effectively rely on digital pedagogies or respond to inequalities in access to technology among their students, relying on lowest common denominator didactic approaches. Teachers describe the barriers they faced during the pandemic as a function of insufficient access to technological equipment, inadequate parental support for students, differences in access to connectivity between teachers and students, and constraints facing teachers to access, professional development or to connect with parents. As a result, it is likely that education during the pandemic augmented pre-existing inequalities.

In Chap. 7, *The Fragility of the Norwegian Policy Response: How Relying on Digital Infrastructure and Local Autonomy Led to an Increase in Inequality in Education*, Marte Blikstad-Balas explains that the lack of a national response and government support to teachers during the pandemic, and a tradition of reliance on teacher professional autonomy, left many teachers inadequately supported to effectively teach their students remotely. National policy prioritized minimizing school closures, but there was variation across schools in the extent to which they could operate in person because of local health conditions–including infection of their

own teaching staff and students. The lack of adequate professional development to transition to remote teaching resulted in many students receiving very traditional forms of direct instruction, focused on content transmission. This extreme reliance on local schools and individual teachers to decide how to teach during the pandemic resulted in an increase in inequality of educational opportunity during the years 2020 and 2021, with students spending considerable time studying unsupported. There was a lack of effective approaches to educate vulnerable students during the pandemic. Plans to recover learning loss are still largely dependent on teachers' choices and capacity. Despite these challenges, the authors found increasing awareness of the limits of using technology purely for content transmission, emphasizing the need for effective professional development and fostering greater parental involvement in education. Additionally, some small groups of students may have benefited from remote instruction more than they would have otherwise (students who are bullied, or chronically ill, or who received high quality support at home).

In Chap. 8, *Reframing Schools: What Has Been Learned and Remains in the Post-COVID-19 Period* Estela Costa and Mónica Baptista discuss the main programs of education continuity promoted by the government in Portugal during the two phases of the pandemic, the subsequent plan of learning recovery, and how teachers made sense of these initiatives. The chapters show that the main programs of digital resources to support distance learning and professional development, which were adopted in the first phase of the crisis, have continued and were incorporated in more recent policies designed to foster school autonomy in the implementation of the curriculum. The recent policies include a significant reorganization of the academic year and strengthened teacher collaboration in instruction, greater support for student well-being, and some changes to student assessment. Teachers responded positively to these initiatives. The learning recovery plan contains three pillars: teaching and learning, supporting education communities and evaluation and monitoring. The teaching and learning pillar integrates the initiatives which were developed for digital learning and to support effective family engagement during the pandemic. Teachers see these changes as having improved the utilization of time and instruction and see the innovations which were developed during the pandemic as positive and continuing.

In Chap. 9, *Pandemic lessons: Story of cooperation and competition in Russian education*, Anastasia A. Andreeva Moscow, Diana O. Koroleva, Sergei G. Kosaretsky, and Isaak D. Frumin examine the responses of the Russian education system to the pandemic. In response to the absence of a well-developed integrated distance learning infrastructure at the beginning of the pandemic, regions and schools exercised considerable autonomy in adopting digital strategies, which led to great heterogeneity including local innovation and facilitating contextualization but also contributed to inequality in outcomes. The onset of the pandemic fostered collaboration between schools and EdTech companies, including schools adapting and adopting the products developed by companies. As the pandemic progressed, the government attempted to foster a consistent, national infrastructure for distance learning and vetting of educational content delivered remotely, but the implementation of this strategy failed. The government then attempted to regulate

the relationships between schools and EdTech companies. Lastly, this chapter examines what lessons about remote learning were incorporated by schools following the pandemic, discerning three patterns of response, and discussing their shortcomings.

In Chap. 10, *Singapore's endemic approach to education: Re-envisioning schools and learning*, Oon Seng Tan and Jallene Jia En Chua examine how effective intergovernmental coordination among education, health, and other sectors, as well as reliance on science and a commitment to social responsibility, mitigated the impact of COVID-19 in Singapore, and hence in education. The two periods of remote learning were brief, facilitated by previous plans to introduce technology in school, teacher professional development, and distribution of devices to students who needed them. While specific evidence is lacking, there appears to have been a minimal impact of the pandemic on learning loss. There is more evidence, in contrast, of the impact on mental health of students, youth, and teachers. The chapter discusses some silver-linings of the pandemic, in the form of greater reliance on digipedagogies following the pandemic, greater attention to socially disadvantaged students, and greater attention to mental health needs of students and teachers. These new priorities impacted the examination system. The chapter concludes by highlighting future challenges the education system should address in a post-pandemic world.

In Chap. 11, *Reforming education in times of pandemic: The case of Spain*, Alejandro Tiana-Ferrer examines how the impact of the pandemic coincided with the process of development and implementation of a substantial education reform across the country. The suspension of in person instruction was minimal compared to other countries, and several programs supported the distribution of devices and connectivity. The pandemic heightened attention to wellbeing and mental health, and to pedagogical and organizational challenges such as an overcrowded curriculum and lack of teacher collaboration. It also revealed conditions of vulnerability for socially marginalized students, the poor, immigrants, and students with disability. The recognition of these issues fed back into the process of development of the reform and allowed them to be incorporated into the post-pandemic policy agenda.

In Chap. 12, *Fragility compounded: the state of the South African educational system in the aftermath of COVID-19*, Crain Soudien, Vijay Reddy, and Jaqueline Harvey examine the efforts of the South African government to mitigate the educational impact of the pandemic. That impact was mediated by the structural inequalities of the system - a legacy of the apartheid era - which resulted in large class and racial inequalities in educational opportunity. Inequalities among school type compounded the impact of school closures and the ensuing learning loss, all augmented by the need to allocate public funds to address infrastructural requirements created by the emergency. Despite the efforts of government, labor unions, parents, and civil society to sustain education during the pandemic, schools serving the most disadvantaged students lost gains made in previous years in enrollment, attendance, and learning. In contrast, more privileged schools were able to mobilize structures and systems which maintained standards of education delivery, and even improved it. The chapter then uses a framework developed by UNESCO's International

Commission on the Futures of Education to assess the post-pandemic responses of the education system. They conclude that, while opportunities for deeper transformation were missed, the pandemic influenced education policies and structures in ways that made them more responsive to the needs of the most vulnerable students. For instance, it provided support for teachers, increased the coherence of the system, trimmed the curriculum, and closed the digital divide. The chapter concludes, however, highlighting the limitations of South Africa's institutional capacity to implement these policy initiatives, and the absence of specific implementation plans to execute them.

In Chap. 13, *Leaning into the Leapfrog Moment: Redesigning American Schools in a Post-Pandemic World,* R. Lennon Audrain and Carole G. Basile discuss the evidence on the substantial declines in student achievement that took place in the United States during the pandemic, the increases in teacher dissatisfaction, and in mental health challenges for students and teachers. The chapter also discusses that, while considerable funds have been apportioned for learning loss recovery, those are being used for programs and solutions which are short-term and miss the structural foundations of the deficiencies of the American education system. The authors argue that those foundations include a model of teaching that is outdated, and that sees teachers doing their work siloed in their classrooms. The chapter then reviews the Next Education Workforce model to reimagine teaching as a collaborative endeavor, developed at the University of Arizona, and discusses emerging evidence on the implementation of such an approach.

Sustaining Hope in Education

The COVID-19 pandemic created an education crisis which robbed many students of the opportunities to learn what they were expected to, caused others to lose skills they had already gained, and pushed some students out of school entirely. These losses were unequally distributed among different students and education systems and, as a result, the pandemic will result in increased educational inequality if the losses are not reversed. Without proper intervention, economic and social inequality will surely follow in and across these contexts.

But, for all that was lost during the pandemic, much was gained, too. The pandemic made visible how important education and school attendance were for students – not just for their learning, but for their well-being. As the stabilizing routines of schools were disrupted, it became visible to parents, educators, administrators, and other stakeholders that the development which takes place in schools is multidimensional. The attempts to maintain educational opportunity during the pandemic with limited resources and preparation were fraught with immense difficulties. As this made visible the benefits of in person schooling, some governments and subnational jurisdictions endeavored to return to in person instruction as quickly as possible. These efforts of education systems to respond to a sudden change in the social context made visible the many ways in which the conditions under which different

children learn are unequal. It also made more salient the inability of education initiatives to offer equal opportunities, given the differences in such preexisting educational and social conditions. The chapters in this book also underscore how various education systems differed in two forms of resiliency: first in the resiliency to sustain educational opportunity in the face of a shock such as a pandemic, (as was the case in Finland, Japan, or Singapore) and secondly the resiliency to recover from the shock of the pandemic (as was the case with some municipalities in Brazil).

The crisis created by the pandemic also demonstrated that well-being is the foundation of learning and prioritized the importance of mental health and socio-emotional well-being. It also caused a reexamination of which learning outcomes matter, and a more critical stance towards crowded curricula that focus more on content than on the competencies that students gain. The challenges to engage and teach students during the pandemic also necessitated a renewed interest and attention on the effectiveness of instruction and underscored the importance of providing support to teachers; via professional development, but more fundamentally rethinking how their work is structured and how they collaborate with others. The crisis created by the pandemic also showed that innovation was possible - albeit in short order and with many limitations - through a shared commitment of many to preparing students to have a better future, even as humanity faced a crisis of death and disease. Much of this innovation involved using technology - first to teach remotely, but also to support personalization, teacher collaboration, and more effective teacher engagement.

To return to the questions about the relationship between schools and society which we can learn from the COVID-19 pandemic, the first lesson we learned is that each teacher, school, network, and system faced the pandemic with a unique set of capacities and constraints that were intertwined in their country's history. These factors thus shaped how the pandemic impacted them. Some teachers were better prepared than others to face the crisis, as were some students; some systems were better prepared than others to face the crisis, as were some schools.

Across these differences, however, the pandemic caused many actors, teachers, parents, governments, and other actors to realize the importance of schools and of learning, and to commit extraordinary effort and resources to sustain educational opportunity. In facing the shortcomings of these efforts, the pandemic heightened awareness of the many pre-existing constraints to educate all children and elevated the priority of education and of serving students facing the greatest constraints. The pandemic also helped rethink the goals of education, creating greater awareness about the need to address the well-being and mental health of students, and about the need to focus on learning rather than on delivering content. Teachers and schools demonstrated extraordinary capacity to innovate during the pandemic, even if many of these efforts were insufficient and short lived. The pandemic revealed that education systems are open to their external environment, albeit with limited capacity to coherently integrate the various components and processes that are involved in their functioning - especially during a crisis. The pandemic will likely have long lasting effects, causing greater attention to the need to reimagine education institutions and to support the teaching profession.

Paradoxically, the education crisis created by COVID-19 made evident that education is our best hope to support humanity in building a better and more sustainable future at a time when this could not be more necessary. Three resources will be critical to sustain those efforts: (1) societal commitment to educational transformation, bolstered by the necessary institutional support and financial resources, (2) continued collective leadership, and (3) educational innovation. Drawing on Albert Einstein's discussion of the dangers of atomic weapons "a new type of thinking is essential if mankind is to survive and move toward higher levels." (Einstein, 1946). For all it took away, the pandemic may well have unleashed these three resources in abundance.

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