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Building resilient education systems

A rapid review of the education in emergencies literature

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The Global Education Monitoring (GEM) Centre drives improvements in learning by supporting the monitoring of educational outcomes worldwide. The GEM Centre is a long-term partnership between the Australian Council for Educational Research (ACER) and the Australian Government's Department of Foreign Affairs and Trade (DFAT).

Building resilient education systems: A rapid review of the education in emergencies literature

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Abbreviations

ACER	Australian Council for Educational Research
ADRC	Asian Disaster Reduction Center
DFAT	Department of Foreign Affairs and Trade (Australia)
ECW	Education Cannot Wait
EiE	education in emergencies
GEM	Global Education Monitoring
GPE	Global Partnership for Education
ICT	information and communication technology
INEE	Inter-agency Network for Education in Emergencies
IRC	International Rescue Committee
K–12	kindergarten to year 12
NGO	non-government organisation
OECD	Organisation for Economic Co-operation and Development
PICO	Population, Interventions, Contexts and Outcomes
SEL	social and emotional learning
SES	socioeconomic status
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization

Executive summary

The COVID-19 pandemic has highlighted the vulnerabilities and inequalities of national education systems and hindered the education of millions of children globally. In response, the Global Education Monitoring (GEM) Centre, which is a long-term, strategic partnership between the Australian Council for Educational Research (ACER) and the Australian Government's Department of Foreign Affairs and Trade (DFAT), undertook a rapid review of literature to support policymakers.

The research has six evidence-based outcomes that can help policymakers to build resilient education systems and thereby enhance education quality and equity during emergencies:

- identification of student populations who are particularly vulnerable to falling behind their peers during education emergencies
- development of an EiE Policy Monitoring Framework to conceptualise the effects and management of education in emergencies (EiE)
- identification of the factors impacting education during emergencies, with a focus on equitable learning progress and access across K–12 education
- presentation of appropriate preparedness activities and policy considerations to withstand education emergencies
- description of best-practice response and recovery activities and policy considerations to promote equitable and quality education outcomes
- presentation of an evidence-based Policy Monitoring Tool for planning educational reforms and monitoring the status of the education system to build resilience.

The COVID-19 emergency provided the impetus for this research, with much of the reported data associated with this pandemic. Learnings from past education in emergencies situations have informed the understandings of the impacts and implications of the COVID-19 emergency, and have been synthesised with the COVID-19 literature to inform policymakers about how to build resilient education systems. This report presents evidence relating to two main types of emergencies affecting education: natural disasters and communicable disease, and political conflicts. Both types of emergencies can also coalesce within the same education system, resulting in complex and often protracted emergencies.

This review found that emergencies impact education in two main ways: endangering children's wellbeing, and exacerbating unequal learning outcomes. Access to education is inextricably connected to general wellbeing, mental health, and social and emotional learning, and may be jeopardised by emergency events. While large-scale disruptions to education can have population-wide detrimental effects on learning, the consequences of these disruptions are not evenly distributed. There is strong evidence common to a range of countries that specific demographic groups are more vulnerable than others to

having their education disrupted by emergencies. It was found that particular attention needs to be provided to children from the following five groups: girls; those living in low socioeconomic status (SES) households; children with disability; those living in remote areas; and refugees, asylum seekers and internally displaced persons. Children belonging to these groups are more likely to have difficulty accessing education during an emergency, albeit for different reasons. For example, children living in low SES households might not have the materials needed to engage in distance education, while those with disability might be excluded due to a lack of universal design, and girls are more likely to be compelled to abandon their education to undertake household tasks.

EiE Policy Monitoring Framework

An EiE Policy Monitoring Framework was developed over the course of this investigation to conceptualise the impact and management of education before, during and after emergencies (see Figure 1). This framework helps policymakers to understand how emergencies are likely to impact education, and to develop strategies to manage and build resilient education systems in the context of emergencies.

The framework is underpinned by three phases – Preparedness, Response, and Recovery – which need to be considered when operationalising policies, plans, and activities, as well as when analysing data to inform decision-making. The first of these emergency management phases, Preparedness, involves being ready for education emergencies. It includes having documented policies and plans that detail what actions should be taken during and after education emergencies. The Response phase refers to policies, plans, and actions that seek to address priority areas so that some form of education can continue. The Recovery phase focuses on returning students to their pre-emergency learning trajectories and continuing learning.

Common to all three phases are factors that influence how policymakers manage education systems and school-level planning. These factors are grouped into Systems, Teaching and Learning, and Agents. The Systems factor refers to the central processes, practices, networks, and relations that policymakers engage with and within. The Teaching and Learning factor refers to all activities and resources that are directly related to how teachers teach, and how students learn and are assessed. The Agents factor refers to entities that can make decisions and act over the course of emergency management phases.

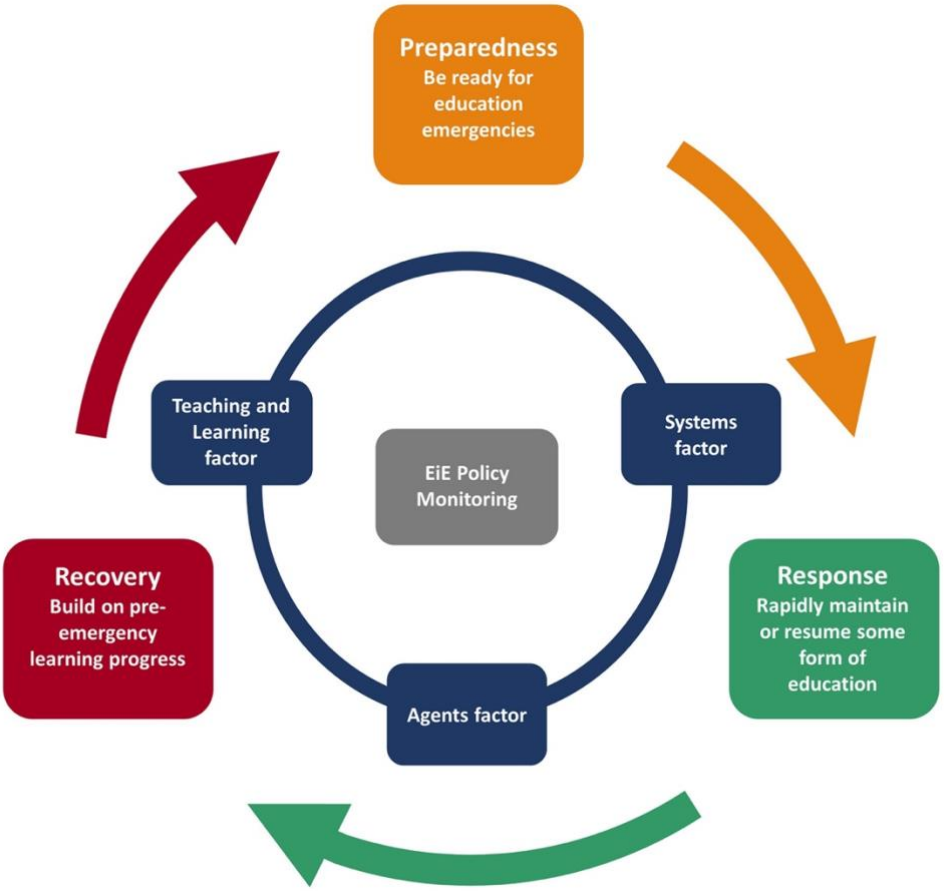

Figure 1: EiE Policy Monitoring Framework for building a resilient education system

Factors influencing the impacts and management of education in emergencies

Within the broader Systems, Teaching and Learning, and Agents factors are corresponding sub-factors that enable policymakers to target and manage aspects of their education system and school-level planning during emergencies. These sub-factors are outlined below.

Systems

Planning for education in emergencies aims to reduce negative impacts on school operations, often detailing processes to communicate information about risks, risk mitigation, and potential responses. Effective planning requires detailing specific planning documents, including: education sector plans, implementation plans, institutional and business continuity plans, operations plans, and disaster response plans.

Collaboration and coordination refers to the plans and processes that facilitate the diverse agents working together to ensure children have access to education. Government departments that display agile leadership, and collaborate vertically and horizontally to

plan and implement key policies and practices, have been better able to mitigate the impact of emergencies.

Communication involves organisations communicating with each other to coordinate their activities, as well as ensuring teachers, parents, and children are well informed about engaging in education during emergencies. Effective communication is timely, is targeted to an audience, includes dialogue, and is detailed.

Information, communication and technology infrastructure needs to be provided through multiple networks, such as cables, satellite, radio, and television, to ensure that alternative means of communication are available if one or two networks are disconnected.

School buildings and protocols need to be to a standard to protect the safety of children and staff.

Monitoring involves collecting and analysing up-to-date data from schools, staff, and children to inform decision-making about education resourcing and support. Large-scale assessments can be used to compare learning progress between schools and regions, thereby informing the targeting of resources and promoting equitable learning outcomes. Regardless of which large-scale assessments are implemented, they should be adapted for a given education system.

Teaching and Learning

Curriculum involves the content of what students learn. In the context of emergencies, curriculum can be adapted to enhance child resilience, such as by integrating social and emotional learning.

Television, radio, and print materials were used by numerous countries in response to the COVID-19 disruption to deliver teaching and learning content. The use of these technologies was particularly useful for children living in remote regions or from lower SES backgrounds. Print materials are often relied on when there is a lack of access to other modalities, or there is insufficient time to digitise curriculum materials.

Digital technology application was accelerated in response to the COVID-19 disruption. A specific digital technology that has been implemented during education in emergencies situations involves mobile learning, which can potentially provide rapid and widespread access to learning during school shutdowns.

Blended learning involves integrating digital technology with older modes of teaching and learning (e.g., classroom teaching) to support distance learning. Learning via digital technology is more effective if it is incorporated alongside offline components.

Assessment and learning progress are especially important following an emergency, as there is greater risk of vulnerable children falling behind. Classroom and school

assessments, during and after emergencies, are crucial for guiding education Response and Recovery, and identifying learners' needs and progress.

Agents

National, state, and local governments are usually the most significant agents in maintaining access to education in emergencies. Governments often have access to greater resources, and can draw on multiple instruments – such as law enforcement and healthcare – to produce outcomes.

Intergovernmental organisations and non-government organisations (NGOs) can provide varying degrees of support for education in emergencies Preparedness, Response, and Recovery, helping fill the gaps where government capacity is limited.

Schools are usually the basic organisational units and agents that provide the resources for educating children, and school leaders are the agents that direct those resources. For schools to continue to serve their students during emergencies, school leaders need support, such as information, templates, training, and resources. Schools can also provide community social support, such as offering food and counselling.

Teachers are the fulcrum of any education system's capacity to maintain learning during an emergency. During emergencies, however, teachers might need to disseminate and communicate information across various platforms to support and engage students and parents. This may require teachers to upskill in distance learning pedagogies.

Communities can play a significant role in children's education by either implementing government initiatives or leading their own. Community members can support educational responses, such as by undertaking predetermined responsibilities to complement formal education.

Families can support and enhance learning outcomes, such as by providing structured and emotionally warm learning environments for children. However, they need support to do this, such as having access to educational resources like stationery and books, as well as advice and guidance from education experts.

Children can be engaged as active agents, such as by notifying them of events that affect them, educating them on how to reduce harm to themselves and others, and informing them of available support, such as counselling.

Policy considerations for monitoring education in emergencies

To further support policymakers' efforts at building a resilient education system, the aforementioned sub-factors were elaborated into policy considerations to address the impact and management of education in emergencies. These considerations are summarised below and expanded on in section 6.

Policy factor 1. Systems:
1.1. Planning for education in emergencies
1.2. Instituting strong coordination and collaboration
1.3. Communicating between and with education agents
1.4. Constructing robust ICT infrastructure
1.5. Building sound school facilities
1.6. Bolstering monitoring systems.

Policy factor 2. Teaching and Learning:
2.1. Embedding assessment into emergency contexts
2.2. Implementing digital teaching and learning
2.3. Applying multiple teaching modalities.

Policy factor 3. Agents:
3.1. Clarifying responsibilities among government agents
3.2. Engaging the community
3.3. Strengthening schools and supporting school leaders
3.4. Developing teacher capacity
3.5. Helping parents and resourcing the home learning environment
3.6. Fostering children's resilience.

Policy Monitoring Tool

A key output from this report was a Policy Monitoring Tool that was developed by integrating the EiE Policy Monitoring Framework with the policy considerations. This was achieved by mapping pertinent education in emergency factors and considerations against the Preparedness, Response, and Recovery emergency management phases to develop a monitoring tool for use by policymakers (see Appendix A).

By drawing from this report, particularly the policy considerations, and applying the EiE Policy Monitoring Framework via the Policy Monitoring Tool, policymakers can identify the factors and considerations relevant to each phase of emergency management, and work towards building a resilient education system.

1. Introduction

The ongoing COVID-19 pandemic has greatly impacted education systems worldwide and affected approximately 1.2 billion students across 143 countries (UNESCO, 2020a). Estimates have suggested that over 90% of learners have had their education disrupted through school closures, increasing the number of out-of-school children as countries entered into various degrees of lockdown (IEA, 2020).[1] Accordingly, this pandemic has revealed inequalities and vulnerabilities in education systems globally, by highlighting that it is likely that developed countries will recover quickly compared with less developed countries. In the wake of governments closing schools to secure community health and safety, issues such as the capacity of education systems, schools, and teachers to deliver online teaching, adapt the curriculum to distance learning,[2] and minimise interruptions to learning, are a continuing concern for policymakers and school administrators (IIEP-UNESCO, 2020b; Li & Lalani, 2020; Save the Children, 2020b; UNESCO, 2020a; UNICEF, 2020a).

While the COVID-19 pandemic has caused a global education emergency, in recent years many countries and regions have increasingly experienced localised education emergencies and crises. An 'emergency' typically refers to short-term intrusions, while a 'crisis' may refer to protracted disruptions to education (Al-Dahash et al., 2016; World Health Organization, 2020). Emergencies may also lead to crises, for instance when a conflict disrupts an education system and schooling over a longer period, even if the conflict subsides. For education systems that have the ability to respond to and recover from the COVID-19 pandemic, it might remain a short-term emergency, but for some education systems, there is a danger that COVID-19 will cause a protracted crisis in education; a goal of this research is to help prevent this happening. This report follows the practice set by education in emergencies (EiE) research and uses the term 'emergency' to also encompass 'crisis'. This report focuses on two categories of emergencies that affect education at a systems level (i.e., natural disasters and communicable disease, and political conflicts) but excludes acute disruptions (e.g., school shootings) (GPE, 2018a).

The current COVID-19 emergency is the impetus for this research, with much of the data collected associated with the pandemic. However, learnings from previous education emergencies are drawn on to inform our understanding of the impacts and implications of the COVID-19 emergency. Furthermore, learnings from the COVID-19 emergency are synthesised with a broader body of literature on education in emergencies to inform policymakers about how to build more resilient education systems.

[1] Although it is recognised that 'children' and 'youth' have been distinguished in some research literature, for the duration of this report, the term 'children' encompasses youth.

[2] 'Distance learning' refers to learning assisted by formal education institutions outside of formal education environments (i.e., schools). This can include learning at home or community centres. The term 'remote learning' is sometimes used synonymously with distance learning; in keeping with recent literature the former term is used throughout this report.

At present, there is a lack of information that systematises evidence regarding effective education policies and practices in emergencies. This rapid review contributes to knowledge and policy development by examining the literature and education system policies that address education in emergencies, with attention to education sector plans and COVID-19 response plans. **It is intended that this review will provide education policymakers, at the systems level, with key information and policy considerations that will enable them to enhance education equity and quality during emergencies, and build a resilient education system for the future**. Specifically, this study aims to provide the following information for national, state, and local level policymakers:

- an *evidence base* to inform policymakers and educators about education in emergencies Preparedness, Response, and Recovery
- an *EiE Policy Monitoring Framework* to help policymakers structure the factors and considerations in building a resilient education system
- *policy considerations and issues*, which are actionable processes, to build a resilient education system based on system-level change, supporting teaching and learning, and the roles of various agents
- *a Policy Monitoring Tool* to help policymakers apply the findings in this report to build a more resilient education system.

The report is divided into the following six sections:

Section 1. Introduction: addresses the topic and context of this review and outlines the outcomes that follow.

Section 2. Methodology: provides an outline of the research design and research questions, inclusion and exclusion criteria for sourcing reviewed literature, and methods for data collection and analysis.

Section 3. Context: describes the context underlying education in emergencies with respect to the categories of emergencies, the impact of such emergencies, and the vulnerable populations they affect.

Section 4. EiE Policy Monitoring Framework: presents the policymaking framework used to inform the structure of this report, and how this framework might be used to develop the resilience of education systems during emergencies.

Section 5. Building resilient education systems: presents policymakers with a range of factors for building a resilient education system.

Section 6. Policy considerations for monitoring education in emergencies: draws together findings from section 5 and proposes practical considerations for policymakers.

2. Methodology

The primary audience for this rapid review are system-level education policymakers working within education in emergencies (EiE) situations. In particular, they are policymakers who work in education policy planning units, assessment and curriculum units, education agencies, education school systems, intergovernmental organisations, and the Department of Foreign Affairs and Trade (DFAT). Other secondary audiences include donors, developmental partners, and educators working within education in emergencies situations.

The final number of documents included in this review was 224. From this total, 32 documents were drawn from country submissions to the Global Partnership for Education (GPE) requesting COVID-19-related short- and medium-term education in emergencies funding, while another 67 documents comprised national policy papers, organisation reports (e.g., from UNESCO, the OECD, and Save the Children), and peer-reviewed articles that addressed COVID-19 challenges and possible solutions. Of the remaining 125 references, 114 addressed education in emergencies situations that were not COVID-19-related, while the remaining 11 addressed methodological approaches and issues relating to rapid reviews. Thus, approximately 44% of the references reviewed in this report focused on COVID-19 specifically, and its impact on schooling and education systems.

Rapid review approaches are becoming increasingly critical for providing a knowledge synthesis that is up-to-date and contextual – as seen in a recent OECD report on the impact of the COVID-19 pandemic on education globally (Reimers & Schleicher, 2020). Methodologically, while a universal definition of a rapid review is lacking, researchers have identified commonalities with respect to this research approach (Hamel et al., 2021; Khangura et al., 2012; Tricco et al., 2015). These commonalities include targeting key questions or issues; conducting a broad, but not exhaustive, search of the literature to determine the scope of the review; and applying streamlined practices (see Table 2.1). This research approach enables analysis and reporting to be completed over shorter periods (e.g., weeks to 12 months) (Garritty et al., 2017; Tricco et al., 2015).

Applying a rapid review methodology may introduce limitations, including a reliance on limited resources; less rigour due to time constraints; the use of interchangeable terminology; and the increased possibility of bias. In contrast, systematic reviews might be seen to embody the 'gold standard' because researchers are required to analyse all available evidence to answer specific questions, and utilise explicit and systematic methods to reduce bias to increase validity and reliability (Garritty et al., 2017; Khangura et al., 2012). A major limitation of a systematic review is the extended periods required to complete a thorough and expansive review of the literature, leading to a delay in the dissemination of the synthesised information.

With respect to the present investigation, it is important to note that despite the differences in these methods, researchers have often identified that the conclusions

derived from systematic and rapid reviews do not differ greatly, and that the latter can be improved by applying greater scrutiny and transparency to procedures (Ganann et al., 2010; Khangura et al., 2012; Rocco & Plakhotnik, 2009; Tricco et al., 2015a; Varker et al., 2015). Table 2.1 provides a comparison of the methodological approaches traditionally associated with systematic reviews, and the rapid review approach taken in the present investigation.

Table 2.1: Comparing methodological components: standard systematic review and the present education in emergencies adapted rapid review

Methodological component	Standard systematic review	Education in emergencies adapted rapid review
Timeframe	12 months to five years	Over eight months (March–November 2020)
Research questions	Narrow and focused	Narrow and focused
Sources	Comprehensive	Publicly accessible academic and non-academic databases and literature
Selection	All included and excluded sources relating to Population, Interventions, Contexts and Outcomes (PICO) are catalogued	Examples are provided of excluded and included sources rather than cataloguing them all
Appraisal	The judgement of including or excluding all material is crosschecked by multiple researchers	A sample of material was crosschecked by a second researcher
Analysis	After coding framework is developed, all material is analysed or reanalysed	Coding framework was developed iteratively along with the analysis
Inferences	Often quantitative methods are applied (e.g., enumeration of articles that come to specific conclusions)	Three researchers discussed how data might be coded and analysed thematically based on inclusion-exclusion criteria (see section 2.2), and came to agreement regarding what the data infers
Synthesis	Meta-analysis or narrative synthesis is used to identify the strength of each finding	An EiE Policy Monitoring Framework was developed to translate the data into a useful form

To ensure the integrity of the methods used, this review adapted the evidence synthesis methods employed by the Campbell Collaboration (2020). Specifically, the five steps that were developed to guide researchers involved:

Step 1. Outlining research questions

Step 2. Identifying inclusion and exclusion criteria

Step 3. Extracting and collecting data

Step 4. Coding, analysis and synthesis

Step 5. Reporting.

Clarifications for Step 1 and Step 2 are outlined below, while Step 3 and Step 4 can be viewed in Appendix B. Step 5 is outlined in sections 3 to 6 of this report.

2.1 Step 1. Outlining research questions

This review utilised the following research questions to guide our investigation into how policymakers address education in emergencies, and to propose policy considerations to support policy development to build resilient education systems.

1. What are the impacts on equitable and quality K–12 education during emergencies?
    1.1. What factors affect education during emergencies, and therefore equitable learning progress?
    1.2. Which populations are particularly vulnerable to falling behind their peers during emergencies?
2. How should policymakers respond and recover to promote equitable and quality outcomes when K–12 education systems are disrupted by emergencies?
    2.1. What can be learned from education policies and practices that have been implemented during emergencies?
    2.2. During emergencies, how can student learning be monitored and assessed during the situation and in the transition to normal schooling?
3. How can K–12 education systems be engaged in preparedness activities and build further resilience in enduring emergencies?

2.2 Step 2. Identifying inclusion and exclusion criteria

The inclusion and exclusion criteria used to identify and screen literature for relevance and quality was based on the PICO model – Population, Interventions, Contexts and Outcomes – described below (Tufanaru et al., 2020). Broadly, studies were included that can inform policymakers and school leaders to build a resilient K–12 education system in the context of emergencies in developing countries. Once saturation with respect to

research issues was reached, and research timeframes were met, further searches for resources were halted.

Population

This review focused on policies that included populations comprising students, teachers, and other relevant stakeholders in K–12 education systems. Studies involving students from higher education were reviewed if they were relevant to K–12 education, such as those covering initial teacher education.

Interventions

Literature that was included concerned how education was supported in emergencies. For example: How was education maintained during emergencies? How were education systems rebuilt after emergencies? How can education systems be better prepared for emergencies?

Examples of excluded academic studies are Jarrell et al. (2008) and Meyer and Wilson (2011). These studies were excluded on the grounds that they did not meet the population criteria, as described above. Both studies also focused on higher education institutions, with little relevance to K–12 education. An example of an excluded report is Atrafi (2017), which was excluded on the grounds that it did not meet the outcomes criteria as described below, in that the report did not provide sufficient detail that would enable policymakers or school leaders to build a resilient education system.

Context

The context of the literature was a focus on:

- support for countries to build resilient education systems, and a review of the existing literature for policy transfer from developed and developing countries
- geographical regions that are prone to environmental disasters or political conflicts
- countries most impacted by the current pandemic (COVID-19).

Outcomes

Literature was judged as providing critical and important outcomes if results could inform policymakers and school leaders to design and further develop resilient education systems (e.g., research, policies, and planning documents).

3. Context

This section identifies the context underlying education in emergencies (EiE). Specifically, it addresses the different types of emergencies affecting education, the impacts of such emergencies, and the vulnerable populations that they affect.

3.1 Types of emergencies affecting education

Prior to the impact of COVID-19, millions of children across the globe were out of school as a result of emergencies. National and regional education sector plans often recognised emergencies as a major cause of absence from school (Government of the Punjab, 2020; GPE, 2020u). The following sections detail the two main kinds of emergencies that disrupt education systems – first, natural disasters and communicable disease; and second, political conflicts – as well as the confluence of these two types of emergencies and the mass displacement they can cause.

Natural disasters and communicable disease

Natural disasters and communicable disease greatly disrupt education across the globe, and have been due, in part, to increased urbanisation and climate change (Asian Disaster Preparedness Center, 2008; Cabinet Office Japan, 2015; USAID, 2014a; Webster et al., 2008). Natural disasters and communicable disease include:

- seismic activity (e.g., earthquake, volcano, tsunami)
- extreme weather events (e.g., cyclone/hurricane, tornado, flood)
- drought
- bush- or wildfires
- HIV/AIDS, malaria, influenza, Ebola, coronavirus.

While all countries are vulnerable to natural disasters and communicable disease, some regions are prone to greater disruptions to education. For example, the education sector plans for Nepal and the Punjab highlight the interruptions caused by frequent natural disasters and communicable disease, such as earthquakes (Government of Nepal, Ministry of Education, 2009; Government of the Punjab, 2020). These plans also recognise that sub-regions within education systems can be vulnerable to such disturbances, and there is a risk of increasing disparity in learning between children located across different regions.

Political conflicts

Generally, political conflicts lower access to education (Burde et al., 2017), and include:

- outright war
- civil unrest
- tribal clashes
- terrorism.

Globally, the education of tens of millions of children has been interrupted by such conflicts (Save the Children, 2020a), with young children often affected through reduced access to education (Dabalen & Paul, 2012; Verwimp & Van Bavel, 2013). Conflicts can reduce access to education by directly damaging schools, or indirectly affect access by preventing children and teachers from attending school. Conflicts may make it unsafe to attend school, children or teachers may feel intimidated to attend school, or children or teachers may be conscripted to fight in a conflict.

Conflicts are often prolonged and produce political instability. This can undermine government legitimacy and capacity (Nicolai et al., 2020). For this reason, supporting education in conflict situations is often based on a humanitarian approach, which usually involves engaging with non-state actors (Cambridge Education, 2017). Hence, the considerations for policymakers provided in this report have greater utility once conflicts subside, when a degree of political stability has returned.

Complex emergencies and mass displacement

Complex emergencies arise where natural disasters and/or communicable disease occur alongside political conflicts. Sometimes the relationship is causal, and in other cases the emergencies arise independently but then become mutually reinforcing, with compounded effects. For example, the 2021 military coup d'état in Myanmar has worsened the effects of the COVID-19 pandemic, with a UN report warning that their combination could produce a 'devastating impact on the human capital of the next generation' (United Nations Development Programme [UNDP], 2021).

Natural disasters and communicable disease, and political conflicts can cause the mass displacement of populations. While such population displacements are inextricably linked to the emergency that caused the displacement, they can also be considered as separate emergencies in themselves. Conflicts can create refugees and internally displaced persons by forcing populations to flee to regions or countries, often with a different language of instruction or education system (Human Rights Watch, 2011; Mooney & French, 2006). The Battle for Marawi in the Philippines during 2017, for instance, resulted in the displacement of approximately 35,016 learners and 1,285 personnel from 69 public schools (Department of Education, Republic of the Philippines, 2019).

The education of refugees and internally displaced persons is jeopardised because they are often excluded from education systems. Governments might avoid integrating refugees into education systems so as not to create ongoing obligations that could further strain already limited resources (World Bank & UNHCR, 2021). Accordingly, a sustainable development approach, where intergovernmental organisations and non-government organisations (NGOs) work with governments to build capacity to educate refugees and internally displaced persons, can be the most effective medium- to long-term strategy (Mendenhall et al., 2017; Nicolai et al., 2020). This is the approach that this research is most aligned with, as the focus is on developing education systems, rather than providing relief. However, it is acknowledged that the immediate education needs of refugees can also be served through humanitarian responses and integrated with development activities, referred to as 'humanitarian-development coherence' (INEE, 2021). Further details about the impacts of emergencies on refugees and internally displaced persons are provided in section 3.3, which discusses vulnerable populations. The educational Preparedness, Response, and Recovery strategies related to refugees and internally displaced persons are provided in section 5.

3.2 Impacts of emergencies on education

This review found that the various ways in which emergencies impact education can be grouped under two broad categories: wellbeing and unequal learning outcomes.

Impacts of education emergencies on wellbeing

Access to education is inextricably connected to general wellbeing, mental health, and social and emotional learning, which may be jeopardised by extreme emergency events (e.g., armed conflicts, post-conflict situations, natural disasters, economic depression, and epidemics). In addition to disrupting everyday activities and increasing feelings of uncertainty, fear, and isolation, these events may also deny children the opportunity to develop much-needed adaptive emotional coping, communication, and problem-solving skills and strategies, and place them at risk of long-term physical and psychological damage and trauma (European Civil Protection and Humanitarian Aid Operations, 2020; Kankaraš & Suarez-Alvarez, 2019; Rodríguez-Ledo et al., 2018; Weiss-Yagoda et al., 2019). Children are particularly vulnerable to social disruptions, and are likely to experience mental health problems (Halman et al., 2018). Research about COVID-19 school closures suggests that the likely negative impacts on health and wellbeing include anxiety, stress, boredom, and an inability to concentrate (Di Pietro et al., 2020; Save the Children, 2020a).

When education systems are disrupted, so too are other social systems, with detrimental effects on wellbeing. Disruptions to education can undermine peace and stability, and interfere with the process of building national identity and unity (Barakat & Urdal, 2009; Collier et al., 2004). Education is an important factor in reducing children's participation in violence (Burde et al., 2017). Furthermore, interrupted schooling reduces economic prosperity, at both the national and individual level, which can erode security and future wellbeing (Reimers & Schleicher, 2020). The connection between education,

prosperity, and economic development is a significant motivation for the Australian Department of Foreign Affairs and Trade (DFAT) to prioritise education in supporting its Indo-Pacific neighbours in its COVID-19 development response (DFAT, 2020). Without the appropriate responses to minimise disruptions to education, there can be lasting detrimental consequences. Hence, the role of education in promoting wellbeing becomes vital during emergencies.

Impacts of emergencies on equal learning outcomes

While large-scale disruptions to education can have population-wide detrimental effects on learning, the consequences of these disruptions are not evenly distributed. As a consequence of school closures that have occurred in response to COVID-19, inequalities between and within countries have been exacerbated (Di Pietro et al., 2020; UNESCO, 2020b). In particular, developing countries are especially vulnerable and at a greater risk of widening the gap between themselves and developed countries (Cao et al., 2014; UNESCO, 2020a).

Within countries, there is often a proportion of the population whose education is significantly disrupted by a given emergency. An OECD survey monitoring the COVID-19 emergency across 59 developed and developing countries found that approximately half of the children in a large majority of these countries were not able to attend school or access the curriculum via any means (Reimers & Schleicher, 2020). In Great Britain, for example, a Sutton Trust survey during the first wave of COVID-19 school closures found that children in disadvantaged schools accessed online lessons less often, submitted less schoolwork (which was also likely to be of poor quality), and spent less time learning at home (Cullinane & Montacute, 2020). These findings are transferrable to many other national contexts, with inequality often starker in developing countries (Save the Children, 2020a). During emergencies, disadvantaged populations will have their education most disrupted (see section 3.3). Those who need the most educational support are least likely to receive it when normal education is disrupted, exacerbating existing inequalities.

Greater responsibilities are also placed on parents when normal education is disrupted. Parents may need to spend extra time and money to support their children's education, which can highlight the disparities between the types of supports provided by high and low SES households. Specifically, higher SES parents can be expected to have greater resources to support the education of their children, while children from lower SES households are less likely to have access to necessary resources (e.g., electronic devices, and the internet at home) to support learning. This inequality is intensified by the disparity in human capital, with research showing that a greater proportion of higher education–qualified parents indicate they are confident in directing their children's learning compared with parents without such qualifications (Cullinane & Montacute, 2020; Di Pietro et al., 2020; UNESCO, 2020c). Increased education responsibilities placed on parents can also interfere with their work responsibilities and undermine their financial ability to support their children's education (Hall et al., 2020; Reimers & Schleicher, 2020).

3.3 Vulnerable populations

Some demographic groups are more vulnerable to having their education disrupted by emergencies than others (Ministry of Education, Ghana, 2020). Based on this analysis, the five groups that were affected in most of the reviewed countries were children from low socioeconomic status households, girls, children with disability, refugees, asylum seekers, and internally displaced persons, and children living in rural or remote areas. The implications for these vulnerable populations are discussed with regards to the Preparedness, Response, and Recovery initiatives (see section 5).

Low socioeconomic status

Social disturbances arising from emergencies have a significant effect on education in low socioeconomic status (SES) households. For example, a reduction in parental income may cause children to drop out of school and/or require them to enter the workforce to earn more money (Bekalo et al., 2003; Desai, 2020; Smith, 2014). This was observed during the Ebola outbreak in Sierra Leone, where many children were compelled into employment and did not return to schools once they were reopened (Save the Children, 2020a).

Lack of income is one of the main barriers to engaging in education during emergencies; for example, households may not be able to afford decent clothing (Sinclair, 2001). Research conducted in Iraq indicated that a lack of financial resources prevented many children from engaging in an accelerated learning program (Bilagher & Kaushik, 2020). Furthermore, when schools are closed children from lower SES households suffer more because they generally do not have access to the means to support learning outside of school. Schools in the United Kingdom with a high population of children from low SES backgrounds found that during the initial wave of the COVID-19 pandemic they were less likely to be equipped to support distance learning via digital technology (Cullinane & Montacute, 2020).

Girls

Emergencies are likely to affect girls' education significantly more than boys' education (Heltne et al., 2020). Recognition of this gender inequality is reflected in the high priority given to supporting girls' education by foreign aid donors including Education Cannot Wait (2019) and Save the Children (2020a). While there are numerous reasons leading to increased vulnerability for girls in emergencies, many of these reasons reflect structural and cultural gender biases. For example, as a result of lowered income, parents are likely to keep their sons at school, while selecting their daughters to stay home and attend to household tasks (Federal Democratic Republic of Ethiopia, 2020a; Global Education Monitoring Report Team, 2020).

Girls' education can also be affected by the risk of sexual assault, harassment, and exploitation during conflicts, whether these result from opportunistic soldiers exploiting the absence of law and order or the deliberate targeting of women and girls (Kirk & Winthrop, 2006). Distance to school may also result in girls being withdrawn from

schooling more than boys (Murphy et al., 2011), with this impact compounded if real or perceived insecurities are believed to compromise student safety (Kirk, 2011). For instance, if parents believe that their daughter is at higher risk than their son of being targeted when travelling to school, then they are likely to withdraw their daughter from school, regardless of if there is a higher risk. This is often not ameliorated by digital learning, as girls generally face more barriers than boys in accessing digital technology and developing digital literacy (Keeley & Little, 2017). Finally, being withdrawn from school may cause girls to be more susceptible to child marriage, gender-based violence, and teenage pregnancy, as they are less in the public sphere where laws are more easily enforceable. Consequently, while all disadvantaged children are at risk of not resuming schooling after an emergency subsides, this likelihood and the associated negative impacts are greater for girls than for boys (Akmal et al., 2020).

Children with disability

Children with disability or special needs are particularly vulnerable during emergencies. The Inter-agency Network for Education in Emergencies (INEE, 2020) affirms that people with disability often experience barriers to accessing information, are excluded from decision-making, and are socially isolated. During immediate danger periods in an emergency, such as when evacuations are required in the Response phase, children with disability are at risk of being neglected. In the Recovery phase, the additional support that children with disability might receive is often interrupted (Good, 2015).

While many education systems are challenged to provide inclusive environments for children with disability, in developing countries this is at least partially the result of limited resources and exclusions, which are compounded during an emergency (Save the Children, 2020a). For example, the Nepalese School Sector Development Plan states that the aim to provide a more inclusive learning environment has been delayed by the 2015 earthquake (Government of Nepal, Ministry of Education, 2016). In the case of COVID-19, even high-resource countries have often failed to appropriately support children with disability. For example, a survey found that the level of support for Australian children with disability declined across many areas, including curriculum modification, behavioural support, and access to specialist allied health (e.g., speech pathologists) (Dickinson et al., 2020).

Refugees, asylum seekers, and internally displaced persons

The majority of the world's refugees, asylum seekers, and internally displaced persons live in developing countries (UNHCR, 2020). Many have become displaced due to ethnic persecution, highlighting the trend that ethnic minorities are often vulnerable. These countries often struggle to provide adequate education for their own citizens, meaning that they have fewer resources to support vulnerable populations. Refugees are often excluded from education sector planning, which results in the education needs of refugees being overlooked (GPE, 2018a; West & Ring, 2015). For example, one review involving Syrian refugees in Turkey noted that while 80% of refugee children living in

official camps accessed formal education, only a small minority of those living outside of these camps had access to such educational supports and resources (Hos, 2016).

In the case of internally displaced persons, approximately 14.6 million people became newly displaced across 127 countries during the first six months of 2020. The number of people displaced by conflicts and violence increased significantly in countries such as Cameroon, Mozambique, Niger, and Somalia during this period. People displaced by natural disasters included those in India and Bangladesh as a result of Cyclone Amphan; in East African countries as a result of flooding and locust plagues; and in Australia because of intense bushfires.

With respect to the COVID-19 pandemic, the same efforts that were taken to limit its spread have also hampered our understanding of how this virus might have affected internally displaced persons. For example, decreased access to healthcare (Somalia and Yemen) and medical facilities (Colombia), and increased lockdowns (Afghanistan and Iraq) are likely to have negatively influenced the health and resilience of internally displaced persons. More broadly, the combination of living in conditions of high population density (as do many refugees and asylum seekers) with a lack of access to health and humanitarian services places these populations at greater risk (Internal Displacement Monitoring Centre, 2020; Refugees International, 2020). Efforts to improve education for these people during the COVID-19 pandemic, however, can be seen in education sector plans that aim to provide children with learning materials and information and communication technology (ICT) equipment (Nigeria), to support equitable learning opportunities and learning from home (South Sudan), and to provide basic education for children studying in internally displaced persons camps (Myanmar) (GPE, 2020q, 2020t, 2020z).

Children living in rural or remote areas

Children in rural or remote areas often have poorer access to education, including a lack of schools or access only to under-resourced schools. This under-resourcing is partially due to the higher cost of providing education to remote areas. Hence, children in remote areas can particularly benefit from access to digital technology to receive the same quality educational resources as their urban peers. This requires ICT infrastructure, which is often more extensive than in urban areas (Hanssen & Rana, 2007; Horn & Rennie, 2018; Kanwischer & Quennet, 2012). Furthermore, children in remote areas often lack access to other services, such as healthcare, which can aid education participation. Finally, income is generally lower in remote areas, which may compel children to seek work. These concerns are recognised in the education sector plans of numerous developing countries (GPE, 2020h, 2020m, 2020v, 2020w).

4. EiE Policy Monitoring Framework

An EiE Policy Monitoring Framework was developed over the course of this investigation as one of the main outputs of the review. This framework shares characteristics with the conceptual framework described by Rocco and Plakhotnik (2009) in that concepts are related to each other to systematise knowledge. The EiE Policy Monitoring Framework provides a structure that represents the overall systematisation of the evidence drawn from the literature. Policymakers involved in national, state, and local education systems can use this framework to inform policy development.

The EiE Policy Monitoring Framework was also informed by various frameworks that were developed to support the analysis of how emergencies impact education systems and children (Almasri et al., 2019; GPE, 2018b; Kousky, 2016). Drawing on this literature, and education in emergencies (EiE) research broadly (Al-Dahash et al., 2016; Bates, 2013; Cabinet Office Japan, 2015; Nazarov, 2011), the following three management phases can be applied to emergency situations: **Preparedness**, **Response**, and **Recovery**.

These three phases provide a foundation for an EiE Policy Monitoring Framework that can be used to manage policy development for the operationalisation of plans and activities, and to identify measures to inform decision-making and monitor outcomes. Cutting across these three phases are three factors for policymakers to consider in building a resilient education system – **Systems**, **Teaching and Learning**, and **Agents**. Specific sub-factors that fall under each factor are detailed in section 5. The phases and factors are integrated into the EiE Policy Monitoring Framework depicted in Figure 1.

The EiE Policy Monitoring Framework is intended to guide policymakers and highlight the need to consider the phases in emergency management and the different factors in building a resilient education system. The EiE Policy Monitoring Framework has been integrated with the policy considerations for monitoring education in emergencies (as detailed in section 6) to form the Policy Monitoring Tool, for which a template is provided in Appendix A. The tool systematically presents pertinent factors and considerations that emerged from this review for building a resilient education system, and have been mapped to corresponding emergency management phases.

By drawing from this report, particularly the policy considerations, and applying the EiE Policy Monitoring Framework via the tool, policymakers can identify the factors and considerations relevant to each phase of emergency management (Preparedness, Response, and Recovery) to work towards building a resilient education system. Policymakers may also adapt the Policy Monitoring Tool for their purposes (as explained in Appendix A). Furthermore, the EiE Policy Monitoring Framework can be used by policymakers to develop their own planning and monitoring tools, as it provides a structure from which tools can be constructed.

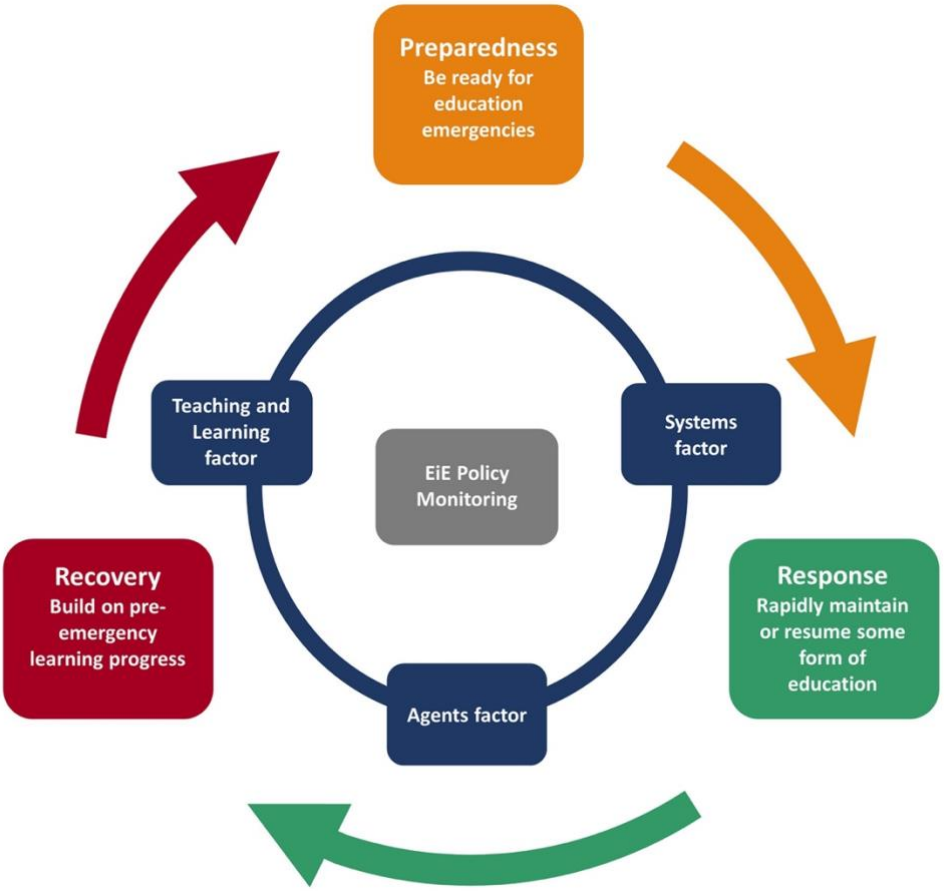

Figure 1: EiE Policy Monitoring Framework for building a resilient education system

The EiE Policy Monitoring Framework does not encompass all relevant matters related to building a resilient education system, but systematises the presentation of the three emergency phases and three factors arising from this review. The framework represents the interrelationship between phases and factors, where the three phases are cyclic, and the three factors are interrelated and integral across the phases.

4.1 Phases: Preparedness, Response, and Recovery

In the present context, the **Preparedness** phase involves being ready for education emergencies. It includes having documented plans that detail what actions should be taken during and after education emergencies. Specific planning documents include implementation plans, institutional continuity plans, operational plans, and disaster response plans. Governments and non-government organisations (NGOs) have produced similar guides to support schools and local authorities as part of the emergency planning process (Cabinet Office Japan, 2015; Homeland Security Council, 2006; Readiness and Emergency Management for Schools Technical Assistance Center, 2019).

The **Response** phase refers to policies, plans, and actions that seek to manage and address priority areas. This might include focusing on the resumption or continuation of

school subjects like languages and maths, while placing less emphasis on other subjects. Appropriate responses will differ across national and local contexts. For example, developing countries may have fewer resources than developed countries, while those regions or local areas that have experienced prior or recent emergency situations may have more established response processes than those without such experiences (Government of Nepal, Ministry of Education, 2009; Kanwischer & Quennet, 2012; Nazarov, 2011).

The **Recovery** phase focuses on returning students to their pre-emergency learning trajectories and continuing learning. An education system that is well prepared for an emergency typically has access to appropriate response mechanisms and is better able to develop strategies for recovery and resilience.

4.2 Factors: Systems, Teaching and Learning, and Agents

Common to all three phases of education in emergencies are factors that can influence how policymakers manage education systems and school-level planning. Over the course of this rapid review, these factors were seen to relate to **Systems**, **Teaching and Learning**, and **Agents**. These factors were incorporated into the EiE Policy Monitoring Framework to particularise the issues, challenges, and actions considered by policymakers globally before, during, and after education in emergencies situations.

Systems refers to central processes, practices, networks, and relations that public and private bodies (e.g., institutions and people groups) engage in. For example, education policies, legislation, and sociocultural practices are systems that can influence and be influenced by education in emergencies situations. These may occur in formal and informal contexts, and are overarching in their reach. Consequently, systems can also include government initiatives, infrastructure, coordination and management, communication, monitoring, assessment, and evaluation.

Teaching and Learning refers to education-specific activities, resources, delivery platforms, student assessment, classroom pedagogies and practices, and curricular content. This factor is focused on issues that are directly related to how teachers teach, and how students learn and are assessed.

Finally, **Agents** refers to entities that make decisions and act. Agents include individual people, groups or organisations (e.g., parents/guardians,[3] families, teachers, children, refugees, asylum seekers, internally displaced persons, local government, government agencies, and NGOs).

[3] It is recognised that guardians, extended family and the community can steward a child's education. For brevity, in this report the term 'parent' is used to also encompass legal and other guardians.

4.3 Consistency between the proposed education in emergencies factors and other policy approaches

The three proposed education in emergencies factors – Systems, Teaching and Learning, and Agents – are consistent with other policy approaches and priorities advocated by other education in emergencies organisations, which provides confirmation about the validity of this review and its relevance for policymakers addressing COVID-19 and broader education in emergencies situations. For example, in response to COVID-19 exacerbating learning crises within education systems, the Research on Improving Systems of Education (RISE) Programme (n.d.) has advocated for three critical actions to help protect children's long-term life outcomes. All three actions aim to mitigate learning losses and develop greater education system resilience, and are consistent with Systems, Teaching and Learning, and Agents factors. These actions are:

> *Action 1: Making a system-wide commitment to prioritise foundational skills.* The importance of developing students' foundational skills (reading and maths), and the crucial role that political and educational leaders have in supporting these goals are emphasised in this action. Specifically, the need to prioritise and articulate achievable goals, while practising clear and consistent delegation within education systems, is pivotal.[4]
>
> *Action 2: Assessing children's learning levels when schools reopen.* This action seeks to return children to their pre-pandemic learning trajectories. Teachers require support and resources to assess student learning, process this diagnostic information, and use the information to inform their classroom teaching to support their students.[5]
>
> *Action 3: Adapting instruction to meet children where they are.* This action emphasises that teachers should focus on teaching at children's current learning level rather than returning to the standard curriculum when schools reopen. Student progress should be measured from baseline (upon returning to school) rather than against pre-pandemic curriculum standards. Accordingly, teachers require access to students' learning levels, the ability (i.e., authorisation, resources, and capability) to align their teaching with their students' learning abilities, and the capacity to put these into action.[6]

[4] This action is seen to be consistent with this review's proposed Systems factor insofar as it relates to how education system management and school-level planning can be influenced by relationships, central processes, practices, and networks, which shape how education initiatives, infrastructure, communication between bodies, and monitoring, assessment, and evaluation are enacted.

[5] Such requirements are also seen in the proposed Teaching and Learning factor, which draws attention to the education in emergencies pedagogy and how students learn and are assessed.

[6] While overlapping with the proposed Teaching and Learning factor, this action is also linked to the teachers and students sub-groups of the proposed Agents factor. Specifically, teachers are the fulcrum of any education system's capacity to maintain learning during and recover from an emergency; and meeting the needs of students where they are includes addressing issues relating to learning, health, safety, and wellbeing during education in emergencies situations.

The proposed factors – Systems, Teaching and Learning, and Agents – share commonalities with the 19 domain standards previously expressed by the Inter-agency Network for Education in Emergencies (INEE) (2010) in its *Minimum Standards for Education: Preparedness, Response, Recovery*. The INEE's approaches and emphases differ from the framework developed in the present review with respect to stakeholder focus and application. While the INEE is focused on multiple stakeholder groups[7] with contrasting needs, this rapid review is focused primarily on policymakers and their requirements. To determine coherence and coverage across this review and the INEE's standards, the latter's 19 domain standards were mapped to the present review's Systems, Teaching and Learning, and Agents factors (see Appendix C). The outcome of this mapping indicated consistency and coverage between the considerations and issues addressed across the INEE's domains and the proposed Systems, Teaching and Learning, and Agents factors.

[7] According to the INEE (2010), these include education authorities at national and local levels; UN agencies; bilateral and multilateral donor agencies; NGOs and community-based organisations, including parent-teacher associations, teachers, other education personnel, and teachers' unions; education sector coordination; committees and Education Clusters; education consultants, researchers, and academics; and human rights and humanitarian advocates.

5. Building resilient education systems

In this section, a range of factors and sub-factors for building a resilient education system are explained. As seen in Table 5.1, sub-factors are subsumed under three factors – Systems, Teaching and Learning, and Agents – as depicted in the EiE Policy Monitoring Framework (see section 4). These factors span the Preparedness, Response, and Recovery phases, hence considerations derived from sub-factors are also relevant across all three emergency phases. The evidence drawn on to identify factors to build more resilient education systems is largely associated with the present pandemic, with COVID-19 response plans being a particularly important source. However, a broader range of literature relating to education in emergencies (EiE) is also drawn on, with the evidence synthesised to identify factors for building education systems that can withstand different kinds of emergencies.

Table 5.1: Factors and sub-factors relevant to building a resilient education system

Systems	Teaching and Learning	Agents
Planning for education in emergencies	Curriculum	National and local governments
Collaboration and coordination	Television, radio, and print materials	Intergovernmental organisations and NGOs
Communication	Digital technology	Schools and school leaders
Information, communication and technology infrastructure	Blended learning	Teachers
School buildings and protocols	Assessment and learning progress	Communities
Monitoring		Parents
		Children

5.1 Systems

The Systems factor refers to the central processes, practices, networks, and relations that policymakers engage with and within. These systems may exist across formal and informal contexts, and comprise specifically sub-factors involving planning, collaboration and coordination, communication, information, communication and technology infrastructure, school buildings and protocols, and monitoring.

Planning for education in emergencies

Planning can mitigate the impact of emergencies, and enable student learning and wellbeing to be advanced (Brocque et al., 2017; Kirkland & Maybery, 2000). It is central to building a resilient education system and is undertaken as part of emergency Preparedness, Response, and Recovery efforts. Although plans can relate to other factors (such as Teaching and Learning, and Agents), this review is concerned with high-level planning to strengthen the resilience of the education system, and thus treats planning

as a predominantly Systems factor. Emergency planning includes implementation plans, institutional and business continuity plans, operations plans, and disaster response plans (Hanssen & Rana, 2007; Jarrell et al., 2008).

Education sector emergency Response and Recovery plans detail the resources, actions, tasks, and data required to manage recovery processes. Planning aims to reduce negative impacts on school operations, and often details processes to communicate information about risks, risk mitigation, and potential responses (Bates, 2013). The Global Partnership for Education (GPE) emphasises that education sector plans must be sensitive to context, and include preparedness, prevention, and risk mitigation, and that education sector analysis should comprise data and targets for marginalised groups.[8] In assisting national education systems to develop education sector plans, the US *Guide for Developing High-Quality School Emergency Operations Plans* outlines the following six-step planning process.

1. Form a collaborative planning team
2. Understand the situation
3. Determine goals and objectives
4. Plan development
5. Plan preparation, review, and approval
6. Plan implementation and maintenance (Readiness and Emergency Management for Schools Technical Assistance Center, 2019).

At a national systems level, such plans may involve mapping risks to identify which institutions and processes are vulnerable to education disruptions. The Education Sector Strategic Plan drafted by the Republic of Kenya's Ministry of Education (2019) exemplifies how such risks might be mapped to corresponding mitigation strategies and responsible bodies (i.e., Ministry of Education, county-level governments, or sectorial directorates). For example, risks associated with natural disasters (e.g., droughts, fires, and floods), insecurity, and inter-clan clashes might be mitigated by strategies that focus on the development and implementation of broad education in emergencies policies, plans, and processes to build the capacity of teachers, students, and school administrators; or the development of multisector coordination and response systems. Education authorities may also produce macro planning documents, to which individualised school plans have a subsidiary relationship, as exemplified in the directives of the Department of Education in Papua New Guinea (PNG) (National Department of Education, PNG, 2020).

At more localised levels, institutional or business continuity plans are often adopted by schools. These plans typically enable schools to continue serving their core functions,

[8] GPE-supported education sector plans and emergency (i.e., COVID-19) response plans are a key source for this review. While all the planning documents do not completely conform to GPE ideals, they nonetheless exemplify clear planning processes.

and detail what adjustments and accommodations are necessary to mitigate education disruptions. Besides teaching and learning, these plans might also address functions involving finance, infrastructure, and security. Institutional continuity plans set broad operational goals and may include other Response and Recovery planning documents – for example, disaster recovery, end-user recovery, contingency, emergency response, and crisis management plans (Bates, 2013).

Ensuring that schools have access to relevant institutional continuity plans relies on education authorities producing practical guides and supports. For example, in the United States of America, the Homeland Security Council has produced the *National Strategy for Pandemic Influenza: Implementation Plan* (Ashford, 2006; Homeland Security Council, 2006). This plan provides guidance for:

- developing alternative teaching procedures if schools are closed
- developing educational support plans for those children who are isolated or quarantined
- identifying a chain of command in case of illness, with at least two backups
- planning to share resources within the same district.

Finally, for plans to be effective, it is necessary that staff, children, and the broader community are aware of such documents and their designated responsibilities as outlined in these plans, and that they routinely practise prescribed activities (Kousky, 2016).

Collaboration and coordination

Policymakers need to consider plans and processes that involve relevant agents in collaboration and coordination activities during education in emergencies. With regards to COVID-19, collaboration and coordination are required to mitigate learning losses. With three months of school closures children may lose one full year of schooling due to the compounding effects of learning losses as time progresses.[9] By collaborating on and coordinating mitigation measures – such as initiating remediation programs or reorientating teaching to match students' long-term learning needs upon schools reopening – policymakers can alleviate and better manage students' future learning losses (Belafi & Kaffenberger, n.d.; Kaffenberger, 2021).

The importance of both activities has been acknowledged by the Inter-agency Network for Education (INEE, 2010), GPE (2018b) and OECD (2011) for response and preparation, and has also been recognised in various Ministries of Education planning documents (Federal Democratic Republic of Ethiopia, 2020a; Lao People Democratic Republic, Ministry of Education and Sports, 2015; Ministry of Education, Republic of Liberia, 2020; Republic of Kenya, Ministry of Education, 2019). According to the OECD (2020a), government departments (e.g., health, and primary and secondary education) that

[9] Computer modelling has indicated that today's grade 3 students may experience 1.5 years of learning losses, as a result of school closures, by the time they commence grade 10 (Kaffenberger, 2021).

display agile leadership, and collaborate vertically and horizontally to plan and implement key policies and practices were better able to mitigate the impact of the recent COVID-19 pandemic. Examples of collaboration and coordination can be seen in Box 5.1.

Box 5.1: Examples of collaboration and coordination across government departments

Djibouti created dedicated teams to manage and respond to regional centres as they aimed to meet learning needs and build the long-term resilience of the education system to respond to future emergencies or further COVID-19 school closures (GPE, 2020g).

Kenya set up multisector and multilevel early warning, prevention, surveillance, and coordination systems to respond to disasters by government agencies (Republic of Kenya, Ministry of Education, 2019).

The Ministry of Education in Afghanistan assigned the Academic Supervision Directorate, and supervision teams at the provincial and district levels to oversee learning programs during the COVID-19 crisis (Ministry of Education, Afghanistan, 2020).

In the wake of the COVID-19 pandemic, Ethiopia enhanced coordination between local, regional, and central levels of education officials by improving ICT infrastructure and providing low-cost devices (Federal Democratic Republic of Ethiopia, 2020b).

Specific international coordination mechanisms can also support the education of internally displaced persons and refugees. For example, the Humanitarian Cluster Coordination approach can be used to support internally displaced persons when government coordination capacity is limited; this can involve using clusters of local actors led by organisations like UNICEF and Save the Children to rapidly respond to pressing education needs. In the case of refugees, the UNHCR leads and coordinates responses involving both international and national actors. Although host countries would ideally lead responses, in practice, many host governments lack capacity (Nicolai et al., 2020).

A well-coordinated education system is also one where agents' responsibilities match their capacity. In ideal circumstances, policymakers aim to manage agents so that they understand their responsibilities, have opportunities to cooperate, and are engaged in tasks that minimise overlap while maximising coverage. The process of developing and monitoring these goals will help ensure that agents are adequately resourced, in terms of equipment, support, and training, to undertake allocated tasks. For example, the goal of collecting information about the home learning environment is only possible if schools and policymakers adequately collaborate with and support staff to engage students and their families. Additionally, education systems that are well coordinated also increase the likelihood that schooling can continue when faced with emergencies (Asian Disaster Preparedness Center, 2008; Prime Minister of Japan and His Cabinet, 2020; Reimers & Schleicher, 2020). Box 5.2 outlines how a well-coordinated emergency management system might be structured.

Box 5.2: Example of a well-coordinated emergency management system

The Japanese Government's response to COVID-19 highlights how plans to facilitate collaboration and coordination between ministerial departments might be implemented. The response strategy involved the Government Response Headquarters coordinating with prefectures downstream to manage emergency measures. The Ministry of Education, Culture, Sports, Science and Technology collaborated with the Ministry of Health, Labor and Welfare to divide responsibilities to maximise coverage and minimise overlap. The former ministry provided leadership on the temporary closure of schools and disseminated guiding principles and countermeasures for prefectural governments to communicate to school administrators. The latter ministry performed a similar role with nursery schools and after-school children's clubs, while also securing childcare services for essential workers (e.g., medical staff, single parents who have difficulty taking time off work, and workers who are required to maintain social cohesion) (Prime Minister of Japan and His Cabinet, 2020).

Finally, successful collaboration and coordination are needed to plan and implement education interventions between governments and internal and external agents (Robinson & Curtiss, 2020). For example, governments operating in countries/regions that are frequently affected by conflicts (e.g., war or insurgencies) or natural disasters (e.g., severe famine) may be more reliant on medium- to long-term collaborations with intergovernmental organisations and non-government organisations (NGOs) to coordinate the delivery of education interventions. In countries such as Niger, Nigeria, and South Sudan, organisations like the International Rescue Committee (IRC), Montrose International, Save the Children, World Bank Group, and USAID have all collaborated with government to deliver assessment and intervention programs for literacy, numeracy, and social-emotional wellbeing, across contexts involving refugees, internally displaced persons, and asylum seekers (IRC, 2018; Montrose International, 2016; Save the Children US, 2018; USAID, 2013, 2014b; World Bank Group, n.d.).

The role of governments and intergovernmental organisations is further expounded in section 5.3.

Communication

Effective communication enables education to be maintained or quickly recover from an emergency. Communication enables organisations (e.g., governments, schools, and educational agencies) to coordinate their emergency management strategies and activities to ensure that teachers, parents, and children are well informed about the emergency response (Reimers & Schleicher, 2020). Communication in emergency situations may include information about:

- impacts of the emergency on education
- effects on children
- alternative arrangements that are, or will be, in place to maintain education
- responsibilities of teachers, parents, and children.

Effective communication is also timely, is targeted to an audience, involves dialogue, and includes details (e.g., timeframes) (Petriwskyj, 2013). Policymakers should note that satisfying these ideals involves risks. Community members who rapidly communicate with each other may lack official information and may instead share misinformation that interferes with official guidance (Frost, 2015). For example, it is essential that clear communication is provided to families about the emergency so that they are confident about returning children to school when required by authorities. It is important that policymakers manage communication and information dissemination channels so that all agents are aware of the current emergency. To address this, for example, specific communication can be designed for families from linguistic minorities who may have difficulty comprehending messages in the dominant language. Following the spread of COVID-19 in Ethiopia, a helpdesk hotline was established indefinitely to allow the community to report emergencies, as well as ask questions and receive relevant information (Federal Democratic Republic of Ethiopia, 2020a).

Useful communication channels can include contexts or platforms involving:

- in-person communication, such as via teachers or health workers to families
- telephone conversations and text messages
- school online portals, government websites, official social media profiles, and emails
- newsletters, newspapers, and posters
- television and radio.

Information, communication and technology infrastructure

A resilient education system may also be one where school districts are not reliant on a single point of connection to support distance learning. This may be particularly relevant in remote communities, such as in the Pacific Islands or mountainous regions, where cables can be disconnected by natural disasters or conflict. Instead, the provision of multiple networks, such as cables, satellite, radio, and television, are needed to ensure that alternative means of communication are available if one or two networks are disconnected (Hanssen & Rana, 2007; Republic of Rwanda, Ministry of Education, 2020).

Governments are relied on to provide and improve information and communication technology (ICT) infrastructure to support access to distance learning (e.g., Guyana, Mozambique, Tanzania [Mainland], and Togo) (GPE, 2020k, 2020p, 2020aa, 2020ab). Governments in countries like Djibouti, Guyana, and Nepal have aimed to improve online access and communication by enhancing infrastructure, connectivity, and partnership agreements between telecom service companies and internet providers (GPE, 2020g, 2020k, 2020r). Likewise, Latin American countries have worked with IIEP-UNESCO's Information System on Educational Trends in Latin America to respond to digital policies by enhancing access and connectivity to ICT platforms (IIEP-UNESCO, 2020a).

School buildings and protocols

This sub-factor, school buildings and protocols, concerns protecting the physical safety of children and staff. The need for structurally secure and safe school buildings is pertinent in relation to various kinds of natural disasters, such as extreme weather events and seismic activity. For example, following the Nepalese 2015 earthquake, the Ministry of Education committed to constructing, reconstructing, and retrofitting schools to standards that are earthquake-resistant (Government of Nepal, Ministry of Education, 2016; GPE, 2020r). Furthermore, building design needs to be inclusive so that students with reduced mobility can access schooling.

Additionally, it is imperative that schools also have facilities that support and encourage health and safety protocols before reopening, as part of an education system's Response and Recovery phases (GPE, 2020n). In the case of COVID-19, this involved initiatives to ensure the maintenance of appropriate standards in Water, Sanitation and Hygiene (WASH), as described by UNICEF (2020b). It might also involve providing equipment to schools (e.g., masks, sanitiser, and soap), instituting hygiene practices (e.g., hand-washing, school disinfections, and codes of conduct around touching), and ensuring that school refurbishments support health and safety (Asian Disaster Reduction Center, 2020; GPE, 2020t, 2020u, 2020v, 2020w; Ministry of Education, Youth and Sport, Timor-Leste, 2020).

Outside of these immediate aims, the INEE (2010) and the OECD (Reimers & Schleicher, 2020) have noted that:

- schools should have learning spaces marked using clear lines and boundaries to further promote the safety and wellbeing of children and teachers, and to ensure that social-distancing (e.g., class space and seating arrangements) requirements are met
- school sanitation and hygiene facilities should consider issues relating to gender, age, and special needs
- teaching may require creative solutions, such as teaching outdoors, and open teaching and learning spaces.

Monitoring

A resilient education system is broadly characterised by monitoring processes that collect, store, and enable the analysis of up-to-date data from schools, staff, and children. Importantly, data that are collected should be reliable and enable informed decision-making about education resourcing and support (Robinson & Curtiss, 2020; Save the Children, 2020a). Such monitoring processes and ideals have been expressed by various governments (e.g., the Democratic Republic of Congo, Guyana, Kenya, and PNG) in their education and COVID-19 response plans (GPE, 2020f, 2020k; National Department of Education, PNG, 2020; Republic of Kenya, Ministry of Education, 2020). These plans are essential for the Preparedness and Response phases.

With regards to schools, data that might be used for monitoring include available resources (e.g., the extent that each school is digital-ready), child-to-teacher ratios, and demographic information about the student body. The latter can be particularly useful to support the education of vulnerable groups, such as girls and children from minority linguistic backgrounds. Data involving teacher training, professional learning, and how teachers are coping with challenges triggered by emergency situations might also be monitored to support teachers.

Assessing the learning progress of children is a central element of education monitoring (Reimers & Schleicher, 2020). At a systems level, large-scale assessments enable student progress to be compared between schools and regions. This is particularly useful to inform the targeting of resources and attention on those schools and regions that may need greater support, thereby promoting more equitable learning outcomes (Belisle et al., 2016).

In the case of COVID-19, numerous governments appreciated the importance of national standardised assessments in identifying learning gaps (Federal Ministry of Education, Republic of Sudan, 2020; Ministry of Education, Ghana, 2020; Save the Children, 2020a). National large-scale assessments can be tailored for national contexts, including the emergency context. For example, ACER's Monitoring Trends in Educational Growth (MTEG) program is based on design principles and quality standards, and focuses on a country's monitoring needs to address context-specific education issues and advance national policy priorities (ACER, 2020).

A second option is for education systems to participate in regional assessment programs. Two examples of such large-scale assessments are the Pacific Islands Literacy and Numeracy Assessment (PILNA) and the Southeast Asia Primary Learning Metrics (SEA-PLM) (see Appendix D). The advantage of participating in regional assessments is that education systems in the same region often have much in common and share a similar context, including their level of vulnerabilities to specific emergencies (such as being more prone to earthquakes or cyclones). This means that they can learn from each other, as well as collaboratively develop capacity-development activities related to systems monitoring and improvement. This collaboration can also aid regional integration and promote regional peace and prosperity (Belisle et al., 2016).

A third systems-monitoring option is participating in international assessments, such as the Programme for International Student Assessment (PISA), Trends in International Mathematics and Science Study (TIMSS), and Progress in International Reading Literacy Study (PIRLS) (see Appendix D). Some international studies are well established, facilitating the monitoring of comparative learning progress over time. International assessments broaden the policy perspective, enabling education systems to identify and learn from best practice (IEA, 2020). At the opposite end of the spectrum of learning assessment are school-based assessments, which are described in section 5.2.

Policymakers need to develop a strategy to identify the appropriate assessment or suite of assessments to monitor learning progress. To support policymakers in this

endeavour, the GPE has provided countries with the Analysis of National Learning Assessment Systems (ANLAS) toolkit. The ANLAS toolkit enables countries to systematically gather and analyse information about their learning assessment systems and requirements, and thereby inform how they can further develop their assessment systems to achieve their education goals (GPE & ACER, 2019).

In practice, the process of monitoring education in emergencies seeks to inform and enhance how policymakers prepare for, respond to, and recover from emergency situations (Robinson & Curtiss, 2020). In preparing education systems for future emergencies, monitoring can also be used to explore which delivery modalities for learning warrant ongoing investment. This can be achieved by assessing whether initiatives have sufficient reach and participation, are cost-effective to implement, and advance learning outcomes for diverse groups. For example, the Government of Pakistan is investigating whether self-learning or guided learning in 'no tech offline', 'low tech', or 'high tech online' contexts enhances student learning (Ministry of Federal Education and Professional Training, Pakistan, 2020, p. 13).

In the case of COVID-19, governments have responded by attempting to monitor how children and teachers utilised learning platforms. For example, the Afghan Government has been monitoring the recording and availability of learning material for television and radio (Ministry of Education, Afghanistan, 2020). The Sudanese Government has aimed to address access to learning by monitoring how children and teachers use media and digital platforms via website data and media surveys (Federal Ministry of Education, Republic of Sudan, 2020). Likewise, the Gambian Government is monitoring student-teacher engagements on social media and distance learning (The Republic of The Gambia, 2020). In response to these monitoring efforts, distance learning content can be revised and integrated into teaching practices, as seen in Ethiopia and Pakistan (Federal Democratic Republic of Ethiopia, 2020b; Ministry of Federal Education and Professional Training, Pakistan, 2020; Motteram et al., 2020).

Monitoring is also essential to the Recovery phase of education in emergencies. This is recognised in the Laotian Government's COVID-19 response plan, where monitoring has been strategised under three different return-to-school scenarios (Lao People Democratic Republic, Ministry of Education and Sports, 2020). In Rwanda, the government is focused on measuring the percentage of children who have accessed distance learning and have returned to school. These data are analysed according to grade, gender, and disability, to enable greater support for those in need (Republic of Rwanda, Ministry of Education, 2020).

5.2 Teaching and Learning

The Teaching and Learning factor refers to all activities and resources that are directly related to how teachers teach, and how students learn and are assessed. The specific Teaching and Learning sub-factors that emerged from this review focus on the curriculum, television, radio, and print materials, digital technology, blended learning, and assessment and learning progress.

Curriculum

The process of developing a resilient education system involves ensuring that appropriate protocols are established to support the delivery of the curriculum across multiple platforms. This was a key consideration and challenge for various policymakers – for example, the Ministries of Education in Cabo Verde (GPE, 2020c), Madagascar (GPE, 2020n), Senegal (GPE, 2020x), and the OECD (2020a) – and will be addressed in greater detail in the sections that follow.

Another curriculum consideration involved the development and incorporation of curricular content relating to the causes and outcomes of emergencies. When tailored to school context and incorporated as part of the broader science/environment/geography curriculum, these programs provide children with greater awareness of and preparedness for emergency issues (Mohadjer et al., 2010). This might include incorporating content in the curriculum about regional hazards, like earthquakes or floods (Chand et al., 2003; Mitchell, 2009), and planning practical activities, rehearsals, and drills to support student preparedness (Boon & Pagliano, 2014; Frost, 2015).

The curriculum might also be adapted to integrate social and emotional learning (SEL) programs to enhance student resilience (Kankaraš & Suarez-Alvarez, 2019). One study involving SEL in emergencies suggested that these programs can improve students' academic achievement by an average of 11%, and promote pro-social behaviours and attitudes about the self and others, while reducing negative behaviours (e.g., student conduct issues, aggressive behaviours, and emotional distress) (Weiss-Yagoda et al., 2019). SEL programs can also enhance emotional regulation, which includes exercising calm and positive emotions, and resisting stress (Kankaraš & Suarez-Alvarez, 2019). While it is not expected that children will emerge from emergencies unscathed, it is clear that education has a role to play in supporting them to overcome trauma (Reimers & Schleicher, 2020), and that this might be achieved by enhancing their SEL capabilities (Yeager & Dweck, 2012).

Television, radio, and print materials

In response to the COVID-19 emergencies, numerous countries delivered teaching and learning content via television and radio to cater for children living in remote regions or from lower SES backgrounds (Dabrowski et al., 2020). Sierra Leone and Uganda exemplify governments that have used television and radio to deliver lessons at home (GPE, 2020y, 2020ac). A range of issues may be encountered when using these platforms.

These issues include the time it takes to convert curricula for television and/or radio platforms (Federal Democratic Republic of Ethiopia, 2020b); catering to linguistic minorities; and managing complex schedules to incorporate all grades, subjects, and exam review lessons (Federal Ministry of Education, Republic of Sudan, 2020; The Republic of The Gambia, 2020). Television programming may also be cost-prohibitive relative to radio; a cost–benefit analysis may be required to determine a fit-for-purpose platform (Republic of Rwanda, Ministry of Education, 2020). Finally, children with disability risk being excluded if provisions are not made – for example, incorporating subtitles, sign language, and captioned learning content (GPE, 2020aa; Ministry of Education, Ghana, 2020).

Various governments and schools provided print materials to support learning in response to the COVID-19 emergency. Print materials are advantageous when there is a lack of access to other modalities. This was more commonly the case for poorer children in both developed and developing countries (Cullinane & Montacute, 2020; GPE, 2020s), as well as those in remote areas (Federal Democratic Republic of Ethiopia, 2020b; GPE, 2020t). As with other teaching modalities, special attention is required for children with disability; for example, the Ethiopian Government delivered booklets in Braille to vision-impaired children (Federal Democratic Republic of Ethiopia, 2020b; GPE, 2020aa, 2020ab, 2020ac).

While some countries provided print materials for specific education levels (e.g., early childhood education), as seen in the Maldives and the Philippines (Ministry of Education, Maldives, 2020; Save the Children, 2020a), others produced learning packages across all stages of schooling as part of their COVID-19 response strategy (National Department of Education, PNG, 2020). The decision to target print materials at an education level can depend on the extent that parents are able to support their child's education outside of school. Alternatively, print materials might be more appropriate for advanced education levels, where there is relatively high literacy.

Digital technology

Ministries of Education have recognised the need to increase the use of digital technology in the classroom, in part so that students can develop 21st century skills such as digital literacy. This imperative is consistent with OECD (2020a) observations that distance learning has the potential to facilitate independent learning and that using digital learning environments can make the transition to distance learning smoother during emergency situations (Dabrowski et al., 2020; Trust & Whalen, 2020).

Digital literacy cannot be assumed and different levels of training may be required for children to engage with digital learning platforms (Almasri et al., 2019; Fraillon, 2019; Haigh, 1985; Moya & Camacho, 2019). For example, one review found that regardless of whether online lessons were delivered synchronously or asynchronously, what was crucial for children was whether they experienced effective teaching practices while learning (e.g., clear explanations, scaffolding, and feedback) (Education Endowment Foundation, 2020). Similarly, meeting the needs of children with disability may require

digital technology to be adapted to enhance equity and access (Di Pietro et al., 2020; Fermín-González, 2019) using universal design and web accessibility standards (Vasquez & Straub, 2012). In fact, technology that incorporates 'universal design' can exceed merely including students with disability and actually advance their learning above what it would have been in the classroom, such as by providing subtitles to hearing-impaired students (Banes et al., 2019). Ultimately, the design and use of digital learning platforms must be matched with responsive pedagogies.

A specific technology that could be implemented during education in emergencies situations involves mobile learning (m-learning) (Dabrowski et al., 2020). As a potentially rapid delivery platform, m-learning relies on the combination of mobile phones (or devices) and social media learning tools to create, share, and modify content (Baytiyeh, 2019). This approach is advantageous because mobile phone technology is ubiquitous (Talan, 2020). One program used to deliver education to girls in Nepal during the COVID-19 pandemic involved mobile phones for this reason (Street Child, 2021). Mobile phones can support collaborative activities between students, be utilised flexibly across various spaces and times, and capitalise on existing user-friendly application designs (Alrasheedi & Capretz, 2015). For example, mobile phone applications have been successfully used to improve literacy and psychosocial wellbeing for Syrian refugees, as seen in an initiative of the 'All Children Reading Program' (Comings, 2018). Although the barriers to m-learning can be lower than for other forms of computer-based learning, reviews have found that numerous factors can influence its successful uptake, including user attitudes, leadership, technical competence, training, support, learner autonomy, and assimilation with curriculum (Alrasheedi et al., 2015; Kaliisa & Picard, 2017; Moya & Camacho, 2019).

While rapid educational responses to an emergency, such as m-learning, might not be ideal, they may still maintain children's engagement in the curriculum and mitigate the effects of learning loss until a Recovery phase is entered. To this extent, these rapid responses are useful.

With respect to the COVID-19 emergency, policymakers' attempts to respond to and recover from the pandemic often involved implementing or enhancing their use of digital platforms. The broader use of digital platforms provided a significant opportunity to transform 21st century education (IIEP-UNESCO, 2020b). For example, while some Pacific Island countries requested funds to establish frameworks, digital platforms, and instructional content (GPE, 2020ae),[10] other countries opted for rapid and low-cost enhancements to existing learning platforms. The Maldives utilised Google Classroom and other workspace software to conduct live teaching with children and assign learning tasks (Ministry of Education, Maldives, 2020). In other countries, online learning platforms were linked with existing digital platforms to maximise coverage, while also integrating social media like Facebook, Twitter and WhatsApp.

[10] These included: Marshall Islands, Federated States of Micronesia, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

In seeking to enhance the resilience of their education system, governments sought to increase access to digital learning platforms following the outbreak of COVID-19 in their country. In Dominica, Grenada, Nigeria, Saint Lucia, and Saint Vincent and the Grenadines, governments provided learning devices and ICT equipment to children, and to vulnerable populations (e.g., migrants, refugees, people living in poverty, and those with disability) (GPE, 2020h, 2020i, 2020t, 2020u, 2020v). In Ghana 10,000 children with disability were delivered ready-to-use devices with pre-loaded content (Ministry of Education, Ghana, 2020).

As access to technology grows, there is a need to refine design considerations and digital modalities at the Recovery phase (Almasri et al., 2019). It is also necessary to ensure that teaching materials are tailored to children's environments (Reinhardt, 2018). Digital platforms intended for developing countries experiencing an emergency should be designed for their needs, and not imported from developed country contexts (Creed & Morpeth, 2014; Save the Children, 2020a).

Blended learning

A resilient education system 'builds back better' and relies on more than one channel of communication for information distribution and engagement – that is, a modality of learning or blended learning (Dabrowski et al., 2020; d'Orville, 2020). Digital technology is not the sole solution to education in emergencies because many remote locations have poor internet connectivity, and many emergencies may disrupt reliable power supplies (Horn & Rennie, 2018; Kanwischer & Quennet, 2012). Digital technology is used to support distance learning through integration with older modes of teaching and learning (i.e., face-to-face/classroom teaching) (Mestan, 2019). For example, Papua New Guinea recognised the need to implement blended learning in its COVID response plan by affirming that teaching and learning resources will be made available online on an intermediate basis following the COVID-19 emergency (National Department of Education, PNG, 2020).

Digital technology can be most effective when not applied exclusively. One systematic review found that learning with digital technology is more effective if it is incorporated with offline components (Talan, 2020). Consequently, governments need to consider a broader range of communication channels beyond digital technology, including telephone trees,[11] mailed lessons and assignments, and instruction via local radio or television stations (Ashford, 2006). The education sector plans of many developing countries recognise the need to use multiple modalities. For example, in Ethiopia different modalities are used in response to cultural sensitivity, regional variability, and technological capabilities. Hence, while urban areas may support digital modes, in rural areas booklets are distributed via mail, at markets, and by health workers, in addition to instructional content printed in newspapers (Federal Democratic Republic of Ethiopia, 2020a). In The Gambia, multiple platforms are used to deliver the curriculum with the

[11] A telephone tree is a group notification system. A network of people is organised so that information can be quickly shared with each other and the group.

aim to 'guarantee continuity of learning under all circumstances and leaving no child behind' (The Republic of The Gambia, 2020, p. ii). Box 5.3 presents the mixed low-technology response distance learning model that the Afghan Government applied in response to COVID-19 (Ministry of Education, Afghanistan, 2020).

Box 5.3: Afghanistan's distance learning model

The Afghan Government proposed three alternative learning pathways, all of which would be assessed at later dates in the amended school curriculum. In brief, *self-learning* involves lower- and upper-secondary students engaging in self-directed learning across all social science and language subjects in their general education and Islamic education. *Distance learning* involves core subjects in primary education, science, mathematics, and foreign languages in lower- and upper-secondary education being taught via a combination of television programming, internet/mobile applications, literate parents, mullahs of mosques, and select upper-secondary students teaching primary school students. *Small group learning* involves teachers instructing small groups of students (up to eight children) in open areas to allow for social distancing. It is expected to be delivered in remote areas where television programming, internet, and electricity are not readily available, or where parents are not capable of supporting their children's learning.

Assessment and learning progress

The need to assess children's learning is heightened after an emergency as there is more risk of unequal learning progress outside of normal schooling (Reimers & Schleicher, 2020). Classroom and school assessments (as opposed to large-scale assessments) of student learning during and after an emergency are crucial for guiding education Response and Recovery. If applied as soon as students return to school, such assessments can be used to diagnose learning progress and loss, establish a baseline for future learning, and identify learner needs (Beatty et al., 2020; INEE, 2010; Kaffenberger, 2021; Reimers & Schleicher, 2020).

Vulnerable students, who are more at risk of falling behind their peers during education emergencies, can particularly benefit from assessments that reveal learning progress of different groups of students, and thereby inform targeted educational support. This is one of the aims of the UNESCO Institute for Statistics (UIS) COVID-19: Monitoring Impacts on Learning Outcomes (MILO) study, which, in addition to measuring student learning, collects contextual data about students, including their gender, SES, disability, ethnicity, refugee status, and rurality (UIS, 2021). The information gathered from assessments can structure activities and programs to advance learning progress (Belisle et al., 2016). These activities might include pedagogical strategies at the classroom level or school-wide programs, such as teacher professional development (which is discussed in section 5.3).

Assessments used prior to an emergency might need adjustment post-emergency if the assessment is to be a useful diagnostic tool; this was recognised in the COVID-19 response plans of Lao and Timor-Leste (Lao People Democratic Republic, Ministry of

Education and Sports, 2020; Ministry of Education, Youth and Sport, Timor-Leste, 2020). Policymakers seeking to select and implement a tool, or suite of tools, should consider the unique in-country context and whether the tool is fit-for-purpose. It may involve determining which age groups or grade level to assess, what method of assessment will be employed (i.e., oral, written, or both), whether competency-based or content-based assessment is desired, and what subject(s) to assess (e.g., literacy, numeracy, social-emotional learning, language/mother tongue, or executive function). Such considerations can be observed in the COVID-19 response plans of various countries (e.g., the Democratic Republic of Congo, Guyana, Kenya, and Rwanda). A breakdown and comparison of education in emergencies assessment tools can be viewed in Appendix D (GPE, 2020f, 2020k; Republic of Kenya, Ministry of Education, 2020; Republic of Rwanda, Ministry of Education, 2020).

Further considerations expressed in COVID-19 response plans include:

- assessing out-of-school children (Sao Tome and Principe) (GPE, 2020w)
- integrating online assessments perpetually (Tanzania) (GPE, 2020aa)
- applying self-assessment (Somalia) (Ministry of Education, Somalia, 2020)
- assessing students using a pass/fail system instead of letter-grade assessments as a result of teachers lacking familiarity with teaching across various modalities (e.g., via television, the internet, or limited face-to-face teaching in schools) and combinations of these modalities (Ministry of Education, Maldives, 2020).

In Box 5.4 the policy options taken by Somalia and the Maldives are elaborated.

Box 5.4: Assessment approaches in Somalia and the Maldives

In Somalia, distance learning modules have the potential to support students living in remote locations by using online and radio platforms to deliver content, including periodic self-assessment tasks that measure student learning and provide feedback. Additionally, while Somali students in grades 1–11 will not be assessed using new assessment tasks, grade 12 students may (at the time of writing) have to undertake their national final examinations using non-traditional modalities and during alternative examination periods (Ministry of Education, Somalia, 2020).

In the Maldives, because students are engaging using a variety of self-learning platforms (e.g., online, television, and radio), there has been a shift towards teachers using a pass/fail system for assessment tasks, instead of allocating letter-grade assignments (Ministry of Education, Maldives, 2020).

In determining appropriate assessments, consideration needs to be given to complementary teaching practices, such as:

- feedback mechanisms and processes between children and teachers to facilitate distance learning, tutoring, and refresher courses

- accelerated and second-chance learning opportunities for children who have fallen behind
- support programs for children transitioning from primary to secondary school (e.g., the Democratic Republic of Congo, Djibouti, Lesotho, Malawi, Tanzania, and Zambia) (GPE, 2020f, 2020g, 2020m, 2020o, 2020aa, 2020ad)
- remedial learning opportunities for children with disability (e.g., Burkina Faso, Lesotho, Mozambique, Myanmar, Togo, Uganda, and Zambia) (GPE, 2020b, 2020m, 2020p, 2020q, 2020ab, 2020ac, 2020ad).

Appropriate assessment programs need to be developed for wherever learning takes place, whether that be in school, the home, or elsewhere in the community (Kaushik, 2021). The COVID-19 pandemic has hastened the trend towards adopting digital assessments, as they can be particularly useful when students need to learn from a distance. Further advantages of using digital technology to undertake assessments include the greater personalisation of assessments, and greater automation of marking and feedback (Kaushik, 2021).

Best practice involves using digital tools to embed assessments in teaching and learning on an ongoing basis (Richardson, 2019), while employing assessment processes and goals that are 'holistic, transparent and participatory' (INEE, 2010, p. 35). However, it must be recognised that for many education systems, digital technology is not yet pervasive enough to use it in assessments, and regardless of what technologies are used, the focus must remain on well-designed assessments to identify student learning progress (Kaushik, 2021). Additionally, consideration might be given to how assessments can be applied to students across different grades. Younger students (foundation to grade 3) are more likely to require one-on-one assessments with teachers for literacy and numeracy, and older students (grades 4 to 12) are more able to engage with computer-based applications or diagnostic assessments (Beatty et al., 2020).

5.3 Agents

The Agents factor refers to entities that can make decisions and act over the course of emergency management phases. Agents include national, state,[12] and local governments, intergovernmental organisations and NGOs, schools and school leaders, teachers, communities, families, and children.

National, state, and local governments

Governments with experience dealing with education in emergencies were typically seen to reference existing legislation, frameworks, and guidelines to trigger Response (e.g., redesigning the curriculum) and Recovery (e.g., rebuilding schools) protocols. Specifically, national and state strategies for educational Recovery typically included the development of distance learning, which required governments to provide tailored instructional content, infrastructure, and communication channels, regardless of the modality used (GPE, 2020a, 2020e, 2020i, 2020p, 2020af).

During the COVID-19 emergency, governments in developing countries, such as Benin, the Democratic Republic of Congo, Haiti, and Niger, responded by prioritising child safety and wellbeing (e.g., protecting children from abuse and sexual exploitation), as well as maintaining girls' access to education (GPE, 2020a, 2020f, 2020l, 2020s). Local governments were also instrumental during the Response phase by implementing emergency measures, including managing school closures and reopenings, providing personal protective equipment (PPE), and undertaking regular disinfection exercises (Asian Disaster Reduction Center, 2020; Ministry of Federal Education and Professional Training, Pakistan, 2020; Reimers & Schleicher, 2020; Victoria Department of Education and Training, 2017).

In Australia, state and territory governments provided initial broad economic packages and stimulus plans to support their economies, with most (Tasmania, the Northern Territory, South Australia, Western Australia, and Queensland) also choosing to initiate border restrictions by the end of March 2020. During the initial stages of this pandemic, the size and extent of these state-level economic packages and stimulus plans ranged from a AU$65 million jobs rescue and recovery plan in the Northern Territory to AU$4 billion to support health, employment, households, and businesses in Queensland (Parliament of Australia, 2020). In tandem, the Australian Government also provided a AU$2.4 billion national healthcare package to support primary care, aged care, hospitals, research, ongoing responses, and communication (Prime Minister of Australia, 2020a), and the AU$130 billion JobKeeper payment to subsidise wages for approximately six million Australians (Prime Minister of Australia, 2020b). The Australian Government's response to the COVID-19 pandemic has also extended beyond its national borders to neighbouring countries and the region. Box 5.5 provides a brief description of some

[12] 'State governments' are also referred to as 'provincial', 'prefectural', or 'regional' governments. They all share a degree of political autonomy over a geographic region within the boundaries of a national government.

commitments and activities that the Australian Government has engaged in beyond its national borders.

Box 5.5: The Australian Government's response to supporting neighbouring countries and the Indo-Pacific region during the COVID-19 pandemic

Over 2019–2020, the Australian Government committed AU$280 million to fund initial response efforts within the Indo-Pacific region as a result of COVID-19. These efforts focused on the immediate distribution of PPE and medical supplies, and opening global transport links to manage disruptions to global supply chains. Australia's development program priority action areas during this period have been to focus on the Pacific Islands and Timor-Leste to improve health security, Southeast Asia to help facilitate stability, and a broader global response for economic recovery. Over 2020–2021, the Australian Government budgeted AU$4 billion in Official Development Assistance to invest in regional recovery. Aligned with its Partnerships for Recovery plan, additional targeted measures have included AU$307.7 million for the Pacific Islands and Timor-Leste (COVID-19 response package), AU$23.2 million for the Pacific Islands, Timor-Leste, and Southeast Asia (vaccine access and health security), and the development of 27 COVID-19 Development Response Plans that outline shared objectives between partner government priorities and those of the Australian Government.

Outside of these measures, the Partnerships for Recovery plan also reiterates the Australian Government's commitment to providing stability to the region by supporting children's education in low- to middle-income countries. This will be achieved by reorientating existing investments in education during the Response and Recovery phases to support partner governments in delivering critical services (the Pacific Islands and Timor-Leste), support national responses to COVID-19 (Southeast Asia), and further develop long-term partnerships with organisations like the Global Partnership for Education (GPE) to ensure that assistance for education in emergencies is regionally mobilised (Department of Foreign Affairs and Trade, Australia, n.d., 2020).

Intergovernmental organisations and NGOs

Depending on a government's capacity during education in emergencies, intergovernmental organisations and NGOs can provide high-level support for emergency Preparedness, Response, and Recovery (Robinson & Curtiss, 2020). For example, the GPE supports partner countries with education planning, financing, and implementation. This includes designing education frameworks, prioritising development areas, producing learning materials, and building emergency management capacity (GPE 2018a; GPE, 2020z). Additionally, philanthropic foundations often work better with local actors than governments, resulting in a localised education agenda being implemented (Education Cannot Wait, 2019).

During the COVID-19 crisis, NGOs' involvement with governments during Response and Recovery phases included supporting schools in marginalised areas (such as remote communities), protecting vulnerable children (including marginalised groups, such as girls, refugees, and children with disability), as well as providing educational activities and materials generally. Box 5.6 – 5.8 provide a brief description of some of the

responses to COVID-19 that intergovernmental organisations and NGOs engaged in. In contrast to government bodies, NGOs are likely to be characterised by decision-making flexibility, technical expertise, and a focus on achieving humanitarian goals (Burde et al., 2019). For example, organisations like Save the Children have assisted governments on a range of grassroots challenges during the COVID-19 crisis. These challenges have included:

- improving communications about COVID-19 via churches and mosques in Ethiopia, and training health workers in Somalia
- distributing SIM cards so families can access the internet and learning materials in North West Syria
- educating parents on how to support their children's learning and reading at home via the development of a radio broadcast drama series in Rwanda
- supporting children and families by offering therapy to support their emotional wellbeing and develop positive parenting skills in Spain (Save the Children, 2020b).

Box 5.6: Responses to the COVID-19 pandemic: ASEAN

ASEAN

As an economic union of ten southeast Asian nations, the Association of Southeast Asian Nations (ASEAN) seeks to promote cooperation and economic, educational, military, political, and sociocultural integration between member states. In 2016, The One ASEAN, One Response declaration was ratified by all ASEAN heads of state to respond to disasters from within and outside of this region (ASEAN, 2016). As COVID-19 spread across ASEAN countries from January to August 2020, it was observed from a comparative policy perspective that the potential for this organisation to coordinate constructive pandemic responses was not fully realised, with many countries responding to the initial outbreak (April 2020) by independently closing borders; prioritising their national health system, contact tracing/testing protocols, and quarantine measures; and closing non-essential businesses and other public places. Insofar as the education sector was concerned, the only governments that mandated the closure of schools were those in Brunei, Laos, Singapore, and Thailand.

On the positive side, there is evidence to suggest that by August 2020 ASEAN had sought to coordinate regional government pandemic responses by leveraging existing cooperative frameworks and developing new ones over time (e.g., *COVID-19 Recovery Guidelines for Resilient and Sustainable International Road Freight Transport Connectivity in ASEAN* [ASEAN, 2021a]), and had become more crucial for sharing and disseminating information across member states (e.g., providing updates on the regional impact of the virus and comparative data) as some ASEAN countries experienced their second wave. Challenges for this organisation and region remain, however, with respect to coordinating existing regional health frameworks and ensuring that new outbreaks do not overwhelm governments (Djalante et al., 2020).

Box 5.7: Responses to the COVID-19 pandemic: SEAMO

SEAMEO

As an intergovernmental organisation, the Southeast Asian Ministers of Education Organization (SEAMEO) aims to promote cooperation between member states in education, science, and culture. Specifically, it seeks to improve 'quality and equity in education, preventive health education, culture and tradition, information and communication technology, languages, poverty alleviation and agriculture and natural resources' across the region (SEAMEO, n.d.b). In June 2020, SEAMEO convened its first virtual meeting of the 11 education ministers to share best practices and continuity-of-learning educational policies and plans (SEAMEO, 2020). The ministers addressed the following five themes:

- What actions were taken in response to education disruptions?
- What were the alternative modalities used to continue learning at home?
- How did teachers' and parents' roles evolve in terms of educating learners?
- What efforts were made to reach disadvantaged and vulnerable learners?
- What education policies were enacted to reopen schools?

This virtual meeting also produced a joint statement from SEAMEO (2020) that emphasised:

- enhancing teachers' and education enablers' capacities using technology and alternative learning modalities
- fostering learning environments that respond quickly to disruptions, to enable continuity of learning through contextually appropriate and responsive pedagogical solutions and technologies
- sustaining regional resource development and advancement (e.g., open educational resources) for responding to all learners' needs
- further developing partnerships and alliances to ensure political commitment towards and investment in education for the COVID-19 Recovery phase
- promoting educational equity, inclusion, efficiency, and financing by enhancing collaboration between national COVID-19 coalitions, relevant organisations (i.e., regional, international, bilateral, and multilateral), and key partners.

SEAMEO also developed a webinar series on its response to the COVID-19 pandemic. This series aimed to disseminate COVID-19 responses by policymakers, SEAMEO centres, and other development organisations and educational bodies; explore the scalability of national post-COVID-19 response and solution plans; discuss issues involving learning and learners during lockdown, and immediate and long-term programs developed by SEAMEO centres; and discuss post-COVID-19 rehabilitation initiatives. From April to September 2020, 13 webinars were delivered that addressed a range of topics, including *Emotional & Psychosocial Health during the COVID-19 Pandemic* (29 April); *Quality Learning and Assessment during the COVID-19 Pandemic* (28 May); *Developing Flexible and Technology-Mediated Learning Programmes* (22 June); and *Leading for Impact: Educational Leadership and Planning in Turbulent Times* (24 September) (SEAMEO, n.d.a).

Box 5.8: Responses to the COVID-19 pandemic: Pacific Islands Forum and Pacific Community

Pacific Islands Forum and Pacific Community

Pacific Islands have largely focused on health and economic issues relating to COVID-19, with the main areas of risk being a lack of access to quality health services (i.e., infrastructure, equipment, and personnel) and medical laboratories for sample analyses, and downturns in tourism. As an intergovernmental organisation, the Pacific Islands Forum has prioritised the delivery of vaccines, explored the viability of quarantine-free travel within the region, and engaged with the UN World Food Programme to deliver health and humanitarian cargo, and 111 technical personnel to support this region. Concurrently, the Pacific Community (SPC), which spearheads the innovative application of scientific and technical knowledge in the Pacific region, is supporting Pacific Island countries and territories with educational assessment (Pacific Community, 2021; Pacific Islands Forum, 2021).

In response to the initial outbreak of COVID-19, UNICEF supported the education contingency and response plans of Pacific Island countries to maintain safe school operations; transition to distance learning; plan for school reopening; provide schools with hygiene packages and circulate disease-prevention materials; provide teachers and caregivers with the capability to support children and themselves socially and psychologically during this period; ensure access and continuity of learning (especially for the most vulnerable learners) through alternative teaching and learning modalities (e.g., online, radio, television, and activity kits); and strengthen current and future pandemic responses through enhancing knowledge sharing, capacity building and system strengthening. Over the medium to longer term, UNICEF has also partnered with the Fijian Ministry of Education, Heritage and Arts to develop an animated television series for children to support their continuation of schooling at home during the second wave of COVID-19. In addition to positively portraying community diversity, this series focuses on foundational concepts such as the alphabet, colours, counting, manners, basic hygiene, and opposites (UNICEF, 2020c; 2021).

Schools and school leaders

A resilient, well-managed education system has strong schools. Under normal circumstances, strong schools constitute the basic organisational unit that provides the resources, including teachers, necessary for educating children. The Ministry of Education, Ghana (2020), for instance, recognises that strong schools are developed by supporting school administrators and leaders with appropriate information, templates, training, and resources. For example, in developing emergency plans, schools need pro forma documentation and guidance notes, along with experts in central administration to provide advice and feedback. With appropriate support for school leaders and administrators, schools can be in a stronger position to support teachers, parents, and children before, during, and after emergencies.

In responding to and recovering from any emergency, school infrastructure and protocols need to be in a state of readiness for maintaining child safety. The conditions and protocols that foster this safety were outlined in section 5.1. The role that schools play in providing psychosocial support is critical for supporting children who may be traumatised from the emergency situation. Schools can also provide broader social

support to the community, such as offering food and counselling, especially when other social services are underdeveloped or if they are best placed to access the population – as seen in the Democratic Republic of Congo, Guinea, and Senegal (GPE, 2020f, 2020j, 2020x).

In reopening schools after the COVID-19 outbreak, governments have been cognisant of the need to engage vulnerable children. Some governments have focused on girls, such as in Guinea, ensuring that pregnant girls and victims of violence were welcomed back to school, and providing guides for accelerated learning (GPE, 2020j). The Djibouti Government implemented campaigns focused on encouraging at-risk children, such as children with disability, to return to school (GPE, 2020g). In Lesotho, policies and practices included literacy courses for refugee families, subsidised school fees for disadvantaged children, and greater support for regions with low school participation (GPE, 2020m).

Governments have also focused on ensuring that schools enable children to make up for lost learning. This is achieved through various back-to-school programs (e.g., remedial, learning diagnostic, and accelerated learning programs), scholarships, and erecting temporary school structures (e.g., tents to increase school capacity and enhance social-distancing measures) in countries like the Central African Republic, Djibouti, Kenya, Lesotho, and the United Kingdom (Cullinane & Montacute, 2020; GPE, 2020d, 2020g, 2020m; Republic of Kenya, Ministry of Education, 2020).

Teachers

Teachers are the fulcrum of any education system's capacity to maintain learning during an emergency (INEE, 2010). The centrality of teachers is recognised in education sector plans, such as in Rwanda, which has an ongoing objective to improve teacher competencies (Republic of Rwanda, Ministry of Education, 2013). Likewise, the Kenyan Education Sector Strategic Plan refers to the need to build specific emergency response capacities of teachers (e.g., the ability to contribute to early warning and surveillance systems) (Republic of Kenya, Ministry of Education, 2019).

As guardians of safety and wellbeing, teachers must be familiar with practical emergency response and management standards. Different kinds of emergencies will require training and familiarity with responses and common risks associated with the school zone. For example, with the COVID-19 emergency, teacher training is required in health, safety, and hygiene interventions (Federal Democratic Republic of Ethiopia, 2020b; Government of the Punjab, 2020; Ministry of Education, Afghanistan, 2020; Ministry of Education, Ghana, 2020; Ministry of Education, Republic of Liberia, 2020).

With respect to differentiated teaching practices, the Research on Improving Systems of Education (RISE) Programme has published a toolkit to highlight which return-to-school system requirements are dependent on additional teacher training, a technology component/requirement, and community participation (e.g., NGOs and NGO staff, community volunteers, government officials/representatives, and parents) to improve

student learning outcomes. For example, system requirements with minimal demands (i.e., a lower need for teacher training, technology, or community participation) include 'additional 10 days of instruction', 'school tracking', 'accelerated learning program', and 'in-school shared vs individual CAL program'. System requirements with higher demands (i.e., a greater need for teacher training, technology, and community participation) include 'hybrid learning', 'e-Learning', 'tablet-based learning for foundational literacy and numeracy', and 'interactive radio instruction' (Beatty et al., 2020).

Many emergencies may also require teachers to disseminate and communicate information across various platforms to support and engage children and parents (Brocque et al., 2017). This may require teachers to upskill in online pedagogies, both in delivering online teaching, and in preparing materials for online teaching (Di Pietro et al., 2020; Hall et al., 2020; Reimers & Schleicher, 2020; Trust & Whalen, 2020). Even in developed countries, close to 20% of teachers report a high need for professional learning in the use of ICT, as indicated by the OECD's Teacher and Learning International Survey (OECD, 2020b).

While it is possible to provide training and development for teachers working in education in emergencies settings, it is likely that teachers will engage in self-learning via online resources and interacting with professional learning communities. The latter might involve sharing information, problem-solving, discussing, and self-reflecting on learning and instructional practices with other teachers (Blitz, 2013; Save the Children, 2020a).

During the Recovery phase, teachers might be allocated additional responsibilities,[13] such as:

- counselling children
- increasing communication with parents, sometimes in languages other than that of instruction
- teaching in multi-grade-level classes in temporary facilities
- developing accelerated lesson plans
- adapting curricula
- reaching out to disengaged children.

In sum, teachers will need support in building their capacity to undertake teaching and auxiliary activities (Ubit & Bartholomaeus, 2018). They also need support managing the

[13] For example, this was found in the following countries: Ethiopia (Federal Democratic Republic of Ethiopia, 2020b), Sudan (Federal Ministry of Education, Republic of the Sudan, 2019), the Punjab (Government of the Punjab, 2020), Afghanistan (Ministry of Education, Afghanistan, 2020), Ghana (Ministry of Education, Ghana, 2020), Republic of Kenya (Republic of Kenya, Ministry of Education, 2020), Republic of Liberia (Ministry of Education, Republic of Liberia, 2020), Nepal (Government of Nepal, Ministry of Education, 2016), and Somalia (Ministry of Education, Somalia, 2020).

stresses and trauma related to increased responsibilities, while potentially suffering from the emergency situation themselves (Brocque et al., 2017).

Communities

Education sector plans often recognise the importance of community engagement for building resilience. For example, the Nepal education sector plan considers how to foster resilient communities that can take action during emergencies (Government of Nepal, Ministry of Education, 2016). Communities can play an important role in children's education by implementing government initiatives or leading their own. Communities also play a role when schools are damaged, requiring people to be relocated to facilities for living and learning in shared spaces. Another common scenario is the need for learning to take place in refugee camps as a result of people being displaced by conflict (Creed & Morpeth, 2014; Dicum, 2008; Halman et al., 2018).

The need for governments to involve the community in emergency Preparedness, Response, and Recovery is well established. Community members can support educational responses, such as by undertaking predetermined responsibilities to complement formal education (e.g., conducting discussion groups and emergency training) (Sinclair, 2001). For instance, after the Great Hanshin-Awaji Earthquake in Kobe in 1995, community-based school district organisations brought together various community groups, led evacuation drills, and delivered emergency response training, to better prepare for future earthquake events (Nazarov, 2011).

Communities are crucial to the Recovery phase, particularly if processes have been prepared in advance. For example, school committees with membership from the broader community can facilitate community engagement in useful activities (Sinclair, 2001). Effective community participation enhances education in emergencies responses because it empowers people to take part in decision-making processes, promotes accountability, supports the mobilisation of resources, and builds capacity for future emergencies (INEE, 2010).

Engaging communities can also help provide authorities with essential contextual information and feedback about emergency Response and Recovery efforts (Reimers & Schleicher, 2020; Shanks, 2019). For example, governments, intergovernmental organisations, and NGOs that engage with communities and families affected by an emergency are likely to be guided by perceptions and practices that enhance Response and Recovery strategies (Petriwskyj, 2013). With respect to COVID-19, education policies and practices that have engaged the community can be seen in Box 5.9.

Box 5.9: Examples of community engagement in educational responses during COVID-19

Ethiopia: Learning packets are prepared and distributed through markets and community health workers, with instructional content also included in national and regional newspapers, to maintain learning during school closures. Additionally, school community committees are supported via monitoring activities and grants to maintain school cleanliness (Federal Democratic Republic of Ethiopia, 2020b).

Liberia: Community facilitators are supported with teaching tips and other knowledge about health and safety protocols during the emergency response to help ensure learning continuity. School communities may also support the Recovery phase by assisting with school maintenance and repair to damage; partaking in engagement workshops and information sessions; and engaging in other recovery activities (e.g., establishing temporary learning spaces, cleaning school grounds, conducting registration of children, holding small study groups for children, and providing food for school meal programs) (Ministry of Education, Republic of Liberia, 2020).

Rwanda: Community mobilisation serves to mitigate student dropout rates and promote re-entry into school (Republic of Rwanda, Ministry of Education, 2020).

Families

Households play a larger role in children's education when schools are shut down during emergencies. Accordingly, education systems can increase resilience if families are involved as part of the school community (Codreanu, 2019; Davies, 2011; Reimers & Schleicher, 2020). This may involve communicating with parents to reaffirm the importance of their child's education, advising them about initiatives that support them and their child's learning (Cullinane & Montacute, 2020), and involving them in the process of designing supportive initiatives (Beatty et al., 2020; Di Pietro et al., 2020). This is particularly the case for families with children at most risk of educational disengagement, such as children with disability, and girls. For low SES families, parental capacity to support their children's learning may also be positively influenced by reducing the costs of education (e.g., school fees, uniforms, and books); providing cash transfers, material supports (e.g., vouchers), or food programs; and increasing their ability to support the psychological wellbeing of their children (Burde et al., 2015). Outside of these contexts, there is a lack of clarity regarding what other aspects of parental capacity might support children's learning within education in emergencies contexts.

Across developing countries during the COVID-19 emergency, the initiatives that supported families typically emphasised the basic health and wellbeing of individuals (e.g., the provision of PPE, and hygiene kits to girls, and promoting safety guidelines). Other initiatives included providing resources like stationery and books, as well as guides for families to develop structured and emotionally warm learning environments. In some instances, these guides presented how learning activities might be incorporated into children's daily chores (GPE, 2020d, 2020u, 2020r; Ministry of Education, Maldives, 2020; Ministry of Education, Republic of Liberia, 2020; Ministry of Education, Somalia, 2020; Ministry of Federal Education and Professional Training, Pakistan, 2020; National

Department of Education, PNG, 2020; Reimers & Schleicher, 2020; Save the Children, 2020a).

Children

The primary response to any education in emergencies situation is to maintain the health and safety of children. Education is undermined when children's basic wellbeing is not secured and when they are framed as having a lack of agency. Rectifying this situation involves engaging children as active agents, such as notifying them of events that affect them, educating them on how to reduce harm to themselves and others, and informing them of available support, such as counselling (Cultures of Disaster Resilience among Children and Young People [CUIDAR], 2020; Lao People Democratic Republic, Ministry of Education and Sports, 2020; Ministry of Education, Maldives, 2020; National Department of Education, PNG, 2020). The form of engagement needs to be sensitive and tailored to the circumstances of children and their needs. For example, children from linguistic minorities will need specific messages, while the best way to engage girls will need to consider the cultural context.

Engaging children within education programs that are embedded into their school curriculum has the potential to mitigate the negative consequences of emergency situations (as described in section 3). Referring to this as 'emergency education', the INEE (2010) specifically references the provision of such formal and non-formal programs as they relate to disaster risk reduction, conflict prevention, and skills-based health and hygiene. Where these programs are poorly designed or taught, or fail to engage positively with children, it is likely that anxiety and fear will increase, while situation preparedness will decrease (Boon & Pagliano, 2014). Actively collaborating with children (and the community) in emergency education program design can help to avoid such circumstances and increase the efficacy of emergency education programs (Boon & Pagliano, 2014; Towers et al., 2018).

6. Policy considerations for monitoring education in emergencies

The main outcome of this rapid review and analysis has been the identification of key policy factors, considerations, and issues relating to education in emergency (EiE) situations. Specifically, each policy factor (i.e., Systems, Teaching and Learning, and Agents) operates as an overarching category that houses policy considerations which, in turn, are associated with corresponding policy issues. Table 6.1 provides a brief summary of policy factors and considerations derived from this review, while associated policy issues are presented further in this section.

Table 6.1: Policy factors and policy considerations for education in emergencies

Policy factors	Policy considerations
1. Systems	1.1. Planning for education in emergencies 1.2. Instituting strong coordination and collaboration 1.3. Communicating between and with education agents 1.4. Constructing robust ICT infrastructure 1.5. Building sound school facilities 1.6. Bolstering monitoring systems.
2. Teaching and Learning	2.1. Embedding assessment into emergency contexts 2.2. Implementing digital teaching and learning 2.3. Applying multiple teaching modalities.
3. Agents	3.1. Clarifying responsibilities among government agents 3.2. Engaging the community 3.3. Strengthening schools and supporting school leaders 3.4. Developing teacher capacity 3.5. Helping parents and resourcing the home learning environment 3.6. Fostering children's resilience.

The EiE Policy Monitoring Framework (see section 4) was developed from a review of international literature and resources to ensure that it would not be limited to specific emergency situations or national contexts, but could be generalised and applied cross-nationally. By adapting identified policy issues (see below) into standards or requirements, policymakers can build monitoring tools that suit their in-country requirements to address the three phases and three factors. Policymakers can also use the framework in tandem with the summary of measurement and assessment tools for monitoring learning outcomes in education in emergencies situations, to inform policies regarding national assessments (see section 5.2 and Appendix D).

Drawing from the EiE Policy Monitoring Framework, a Policy Monitoring Tool was subsequently developed into a template to be used for policy development and

planning. This tool provides an example of how the three phases, three factors, considerations, and issues might be presented as a monitoring tool (see Appendix A).

It is expected that policymakers will adapt the findings of this report for their purposes, context, and unique situation, and it should also be noted that the phases, factors, considerations, and issues outlined are not exhaustive and that their significance may change depending on in-country demands and contexts. For example, a country might prioritise specific factors, considerations, and issues over others based on the status of its education system (e.g., developed or developing); its access to resources for supporting education systems and schools (e.g., existing education in emergencies legislation and strategies, and availability of online teaching resources); and the emergency phase(s) policymakers are engaged with (i.e., Preparedness, Response, and/or Recovery). Policymakers are therefore encouraged to refer to this report's findings in light of their contextual needs, and evaluate how shifting demands across emergency phases might affect present and future planning.

The sub-sections that follow outline the key policy factors, policy considerations, and policy issues identified from this rapid review of education in emergencies.

6.1 Policy factor 1. Systems

1.1. Policy consideration: Planning for education in emergencies

1.1.1. At an education system level, risks are mapped to identify which institutions and processes are vulnerable to various external shocks.
1.1.2. Emergency planning procedures are documented, communicated to relevant agents and implemented at an education systems and school level.
1.1.3. Education authorities produce macro planning documents and guides to support schools to develop individualised subsidiary plans.
1.1.4. Emergency Response and Recovery plans detail the resources, actions, tasks, and data required in the Response and Recovery phases of an emergency.
1.1.5. Institutional continuity plans specify adjustments and accommodations necessary to sustain core education system and school functions. These include alternative teaching procedures and supports for vulnerable children.

1.2. Policy consideration: Instituting strong coordination and collaboration

1.2.1. Governments demonstrate leadership, and collaborate vertically and horizontally with all relevant agents to plan and implement key policies and practices.
1.2.2. Relevant agents have the appropriate responsibilities for their capacity, know and understand their responsibilities, and divide tasks to minimise overlap to maximise coverage.
1.2.3. Intergovernmental organisations and non-government organisations (NGOs) closely cooperate with host countries and each other to identify how their services can benefit host countries, and integrate with other processes, including with other intergovernmental organisations and NGOs. Intergovernmental organisations generally provide high-level support, such as financing and

developing education sector plans. NGOs are likely to offer services and programs that the government is unable or unwilling to provide, such as helping parents support their children's education.

1.3. Policy consideration: Communicating between and with education agents

1.3.1. Leading agents (e.g., government agencies) communicate policies and practices with education agents (e.g., education systems and schools), thereby reinforcing effective coordination.

1.3.2. Communication is timely, accessible, and targeted to the audience, and specifies pertinent details. Multiple communication channels are enabled, allowing for dialogue. Through these communication channels, education systems, schools, students, parents, and the community are well informed about an emergency and its implications (e.g., schools will be closed), and the responses (e.g., distance learning provisions).

1.4. Policy consideration: Constructing robust ICT infrastructure

1.4.1. Access to digital technology is broadened. Vulnerable points of information and communication technology (ICT) infrastructure are minimised, and are reinforced with multiple lines of connection, making use of cables, satellites, radio waves, and television waves.

1.5. Policy consideration: Building sound school facilities

1.5.1. School buildings are built to withstand the risks associated with the location (e.g., schools located in seismic zones are earthquake-resistant). Even when scarce resources limit the structural integrity, protocols are instituted to reduce danger, such as evacuation procedures, and in the case of communicable disease, WASH standards.

1.6. Policy consideration: Bolstering monitoring systems

1.6.1. Data management systems collect, store, and manage data about schools, staff, and students.

1.6.2. Data collected include inputs, such as the level of student engagement with different elements of the education system; qualitative data about how students and teachers use learning platforms; and outputs, such as learning outcomes. Demographic data are also collected, enabling policies to be tailored for disadvantaged populations.

1.6.3. Large-scale assessments are implemented and/or maintained so that student learning progress and outcomes can be measured and monitored, informing the targeting of special learning support to relatively low-performing schools and regions.

6.2 Policy factor 2. Teaching and Learning

2.1. Policy consideration: Embedding assessment into emergency contexts

2.1.1. Classroom and school assessment of student learning progress is conducted during and shortly after an emergency. The assessment data are used to track student learning progress in academic domains to establish baselines, learning loss, and learning recovery, and to inform teaching and address learning needs with respect to priority subjects (e.g., literacy and numeracy). In addition to academic domains, mental health and wellbeing is assessed, so that psychosocial support can be provided to those in need.

2.1.2. Classroom and school assessments that were used prior to an emergency are adjusted for the Recovery phase of an emergency.

2.1.3. Classroom and school assessment programs, including digital assessment, are designed to complement and inform teaching and learning practices. Digital assessment can be used to provide targeted feedback on student progress.

2.1.4. Research is conducted to identify and develop appropriate assessments.

2.2. Policy consideration: Implementing digital teaching and learning

2.2.1. Digital technology devices are provided to students in need.

2.2.2. Existing platforms already used by students, such as popular social media, are adapted for educational purposes, when specialist digital platforms are not established.

2.2.3. Mobile learning is used to reach greater numbers of students, adapting curriculum and pedagogy as needed.

2.2.4. Learning materials accommodate the context of learning in emergencies.

2.2.5. Digital literacy is advanced by providing training and technical support to students and teachers to use digital tools.

2.2.6. Students engaging in digital platforms receive personalised supervision and feedback.

2.3. Policy consideration: Applying multiple teaching modalities

2.3.1. Digital technology is integrated into current pedagogical practices, making an emergency transition to distance learning practical and smoother.

2.3.2. Low-cost and low-technology approaches, such as mailing printed materials, television, and radio, are employed, when appropriate, based on cultural, economic, regional, and technological factors.

2.3.3. Digital teaching and learning modalities are blended with other modalities, which may involve downloading material from the internet, and using the internet to communicate instructions, submit assignments, and receive feedback relating to offline activities.

2.3.4. The design of all teaching modalities accommodates students with diverse needs, such as children with disability.

6.3 Policy factor 3. Agents

3.1. Policy consideration: Clarifying responsibilities among government agents

3.1.1. Governments prepare for emergencies by establishing procedures for distributing responsibilities among the relevant levels of government, agencies, and institutions. Preparation ensures that all necessary activities are accounted for and resources are well managed.

3.2. Policy consideration: Engaging the community

3.2.1. Communities are empowered to take part in decision-making processes and contribute to Response and Recovery efforts, such as home schooling, and out-of-school educational activities.

3.2.2. Authorities listen to and act on community feedback to monitor Response and Recovery initiatives.

3.3. Policy consideration: Strengthening schools and supporting school leaders

3.3.1. Schools are well managed; school leaders are given appropriate emergency-related information, training, and resources. Government administration provides documentation, guidance notes, advice, and feedback to support school leaders in developing emergency plans.

3.3.2. Schools offer psychosocial support to children, and when necessary, social services to the broader community.

3.3.3. Schools offer initiatives to recover 'lost learning', such as remedial and accelerated learning programs, especially targeted at disadvantaged children who may have fallen further behind in their schooling.

3.4 Policy consideration: Developing teacher capacity

3.4.1. Teachers are familiar with emergency management, and trained in the required protocols to assist students to safety when an emergency strikes.

3.4.2. Teachers are provided with professional learning opportunities related to distance learning, including using digital technology.

3.4.3. Teachers are provided with training and resources to enable them to provide psychosocial support to students, as well as coping with their own hardship. This can take various forms, including self-directed learning modules and communities of practice accessed via digital technology.

3.5. Policy consideration: Helping parents and resourcing the home learning environment

3.5.1. The education system and schools guide parents/guardians to support their child's education by reinforcing the value of education, advising how to provide a structured learning environment, and providing regular information about learning progress.

3.5.2. Households are provided with resources to support their child's education. This includes learning resources, such as the internet, devices, stationery, and textbooks, and fundamental resources such as food, energy, and safety equipment.

3.6. Policy consideration: Fostering children's resilience

3.6.1. Children are treated as agents, who are informed about how they can protect themselves, reduce the risks to others, and seek help, including counselling.

3.6.2. Emergency education is included in the curriculum and focuses on risk reduction. Emergency education is tailored to the students' environment and develops their skills in responding to emergencies.

3.6.3. Social and emotional learning is integrated into the curriculum, enhancing abilities such as emotional awareness and regulation.

3.6.4. Children with disability receive the necessary support to ensure their resilience is equally fostered.

Conclusion

Successfully managing the key factors – Systems, Teaching and Learning, and Agents – during the Preparedness phase will enable policymakers to enact effective Response and Recovery measures for education in emergencies. Importantly, the process of building a resilient education system requires agility on the part of Agents to prepare for, respond to, and recover from disasters. Although most responsibility lies with governments – and so the responsibilities of different parts of government need clarifying – all agents have a role to play. These include school leaders, teachers, parents, and children who may require further support to be empowered to act. This support involves adequately resourcing school leaders, providing professional development for teachers, engaging the community, helping parents, and fostering children's resilience.

Special attention also needs to be given to Teaching and Learning. While education systems of the future will undoubtedly make greater use of digital technology, a resilient education system should be ready to deploy multiple modalities, including television, radio, and print materials. Furthermore, classroom and school assessments will be central to educational reforms and should enable learning progress to be effectively monitored, regardless of the teaching and learning modalities employed by governments or schools.

Finally, it is likely that the main Systems that need attention will involve collaboration, communication, information and communication technology (ICT) infrastructure, school buildings, and monitoring. In these instances, various reforms were identified over the course of this review that exemplify what might be achieved. Some East African governments, for example, collaborated with non-government organisations (NGOs) to deliver assessment and intervention programs. Efforts to improve clear and reciprocal communication were evidenced in Ethiopia, where an ongoing helpdesk hotline was established. In Djibouti and Guyana, ICT infrastructure was expanded as a result of partnerships between governments and telecom services.

In Nepal, school buildings were reconstructed and retrofitted to standards appropriate for context; and numerous governments monitored aspects of their education systems, including inputs (the number of students reached by distance learning), processes (how students and teachers used learning platforms), and outcomes (such as student learning progress).

Regarding attempts to monitor student learning and progress, varying combinations of national, regional, and international assessments were implemented. Regardless of which large-scale assessment was used, it remained crucial that these monitoring programs were adapted contextually for education systems and that useful data could be collected to inform subsequent interventions and reforms.

By collecting real-world practices relating to a range of emergencies – with special attention on the COVID-19 pandemic – and identifying ideal practices from literature,

this report provides an evidence base to inform policymakers about education in emergencies. This evidence base has been translated into policy considerations to build resilient education systems. Actionable processes have been provided as a possible tool for implementing reforms and monitoring the status of education systems.

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Appendix A. Policy Monitoring Tool template

The Policy Monitoring Tool integrates the EiE Policy Monitoring Framework (see section 4) with the policy considerations (see section 6). It assists policymakers to prioritise their activities to build a more resilient education system.

Policymakers use the tool by examining to what extent each policy consideration is accounted for in their education system during each phase of emergency management, and allocating each consideration a rating of 'Low' to 'Very high'. If the policy consideration is not relevant to their education system, they can assign it as 'not applicable' (NA). The rating is colour-coded to make it easier for policymakers to review the completed document and identify which policy considerations need more attention, and in which phase of the emergency management cycle attention is required.

Policymakers' ratings can also be guided more generally by the content of this report; each policy consideration has an associated section in the report based on the sub-factors in section 5 (e.g., monitoring, blended learning, teachers). To illustrate, policy consideration 1.1.1 states 'At an education system level, risks are mapped to identify which institutions and processes are vulnerable to various external shocks' – hence, policymakers will examine to what extent this activity has been done to facilitate educational Preparedness, Response, and Recovery in emergencies. If the consideration has not been realised in the education system, then policymakers will generally rate it as a high priority, although there might be some instances where policymakers judge that some considerations are not as relevant to their context.

Most of the policy considerations relate to all three emergency management phases, but in some educational contexts some policy considerations will be particularly relevant to certain phases, and thus will receive a higher rating. For instance, policy consideration 2.1.2 – 'Classroom and school assessments that were used prior to an emergency are adjusted for the Recovery phase of an emergency' – will receive a high priority rating in the Recovery phase in countries that did indeed have assessments prior to the emergency that can be adapted. Policymakers may also adapt this tool for their own purposes, such as by removing certain considerations with no relevance to their context or adding new considerations.

Table A1: Policy Monitoring Tool template

Low	Medium	High	Very high	NA

Policy factors	Policy considerations	Policy issues	Phase of emergency management		
			Preparedness	Response	Recovery
1. Systems	1.1. Planning for education in emergencies	1.1.1. At an education system level, risks are mapped to identify which institutions and processes are vulnerable to various external shocks.			
		1.1.2. Emergency planning procedures are documented, communicated to relevant agents and implemented at an education systems and school level.			
		1.1.3. Education authorities produce macro planning documents and guides to support schools to develop individualised subsidiary plans.			
		1.1.4. Emergency Response and Recovery plans detail the resources, actions, tasks, and data required in the Response and Recovery phases of an emergency.			
		1.1.5. Institutional continuity plans specify adjustments and accommodations necessary to sustain core education system and school functions. These include alternative teaching procedures and supports for vulnerable children.			
	1.2. Instituting strong coordination and collaboration	1.2.1. Governments demonstrate leadership, and collaborate vertically and horizontally with all relevant agents to plan and implement key policies and practices.			
		1.2.2. Relevant agents have the appropriate responsibilities for their capacity, know and understand their responsibilities, and divide tasks to minimise overlap to maximise coverage.			
		1.2.3. Intergovernmental organisations and non-government organisations (NGOs) closely cooperate with host countries and each other to identify how their services can benefit host countries, and integrate with other processes, including with other intergovernmental organisations and NGOs. Intergovernmental organisations generally provide high level support, such as financing and developing education sector plans. NGOs are likely to offer services and programs that the government is unable or unwilling to provide, such as helping parents support their children's education.			

Policy factors	Policy considerations	Policy issues	Phase of emergency management		
			Preparedness	Response	Recovery
	1.3. Communicating between and with education stakeholders	1.3.1. Leading agents (e.g., government agencies), communicate policies and practices with education agents (e.g., education systems, schools), thereby reinforcing effective coordination.			
		1.3.2. Communication is timely, accessible, targeted to the audience and specifies pertinent details. Multiple communication channels are enabled, allowing for dialogue. Through these communication channels, education systems, schools, students, parents, and the community are well informed about an emergency and its implications (e.g., schools will be closed), and the responses (e.g., distance learning provisions).			
	1.4. Constructing robust ICT infrastructure	1.4.1. Access to digital technology is broadened. Vulnerable points of ICT infrastructure are minimised, and are reinforced with multiple lines of connection, making use of cables, satellites, radio waves, and television waves.			
	1.5. Building sound school facilities	1.5.1. School buildings are built to withstand the risks associated with the location (e.g., schools located in seismic zones are earthquake-resistant). Even when scarce resources limit the structural integrity, protocols are instituted to reduce danger, such as evacuation procedures, and in the case of communicable disease, WASH standards.			
	1.6. Bolstering monitoring systems	1.6.1. Data management systems collect, store, and manage data about schools, staff, and students.			
		1.6.2. Data collected include inputs, such as the level of student engagement with different elements of the education system; qualitative data about how students and teachers use learning platforms; and outputs, such as learning outcomes. Demographic data are also collected, enabling policies to be tailored for disadvantaged populations.			
		1.6.3. Large-scale assessments are implemented and/or maintained so that student learning progress and outcomes can be measured and monitored, informing the targeting of special learning support to relatively low-performing schools and regions.			

Policy factors	Policy considerations	Policy issues	Phase of emergency management		
			Preparedness	**Response**	**Recovery**
2. Teaching and Learning	2.1. Embedding assessment into emergency contexts	2.1.1. Classroom and school assessment of student learning progress is conducted during and shortly after an emergency. The assessment data are used to track student learning progress in academic domains to establish baselines, learning loss, and learning recovery, and to inform teaching and address learning needs with respect to priority subjects (e.g., literacy and numeracy). In addition to academic domains, mental health and wellbeing is assessed, so that psychosocial support can be provided to those in need.			
		2.1.2. Classroom and school assessments that were used prior to an emergency are adjusted for the Recovery phase of an emergency.			
		2.1.3. Classroom and school assessment programs, including digital assessment, are designed to complement and inform teaching and learning practices. Digital assessment can be used to provide targeted feedback on student progress.			
		2.1.4. Research is conducted to identify and develop appropriate assessments.			
	2.2. Implementing digital teaching and learning	2.2.1. Digital technology devices are provided to students in need.			
		2.2.2. Existing platforms already used by students, such as popular social media, are adapted for educational purposes, when specialist digital platforms are not established.			
		2.2.3. Mobile learning is used to reach greater numbers of students, adapting curriculum and pedagogy as needed.			
		2.2.4. Learning materials accommodate the context of learning in emergencies.			
		2.2.5. Digital literacy is advanced by providing training and technical support to students and teachers to use digital tools.			
		2.2.6. Students engaging in digital platforms receive personalised supervision and feedback.			

Policy factors	Policy considerations	Policy issues	Phase of emergency management		
			Preparedness	Response	Recovery
	2.3. Applying multiple teaching modalities	2.3.1. Digital technology is integrated into current pedagogical practices, making an emergency transition to distance learning practical and smoother.			
		2.3.2. Low-cost and low-technology approaches, such as mailing printed materials, television, and radio, are employed, when appropriate, based on cultural, economic, regional, and technological factors.			
		2.3.3. Digital teaching and learning modalities are blended with other modalities, which may involve downloading material from the internet, and using the internet to communicate instructions, submit assignments, and receive feedback relating to offline activities.			
		2.3.4. The design of all teaching modalities accommodates children with diverse needs, such as children with disability.			
3. Agents	3.1. Clarifying responsibilities among government agents	3.1.1. Governments prepare for emergencies by establishing procedures for distributing responsibilities among the relevant levels of government, agencies, and institutions. Preparation ensures that all necessary activities are accounted for and resources are well managed.			
	3.2. Engaging the community	3.2.1. Communities are empowered to take part in decision-making processes and contribute to Response and Recovery efforts, such as home schooling, and out-of-school educational activities.			
		3.2.2. Authorities listen to and act on community feedback to monitor Response and Recovery initiatives.			
	3.3. Strengthening schools and supporting school leaders	3.3.1. Schools are well managed; school leaders are given appropriate emergency-related information, training, and resources. Government administration provides documentation, guidance notes, advice, and feedback to support school leaders in developing emergency plans.			
		3.3.2. Schools offer psychosocial support to children, and when necessary, social services to the broader community.			
		3.3.3. Schools offer initiatives to recover 'lost learning', such as remedial and accelerated learning programs, especially targeted at disadvantaged children who may have fallen further behind in their schooling.			

Policy factors	Policy considerations	Policy issues	Phase of emergency management		
			Preparedness	Response	Recovery
	3.4. Developing teacher capacity	3.4.1. Teachers are familiar with emergency management, and trained in the required protocols to assist students to safety when an emergency strikes.			
		3.4.2. Teachers are provided with professional learning opportunities related to distance learning, including using digital technology.			
		3.4.3. Teachers are provided with training and resources to enable them to provide psychosocial support to students, as well as coping with their own hardship. This can take various forms, including self-directed learning modules and communities of practice accessed via digital technology.			
	3.5. Helping parents and resourcing the home learning environment	3.5.1. The education system and schools guide parents/guardians to support their child's education by reinforcing the value of education, advising how to provide a structured learning environment, and providing regular information about learning progress.			
		3.5.2. Households are provided with resources to support their child's education. This includes learning resources, such as the internet, devices, stationery, and textbooks, and fundamental resources such as food, energy, and safety equipment.			
	3.6. Fostering children's resilience	3.6.1. Children are treated as agents, who are informed about how they can protect themselves, reduce the risks to others, and seek help, including counselling.			
		3.6.2. Emergency education is included in the curriculum and focuses on risk reduction. Emergency education is tailored to the students' environment and develops their skills in responding to emergencies.			
		3.6.3. Social and emotional learning is integrated into the curriculum, enhancing abilities such as emotional awareness and regulation.			
		3.6.4. Children with disability receive the necessary support to ensure their resilience is equally fostered.			

Appendix B. Methodology

Step 3. Extracting and collecting data

Data extraction and collection included sourcing documents (from 1985 to 2021) as well as screening and appraising documents over the period March to November 2020.

Sourcing documents

All the documents collected for this review were published in English, located in the public domain, and can be categorised as:

- peer-reviewed publications, including meta-analysis and systematic reviews
- discussion papers, policy reports, and evaluations, from government, intergovernmental organisations, and non-government organisations (NGOs)
- policy and planning documents across education systems, including:
    - education sector plans
    - COVID-19 response plans.

Peer-reviewed papers tended to inform the types of emergencies, impacts of emergencies, and vulnerable populations discussed, whereas non-academic documents, such as policy reports, were mostly used to inform how to build a resilient education system.

The literature search drew sources from multiple academic, government, and NGO databases, and relevant grey literature. In addition to government websites, data were drawn from intergovernmental organisations and NGOs. These organisations were the ADRC, DFAT, ECW, GPE, INEE, OECD, Save the Children, UNESCO, UNICEF, USAID, and World Bank.

The following academic databases were used to identify relevant literature: ERIC (in EBSCO), A+ Education (in Informit), JSTOR, and Google Scholar. An iterative search strategy was used to develop valid and reliable search terms within these databases. Specifically, search terms were refined based on the results' relevance to the topic, quality, and breadth of material (i.e., if a search yielded over 1000 results across a range of topics, search terms were refined to narrow results).

The following redundant or unreliable search terms were identified: crisis, adverse, hardship, distance learning, inclusive, access, and distribution. These terms produced results where the majority of documents did not satisfy the search criteria. For example, 'crisis' yielded results related to endogenous problems with the education system as opposed to emergencies caused by external shocks. The terms 'adverse', 'hardship', 'distance learning', 'inclusive', 'access', and 'distribution' yielded voluminous results unrelated to emergencies. It was deemed unnecessary to use these terms, as it became evident that by focusing on education in emergencies, any research specifically related

to these terms, such as distance learning and education in emergencies, would also be identified. Additionally, searches were refined by using subject and discipline delimiters. There was some variation between the databases on which terms produced optimum results. Details of the ultimate search terms used that were developed based on the above described experimentation and the number of results are provided in Table B1.

Table B1: Search terms and results

Database	Search terms applied from March to November 2020	Results
ERIC (EBSCO)	(Education* OR Learning OR Teaching) AND (Emergency OR Disaster) NOT 'Emergency Service*' NOT medicine	886
JSTOR	(Education* OR Learning OR Teaching) AND (Emergency OR Disaster) NOT 'Emergency Service*' NOT medicine	793
A+ Education (Informit)	(Education*) OR (learning) OR (teaching) AND (emergency) OR (disaster) NOT (medicine) NOT (emergency service*)	320
Google Scholar	Education Emergency* – 'Emergency Service' – 'higher education' – medicine	688

The final number of documents included in this review amounted to 224. From this total, 32 documents were drawn from country submissions to the Global Partnership for Education (GPE) requesting COVID-19-related short- and medium-term education in emergencies funding, while another 67 documents comprised national policy papers, organisation reports (e.g., from UNESCO, the OECD, and Save the Children), and peer-reviewed articles that addressed COVID-19 challenges and possible solutions. Of the remaining 125 references, 114 addressed education in emergencies situations that were not COVID-19-related, while the remaining 11 addressed methodological approaches and issues relating to rapid reviews. Thus, approximately 44% of the references reviewed in this report focused on COVID-19 specifically, and its impact on schooling and education systems.

Screening and appraising literature for inclusion

All studies identified during this rapid review were screened using the inclusion-exclusion PICO criteria. Any report or policy document that provided relevant insights about policies, activities, and programs was included in the analysis, while academic research papers were only included if they were published in peer-reviewed journals to ensure scientific rigour and critique. Biases of each document were considered, which was of particular relevance to non-academic reports published by organisations with specific missions. Such biases did not warrant the exclusion of any given report, but were taken into account in synthesising the evidence into a useful body of literature, as described in the following section.

Step 4. Coding, analysis and synthesis

A research coding framework based on the main research and sub-research questions was developed to analyse data; see Appendix E. Using a similar approach to Best et al. (2013), level one and two codes were generated from main research and sub-research questions, respectively. This was done to broadly categorise data for analysis and was refined iteratively as familiarity with the literature increased.

Specifically, references were reviewed by two researchers across both coding levels to determine which codes were evident and, subsequently, whether they should be further analysed. Codes were initially developed from preliminary research. As knowledge of the field and data increased, the codes were refined to address overlapping research themes between codes (Best et al., 2013), and new codes and categorisations were included.

The coding framework then informed the EiE Policy Monitoring Framework. Codes and data were then transferred to NVivo 12 for sorting and analysis to derive reoccurring research themes from this rapid review (QSR International, 2020). In conducting this analysis, all coded references were systematically mapped to relevant research themes and informed the report sections that follow. As part of this mapping exercise, Table B2 identifies the references that were most often cited across sub-sections in this report. It should be noted that these citations do not reflect instances when a reference was cited multiple times within a specific sub-section. Instead, they indicate the number of report sub-sections in which a given reference was used at least once. Further information relating to this mapping exercise can be viewed in Appendix F. A fully synthesised spreadsheet that maps all references to sections 3–5 sub-sections can be made available upon request from the authors.

Table B2: Most-cited references in this report

Reference	Report sub-sections where this reference was cited at least once
Reimers, F. M., & Schleicher A. (2020). *Schooling disrupted, schooling rethought: How the Covid-19 pandemic is changing education*. OECD. https://read.oecd-ilibrary.org/view/?ref=133_133390-1rtuknc0hi&title=Schooling-disrupted-schooling-rethought-How-the-Covid-19-pandemic-is-changing-education	12
Save the Children. (2020a). *Save our education: Protect every child's right to learn in the COVID-19 response and recovery*. https://resourcecentre.savethechildren.net/node/17871/pdf/save_our_education_0.pdf	11
Federal Democratic Republic of Ethiopia. (2020b). *Ethiopia COVID-19 education response project (P174206): Stakeholder engagement plan (SEP)*. https://documents.worldbank.org/en/publication/documents-reports/documentdetail/182581592665955547/stakeholder-engagement-plan-sep-ethiopia-covid-19-education-response-project-p174206	6
INEE. (2010). *Minimum standards for education: Preparedness, response, recovery*. https://inee.org/resources/inee-minimum-standards	6
Ministry of Education, Ghana. (2020). *Ghana COVID-19 accelerated funding application form.* https://www.globalpartnership.org/sites/default/files/document/file/2020-04-COVID-accelerated-funding-Ghana%20Updated%20Proposal%20May%205%202020%20final.pdf	6
National Department of Education, Papua New Guinea. (2020). *COVID-19 education emergency response and recovery plan*. https://www.education.gov.pg/documents/PNG-COVID-19-Education-Response-and-Recovery-Plan-(Final-Draft-04-05-2020).pdf	6

As mentioned above, the analysed research themes formed the basis of synthesised evidence, whereby the evidence is descriptively summarised. The evidence synthesis is presented in three forms: first, a narrative summary, largely found in section 5, which describes how to build a resilient education system based on key factors derived from the literature; second, a list of policy considerations, found in section 6, which are derived from each policy factor presented in the narrative summary; and third, the Policy Monitoring Tool template, found in Appendix A, which organises the policy factors and considerations to enable policymakers to apply the findings.

In deriving policy considerations, the biases of individual studies and strength of the body of literature were considered and discussed between the researchers until consensus was obtained. For example, in the section relating to the role of agents, the researchers were particularly cognisant of the biases of reports by policy actors, such as whether governments are absolving themselves from responsibility; or whether NGOs are attempting to increase their sphere of influence and funding sources. This was discussed by the researchers in identifying appropriate weight to give to the role of various agents in building a resilient education system. Quantitative methods such as Grading of Recommendations Assessment, Development and Evaluation (GRADE), often used with meta-analysis, was inappropriate for this descriptive review.

Appendix C. Mapping of the INEE EiE domain standards to the Systems, Teaching and Learning, and Agents factors

The present EiE Policy Monitoring Framework holds that the literature reviewed emphasised key factors involving Systems, Teaching and Learning, and Agents. Given the context and focus of this rapid review, it is not surprising that these factors share commonalities with the 19 domain standards expressed by the Inter-agency Network for Education in Emergencies (INEE, 2010) in its *Minimum Standards for Education: Preparedness, Response, Recovery*. To ensure coherence and coverage across all three factors outlined in this report and the INEE domain standards, the definitions applied to the domain standards (INEE, 2010) were mapped onto the definitions applied to Systems, Teaching and Learning, and Agents factors (see section 5). Table C1 outlines how all 19 domain standards were mapped onto one or more of the aforementioned key factors in this report.

Table C1: Mapping INEE domain standards

Domain standard	Definition	Key factors
Foundational Standards domain		
Participation	Community members participate actively, transparently and without discrimination in analysis, planning, design, implementation, monitoring and evaluation of education responses.	Agents
Resources	Community resources are identified, mobilised and used to implement age-appropriate learning opportunities.	Agents Systems
Coordination	Coordination mechanisms for education are in place and support stakeholders working to ensure access to and continuity of quality education.	Agents Systems
Assessment	Timely education assessments of the emergency situation are conducted in a holistic, transparent and participatory manner.	Systems
Response strategies	Inclusive education response strategies include a clear description of the context, barriers to the right to education and strategies to overcome those barriers.	Agents Systems
Monitoring	Regular monitoring of education response activities and the evolving learning needs of the affected population is carried out.	Systems
Evaluation	Systematic and impartial evaluations improve education response activities and enhance accountability.	Systems
Access and Learning Environment domain		
Equal access	All individuals have access to quality and relevant education opportunities.	Agents Systems
Protection and well-being	Learning environments are secure and safe, and promote the protection and the psychosocial well-being of learners, teachers and other education personnel.	Agents
Facilities and services	Education facilities promote the safety and well-being of learners, teachers and other education personnel and are linked to health, nutrition, psychosocial and protection services.	Agents

Domain standard	Definition	Key factors
Teaching and Learning domain		
Curricula	Culturally, socially and linguistically relevant curricula are used to provide formal and non-formal education, appropriate to the particular context and needs of learners.	Teaching and Learning
Training, professional development and support	Teachers and other education personnel receive periodic, relevant and structured training according to needs and circumstances.	Agents Teaching and Learning
Instruction and learning processes	Instruction and learning processes are learner-centred, participatory and inclusive.	Agents Teaching and Learning
Assessment of learning outcomes	Appropriate methods are used to evaluate and validate learning outcomes.	Systems Teaching and Learning
Teachers and Other Education Personnel domain		
Recruitment and selection	A sufficient number of appropriately qualified teachers and other education personnel are recruited through a participatory and transparent process, based on selection criteria reflecting diversity and equity.	Agents Teaching and Learning
Conditions of work	Teachers and other education personnel have clearly defined conditions of work and are appropriately compensated.	Systems Teaching and Learning
Support and supervision	Support and supervision mechanisms for teachers and other education personnel function effectively.	Systems Teaching and Learning
Education Policy domain		
Law and policy formulation	Education authorities prioritise continuity and recovery of quality education, including free and inclusive access to schooling.	Systems
Planning and implementation	Education activities take into account international and national educational policies, laws, standards and plans and the learning needs of affected populations.	Agents Systems Teaching and Learning

Appendix D. Summary of measurement and assessment tools for education in emergencies situations

Table D1 provides an outline of various education in emergencies (EiE) measurements and assessments. These measurements and assessments are presented because monitoring and assessment are integral components of resilient education systems. Measurements and assessments enable learning progress to be identified and tracked, thereby informing Response and Recovery activities. This appendix references the role and use of monitoring and assessment as detailed in sections 5.1 and 5.2. Only three of the measurements and assessments below have been specifically adapted to education in emergencies situations – HALDO, OLA, and the UNRWA MLA. The information in Table D1 has been adapted from Anderson et al. (2020). The headings in this table refer to:

- Assess.: name of measurement/assessment tool
- Org.: administrating agency
- Purpose: 1. System monitoring measurements and assessments enable year-after-year international comparisons; 2. Multipurpose measurements and assessments are context-specific and non-comparable; 3. Citizen-led measurements and assessments provide estimates of children's schooling status and basic learning levels
- Pop. developed for: the broad context the tool was intended for
- Age/Grade: the learner age group or grade the tool was intended for
- Method: the approach taken to measure and assess learners
- Construction: Competency-based refers to the measurement and assessment of specific skills; Content-based refers to the assessment of specific curriculum content
- Subject(s) assessed: the discipline/domain/school subject/topic that is measured and assessed within the tool
- Availability: whether the tool is free/open source or can be used at a cost
- Site: the location where the tool is administered to learners
- Background/Context info.: the type of background/contextual information that is collected on the learner
- Cost: potential costs of administering the measurement and assessment tool.

Table D1: Measurement and assessment tools for education in emergencies situations

Assess.	Org.	Purpose	Pop. developed for	Age/Grade	Method	Construction	Subject(s) assessed	Availability	Site	Background/Context info.	Cost
ASER	Pratham and ASER Centre	Citizen-led	Students and out-of-school children in developing countries	5–16 year olds	Oral	Competency-based	Basic reading, basic numeracy	Open source; fee for implementation	Home	Comprehensive background information on demographics, and school, community, child, and household characteristics	US$200,000 per testing year on average, depending on how it is implemented (i.e., national or sub-national)
Beekunko	Oeuvre Malienne d'Aide a l'Enfance du Sahel (OMAES)	Citizen-led	Students and out-of-school children in developing countries	6–14 year olds	Oral	Competency-based	Basic reading, basic arithmetic	Open source; fee for implementation	Home	Comprehensive background information on demographics, and school, community, child, and household characteristics	US$200,000 per testing year on average, depending on how it is implemented (i.e., national or sub-national)
EGMA	Varies	Multipurpose	Students in developing countries	Grades 1–3	Oral	Competency-based	Basic mathematics	Open source; fee for implementation	School	No standardised collection of background information	Open source and available online, but there are costs associated with any in-country implementation
EGRA	Varies	Multipurpose	Students in developing countries	Grades 1–3	Oral	Competency-based	Basic literacy	Open source; fee or own cost for implementation	School	No standardised collection of background information	Open source and available online, but there are costs associated with any in-country implementation
HALDO	Save the Children	Multipurpose	Rapid deployment for education in emergencies contexts – Children in emergency settings	4–12 year olds	Oral	Competency-based	Literacy, numeracy, SEL, executive functioning	Open source	School, home, or informal learning centre	Background information on demographics, home learning environment, language	Unclear/not stated

Assess.	Org.	Purpose	Pop. developed for	Age/Grade	Method	Construction	Subject(s) assessed	Availability	Site	Background/Context info.	Cost
IDELA	Save the Children	Multipurpose	Young children in developing countries, many of them in emergency settings	3.5–6 year olds	Oral	Competency-based	Early reading and math, socio-emotional skills, motor development	Open source but must sign MOU	Varies	Information collected on parent education, enrolment in early childhood education, household assets	Unclear/not stated
IID/BRAC Survey	Institute of Informatics and Development (IID)	Citizen-led	Students and out-of-school children in developing countries	5–15 year olds	Oral	Competency-based	Basic reading, basic numeracy	Open source; fee for implementation	Home	Comprehensive background information on demographics, and school, community, child, and household characteristics	US$200,000 per testing year on average, depending on how it is implemented (i.e., national or sub-national)
Jàngandoo	Laboratoire de Recherche sur les Transformat-ions Economiques et Sociales (LARTES)	Citizen-led	Students and out-of-school children in developing countries	6–18 year olds	Oral	Competency-based	Basic reading, basic numeracy, culture tasks	Open source; fee for implementation	Home	Comprehensive background information on demographics, and school, community, child, and household characteristics	US$200,000 per testing year on average, depending on how it is implemented (i.e., national or sub-national)
LaNA	IEA	System monitoring	Students in developing countries	Grade 4 (or 5, 6)	Written multiple choice	Content-based	Basic reading, basic mathematics	Not open source	School	Background information on school and household characteristics	
LEARNigeria	The Education Partnership (TEP) Centre	Citizen-led	Students and out-of-school children in developing countries	5–15 year olds	Oral	Competency-based	Basic reading, basic numeracy	Open source; fee for implementation	Home	Comprehensive background information on demographics, and school, community, child, and household characteristics	US$200,000 per testing year on average, depending on how it is implemented (i.e., national or sub-national)
Literacy Boost	Save the Children	Multipurpose	Students in developing countries	Grades 1–3	Oral	Competency-based	Literacy	Not open source	School	Background information on household and school characteristics; reading habits at home	Unclear/not stated

Assess.	Org.	Purpose	Pop. developed for	Age/Grade	Method	Construction	Subject(s) assessed	Availability	Site	Background/Context info.	Cost
MELQO	World Bank, various agencies	Multipurpose	Young children in developing countries	Pre-primary	Oral	Competency-based	Pre-literacy, pre-numeracy, SEL, executive functioning	Open source	School, home, or informal learning centre	No standardised collection of background information	Unclear/not stated
MICS-Foundational Learning Skills	UNICEF	System monitoring	Students and out-of-school children in developing countries	7–14 year olds	Oral	Competency-based	Reading, numeracy skills	Open source	Home	Comprehensive background information collected as part of general MICS survey. Information collected in the module includes reading habits and home language	Open source and available online, but there are costs associated with any in-country implementation
MICS-ECDI	UNICEF	System monitoring	Young children in developing countries	3–4 year olds	Oral	Competency-based	Literacy, numeracy, physical development, SEL skills	Open source	Home	Comprehensive background information collected as part of general MICS survey	Open source and available online, but there are costs associated with any in-country implementation
Numeracy Boost	Save the Children	Multipurpose	Students in developing countries	Grade 2	Oral	Competency-based	Numeracy	Not open source	School	Information about students' exposure to maths outside of school	Unclear/not stated
OLA	Education Development Centre	Multipurpose	Rapid deployment for education in emergencies contexts – Participants in non-formal education programs	Older children	OLA is oral; eOLA uses digital tablets	Competency-based	Literacy	Not open source	Non-formal education programs	Demographic information, information on reading, non-formal and formal education background, literacy goals	Unclear/not stated
PASEC	CONFEMEN	System monitoring	Students in francophone African countries	Grades 2 and 6	Grade 2 oral; grade 6 written multiple choice	Competency-based	Reading, mathematics	Country fee for participation and implementation	School	Background questionnaire includes student, household, and school characteristics	US$200,000 to US$500,000 per country, depending on the assessment program and local costs

Assess.	Org.	Purpose	Pop. developed for	Age/Grade	Method	Construction	Subject(s) assessed	Availability	Site	Background/Context info.	Cost
PILNA	Education Quality and Assessment Program, Pacific Community	System monitoring	Students in Pacific Islands countries	Grades 4 and 6	Written multiple choice	Competency-based	Literacy, numeracy	Country fee for participation and implementation	School	Background questionnaire for student, teacher, and principal, including information on school resources and management	US$200,000 to US$500,000 per country, depending on the assessment program and local costs
PIRLS	International Association for the Evaluation of Educational Achievement (IEA)	System monitoring	Students in participating countries. Began with a small number of European and North American countries but has expanded to all regions	Grade 4	Written multiple choice and open response	Competency-based	Reading	Country fee for participation and implementation	School	Background questionnaires cover student, household, and school characteristics	US$800,000 per cycle; variations depend on the country size and context
PISA	OECD	System monitoring	Grade 7 students and out-of-school 14–16 year olds in Bhutan, Cambodia, Ecuador, Guatemala, Honduras, Paraguay, Senegal, and Zambia	14–16 year olds (includes out-of-school children)	School tool is written multiple choice and open response; out-of-school tool is tablet-based	Competency-based	Reading, mathematics, science	Country fee for participation and implementation	School, home (out-of-school component)	Background questionnaires cover student, home, school, and community characteristics	US$800,000 per cycle; variations depend on the country size and context
SCALE Ghana	Choice Ghana	Citizen-led	Students and out-of-school children in developing countries	6–15 year olds	Oral	Competency-based	Basic reading, basic numeracy	Open source; fee for implementation	Home	Comprehensive background information on demographics, and school, community, child, and household characteristics	US$200,000 per testing year on average, depending on how it is implemented (i.e., national or sub-national)

Assess.	Org.	Purpose	Pop. developed for	Age/Grade	Method	Construction	Subject(s) assessed	Availability	Site	Background/Context info.	Cost
SEA-PLM	Southeast Asian Ministers of Education Organization/ UNICEF East Asia and Pacific Regional Office	System monitoring	Students in East Asia and Pacific countries	Grade 5	Written multiple choice and open response	Content-based	Reading and writing, mathematics, global citizenship	Country fee for participation and implementation	School	Proposal for background information includes student, household, school, and community characteristics	US$200,000 to US$500,000 per country, depending on the assessment program and local costs
SEACMEQ	Southern and Eastern Africa Consortium for Monitoring Educational Quality	System monitoring	Students in anglophone African countries	Grade 6	Written multiple choice and open response	Content-based	Reading, mathematics, HIV/AIDS knowledge	Country fee for participation and implementation	School	Background information on student, household, and school characteristics; access to books and tutoring	US$200,000 to US$500,000 per country, depending on the assessment program and local costs
STAR	World Vision	Multipurpose	Students in developing countries	Grade 3	Structured task	Competency-based	Literacy	Open source	In or near school	Recommended background includes demographic and economic information, home literacy environment	Unclear/not stated
TERCE	Latin American Laboratory for Assessment of the Quality of Education (LLECE)	System monitoring	Students in Latin American countries	Grades 3 and 6	Written multiple choice and open response	Content-based	Reading and writing, mathematics, science (Grade 6)	Country fee for participation and implementation	School	Background questionnaires for teachers, principals, students, and families, including characteristics like school management	US$200,000 to US$500,000 per country, depending on the assessment program and local costs
TIMSS	IEA	System monitoring	Students in participating countries. Began with a small number of European and North American countries but has expanded to all regions	Grades 4 and 8	Written multiple choice and open response; online tablet-based option in 2019	Content-based	Mathematics, science	Country fee for participation and implementation	School	Background information on school, household, and student characteristics; attitudes towards learning	US$800,000 per cycle; variations depend on the country size and context

Assess.	Org.	Purpose	Pop. developed for	Age/Grade	Method	Construction	Subject(s) assessed	Availability	Site	Background/Context info.	Cost
TPC Mozambique	Facilidade – Institute for Citizenship and Sustainable Development (ICSD)	Citizen-led	Students and out-of-school children in developing countries	7–16 year olds	Oral	Competency-based	Basic reading, basic numeracy	Open source; fee for implementation	Home	Comprehensive background information on demographics, and school, community, child, and household characteristics	US$200,000 per testing year on average, depending on how it is implemented (i.e., national or sub-national)
UNRWA MLA	United Nations Relief and Works Agency (UNRWA)	System monitoring	Rapid deployment for education in emergencies contexts – Palestinian refugee students	Grades 4 and 8	Written multiple choice and open response	Content-based	Arabic, mathematics, science	Not open source	School	Background questionnaires on classroom and school characteristics	US$200,000 to US$500,000 per country, depending on the assessment program and local costs
UWEZO	Twaweza	Citizen-led	Students and out-of-school children in developing countries	6–16 year olds	Oral	Competency-based	Basic reading (English, Kiswahili in Kenya/ Tanzania, and local languages in Uganda), basic numeracy	Open source; fee for implementation	Home	Comprehensive background information on demographics, and school, community, child, and household characteristics	US$200,000 per testing year on average, depending on how it is implemented (i.e., national or sub-national)

Appendix E. Research coding framework

Research question title	**Research Question 1**	**Research Question 1.1**			**Research Question 1.2**
Research questions	**What are the impacts on equitable and quality K–12 education during crisis situations?**	**What factors affect education during crisis situations, and therefore equitable learning progress?**			**Which populations are particularly vulnerable to falling behind their peers during crises?**
Categories (Level 1 codes)	**GENERAL IMPACTS**	**RESOURCES – objects**	**CONTEXT – education emergency situation**	**AGENTS – entities that operate with agency and/or decision-making power**	**IMPACTS ON VULNERABLE POPULATIONS**
Key terms (Level 2 codes)	Equality	Internet	Community	Intergovernmental orgs. (e.g., UN)	Gender
	Inequality	Devices (computers, mobile phones)	Schools	National government/ authorities	Ethnic minority/Race
	Equity	School buildings	Home learning environment/ resources	Regional government/ authorities	Poor, low socioeconomic, marginalised, cultural, indigenous minority
	Inequity	Transport	Networks	Local government/ authorities	Disability/inclusion/special needs
	Interrupted	Utilities	Economy	NGOs (local & international)	Rural, regional, remote
	Wellbeing			Parents	Indigenous
	Insecurity			Teachers	Migrant, Culturally and Linguistically Diverse
	Social security			Students	Refugee
	Quality				Out-of-school children
	Social impacts				Special needs and disability
					Child labour
					Displacement

Research question title	**Research Question 2**	**Research Question 2.1**			**Research Question 2.2**	
Research questions	**How should policymakers respond and recover to promote equitable and quality outcomes when K–12 education systems are disrupted by crisis situations?**	**What can be learned from education policies and practices that have been implemented during crises?**			**In times of crisis, how can student learning be monitored and assessed during the situation and in the transition to normal schooling?**	
Categories (Level 1 codes)	**POLICY RESPONSE/FRAMEWORK**	**RESOURCES – objects**	**CONTEXT – education emergency situation**	**AGENTS – entities that operate with agency and/or decision-making power**	**MONITORING**	**OUTCOMES**
Key terms (Level 2 codes)	Responses	Blended learning	Collaborative planning/ implementation	Intergovernmental orgs. (e.g., UN)	Monitoring	Declined
		Television, radio	Community (response, engagement)	National government/ authorities	Assessment	Maintained
		Booklets	Schools	Regional government/ authorities	Learning progress	Improved
		Internet	Home learning environment/ resources	Local government/ authorities		
		Devices (computers, mobile phones)		NGOs (local & international)		
		School buildings		Parents		
		Transport		Teachers		
		Utilities		Students		

Research question title	**Research Question 3**	**Multiple research questions**		
Research questions	**How can K–12 education systems be engaged in preparedness activities and build more resilience in enduring crises?**			
Categories (Level 1 codes)	**RESILIENCE POLICIES/ PRACTICES**	**REGION**	**EVIDENCE TYPE**	**TYPE OF CRISIS**
Key terms (Level 2 codes)	Plans	Pacific	Academic	Conflict/war/political upheaval
	Guidelines	South & East Asia	NGO report	Disease
	Infrastructure	South & East Asia	Government policy document	Earthquake/tsunami/ volcano
		North America	Guide/framework	Extreme weather/flood
		South America		Bush/wildfire
		Europe		Climate change/drought
		Africa		
		Middle East		

Appendix F. Mapping references to report sections

As outlined in Appendix B, Step 4. Coding, analysis and synthesis, Appendix F maps the inclusion of references in sections 3–5. It should be noted that these citations do not reflect instances when a reference was cited multiple times within a specific report section. Instead, they indicate whether a given reference was included across an entire report section. Providing an indication of multiple citations would have resulted in over 50-pages of output. Should readers seek this information, however, a fully synthesised spreadsheet that maps all references to section 3-5 sub-sections can be made available upon request from the authors.

Table F1: References mapped to report section

Report section	References
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