Readiness, response, and recovery: The impacts of COVID-19 on education systems in Asia

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Background and purpose

Two years after the World Health Organization first declared a pandemic, the impacts of COVID-19 continue to be felt around the world. School closures and disruptions to learning have now affected more than 90 percent of the world's student population (UNESCO, 2021), a trend which is likely to continue due to increasing cases, new variants, and disparate access to vaccinations around the world. During the pandemic, educational responses to supporting continuity of learning have also varied around the world. Although most educational settings have reopened in high income contexts, school closures are ongoing in many parts of Africa, the Americas, and Asia, with disruptions also occurring in early learning and childcare settings. In response, there has been widespread adoption of remote learning programs, online education, and distance learning platforms designed to reach students remotely and mitigate the effects of education disruption (Oladipo et al., 2020).

In this context, and despite the large volume of research on COVID-19 and education, there is a dearth of studies on the planned responses of Asian countries to support education equality and improved learning during and after the pandemic. This review attempts to provide insights into COVID-19 responses in educational systems in Asia, and to understand which policies and practices were already in place to contribute to system readiness and resilience. Although the evidence base remains scarce, reflecting on the different system and school-level responses in Asia provides opportunity to identify gaps in current policies and research, and consider new ways in which countries in Asia can strengthen their educational systems into the future.

What makes an education system resilient?

In relation to crisis, a resilient education system is perhaps best described as one that "meets the needs of all children and youth in the face of further shocks and stressors" (USAID, 2020). However, a resilient education system can also be cultivated outside of crisis and emergency: as a system with successful interaction between policies and institutions, which supports high-quality classroom level practices, and the educators that deliver them. In other words, successful policy implementation requires skilled teachers and effective school leaders to connect classroom practices with the broader education reform agenda. Well-designed policies, supported by political commitment and strong institutional structures including capacity and resourcing, have the best chance of success.

This review draws upon several reviews and frameworks that outline the elements of a resilient system (INEE, 2010; OECD 2020a, 2020b; UNESCO, 2020b; UNICEF, 2020b; USAID, 2020). USAID for example, highlights the importance of looking beyond the current COVID-19 response to ensure learning is inclusive for all students (USAID, 2020); providing opportunities to identify promising curricula and pedagogy across multiple contexts, to guide education interventions during periods of disruptions, as well as create opportunities for delivering more equitable learning into the future. Others have also noted the importance of introducing policy instruments that address equity issues by reaching marginalised groups across all layers of the population in the East Asian context (An & Tang, 2020). This includes close collaboration and communication between policymakers and education practitioners on strategies for supporting learning "more quickly, more deeply and more effectively" through adapting the curriculum and instructional time, and pedagogical practices that promote learner agency (Haßler et al., 2020; Kimenyi et al., 2020). The focus on health and wellbeing of students in schools has also been identified as a key dimension with examples from education systems, such as China, Singapore, and Taiwan, showing how these are being implemented already (Kimenyi et al., 2020; Melnick & Darling-Hammond, 2020).

The importance of school level practices

There is no doubt that quality inputs at the school level have the potential to positively influence student outcomes, with teachers having the largest influence on student learning outside of the home (Hattie, 2003). The quality of those inputs, and the potential they bring for student learning and wellbeing, depends on what students, teachers, school leaders, and parents do, and how they interpret and enact broader policies that guide classroom practice and student learning. There is a large volume of research examining the importance of school level practices on education quality (Donohoo, 2018; Goldan et al., 2021; Griffin, 2017; Hattie, 2003; Hattie & Clarke, 2018; Ryan & Deci, 2000; Timperley et al., 2017; Tomlinson & Murphy, 2015; Wiliam et al., 2004). Such research into effective school level practice for supporting student learning commonly identifies a number of important factors that have the potential to positively influence student outcomes, and which should be considered as preconditions for a resilient education system.

Leadership: leadership that focuses on improving student learning, supporting ongoing teacher professional learning and collaboration, engaging all members of the school community, and promoting the wellbeing and growth of the school community. Leadership can occur congruently at various levels, including at policy, school, or classroom level. Leadership at the school level contributes to resilience in the face of challenge and supports equitable outcomes for all. Although leadership comes from school leaders themselves, collaborative leadership can be particularly impactful when it involves and mobilises teachers, families and the local community, encouraging each to share responsibility for a child's learning. Such forms of leadership are important for system resilience.

Collaboration: quality collaboration between school and families to support learning and wellbeing, professional collaboration between teachers that is focused on improving learning and the impact on student outcomes, and collaboration between students and teachers (e.g., formative assessment) can improve student engagement, motivation, and learning.

Wellbeing and inclusion: an emphasis on promoting wellbeing as a valued outcome of school structures, processes, and programs for all members of the school community (students, teachers, school leaders, and families). Inclusion, in the sense that all students have equal opportunities to learn and have their needs supported within the context of a learning environment, should also be considered as a key condition for wellbeing.

Differentiation: encompasses multiple pathways for learning, flexible options for engaging in learning, responsiveness to individual needs, the use of evidence to inform decision-making and planning, teacher autonomy to adjust and respond to the needs of their students and the context for teaching and learning, support for teachers to enable a differentiated approach (training, resources, mentoring).

Growth: an emphasis on making progress, change and improvement, and other structures and processes that support teachers, students, and families to contribute to improvement within their school community, as outlined by Wiliam et al. (2004).

Reflection: a culture of reflection that looks for pathways to improvement and growth, use of evidence to evaluate impact and identify areas for improvement. All members of the school community should be involved in the process of reflection. Feedback is also an integral part of the reflective process, allowing agents across various levels of the school to develop a sense of agency and connectedness as they actively contribute to the school's improvement.

Although policy initiatives are important, school level practices are crucial in creating long term system resilience and continuous improvement in education systems. However, research on COVID-19 responses continues to focus on system level policies rather than their enactment in practice. Responses that can support continuity of learning during the COVID-19 pandemic have not been well examined, particularly in Asia. The remainder of this review focuses on investigating both system and school level policy enactments, in an attempt to understand readiness, response, and recovery efforts in Asian education systems.

Analytical framework: Readiness, response, and recovery

This review draws upon an analytical framework that provides policy, school, and stakeholder level indicators of a resilient education system. The framework is informed by the extensive literature on effective teaching and learning and draws from the emerging evidence base on COVID-19 impacts on education systems worldwide, particularly The Inter-agency Network for Education in Emergencies (INEE) minimum standards (2010). The INEE *Minimum Standards for Education* provide a useful framework for understanding how systems can better respond to emergencies and how they can improve preparedness to build a more resilient education system. The INEE standards have been adapted to consider **Readiness, Response, and Recovery** not only in the context of emergencies, but in relation to system resilience to disruptions

and times of change more broadly. The central notion of resilience underpins each phase, in which change is embraced by educators during periods of disruption, and moving forward, rather than returning to what has always been done, is recognised and rewarded. The framework provides guidance in examining policies and actions that countries have taken to mediate and remediate learning loss and learning inequalities during COVID-19.

Figure 1 depicts the different interacting levels of the education system (policy, school, agents) that impact on equitable student learning. In the context of COVID-19, the three phases – Readiness, Response and Recovery – provide the operational context which influences how education systems plan for and manage their strategies for improvement and resilience.
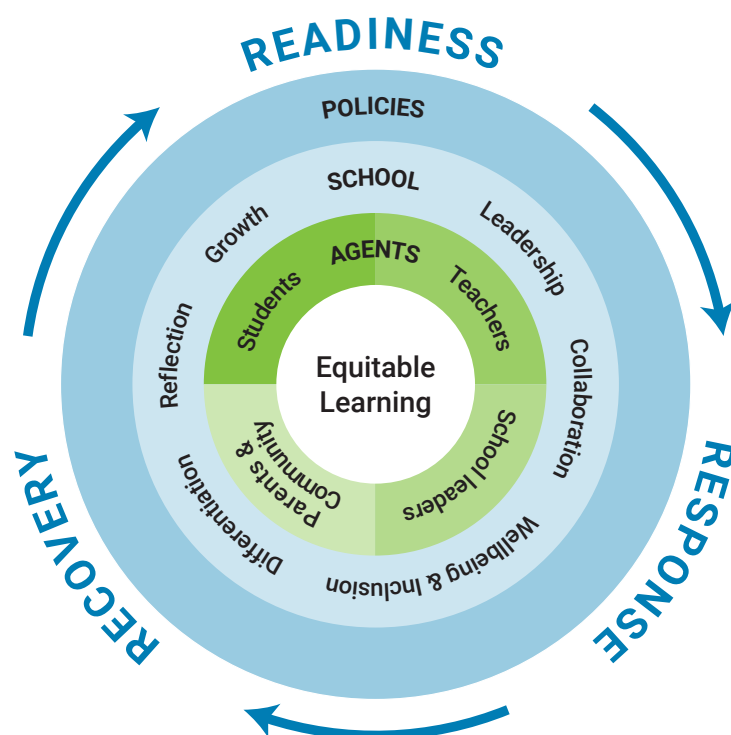
Figure 1: Analytical framework

The following broad descriptions provide an indication of how each phase of the cycle is conceptualised in the framework:

Readiness
The knowledge and capacity to anticipate areas of need, respond to those needs, and embrace change as an opportunity for improvement.

Response
The process of identifying needs, responding to those needs, and evaluating the impact of the response.

Recovery
The emphasis in this phase is on learning lessons from the response phase in order to move forward and improve the effectiveness of practices and the equity of learning.

This framework draws on USAID's (2020) *Reigniting Learning: Strategies for Accelerating Learning Post-Crisis* evidence review and *Return to Learning during Crises* toolkit (Boisvert et al., 2020) and the work on promising policy responses to support greater education system resilience and responsiveness by the OECD (2021a). These share similar elements in defining a path forward that prioritises the policies and practices to promote:

1. equity and inclusion
2. flexibility in learning interventions and assessments
3. building the capacity of educators

However, this framework also seeks to broaden the ways in which we recognise system readiness and quality, by focusing on the interplay between policy, practice, and equitable learning. By exploring possibilities and opportunities rather than deficits, this framework will guide the investigation into how the different levels of the education system operate and interact, at each phase of the COVID-19 planning and management cycle.

Readiness

To improve the quality of education that students receive, many countries in Asia have implemented major reforms within the education system over the previous decade. These reforms targeted areas of educational practice that are common in high-quality education systems, including policies focused on improving access to schooling, enhancing teacher quality, and promoting inclusive education (Lavonen & Salmela-Aro, 2022). The COVID-19 pandemic has also led to renewed efforts to support students, particularly in times of crisis and disruption. Understanding where education systems were at the onset of the pandemic provides important context for understanding the country's readiness to respond to the needs of students, teachers, parents, communities and schools. It also allows reflection on the policies and practices that can support readiness, response, and recovery of education systems.

Leadership

Literature indicates that "the level of support that school principals receive, impacts the level of support that teachers receive, which subsequently impacts the level of support that teachers provide to teachers and students" (Yorke et al., 2020, p. 3). In many contexts, Education Offices have been the main sources of support for school principals (Yorke et al., 2020). Support for school leaders remains a critical part of the learning process, even when students are not in the classroom. In the context of COVID-19, the role of school leadership has a chance to become more distributed across school leader, teacher, and parent/caregivers, particularly in the delivery of remote learning.

Political leadership at the national level through commitment and adoption of national plans and strategies for education reform can have an impact on school-level practices. Evidence suggests that more centralised education systems are able to coordinate and mobilise resources more readily to respond to crises (Joynes et al., 2020). For example, after the 2015 earthquake in Nepal, the Ministry of Education developed a *Master Plan for Comprehensive*

School Safety to mainstream school safety and risk reduction and resilience in the education sector. Other countries in Asia have similar disaster risk reduction strategies in place to support continuity of learning during crises through the use of system and school level coordination and recovery efforts. However, the success of this approach depends on the balance between the central directive and support for local autonomy of schools and teachers to adapt their teaching practices in response to crisis.

In the context of COVID-19, countries such as China, South Korea and Lao PDR provide examples where national level guidelines for remote learning and associated resources are provided to help teachers plan and deliver lessons to suit their local context. School level agency is crucial, although it is not well covered in examination of Asian education responses. Schools need to be able to make decisions that are reflective of the needs of their local context. This includes having the mandate to make decisions about curricula adaptation, assessment practice, school closures, data collection, teacher training, and wellbeing and inclusion practices that promote student engagement and support.

Leadership practices that recognise measures of education quality can also support teachers (and students) to develop a sense of agency and control over teaching and learning practice, encouraging them to reflect upon and adapt teaching practices after the pandemic. However, schools and their staff require support to lead. Teachers play a central role in leading school recovery, and there are many ways in which teacher-led practices can support school level reform and improvement. As USAID (2020) notes, teachers need training and support to:

1. re-engage learners and identify those at risk of dropping out
2. assess learning loss and plan for remediation
3. implement a catch-up curriculum
4. meet learners' social-emotional and protection needs
5. talk with learners about the crisis in age-appropriate ways

Implementation of national teaching standards, for example, can demonstrate a country's readiness to support the development and agency of teachers. In the Philippines, the Professional Standards for Teachers complements the National Competency-Based Teacher Standards, which guides teaching practice across different teaching and learning contexts (DepEd, 2017). In contrast, Lao PDR has developed the National Teaching Standards but have not yet implemented them due to challenges relating to inefficiency and inequity in teacher deployment. This indicates a lower level of readiness to support teachers in responding to changing classroom contexts.

Collaboration

As stated in the USAID (2020) evidence review, "making collaboration, learning, and adaptation an integral part of programming contributes to more responsive, adaptive education systems" (USAID, 2020). The pandemic provides an important opportunity to reflect on education policies and practices that enhance collaborative practices between schools and families, and build trust with local communities. Reflection on resilient systems highlights the ways in which collaboration improves education quality; when educational stakeholders work together, be it at national, school or community level, individual perspectives and insights can be strengthened, particularly when school and student improvement is kept as a focus. While the response to COVID-19 has prioritised access, an emphasis on quality is important to ensure student engagement, student wellbeing as well as learning achievement.

As UNESCO and UNICEF (2021) highlight, collaborative practice can enhance the impact of education systems, "especially to the most marginalized and vulnerable, who can often be found in remote and disconnected locations" (p. 80). Active engagement with local authorities and the community can support short-term interventions through remote learning while building the foundations for long-term student success. Experience from First Peoples contexts suggests that a school improvement agenda is 'everybody's business'; community engagement is a focus area, involving strong partnerships with families and community to inform decision-making and offer an inclusive approach that provides the foundations for children's successful and relevant learning (Kamara, 2009; Lowe et al., 2019).

Ministries and local education departments can also, for example, engage school principals, community chiefs, and parents/caregivers to participate in the construct of appropriate solutions to support all students and overcome educational inequalities (Heng, 2021). Innovative practices that rely on strong community and school partnerships can build a resilient and responsive approach to ensure continuity of learning and keeping marginalised students in school. For example, through the Kelas Perahu program in Indonesia, school principals, local leaders, and teachers collaborated to develop home learning resources to meet the needs of students who help their parents sail boats for a living during school hours (Butcher et al., 2021). The pilot was conducted in 2017 and the model has since been successfully implemented to reach students on remote islands, and was further expanded during COVID-19 school lockdowns.

Many countries in Asia have appreciated the value that parental support and community mobilisation added in the development of local solutions (UNESCO & UNICEF, 2021). Support for parental and community engagement in children's learning is central to educational improvement. This includes effective communication, capacity building activities and the provision of resources to communities and schools. Unfortunately, marginalised and disadvantaged students often have lower levels of support in the home when compared to students from more advantaged backgrounds. Adopting a 'parents-as-partners' mechanism, and fostering effective and collaborative communication between school and family, can support and enhance the educational experiences of these students during periods of remote education and sustain learning outcomes beyond the pandemic.

Wellbeing and inclusion

During the COVID-19 pandemic, it has become clear that many existing policies and practices have not been sufficient to support the number of students vulnerable to disadvantage (UNESCO, 2021). Furthermore, the mental health of students has been impacted heavily by lockdowns and school closures, yet these impacts do not appear to have been fully understood or addressed in the Asia region (UNICEF, 2021a). Even in a high-income context like Singapore, mental health helplines are recording higher number of calls

during the pandemic. One mental health helpline for primary school pupils in Singapore reported that children's mental health was impacted as a result of online schoolwork expectations, and the fear of losing friends (Goh, 2020; Tan & Chua, 2022). This is unsurprising, as across much of Asia, considerable pressure is put on young people to pass high-stakes examinations (UNESCO & UNICEF, 2021). This highlights the need for education systems to understand the importance of schools as a place for students' mental growth, mental care, and mutual support through communication and collaboration with friends and peers (Benesse Educational Research and Development Institute, 2021), not only academic achievement.

In many cases, a lack of adequate resourcing in physical health and safety in education settings has resulted in school closures (UNESCO, 2021), however, a lack of monitoring and evaluation means there is also a lack of evidence around the practices and interventions that have been effective in keeping students safe and well. The paucity of published research prevents the sharing of recovery and reform solutions moving forward, particularly as the conditions in Asian education settings vary significantly, and the needs of students also differ. While national health guidelines are important, a lack of understanding as to the resources and needs of students and staff in individual schools could cause more harm than good (OECD, 2021b) - yet information around what works, and for who, is still emergent in these contexts. Ideally, schools that promote student wellbeing and inclusion prioritise resourcing of infrastructure such as water, sanitation and hygiene (WASH) facilities, gender-separated latrines, and universal design standards to support students with disabilities. Health and wellbeing support programs (for example, cash transfers, deworming programs, school nutrition, psychosocial support) should also be appropriately resourced to provide safe spaces and opportunities for young people to interact and learn, particularly to ensure equality of access to education for the most vulnerable students. These measures will be critical during the response and recovery phase of the pandemic to encourage continuity of learning and return to school, particularly to support students and teachers who have been isolated from the social protective mechanisms of the school environment due to remote learning.

There is some evidence of practices that promoted inclusion and wellbeing to support at-risk students before the pandemic, which could provide insights into what effective measures could be deployed to support students during and after the pandemic. For example, the Government of Thailand established the Equitable Education Fund under the Education Act 2018 that has helped nearly a million low-income and out-of-school children with equitable access to education opportunities (Butcher et al., 2021). Through the provision of scholarships and flexible learning approaches, the initiative supports children's social and emotional learning and age-appropriate intellectual skill building to facilitate positive learning outcomes. The initiative also strengthens and develops the quality and effectiveness of teachers and enables them to work with children and young people from diverse backgrounds and capabilities.

The dependence on digital and online learning during the pandemic has exacerbated the gap in access to education for many vulnerable students, including girls. Data from India suggest just around 29 percent of India's internet users are women (Mall, 2016) and the access to digital devices is highly gendered (Vyas, 2020). Moreover, drawing on data from the Ebola epidemic in Sierra Leone, the Malala Fund (Fry & Lei, 2020) projected that after the crisis has passed, about 20 million more secondary school-aged girls could be out of school. This can be attributed to parental attitudes towards the importance of girls' education, as well as the ways in which patriarchal norms and gender-based abuse disproportionately impact on girls. Recognising the significant gap in access to education, some governments in Asia have introduced specific inclusive education reform initiatives to reach the most marginalised students. For example in the Philippines, the government has introduced inclusive measures such as the development of infrastructure and education for small and remote schools (also known as 'last-mile schools') and mandated opportunities for out-of-school youth through the Alternative Learning System (ALS)

(Arinto, 2020). Further, the establishment of laws and acts supporting inclusive education under the Philippine Enhanced Basic Education Act provide the legal mandate and policy environment to support diverse learners during and after crises, including ethnic and linguistic minority groups and girls.

Differentiation

Although differentiation is a key component of effective educational practice, differentiated approaches to teaching and learning are not well explored in research, policy, or practice examples from Asia. Instead, in most policy frameworks or reports, there appears to be more focus on learning continuity through remote learning using a one-size-fits-all approach, with little evidence available on the individual pedagogical needs of learners. There is also little research on what constitutes effective remote learning pedagogical practices globally (Dabrowski et al., 2020), let alone during a pandemic. As UNESCO and UNICEF (2021) emphasise, moving forward, responding to the different needs of children who are being left behind is crucial for system recovery. The school disruptions resulting from COVID-19 have put a spotlight on existing challenges in equitable access and quality of education to meet the needs of all learners. It also offers an opportunity to consider differentiated approaches for addressing these challenges during remote learning and when schools reopen. UNESCO (2020a) provides guidance on how education systems can be more responsive to the learning needs of students, including modifying the curricula and instruction, adopting the Universal Design for Learning framework[1] (CAST, 2022), ensuring an individualised education program, supporting parents and teachers, and using assessment data to support learning.

The learning needs of children with disabilities have been significantly impacted during COVID-19. These students face multiple challenges in accessing digital or remote learning during school lockdowns and are at greater risk of dropping

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1   Universal Design for Learning is a framework to help all learners access and participate in meaningful learning experiences. https://www.cast.org/impact/universal-design-for-learning-udl

out when schools return (United Nations, 2020). Measures to support students with disabilities should be prioritised to ensure continuity of learning and return to school, including specialised equipment, support for schools and caregivers and mobilisation of cross-sectoral support services. For example, children with disabilities need to be supported with assistive devices, specialised training for their teachers and accessible materials using flexible learning approaches to facilitate learning from home. Children who speak minority languages need to be able to access materials in their language and teachers need to know how to teach effectively using these languages in a remote setting (Doucet et al., 2020).

Growth

Monitoring of student outcomes is a complex process, and more so during times of disruption. During periods of school closure, many countries stopped assessments altogether, while others greatly reduced their use of assessments. Most countries reported that assessments (including summative assessments) were cancelled due to a lack of preparedness to deliver these tasks remotely (Wyse, et al., 2020). As schools reopen across Asia, there is a need to systematically assess any potential learning gaps of students, particularly among marginalised groups.

Learning assessments and student monitoring provide performance tracking at the system level as well as measuring what is being learned in the classroom. The responsibility for monitoring students and measuring growth remains unclear in many contexts. In a recent survey of Ministries of Education in low-middle income contexts, most education systems (86 percent) reported that student learning is being monitored by teachers, rather than at school or system level (UNESCO et al., 2020). According to a 2020 survey conducted by UNESCO in 16 Asian countries, all had a national learning assessment except Singapore, which used public examinations only. Some also participate in international and regional assessments, which provide a means for comparing student performance and school effectiveness in a broader global and regional context. For example, the Central Asian Program for Student Assessment (CAPSA) came about after agreement from four Central Asian countries (Kazakhstan, Kyrgyzstan, Tajikistan, and Turkmenistan) to support ongoing education reforms in the region. Similarly, the Southeast Asian Primary Learning Metrics (SEA-PLM) is administered in six countries (Cambodia, Lao PDR, Malaysia, Myanmar, Philippines and Vietnam) to measure grade 5 students' learning in reading, writing, mathematics and global citizenship.

In many countries in Asia, exams were cancelled as a result of the pandemic, and with these cancellations, the chance to measure growth has been lost. However, as the World Bank (2020a) has noted, deciding to postpone, cancel, or adapt examinations as a result of COVID-19 is not the only response and not an ideal way to understand learning loss or growth in the long term. Indeed, education systems can use the opportunities posed by the crisis to evaluate their examination practices and policies. Reducing summative tasks and increasing formative assessment, with a focus on inclusion and diversity, provides the opportunity for more equitable and resilient education systems targeting individual student learning to be developed (USAID, 2020). This process can be effectively supported by orally administered citizen-led-assessments—such as ASER, ICAN, and Uwezo— which can be integrated into learning practice, promote reflection and improvement, and offer fast, inexpensive, simple and effective tools for self-evaluation and peer assessment (Bhula & Floretta, 2020). Such approaches to assessment can also encourage sustainable ways of improving monitoring and evaluation at a school level.

Innovative ways to measure learning loss or growth at a school level have not been well examined in the literature in the Asia region. However, there are examples from other low- and middle-income contexts. In Botswana, a phone-based assessment was developed to assess basic numeracy skills using the WhatsApp messaging service to create a feedback loop between teacher and student (Angrist et al., 2020; UNICEF, 2021b). In Egypt, the Ministry of Education placed parents in charge of assessing students in preschool and Grades 1-2 (UNICEF, 2021b). In recent years, Egypt has also received extensive support from the World Bank to develop digital learning materials and reform examinations with a computer-based assessment system. These early investments in educational technology, through the availability of digital materials accessible on mobile devices and TV, made it possible for the Egyptian education system to replace national exams during the COVID-19 pandemic (World Bank, 2020b). All of these examples can support school level monitoring of growth, while encouraging collaboration between teachers and families, in shared ownership over student outcomes.

Reflection

Many countries and education systems in Asia have adapted policies and practices based on different public health scenarios, but there has been little consideration into what works best to support learning during health crises and emergencies. However, there appears to have been little reflection on ways that systems and schools in Asia can sustain the delivery of effective, evidence-based practices during periods of disruption, drawing upon what was already in place in order to continuously improve. There is a paucity of evidence on the actions of individual schools and the ways in which students have been supported during the pandemic. There is also a focus on loss, and deficit, rather than opportunity. These gaps offer a chance to reflect and to share insights on what works. It provides education systems in Asia with opportunities to identify areas for improvement, while involving all members of the school community in the process of reflection and reform.

Most research remains focused on system initiatives and policy perspectives over practice; although admittedly, insights from school leaders and teachers have not been widely shared in the literature on education responses in many countries and contexts, particularly low- and middle-income settings. Reflection on the lessons learned during the COVID-19 pandemic is crucial to broader system recovery, but also to broader reform and improvement efforts. As Schleicher (2018) notes, "successful policy implementation requires mobilising the knowledge and experience of teachers and school leaders, the people who can make the practical connections between the classroom and the changes taking place in the outside world" (p. 207).

In Asia, many studies investigating recovery from crisis are based on the premise of building back 'better' (Dabrowski et al., 2020; Reimers, 2022) through reforms around curricula delivery, summative assessment, and data monitoring systems. This research has not consistently considered insights from teachers who have lived through the pandemic, experienced successes as well as challenges, and been in a position to use their experience and training to support students. It is these reflections that are perhaps most valuable but continue to be too often omitted from current research into education systems in Asia.

Response

Cross-sectoral collaboration and partnerships

System level responses to COVID-19 have varied widely. However, not all schools have received the same level of policy or system level support. Across systems, and in line with the recommendations provided by key frameworks (INEE, 2010; OECD, 2020a, 2020b; USAID, 2020), delivery of education during periods of crisis agree that on-site learning should prioritise struggling students who lack support or infrastructure, or experience marginalisation or disadvantage (OECD, 2020c). However, it is clear that during the COVID-19 pandemic this has not eventuated in all settings, particularly in low-income contexts. Even in high-income contexts, prioritisation of school resources and support is not always demonstrated (Brown et al., 2020), reflecting broader challenges of access and equity in every country.

In Asia, COVID-19 responses among five advanced economies in East Asia (Taiwan, Hong Kong, South Korea, Singapore, and Japan) suggests that any policy instruments applied during crises must focus on equity issues by reaching marginalised groups across all layers of the population (An & Tang, 2020). Equitable provision of resources and prioritisation of funding to the education sector is not always common. One notable exception was China, where despite tightening economic conditions, schools were given priority funding to ensure effective and efficient transition to online learning for all learners. Computers were provided to students from low-income families in China in addition to mobile data packages and telecommunication subsidies (Chang & Yano, 2020).

At the systems level, collaboration across different ministries through prioritisation and sequencing of agreed education targets has brought greater efficiency in the mobilisation of education resources and more coherent management of the education sector. In response to the COVID-19 pandemic, there have been examples of successful cross-sectoral collaboration at the national level to implement education response policies. This also supports a streamlined vertical integration of planning and policies down to the provincial and district levels. In China, throughout the COVID-19 planning process, the central government engaged with all levels of government through regular communication with local officials and large-scale training and information sessions with education practitioners (Joynes et al., 2020). A similar process was conducted in Lao PDR's education response, with further provision of ICT packages and devices to local education offices and schools to facilitate information sharing and training.

In Korea, an online national teacher community of 10 000 teachers (with representation from almost every school) is collaborating to share best practice in online education via a real-time, interactive communications channel among government and school-based staff (OECD, 2020b). The initiative has been so successful that the Ministry of Education plans to continue the support for a cohort of educational innovators, who will drive research and development for technology-enabled education response, post-crisis (OECD, 2020b).

Strong partnerships with development partners, the private sector and non-government organisations have also been shown to support effective management of the education response. In South Korea, issues of equity were addressed through collaboration with the private sector and NGOs via a national technology loan scheme to ensure all children had access to online learning (Bicker, 2020). Strong collaboration between the Korean Government and the telecommunications sector has also enabled the nation to create "smart learning systems and services" for its citizens (Ndaruhutse et al., 2020). In Pakistan, the Government of Punjab's Online Teaching Program is a collaboration between the School Education Department, the Punjab IT Board, a private internet provider and a commercial cable TV channel (Joynes et al., 2020). In Cambodia, partnerships between the Ministry of Education, Youth and Sports, the private sector and donor agencies helped develop online educational resources to facilitate online learning, greater engagement of parents and provide a ready resource for future school closures (Heng, 2021).

Access to learning

All countries developed plans to enable children to continue learning, with most countries using technology - TV, radio and online delivery mechanisms (UNESCO et al., 2020). However, the provision did not reach all children, especially the most marginalised. Access to devices is key in supporting the movement from face-to-face to remote learning. Fortunately, mobile phones and television are now available in most households in Asia, albeit less so in lower income contexts and remote areas. For this reason, and due to low levels of computer ownership in many parts of Asia (Asian Development Bank (ADB), 2021), online learning is likely being mainly done by mobile phone.

During the pandemic, Ministries of Education in 15 lower-middle income countries Asia (Mongolia, Bhutan, Philippines, Lao PDR, Uzbekistan, Kyrgyz Republic, Myanmar, Bangladesh, Pakistan, Cambodia, Papua New Guinea, Timor-Leste, Nepal and Tajikistan) implemented remote learning programs through the use of mobile phones (ADB, 2021). Education authorities in 11 countries also distributed subsidised or free devices to access online education (ADB, 2021). Governments in 17 economies in developing Asia negotiated with internet providers to grant connectivity at subsidised or zero cost for the purpose of accessing education materials (UNESCO et al., 2020). Public-private partnerships between industries and the education ministry, such as those seen in Cambodia and other Association of Southeast Asian Nations (ASEAN) countries, has transformed existing learning platforms into a temporarily TV-based or online learning environment, as well as digitalising the wider education system (Heng, 2021).

Emergency remote education

In response to school closures due to COVID-19, 90 percent of countries around the world implemented some form of remote learning policy (UNICEF, 2020a). Many countries in Asia have relied on a range of methods to introduce or encourage distance learning through flexible (Drukpa, 2020; Hyun-Ju, 2020; Omar, 2020), self-paced platforms (Patrinos & Shmis, 2020) as well as agreements with mobile communications operators and internet firms (Ndaruhutse et al., 2020) to enhance access, particularly at the primary level of education (Cahapay, 2020; UNESCO et al., 2020). In China, emergency remote teaching was adopted through a completely virtual learning space using a variety of online courses and electronic textbooks (Dordevic, 2020; Patrinos & Shmis, 2020; Wagner et al., 2020). The Cambodian education ministry's e-learning portal (elearning.moeys.gov.kh) and implementation of the Centre for Digital and Distance Learning is another example of the move towards remote learning (Heng, 2021).

In contexts where there are limited digital resources, educational television programs (a broadcast of recorded lessons in simulated classrooms) combined with some online and offline virtual learning spaces using low technologies, has been efficient in reaching a large proportion of the population (UNESCO, 2021; Wagner et al., 2020). TV-based remote learning was the most used medium in East and South Asia, reaching the highest proportion of learners at 76 and 60 percent respectively (UNICEF, 2020a). Other low- and middle-income countries in Asia used supplemental print materials like workbooks, written homework, or newspaper activities and text messages (Wagner et al., 2020; Zacharia & Twinomugisha, 2020). In Afghanistan, paper-based self-learning guides were developed for teachers and supplementary learning packs delivered weekly to families through Community-Based Education sites (UNESCO & UNICEF, 2021). Families are reported to have become more engaged with their children's learning at this time.

In Bhutan, schools used mobile phones to keep students connected while some schools have utilised online tools such as Google classrooms and social media applications such as WeChat or WhatsApp to augment education from home (Cahapay, 2020). Teachers also provided reading materials to the students using this approach (Cahapay, 2020; Drukpa, 2020). Similarly, Afghanistan used blended learning spaces, through offline and online tools, and multiple technologies (Cahapay, 2020; Omar, 2020). India has also used multiple platforms to deliver remote learning to school aged children, and to support out-of-school children, vocational education, and teacher professional development (World Bank, 2020a), while in Indonesia, broadcast media has been used to support remote learning (Butcher et al., 2021). The public television network of Indonesia (TVRI) allocated a daily three-hour session (Monday to Friday) for students learning

literacy and numeracy subjects. Sessions were aimed at different groups: pre-primary, primary students (grades 1-3 and 4-6 respectively), junior secondary students, senior secondary students, as well as additional support content for the parents (Butcher et al., 2021). The Cambodian government's limited infrastructure to support online learning has relied on funding from the Global Partnership for Education (GPE) to provide grants to procure basic equipment to support continuous learning, including paper-based learning materials for the most vulnerable students (Barron Rodriguez et al., 2020). This large-scale paper-based strategy was complemented with SMS messaging and free instant messaging software (Telegram) to reach all households.

While access to online and remote education has been widespread in the Asia region, students from disadvantaged households were disproportionately affected. According to a recent survey of education ministries across various education systems, 89 percent reported that they are introducing at least one measure to increase access to the devices and connectivity needed for online learning, particularly for the disadvantaged students (UNESCO et al., 2020). The access has been mainly provided through distributing mobile devices or offering subsidised or no cost internet access. Additionally, 91 percent of education systems have also taken actions to support populations at risk of being excluded from distance learning platforms, such as students with disabilities (UNESCO et al., 2020).

A substantial number of children in Asia live in homes in which they have no suitable place to study, no devices, or have no access to the internet. Therefore, adopting online or virtual models of learning is problematic, if not impossible, for many disadvantaged students (Dabrowski et al., 2020). Gender differences in access to devices and technology are also common in Asia, and an impediment to girls' engagement. In Nepal, male students use mobile phones at a rate double that of female students, and in Pakistan, male students use mobile devices at a rate quadruple that of girls (Tyers-Chowdhury & Binder, 2021). Mobile phone ownership is also almost 30 percent higher among boys than girls in Bangladesh, Nepal and Pakistan. Weekly access to information media was also substantially lower among adolescent girls in Afghanistan, India,

Nepal and Timor-Leste (UNESCO, 2021). Such access is a major barrier to supporting students with differing needs during times of crisis.

Some examples of parent/teacher collaboration through regular communication have been reported as a means to support students during remote learning. In India, teachers have been communicating regularly with parents on WhatsApp throughout the remote learning periods (Vyas, 2020). This suggests information dissemination as the primary aim rather than teaching in the absence of low-tech, inclusive modes of education delivery (Vyas, 2020). In Indonesia, as one of the first steps, the emergency curriculum introduced modules for parents which covered practical tips, examples of schedules, and activity organisers to help parents assist with and monitor their children's learning (Butcher et al., 2021).

Support for teachers

In China, teachers were well prepared for online learning through support from the government, and able to quickly connect with their students via remote mechanisms. This took the forms of both synchronous lessons, as well as asynchronous delivery, "with teachers offering online resources for self-directed learning…and those without access to digital resources were not forgotten. In many places, parents could collect free textbooks from schools or ask schools to deliver them to their home" (Schleicher, 2020). It was not only the Chinese government that provided resources to schools (Zhang et al., 2020). Support for students and teachers in China came from government partnerships with private and social enterprises in the form of free wireless internet, resources, and devices for school and their students (Dabrowski et al., 2020). In Afghanistan, all teachers and school/madrasa principals were provided with training materials to increase their capacity in core subjects, class management, assessment mechanisms, child psychology and self-teaching and learning methods. While in Pakistan, distance learning training was provided to teachers to enhance their digital skills (Kimenyi et al., 2020), build their capacity for more effective pedagogy, provide support to help solve any technological challenges, facilitate peer-to-peer learning, and assist them to set healthy boundaries to help them avoid burnout (Barron et al., 2021).

Research also indicates that the mental health of teachers has plummeted during the pandemic (Ozamiz-Etxebarria et al., 2021; Rehman et al., 2021), and is an ongoing impediment to teacher retention, participation in professional development/training, and overall education quality. However, teacher mental health and wellbeing remains underacknowledged in most teacher retention policies or teacher standards frameworks in low- and middle-income contexts. Moving forward, it is important to provide support for teacher wellbeing, given that teachers are not only responsible for the academic needs of students, but also increasingly for monitoring students' own mental health and social and emotional needs (Dabrowski, 2021; OECD, 2020c).

Equity and inclusion

As evidence from past crises demonstrate, girls are frequently at increased risk of child and forced marriage, early pregnancy, domestic and sexual violence during crisis or periods of unrest, for instance during the outbreak of Ebola in Sierra Leone (Akmal et al., 2020; Wagner et al., 2020). Some countries are implementing additional support mechanisms for keeping girls safe. In Cambodia, the provincial Department of Women Affairs has run community awareness campaigns about child marriage for the ethnic minority communities (UNESCO, 2021). In other countries, such as Ghana, Kenya, Nigeria, and Zambia, CAMFED's 'My Better World' life skills program raised awareness of how to reduce COVID-19 exposure, and promoted child rights, addressing safeguarding concerns, and advocating widely against harmful practices such as child marriage (CAMFED, 2021; UNESCO, 2021). Understanding the ways in which equity and inclusion policies are interpreted and enacted by system and school level actors can support sustainability; however, research featuring the scale of implementation, or the success of such programs remains limited.

Recovery

Supporting school reopening

The Recovery phase focuses on the reopening of schools and the return to regular face-to-face teaching and learning for students. At the end of 2020, plans and policies for the reopening of schools were still being formulated and adjusted in many countries across Asia. While some countries had re-commenced face-to-face learning after a short period of school closure, others have had staggered school openings, and some have had more prolonged periods of shutdown including Cambodia, Mongolia and the Philippines, (UNICEF, 2020c). Gorgen and McAleavy (2020) identified six dimensions underpinning successful reopening as part of a comprehensive review of government policies: effective policy, sufficient finance, safe operations, learning quality, including the most marginalised, and ensuring wellbeing and protection. Other guidance from the OECD, UN and World Bank on school reopening emphasises the need to look beyond the status-quo, which was already failing learners, and to use the COVID-19 disruptions to education as an opportunity to 'build back better' and transform student learning (OECD, 2020b; UNESCO et al., 2020; World Bank, 2020a). For many countries, policies and plans to support the reopening of schools were focused on health and hygiene protocols as an immediate measure rather than the opportunity to address some of the persistent challenges facing teaching and learning before and during the pandemic. As policymakers introduce new health operating procedures, it is important to also consider other factors that contribute to longer-term system resilience.

Keeping students safe

Key measures such as prioritising vaccination of teachers, together with social distancing and strict hygiene practices in class, can contribute to making in-person teaching safer, following the re-opening of schools (OECD, 2020c). In low-resourced contexts, the policy challenges related to schools reopening are magnified where inadequate sanitation facilities, lack of infrastructure and high teacher to student ratios make it difficult to ensure hygiene and social distancing to keep teachers and students safe. While the majority of countries in Asia, report having specific health and hygiene guidelines for schools, many reported the lack of sufficient resources such as water, sanitation and hygiene facilities and masks to ensure the safety of teachers and students (UNESCO et al., 2021). According to a 2018 UNICEF & WHO report, less than half of the schools in Philippines, Indonesia and Cambodia have the sanitary facilities to enable regular handwashing.

There are many examples of ways in which countries in Asia have endeavoured to keep children safe during the pandemic. In some countries, ministries of education have collaborated with other line ministries and development partners to coordinate the safe reopening of schools. For example, in Lao PDR, funding was diverted from many line ministries to fund the education response to COVID-19, including the provision of top-up school grants to all public schools for the procurement of hygiene supplies (Lao People's Democratic Republic, 2021). Similarly, in Cambodia, grants were provided through the Global Partnership for Education for equipment and basic hygiene supplies (GPE, 2020).

Other countries have introduced social distancing measures to contain the spread of the virus in the classroom, such as reduced numbers of learners, shorter school days or a rota system. In China, the number of students per class have been limited to 20 students instead of 30 and school days were also reduced in length (Cahapay, 2020; Zhang et al., 2020). To encourage physical distancing, children in some schools have been encouraged to wear "creative winged hats" that makes it easier to keep a meter away from their peers (Katz, 2020). In Taiwan, there are no specific class sizes, but students remain in their homeroom class where desks are physically spaced out and at times protected by dividers while the subject teachers move between the classes. This approach was also used during the H1N1 outbreak (Cahapay, 2020; Yen et al., 2014). In Singapore, early grade learners are seated together in permanent groups while in

intermediate grade levels, learners are seated in rows as during testing (Cahapay, 2020; Melnick & Darling-Hammond, 2020). In Hong Kong, education planners have suggested that schools reopen for shorter time periods and students will attend only half a day of classes (Cahapay, 2020; Ho-Him, 2020).

Beyond the public health and hygiene measures being implemented in schools, other social protection measures need to be considered to encourage students to return to school. As discussed in the Readiness section, resilient education systems typically have policies and practices in place to support students who are at risk of dropping out, particularly those from low-socio-economic backgrounds. While many governments in Asia have responded by diverting additional resources for health and hygiene materials, regular social protection programs (such as school feeding, deworming, cash transfers, sexual and reproductive health and gender-based violence education), should be prioritised as schools reopen to protect vulnerable students. In light of the COVID-19 context, a focus on the socio-emotional wellbeing of students should also be considered as they return to school, particularly for those who have been impacted by prolonged school closures.

Protecting students at risk

While research continues to yield conflicting results in relation to learning loss, the longer-term impacts of the pandemic on education systems, schools, and students are likely to be felt more significantly in low-income and emergency settings (McCoy et al., 2021). In these contexts, mirroring trends can be seen amongst disadvantaged populations in high-income countries. Evidence of increasing inequity and disadvantage is likely to continue well into the future. For example, research from India estimates that out-of-school children will double particularly in the marginalised social groups such as Dalits, Adivasis and Muslims (Seethalakshmi, 2020; Vyas, 2020) while girls are expected to be affected even more and might lose up to 50 percent of their total years of education (Fry & Lei, 2020; Vyas, 2020).

Most countries in the region prioritised the return of older children to school, as they were facing high-stakes examinations, important for the children's future and the economy of the country

(World Bank, 2020a). However, evidence suggests that it was the youngest members of the school population who were most in need of face-to-face interaction and should have been the first to return when schools reopened (Crouch & Gove, 2011; World Bank, 2020a). Also, data from a recent study by the InterAmerican Development Bank illustrate that the closure of the pre-primary program for 12 months will cost 5.9 percent of GDP of LMICs (World Bank, 2020b). Evidence also suggests that a focus on early learning can provide a protective factor in long-term learning loss as well as higher social economic return on investment in the pre-primary and primary cohorts (e.g., Kim et al., 2021; Knudsen et al., 2006). Therefore, policies supporting schools reopening should prioritise these age groups.

The current pandemic brings significantly higher risk to girls' education and wellbeing as they are more likely to drop out of school and face increased risk for sexual exploitation. Girls aged 12-17 in low and lower-middle income countries are predicted to be at the highest risk of dropping out (Azevedo et al., 2021). Previous data from after the Ebola crisis in Sierra Leone suggest that girls were 16 percent less likely to be in school and are more vulnerable to violence, face child marriage and adolescent pregnancy (Fry & Lei, 2020; World Bank, 2020b). During the Ebola outbreak, there was a significant increase in adolescent fertility linked directly to the school closures and in affected villages, girls were nearly 11 percent more likely to become pregnant (World Bank, 2020b).

Recognising the risks facing vulnerable children, many countries in Asia are refocusing their efforts to introduce some form of outreach or support measure to encourage vulnerable children to return to school. The Government of Pakistan have implemented procedures for tracking students who do not return to school and specific actions to enable their return (Government of Pakistan, 2020). In Bangladesh, the Ministry of Education's COVID-19 Response and Recovery Plan includes mechanisms for financial and non-financial incentives to monitor students at risk of dropping out, such as cash transfer facilities, counselling support and engaging with parents and the community in back-to-school campaigns (Government of Bangladesh, 2020). There is strong support in the literature for the use of such measures to promote greater access for at-risks students when schools reopen.

Equitable access to learning

Policymakers assume that students will have access to 'blended' learning opportunities when schools reopen to manage the spread of COVID-19, where reduced classroom time will be compensated by increased learning at home. However, this strategy has the potential to further exacerbate the existing 'digital divide' that was evident during the pandemic and could undermine the reopening phase. Even in high-income contexts, there is little guidance for schools on how blended learning should be implemented (Gorgen & McAleavy, 2020). In most low and lower-middle income countries the lack of access to technology will make it more difficult for disadvantaged students to participate in any online learning provision. Similarly, evidence from remote learning suggests that disadvantaged students will find it more difficult to engage at home using 'low tech' modalities such as TV or radio broadcasting. Worldwide, there is a need to train and support teachers to effectively manage mixed modalities of blended learning. During the pandemic, a survey conducted by UNESCO et al. (2020) found that teachers were given inadequate support to help them transition to remote learning, highlighting the need to embed better teacher training and support for blended learning approaches when schools reopen.

Sustained financing is also important to ensure sufficient resources are available to support access to equitable learning when schools reopen. Many countries in Asia are preparing for flexible and blended learning approaches to support the reopening of schools, including the delivery of printed learning kits, use of SMS text messages, WhatsApp and phone calls (UNICEF, 2020b; Vyas, 2020). In Indonesia, the Ministry of Education, Culture, Research, and Technology are continuing to invest in digital technology to support blended learning and to help mitigate potential learning losses when schools resume (Butcher et al., 2021).

Mitigating against learning loss

While there is still limited evidence in low-income countries relating to student learning loss as a result of school closures or reduced instruction time, once students return to school, there is a need for assessment of learning. Planning for remedial strategies to mitigate any potential learning loss must also be prioritised. This is critical as an immediate response to school reopening to understand student's level of need so that learning can be more targeted. It is also part of a longer-term strategy for building system resilience by integration remediation and formative assessment strategies into the curriculum. However, according to a survey conducted by UNESCO et al. (2021), only one third of countries had plans for systemwide assessments as schools reopen. School-based assessments were more likely to be implemented by low-income countries, with 44 percent reporting that formative assessment was being conducted (UNESCO et al., 2021).

In some countries, measures have been taken to mitigate potential learning losses, such as prioritising certain areas of the curriculum or adjusting the school calendar. In China, the 'Gaukao' exams at the end of secondary school were postponed by a month to allow students to catch up on missed schooling during school closures (Gorgen & McAleavy, 2020). Lao PDR also extended the school year to make up for lost instruction time. Teachers interviewed in a case study conducted by ACER (in press) reported adjusting the curriculum to make up for student learning lost when face-to-face teaching resumed. In Vietnam, summer schools and catch-up programs for hard-to-reach ethnic minority students have been developed as part of the government's school reopening plan (UNESCO & UNICEF, 2021). Mongolia adopted a strategy that focused on assessment and remediation in the first month of school reopening. While teachers reported that the strategy was helpful, time allocated to each subject was inadequate to assess student learning gaps (UNESCO & UNICEF, 2021).

Gaps in evidence in Asia

The COVID-19 pandemic marks a significant crisis in disrupting children's learning globally, while at the same time, offers many opportunities to look at our education systems differently with many insights to be gained. While the research body is limited in relation to Asia-specific responses during the pandemic, there are many ways to draw upon what we already know about creating conditions to enhance teaching and learning, regardless of context. Understanding what effective school level practices look like provides education systems in Asia with new opportunities for education resilience and reform during and after the pandemic.

Student wellbeing

Many education systems in Asia seem to be focusing on learning loss and recovery, however, there is less evidence of a focus on student and teacher mental health and wellbeing.

Teachers first

Many education systems in Asia appear to be focusing on curricula, assessment, and remote learning delivery reform, with less evidence on support for teacher practices and skills that enable this delivery.

School autonomy

While there is much research on school autonomy, there is very little evidence around the role school autonomy plays in system recovery and resilience in Asian education systems.

School leadership

There is little evidence on the importance of school leadership, at both classroom and school level. There are also limited examples of leadership practices that support student learning and engagement during a pandemic.

Monitoring student growth

Research indicates that in most Asian education systems, teachers are responsible for monitoring student growth. However, there is little evidence on what this monitoring looks like at a classroom level, what practices are employed for monitoring students (including formative assessment practices), and to what extent teachers are prepared to monitor and assess student learning.

Figure 2: Gaps in evidence in Asia

Conclusion and next steps

The current pandemic provides education systems with a unique opportunity to share and reflect upon best practices in education that support children during periods of uncertainty and beyond. Opportunities for education reform are more easily undertaken in crisis situations, where failures and bottlenecks in the system are more readily exposed. It challenges our current policies and practices and provides new impetus for policymakers and practitioners at all levels of the education system to transform the 'learning crisis', particularly for those children most at-risk of being left behind. While it is important to reflect upon the ways in which educational systems deal with the impacts of school closures and disruptions on learning and engagement, there is also an urgent need to understand ways to best prepare and support students for a changed world, now and into the future. This is particularly true in diverse contexts such as Asia; however, research presenting effective practices in education during the pandemic remains emergent.

As this review demonstrates, most of the research around COVID-19 pandemic responses in education systems in Asia currently focus on system level responses, with less emphasis on school level practices that contribute to long term quality and equity – the building blocks of a resilient education system. It is encouraging to observe, at the policy level, the extent to which various governments have responded quickly and decisively during the pandemic. These actions have attempted to ensure continuity of learning through sustained education resourcing and strengthened engagement with the private and non-government sectors to deliver services. However, successful education reform requires sustained financing of the education system and investment in its agents – teachers, school leaders and learners. It also requires vertical and horizontal coordination between the multiple layers of the education system including government, local and regional entities, and schools.

While many countries are envisaging large-scale remedial programs to mitigate learning loss and compensate for school closures, specific strategies developed to support students during the pandemic are rarely mentioned in current literature. Accordingly, this review highlights several gaps in the literature on COVID-19 responses in Asia, as briefly outlined in Figure 2. These gaps are important to explore, particularly in relation to recovery efforts of resilient systems globally.

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