



REOPENING WITH RESILIENCE:

Lessons from remote learning during COVID-19

Introduction

The COVID-19 pandemic led to school closures around the world, affecting almost 1.6 billion students (UNESCO, 2020).

The effects of even short disruptions in a child's schooling on their learning and wellbeing have been shown to be acute and long lasting (Alban Conto et al., 2020). The capacities of education systems to respond to the crisis through delivering remote learning and support to children and families have been diverse yet uneven. The most vulnerable children are less likely to access remote learning (UNESCO, UNICEF, World Bank and OECD, 2021), and are at higher risk of violence, neglect, child marriage and other risks while schools are closed (Taulo et al., 2020). While schools slowly started to reopen in 2020, national or localized school closures have remained throughout 2021 (Johns Hopkins University, the World Bank and UNICEF, 2021). In many cases, school reopenings have been short-lived or partial, further disrupting children's routines and learning. Resilient education systems need to have resources that can be used when core delivery models are disrupted (Dreesen et al., 2020). This global crisis has highlighted the need for education systems to have remote learning options that are accessible and effective for all learners when schools are forced to close.



This report reviews the emerging evidence on remote learning throughout the global school closures during the COVID-19 pandemic. Its goal is to help guide decision-makers to build more effective, sustainable remote learning systems for current and future crises. The analysis combines a review of the global literature on remote learning with analysis of global, regional and country-level data sources including: (i) the UNICEF, UNESCO, World Bank and OECD surveys of ministries of

education completed throughout 2020 and 2021; (ii) international learning assessment data; and (iii) household survey data from before and during school closures. While the report centres on the delivery of remote learning when schools are forced to close, the evidence is clear that there is no replacement for in-person learning and that schools should prioritize reopening as soon as possible (UNESCO, UNICEF, World Bank and OECD, 2021).

School closures exacerbating an existing learning crisis

The world was already experiencing a learning crisis before COVID-19, with 53 per cent¹ of children in low and middle-income countries (LMICs) in learning poverty, unable to read a simple text by age 10 (World Bank, 2019). School closures due to COVID-19 will deepen this crisis, with the learning poverty rate estimated to rise from 53 to 63 per cent (Azevedo et al., 2020).

Evidence on actualized learning loss occurring during school closures in 2020 in multiple high-income countries (HICs) finds that even relatively short periods of school closures (two to three months) had large impacts on children's learning levels (Engzell et al., 2021; Tomasik et al., 2020; Rose et al., 2021). The effects for children in LMICs will be more severe given low levels of learning prior to the pandemic and their relative lack of access to technology to support remote learning. The remainder of this report explores practices to improve remote learning systems and implementation in LMICs. LMICs, where the majority of the world's school-age children live, experienced longer periods of school closures than

HICs. *Figure 1* shows the pre-COVID-19 learning level of countries using [Harmonized Learning Outcomes](#)² (HLO) and the length of time that countries experienced full school closures (Angrist et al., 2021; UNESCO, 2021). Countries which appear lower on the graph, such as Sierra Leone,

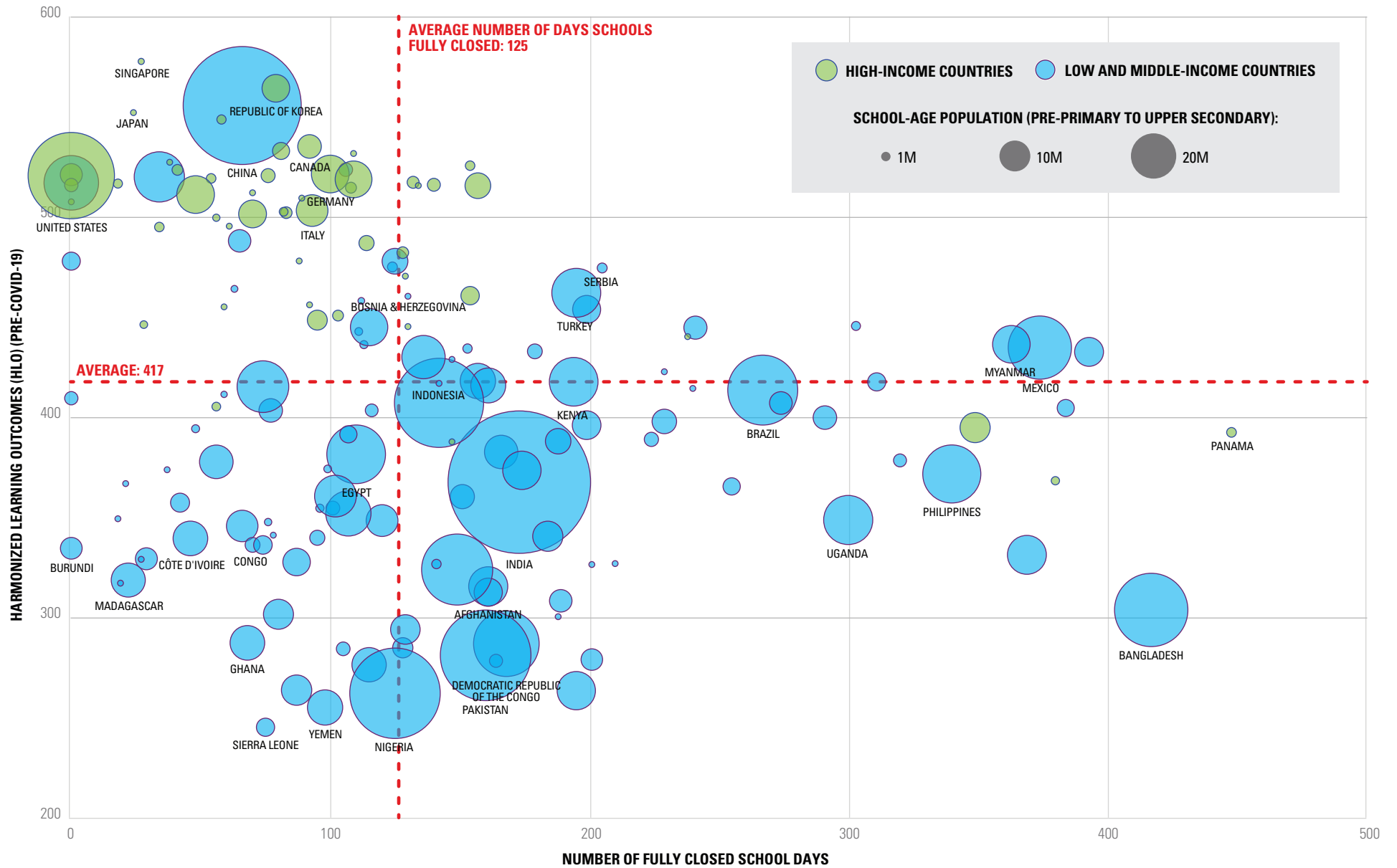
Yemen and Nigeria, had lower pre-COVID-19 learning levels. Countries which appear farther to the right, such as Bangladesh and Panama, have had full school closures for longer periods of time. The size of the circles represents the school-age population (from pre-primary to secondary) of a country.



1 382 million out of 720 million primary school-age children.

2 The Harmonized Learning Outcomes database is a globally comparable database of 164 countries from 2000 to 2017. The data represent 98 per cent of the global population and developing economies comprise two thirds of the included countries. The data are publicly available and will be updated regularly.

FIGURE 1. Harmonized Learning Outcomes by number of fully closed school days (from February 2020 to August 2021)



Note: Data on learning outcomes pre-COVID-19 come from the HLO database of 164 countries, learning outcomes from 2000 to 2017 (Angrist et al., 2021). Data on the duration of education systems being fully closed come from the UNESCO Global monitoring of school closures by COVID-19. The size of the circle represents the school-age population of a country with data from UNESCO Institute for Statistics.



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From late February 2020 until August 2021, the average duration of education systems being completely closed was 125 instruction days. Several education systems have closed and reopened in response to different waves of the pandemic (UNESCO, UNICEF, the World Bank and OECD, 2021). In many cases, school closures and reopenings have been partial across regions within countries, types of schools or education levels. Thus, focusing only on full closures of education systems masks inequities for children whose schools remained closed despite partial reopening of the education system. *Figure 2* shows the number of days schools have been closed in countries either partially or fully (excluding academic breaks). When accounting for partial school closures where a portion of the student population has been

out of school, the average duration of academic disruption rises to 232 days across countries. Some countries with federalized systems had short periods of full system closure but long periods of partial closure. For instance, while the United States of America had 0 days of full system school closures (*see Figure 1*), partial school closures persisted for more than 400 regular learning days (*see Figure 2*). Recent analysis of achievement over the 2020/21 school year from 5.5 million students in grades 3-8 in the United States found that students achieved far lower learning compared with a typical year. Students from historically marginalized and economically disadvantaged groups had larger declines in both mathematics and reading (Lewis et al., 2021). Partial closures should not be discounted for their potential

to widen existing learning disparities. Pre-primary education was the level least likely to be prioritized for reopening, despite data that show pre-primary students were least likely to have remote learning options and robust evidence that investments in pre-primary education yield long-lasting and massive returns for children, families and societies (Nugroho et al., 2021). In total, more than 7 in 10 countries, home to 91 per cent of the global school-age population, have had their schools closed fully or partially for more than four full months from start of the pandemic until August 2021. The majority of these children are from low and-middle income countries already facing low levels of learning, a combination that without mitigating measures will turn a learning crisis into a learning catastrophe.

FIGURE 2. Harmonized Learning Outcomes by number of days schools were closed (full or partial) (from February 2020 to August 2021)



Note: Data on learning outcomes pre-COVID-19 come from the HLO database of 164 countries, learning outcomes from 2000 to 2017 (Angrist et al., 2021). Data on the duration of education systems being fully or partially closed come from the UNESCO Global monitoring of school closures by COVID-19. The size of the circle represents the school-age population of a country with data from UNESCO Institute for Statistics.

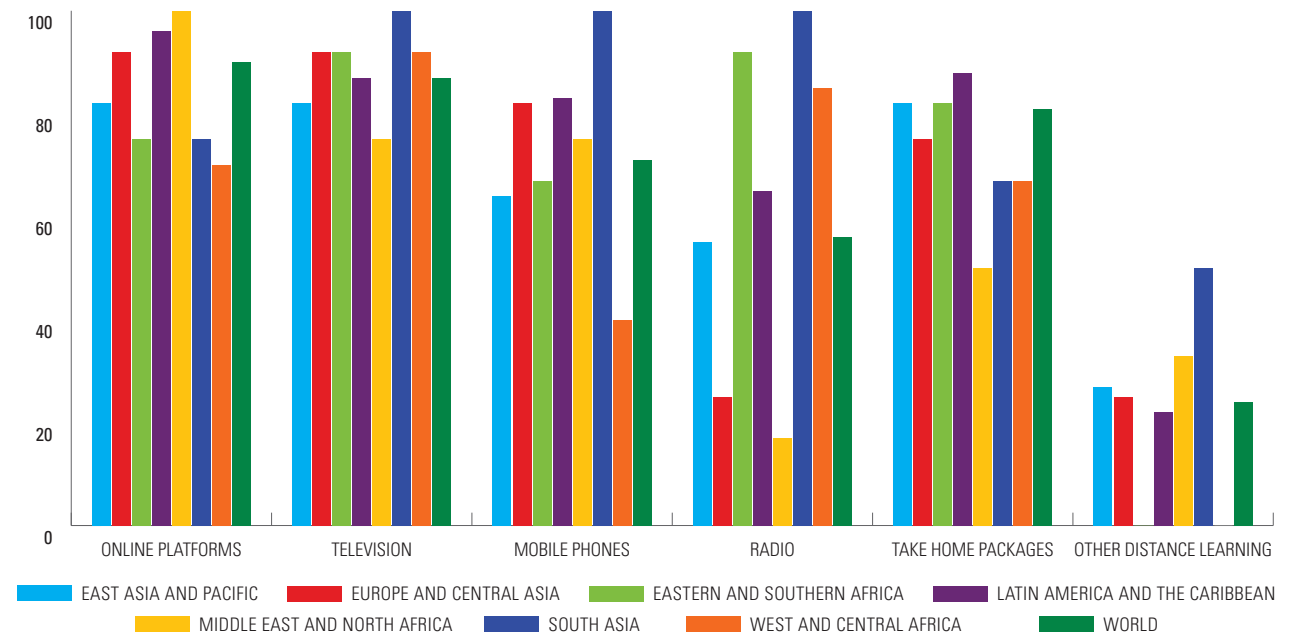
Remote learning policy and implementation

In an attempt to continue education and mitigate learning loss due to school closures, countries around the world implemented remote learning programmes. Online platforms for remote learning were the most commonly reported type of response by ministries of education (91 per cent) followed by TV education broadcasts (85 per cent), and take-home packages (82 per cent). Mobile phone learning support (70 per cent) and radio broadcasts (54 per cent) were relatively less used (UNESCO, UNICEF, the World Bank and OECD, 2021). How these various modalities have been implemented varied widely across countries and, within countries, across different regions. The following section summarizes the evidence on the challenges and promising practices in the implementation of each modality of remote learning.

Digital learning (online platforms)

Digital learning provides opportunities for interactive and engaging education content to be delivered remotely, especially when coupled with virtual classes delivered by teachers or facilitators (known as synchronous platforms). However, 1.3 billion (or two thirds) of the world's school-age children

FIGURE 3. Share of respondent countries offering a remote learning modality across at least one education level, by region



Note: Data on remote learning modalities come the joint UNESCO, UNICEF, World Bank and OECD surveys of ministries of education. Data are aggregated by UNICEF Regional Offices.

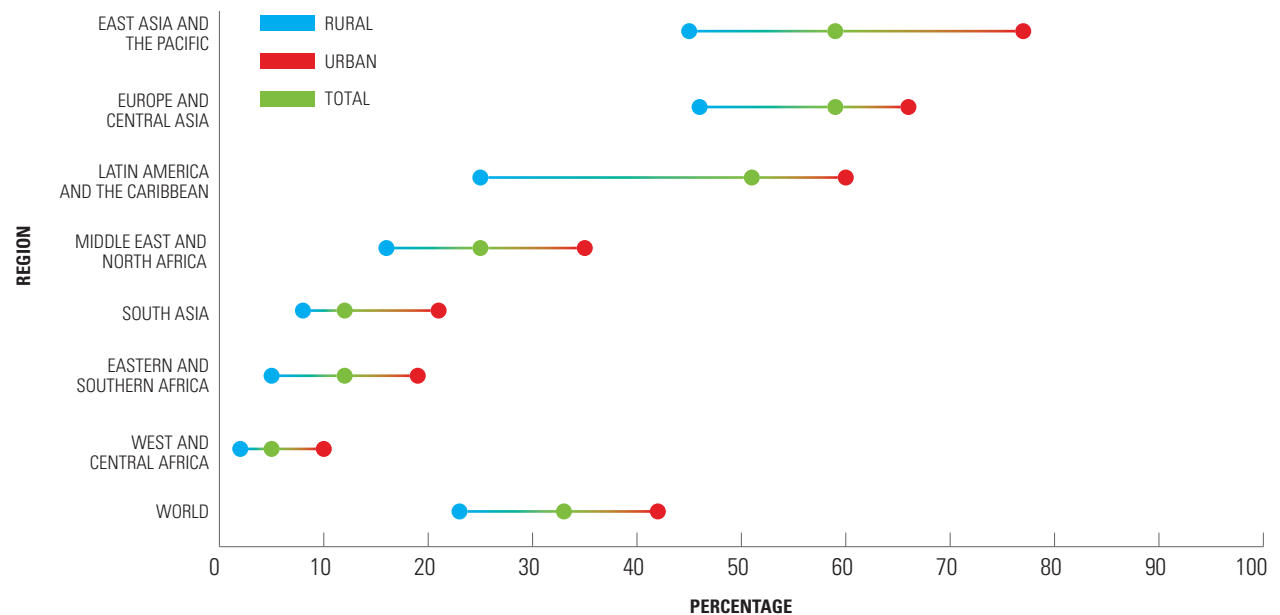
lack internet connection at home (UNICEF and ITU, 2020), creating a key barrier for online learning. Figure 4 shows wide disparities across and within regions in the share of households that have an internet connection at home (UNICEF and ITU,

2020). Households in rural areas are systematically less likely to have access to the internet, with the greatest digital divides seen in Eastern and Southern Africa, East Asia and the Pacific, and Latin America and the Caribbean.

While a number of countries offered a digital learning modality, there was often a mismatch with the infrastructure available. For instance, while Mongolia rapidly developed a web portal for students with pre-recorded videos, internet penetration in the country stands at just 36 per cent (MICS, 2018) and further data suggest that just 2 per cent of the poorest quintile of households has access to the internet. Surveys completed during 2020 in South Asia suggest that only 5 per cent of primary students used online remote learning materials in Bangladesh (Li, forthcoming).

In Sri Lanka, where connectivity rates are higher, only 40 per cent of children in public schools reported using remote learning online, compared with 87 per cent of students in private schools (UNICEF Sri Lanka and UNICEF ROSA, forthcoming). Even where an internet connection and electricity are available, the quality and cost of the internet varies widely and is a constraining factor for many households, especially those from low-income backgrounds. Nigeria and Côte d'Ivoire are two countries for which the stability of internet connectivity was cited as a major barrier to online learning during the pandemic (Adediran, forthcoming; Ministère de l'Éducation Nationale – République de Côte d'Ivoire, 2020). In Latin America and the Caribbean, many countries were unable to successfully deliver synchronous online learning through virtual classes due in large part to both the reliability and cost of connectivity. In Chile, a study conducted in 2020 found that just 18 per cent of teachers reported teaching virtual classes, while 22 per cent recorded classes and 56 per cent sent content to students by email or WhatsApp,

FIGURE 4. Percentage of school-age children with internet access at home, by region and by area



Note: Elaborated based on available Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) data, 2010–2020 (source: Wang et al., 2021). Data are aggregated by UNICEF Regional Offices.

citing that unreliable connectivity prevented more virtual classroom interaction (CEPAL, 2020). In Bolivia, while 60 per cent of students reported having access to the internet at home, half of them used their own mobile phone data packages to access learning and had challenges paying (UNICEF, 2021a). Accessing affordable data was a challenge for teachers as well, with 54 per cent of surveyed teachers in Costa Rica reporting they personally incurred the costs of using their own cell phone data package to connect with students (del Rocío Ramírez González et al., 2020).

Education organizations and teachers went to great lengths to address the digital divide.

In Lebanon, non-governmental organizations (NGOs) delivering non-formal education classes to Syrian refugee students provided households with Wi-Fi hotspots and regular data recharges together with technical assistance to use digital technology and learning software. Reducing the costs of connectivity, together with frequent virtual classes, was associated with strong improvements in children's learning from August to November 2020 (Dreesen et al., forthcoming). Similarly, in Turkey, learning centres provided support to marginalized children, including refugees, who didn't have access to a computer and/or the internet at home by providing learning supplies for families from low socioeconomic backgrounds. In Bulgaria, a platform

for children with disabilities was developed to support inclusive learning. The platform was accompanied by specialized training modules on alternative and augmentative communication and the adaptation of a symbol-based mobile application to support non-verbal children (UNICEF ECARO, 2021).

Broadcast media (TV and radio)

In many countries with low rates of connectivity, broadcast media was emphasized in the response to school closures (UNESCO, UNICEF, the World Bank and OECD, 2021). However, a lack of access to devices remained the biggest barrier for learning via broadcast media, especially in rural areas across sub-Saharan Africa, where less than one in five households own a TV (see Figure 5). While TV was the most accessed modality of remote learning for youth in Pakistan, just 32 per cent of students in rural areas and 25 per cent in urban areas reported watching TV lessons (UNICEF Pakistan and UNICEF ROSA, 2021).

Broadcast media as a tool for remote learning has limitations, especially for larger households with children of different ages and at different levels of education. In Sierra Leone, larger households owning only one TV reported that children of different ages were unable to attend TV lessons as they occurred simultaneously (Turay, forthcoming). Radios are common in Latin America and the Caribbean and in urban areas of West and Central Africa and Eastern and Southern Africa but are less widespread in all other regions compared with TVs.

FIGURE 5. Percentage of households owning a TV

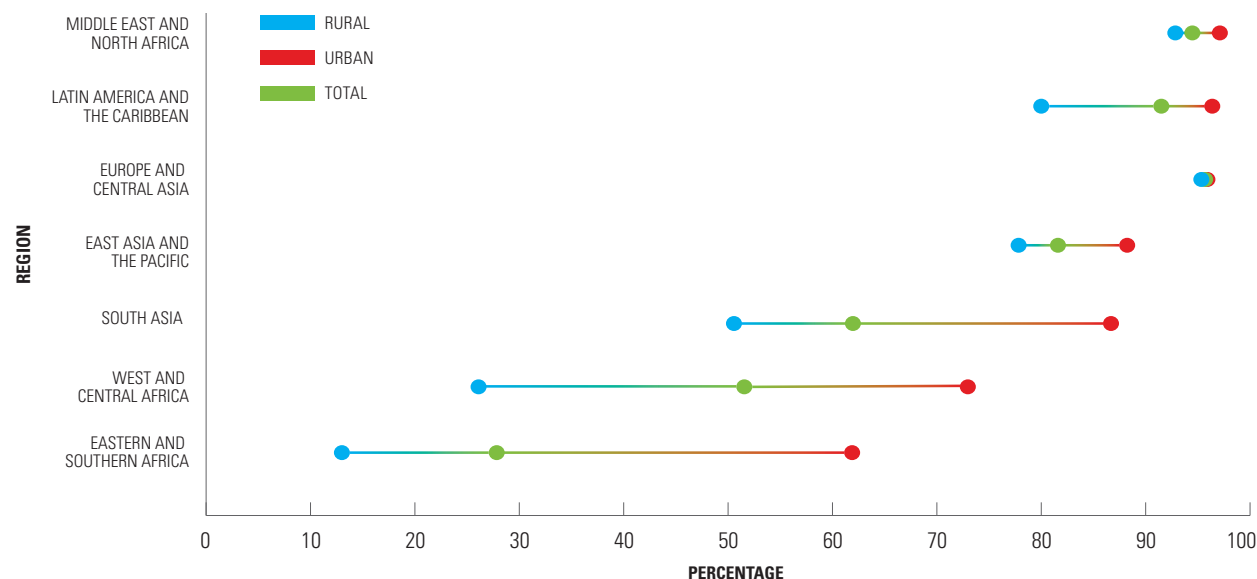
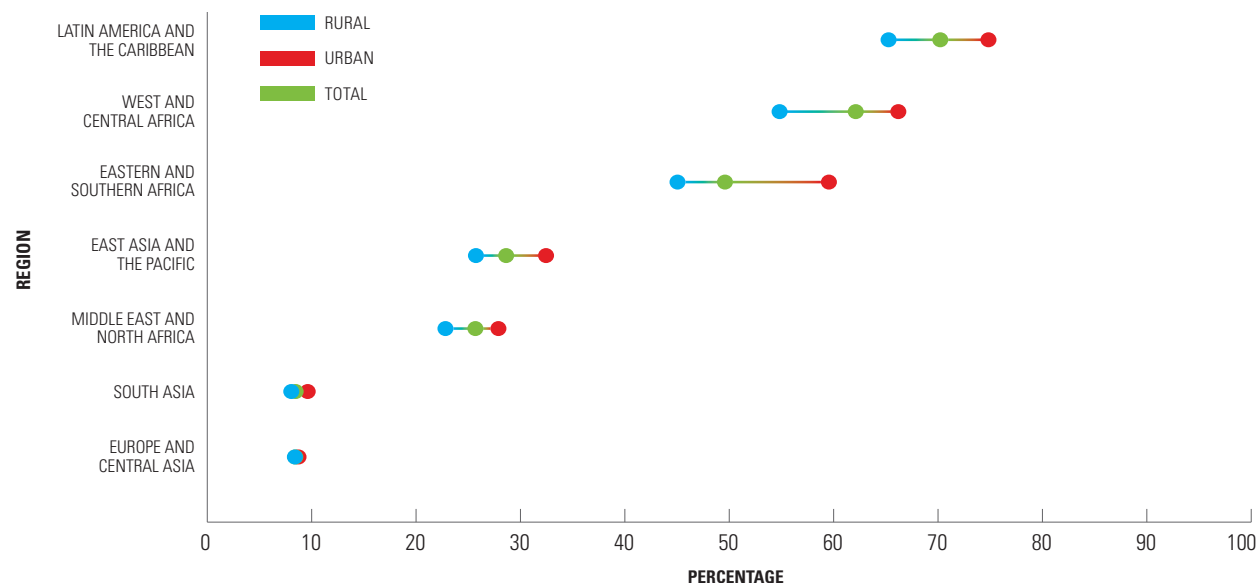


FIGURE 6. Percentage of households owning a Radio



Note: Elaborated based on available DHS and MICS data, 2010–2020. Data are aggregated by UNICEF Regional Offices.



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Partnerships are critical in developing education content for broadcast media. In Nigeria, federal and state education authorities established partnerships with media organizations and mobile networks to broadcast lessons that aligned to the national curriculum (Adediran, forthcoming). In Guatemala, the Ministry of Education produced 570 hours of radio and TV educational content in partnership with UNICEF (UNICEF Guatemala, 2020). Pairing broadcast media, an inherently one-way medium, with opportunities for feedback and interaction using mobile phones is a key strategy for increasing

engagement. In Equatorial Guinea, radio classes were held live and paired with mobile phone call options that enabled interactions between teachers, parents and students, allowing space for clarifications and questions on the subjects taught and reaching an estimated 115,000 pre-primary and primary children (UNICEF WCARO, 2020). In Liberia, radio lessons for different age groups were produced by the Rising Academies Network in collaboration with the Ministry of Education, and made available optional printed materials and additional simple message service (SMS) support (World Bank, 2020).

Mobile phones

Mobile phones are the most prevalent technology around the world that can be harnessed for remote learning. Compared with the other technologies discussed, mobile phone access is also more equally distributed within regions and countries.

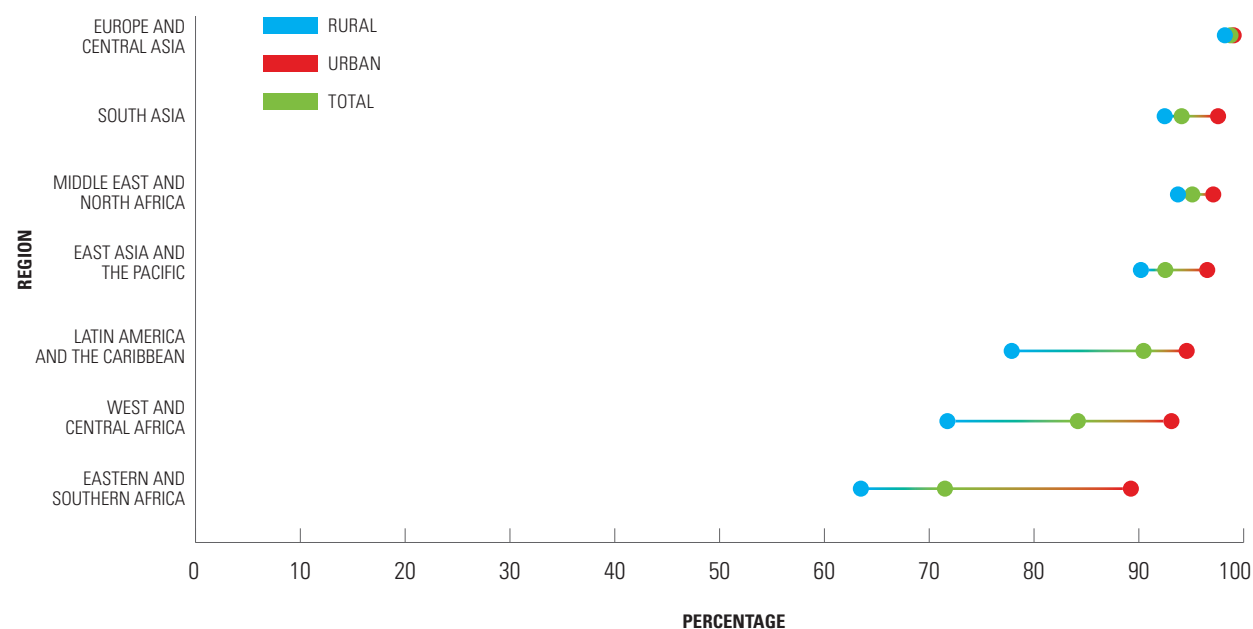
As Figure 7 shows, even in rural areas in Eastern and Southern Africa, which globally has the lowest mobile phone access rate, 60 per cent of households own a mobile phone, compared with 40 per cent that own a radio and 18 per cent that own a TV. In Bangladesh, less than 6 per cent of households in the poorest wealth quintile had a TV while over 92 per cent owned a mobile phone in 2016 (MICS 2016). Despite this, mobile phones were the second least reported modality used by ministries of education to deliver remote learning, with radio being the least used (UNESCO, UNICEF, the World Bank and OECD, 2021).

There are multiple ways to engage children using mobile phones including dial-in audio lessons and dissemination of learning activities via SMS or messaging apps (UNICEF ROSA, 2020). The messaging app WhatsApp was the preferred tool for interaction with teachers for over 90 per cent of surveyed students in Panama (Cordoba, 2020) and the Dominican Republic (United Nations, 2020). Mobile phones have also been used as a tool for the assessment of learning during school closures through direct phone calls, SMS messages and interactive voice response (IVR) technologies (Luna-Bazaldua et al., 2021). However, as is the case across remote learning modalities, the depth of engagement



using mobile phones varies widely based on how the technology is used by teachers and students. For instance, a study in Indonesia found that, while students were sent homework via WhatsApp, there was insufficient follow-up support or interaction from teachers to support learning (Putra et al., 2020). In Botswana, two different mobile phone interventions were tested at the start of the pandemic. One utilized SMS messages to send content and a follow-up phone call with a short lesson for students, while the other focused solely on SMS messages. While both interventions resulted in learning gains, greater parental involvement in their children's education and more accurate parental perceptions about their children's learning, the intervention that included both SMS and the phone lesson had larger effects (Angrist et al., 2020). A study in Kenya, however, found no effect when combining SMS with direct teacher-to-student calls, regardless of whether the call was a five-minute accountability check-in or a 15-minute

FIGURE 7. Percentage of households owning a mobile phone across regions



Note: Elaborated based on available DHS and MICS data, 2010–2020. Data are aggregated by UNICEF Regional Offices.

tutoring session. However, these phone calls did increase students' perceptions that teachers cared for them (Schueler and Rodriguez-Segura, 2021).

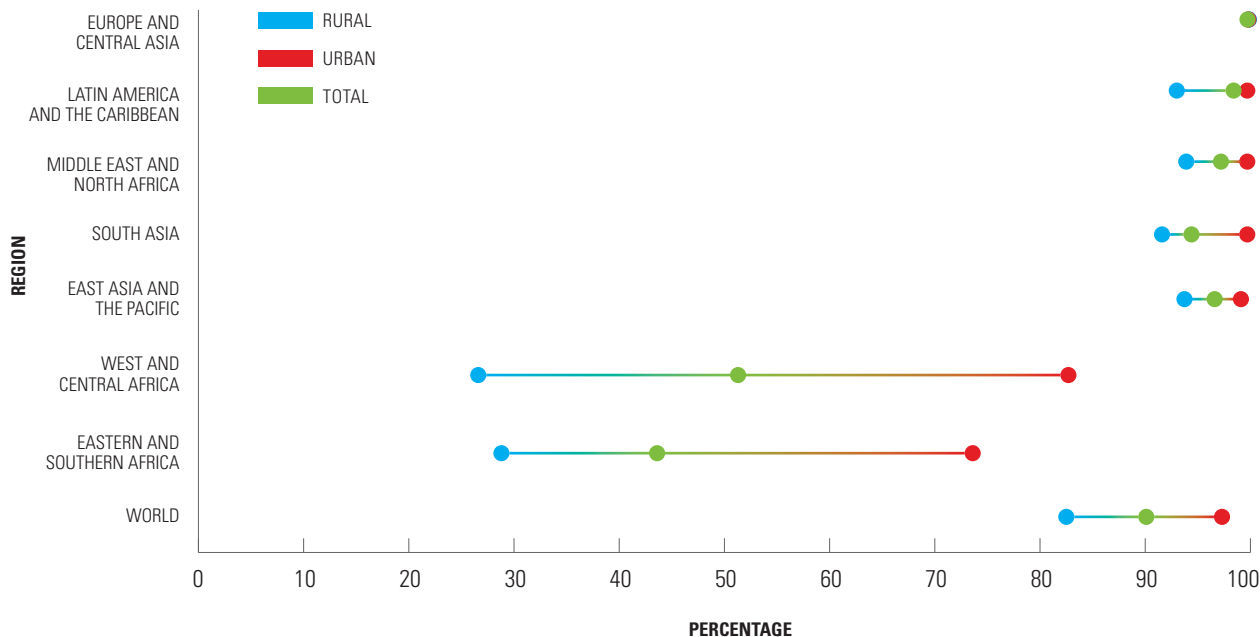
Paper-based take-home packages

All forms of technology-enabled remote learning require electricity. However, while electricity rates are near universal in HICs, this is not the case for many LMICs. Only 47 per cent of the population has access to electricity in sub-Saharan Africa with large variation between rural and urban areas (see *figure 8*).³ In some countries – including Côte d'Ivoire,

Lesotho, Kiribati, Sudan, The Gambia, Guinea-Bissau and Mauritania – less than 10 per cent of the poorest households have access to electricity (Dreesen et al., 2020). There is a strong urban–rural divide in access to electricity in Burkina Faso, the Central African Republic, Chad, the Democratic Republic of the Congo, Guinea-Bissau, Liberia, Mauritania, Niger and Sierra Leone, where the rural electrification rate is less than 5 per cent of households compared with urban household electrification rates of between 31 per cent (Chad) and 80 per cent (Mauritania) (Valenza and Dreesen, forthcoming). While paper-based take-home materials are the most accessible remote learning modality for low-income households without

3 <<https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?view=map&locations=ZF>>.

FIGURE 8. Access to electricity across regions, rural vs. urban



Note: Elaborated based on World Development indicators, 2019.

access to technology and electricity, challenges in distribution and lack of interactivity remain. A survey in Sri Lanka found that around 45 per cent of students in government schools and 20 per cent of students in private schools relied on learning packs delivered by schools (UNICEF Sri Lanka and UNICEF ROSA, forthcoming). In Pakistan, only a third of primary school students in both rural and urban areas reported receiving learning resources from their schools or teachers in the week prior to being surveyed (UNICEF Pakistan and UNICEF ROSA, forthcoming). In Mozambique, results from a national phone survey conducted during school closures in 2020 showed that only 16 per cent of children reported using exercise sheets provided by the teacher (UNICEF

and Universidade Pedagogica, forthcoming). In West and Central Africa, while just over half of countries reported using take-home packages as a mode of remote learning (UNESCO, UNICEF, the World Bank and OECD, 2021), results from multiple surveys of parents during school closures found that printed materials were the most relied-upon tools for learning at home in practice. The proportion of households with children using their own textbooks for learning at home exceeded 40 per cent in Burkina Faso (IPA, 2020a), 70 per cent in Côte d'Ivoire (IPA, 2020b) and 80 per cent in Sierra Leone (IPA, 2020c). Yet, the availability of learning materials, including textbooks and books, is limited at the household level (UNESCO, forthcoming; Save the Children, 2021).



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The distribution of paper-based materials remains a challenge: in Liberia, schools were used as pick-up points for printed take-home packages as part of the national remote learning response, and community-based actors were deployed to inform parents about the take-home packs (Chávez et al., 2021). Support to students from caregivers, teachers and/or facilitators is critically important when using take-home paper-based materials (Brossard et al., 2020). In Bangladesh, facilitators of an accelerated learning programme distributed paper-based materials and provided frequent, short mobile phone calls to provide follow-up support to paper-based materials, as well as to provide social and emotional support to students (Chávez et al., 2021). In India, analysis of survey data collected across six states (Assam, Bihar, Gujarat, Kerala, Madhya Pradesh, and Uttar Pradesh) found that interaction with teachers during COVID-19 was positively associated with students' perceptions of their own learning during school closures (van Cappelle et al., 2021).

COVID-19 school closures and beyond – building resilience into education systems

The evidence on the negative effect of school closures on children’s education, wellbeing and future livelihoods is overwhelming, and schools should be prioritized for reopening as soon as possible. The global school closures due to COVID-19 have shown the fragility of education systems and the need for accessible and effective remote learning modalities that can be relied on when schools are forced shut. These remote learning systems would build resilience into education systems and allow them to quickly respond to emergency situations while limiting learning loss caused by interruptions in children’s schooling. Resilience in education delivery is all the more important due to climate change increasing the intensity and frequency of extreme weather events (such as cyclones, droughts and floods), likely to result in more frequent and prolonged school closures and the movement of populations. Beyond the immediate damage caused by environmental disasters, evidence has shown that climate shocks are closely related to economic hardship leading to reduced investment in children (Anttila-Hughes and Hsiang, 2017). In addition, there is robust evidence that increases in temperature, another impact linked to



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climate change, are strongly related to increases in risks of violence and conflict (Burke et al., 2015). Figure 7 shows countries by their level of learning outcomes and their score on the Children’s Climate Risk Index (CCRI):⁴ children in countries with a CCRI score above 5 are at high risk of climate change, and those above 7.1 are at extremely high risk (UNICEF, 2021b). Over 1.3 billion school age children live in countries at high risk of climate

change related disasters, making school closures and learning loss the new norm unless urgent action is taken. These countries most at risk are also those with the lowest levels of learning, with 60 per cent of children living in learning poverty. These are the children most in need of sustainable solutions for learning and resilient education systems that can provide learning continuity in the face of any crisis, current or future.

4 <<https://data.unicef.org/resources/childrens-climate-risk-index-report/>>. Note: The CCRI is composed of many indicators across climate and environmental hazards, shocks and stresses, as well as child vulnerability.

FIGURE 9. Harmonized Learning Outcomes by the Children’s Climate Risk Index (0–10)



Note: Shows the pre-COVID-19 learning level of countries using HLO by countries’ CCRI score. Countries which appear lower on the graph had lower pre-COVID-19 learning levels. The size of the circle represents the school-age population of a country.

Recommendations for the global education community

In light of the great need for continuous provision of education during school closures, the following are recommendations for policymakers and education practitioners for planning and implementing remote learning systems.

1 Increase investment in remote learning programmes to build resilience into education systems. Global recognition is needed for the importance of building resilient education systems and investments should be mobilized to match this great need. Producing accessible digital and media resources based on the curriculum together with robust delivery systems will allow quicker responses to education disruptions, and their use in ordinary times can enrich learning opportunities for children both in and out of school.

To do this there needs to be global and local action to:

2 Address electricity, connectivity and data affordability challenges, especially in sub-Saharan Africa. When access to the necessary tools is achieved, the cost of connectivity is prohibitive for many students and teachers across the world. Governments should

prioritize action on infrastructure needs while at the same time working to reduce the cost of data for students and teachers. These actions cannot be taken by ministries of education alone and should be coordinated between government agencies, the private sector and the multilateral system. As governments continue to invest in infrastructure, education actors, including ministries of education, should develop remote learning modalities that leverage technology households currently have access to.

3 Leverage widespread access to mobile phones to make remote learning more interactive. Almost all countries reported using multiple modalities of remote learning to reach more children during school closures (UNESCO, UNICEF, the World Bank and OECD, 2021). How these modalities interact with each other is of great importance. Combining mobile phone-based follow-up support with less interactive modalities, such as paper-based take-home materials and broadcast media, has been key to improving the take-up and effectiveness of remote learning, especially in areas with technology constraints. Focus should be provided to groups less likely to engage in



remote learning such as refugees and migrants, girls, and children with disabilities (Amaro et al., 2020; UNHCR, 2020). Mobile phones can also be a useful tool to monitor and assess children's learning remotely, regardless of the modality used for learning. Education actors should plan proactively and develop guidelines for how teachers interact and engage with students and families, when schools are forced to close and remote learning modalities are activated.

4 Improve teacher and facilitator training and preparedness for remote learning.

Throughout school closures, teachers and facilitators provided various types of support to families and students, ranging from checking in with families to teaching over the phone or through video-conferencing. Meaningful interactions between teachers and students are critical for successful remote learning. A survey from India in 2020 found that limited teacher–student interaction was most cited as the reason for dissatisfaction with remote learning (Gupta, forthcoming). Including best practices for the use of different technologies (including digital, broadcast media and mobile phones) in learning will not only prepare teachers and facilitators for when schools are forced to close, but also improve their skills to incorporate different media in lessons when schools are open.

5 Monitor implementation of remote learning solutions, from their use to their impact on learning to inform and improve delivery.

More implementation and operational research are needed to improve the effectiveness of remote learning solutions. This includes measuring learning outcomes and monitoring both access to and use of devices, the production of relevant and engaging content, and the provision of training and support to teachers to integrate the use of technology for learning.

The following are recommendations for the **delivery of each modality of remote learning**:

6 Digital learning. A balance needs to be struck between the interactivity of digital learning and the bandwidth and devices necessary for use. One size does not fit all students, and specific programmes need to be developed for children of different ages and varying digital skills. Developing digital learning modalities that can be used offline or in places with unreliable internet connectivity will allow them to be used more efficiently and equitably. Governments should test digital platforms in remote areas with less reliable connections to understand how they would be used by children in lower-resourced settings.

7 Broadcast media (radio and TV). The delivery of broadcast media needs to be met with a plan for interaction and feedback, such as utilizing call-in numbers and mobile phone-based check-ins with students and families. Coordination must occur between levels of education to ensure that lessons are available for students of all levels at times when they can benefit from them. Priority should be given to ensuring that children from lower levels of primary and pre-primary are not excluded, and that adequate support is provided to caregivers, especially for those youngest learners.

8 Mobile phones. While mobile phones are the most widely available technology, they have been less emphasized in remote learning delivery. Mobile phones can enable communication, lessons and psychosocial support for students and families. They can be used to deliver learning content and to conduct assessments. When used in conjunction with other forms of remote learning, mobile phones can be used to receive feedback, monitor learning progress, and increase interaction between educators, families and learners.

9 Paper-based take-home packages. Governments should leverage community actors and build on existing supply chains from other sectors, such as health and nutrition, during crises to deliver paper-based materials to families at scale. Take-home materials must be met with support from teachers and parents in children’s learning; protocols of communication between schools and families when schools are forced to shut should be developed, including, for example, establishing pick-up points and determining frequency of new material delivery. Regular communication channels between educators, families and learners would not only be useful to support learning and coordination but would allow end user feedback and monitoring of remote learning usefulness and quality.

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References

- Adediran, Sulleiman, *Rapid Situation Analysis of the Effects of and Responses to COVID-19 in the Education Sector: Nigeria Case Study*, UNESCO, Dakar, forthcoming.
- Alban Conto, Maria Carolina, et al., 'COVID-19: Effects of school closures on foundational skills and promising practices for monitoring and mitigating learning loss', Innocenti Working Paper No. 2020-13, UNICEF Office of Research – Innocenti, Florence, 2020, <https://www.unicef-irc.org/publications/pdf/COVID-19_Effects_of_School_Closures_on_Foundational_Skills_and_Promising_Practices_for_Monitoring_and_Mitigating_Learning_Loss.pdf>, accessed 9 September 2021.
- Amaro, Diogo, et al., 'COVID-19 and Education: The digital gender divide among adolescents in sub-Saharan Africa', UNICEF Evidence for Action, 4 August 2020, <<https://blogs.unicef.org/evidence-for-action/covid-19-and-education-the-digital-gender-divide-among-adolescents-in-sub-saharan-africa/>>, accessed 9 September 2021.
- Angrist, Noam, et al., 'Stemming Learning Loss during the Pandemic: A rapid randomized trial of a low-tech intervention in Botswana', CSAE Working Paper Series, Centre for the Study of African Economies, University of Oxford, Oxford, 2020, <<https://ideas.repec.org/p/csa/wpaper/2020-13.html>>, accessed 9 September 2021.
- Angrist, Noam, et al., 'Measuring Human Capital Using Global Learning Data', *Nature*, vol. 592, no. 7854, 10 March 2021, pp. 403–408, <<https://doi.org/10.1038/s41586-021-03323-7>>.
- Azevedo, João Pedro, *Learning Poverty in the Time of COVID-19: A crisis within a crisis*, World Bank Group, Washington, D.C., 2020, <<http://documents.worldbank.org/curated/en/163871606851736436/Learning-Poverty-in-the-Time-of-COVID-19-A-Crisis-Within-a-Crisis>>, accessed 12 August 2021.
- Baller, Silja, Soumitra Dutta and Bruno Lanvin (eds), *The Global Information Technology Report 2016: Innovating in the Digital Economy*, World Economic Forum, Geneva, 2016, <http://www3.weforum.org/docs/GITR2016/WEF_GITR_Full_Report.pdf>, accessed 9 September 2021.
- Brossard, Mathieu, et al., 'Parental Engagement in Children's Learning: Insights for remote learning response during COVID-19', Innocenti Research Brief No. 2020-09, UNICEF Office of Research – Innocenti, Florence, 2020, <www.unicef-irc.org/publications/1091-parental-engagement-in-childrens-learning.html>, accessed 9 September 2021.
- Burke, Marshall, Solomon M. Hsiang and Edward Miguel, 'Climate and Conflict', *Annual Review of Economics*, vol. 7, August 2015, pp. 577–617, <www.annualreviews.org/doi/abs/10.1146/annurev-economics-080614-115430>.
- CEPAL NU and UNESCO, *Education in the Time of COVID-19*, ECLAC/UNESCO, Santiago, 2020, <www.cepal.org/en/publications/45905-education-time-covid-19>, accessed 9 September 2021.
- Chávez, Cirenía, et al., 'Continuing Learning for the Most Vulnerable during COVID-19: Lessons from Let Us Learn in Afghanistan, Bangladesh, Liberia, Madagascar and Nepal', Innocenti Research Brief No. 2021-02, UNICEF Office of Research – Innocenti, Florence, 2021, <www.unicef-irc.org/publications/pdf/RB%202021-02.pdf>, accessed 9 September 2021.
- Cordoba, Javier, 'Situación de Familias con Niños, Niñas y Adolescentes durante el COVID-19 en Panamá', UNICEF, Panama City, 2020, <www.unicef.org/panama/media/2601/file/Encuesta%20de%20Hogares.pdf>, accessed 9 September 2021.
- del Rocio Ramírez González, Maria, Jorge Quesada Lacayo and Carlos Vargas Loáiciga, 'Diagnóstico de los efectos en las condiciones sociolaborales de la profesión, el desempeño y las brechas en competencias docentes por medio de la percepción de las personas colegiadas profesionales en educación, tras las medidas ejecutadas por el Ministerio de Educación Pública para la continuidad de los servicios educativos en el contexto de la pandemia COVID-19', Colypro, San José, 2020, <www.colypro.com/ee_uploads/general/Informe_Condiciones_Docentes_Covid_Colypro.pdf>, accessed 9 September 2021.
- Dreesen, Thomas, et al., 'Promising Practices for Equitable Remote Learning: Emerging lessons from COVID-19 education responses in 127 countries', Innocenti Research Brief No. 2020-10, UNICEF Office of Research – Innocenti, Florence, 2020, <www.unicef-irc.org/publications/pdf/IRB%202020-10%20CL.pdf>, accessed 9 September 2021.
- Dreesen, Thomas, et al., "Remote learning through multiple crises: the implementation and effectiveness of digital learning for Syrian refugees in Lebanon," UNICEF Office of Research – Innocenti, forthcoming.
- Engzell, Per, Arun Frey and Mark D. Verhagen, 'Learning Loss due to School Closures during the COVID-19 Pandemic', *Proceedings of the National Academy of Sciences*, vol. 118, no. 17, 27 April 2021, e2022376118, <<https://doi.org/10.1073/pnas.2022376118>>.
- Gupta, Kanupriya, 'COVID-19 and the status of remote learning in schools in India. Findings from a rapid assessment survey in the four states – Assam, Jharkhand, Tamil Nadu and Uttarakhand', Asian Development Bank, forthcoming.
- Innovations for Poverty Action (IPA), 'Analyse de l'enquête RECOVR au Burkina Faso', IPA, Burkina Faso, 2020a, <www.poverty-action.org/sites/default/files/Burkina%20Faso%20RECOVR%20Survey%20Analysis_French.pdf>, accessed 9 September 2021.
- Innovations for Poverty Action (IPA), 'Analyse de l'enquête RECOVR en Côte d'Ivoire', IPA, Côte d'Ivoire, 2020b, <www.poverty-action.org/sites/default/files/Cote%20d%27Ivoire%20RECOVR%20Survey%20Analysis_French.pdf>, accessed 9 September 2021.
- Innovations for Poverty Action (IPA), 'Sierra Leone RECOVR Survey Analysis', IPA, Sierra Leone, 2020c, <www.poverty-action.org/sites/default/files/Sierra-Leone-RECOVR-Survey-Analysis.pdf>, accessed 9 September 2021.
- Johns Hopkins University, the World Bank and UNICEF, COVID-19 Global Education Recovery Tracker, 2021, <www.covideducationrecovery.global/>.
- Le Nestour, Alexis, et al., 'Enquête téléphonique sur la crise du Covid au Sénégal', *Harvard Dataverse*, vol. 3, 2020, <<https://doi.org/10.7910/DVN/9XE95F/NDD6UB>>.
- Li, Zhigang, 'Access, Utilization and Perceived Effectiveness of Distance Learning in Bangladesh', Asian Development Bank, South Asia Department, forthcoming.
- Ministère de l'Éducation Nationale – République de Côte d'Ivoire, *Evaluation des cours à distance et de la réouverture*

de l'école dans le contexte de crise sanitaire de la COVID-19', Ministère de l'Éducation Nationale et UNICEF, Abidjan, 2020.

Nugroho, Dita, et al., 'It's Not Too Late to Act on Early Learning: Understanding and recovering from the impact of pre-primary education closures during COVID-19', Innocenti Research Brief No. 2021-03, UNICEF Office of Research – Innocenti, Florence, 2021, <www.unicef-irc.org/publications/1213-its-not-too-late-to-act-on-early-learning.html>, accessed 9 September 2021.

Rose, Susan, et al., *Impact of school closures and subsequent support strategies on attainment and socio-emotional wellbeing in Key Stage 1: Interim Paper 1*, National Foundation for Educational Research, Slough, 2021, <https://educationendowmentfoundation.org.uk/public/files/Publications/Covid-19_Resources/Impact_of_school_closures_KS1_interim_findings_paper_-_Jan_2021.pdf>, accessed 9 September 2021.

Save the Children, *The Impact of COVID-19 on Children in West and Central Africa: Learning from 2020*, Save the Children, Dakar, 2021, <https://resourcecentre.savethechildren.net/node/18647/pdf/rapport_covid_anglais.pdf>, accessed 9 September 2021.

Schueler, Beth E., and Daniel Rodriguez-Segura, 'A Cautionary Tale of Tutoring Hard-to-Reach Students in Kenya' EdWorkingPapers.Com, Annenberg Institute at Brown University, Providence, RI, 2021, <www.edworkingpapers.com/ai21-432>, accessed 9 September 2021.

Taulo, Grace W., et al., 'Background Paper 5. Unlock Education for All: Focus on children furthest behind', Save Our Future, 2020, <https://saveourfuture.world/wp-content/uploads/2020/10/Unlock-Education-for-All-Focus-on-the-Furthest-Behind_SOF_BP5-1.pdf>, accessed 9 September 2021.

Tomasik, Martin, Laura Helbling and Urs Moser, 'Educational Gains of In-Person vs. Distance Learning in Primary and Secondary Schools: A natural experiment during the COVID-19 pandemic school closures in Switzerland', *International Journal of Psychology*, vol. 56, 2020, pp. 566–576, <<https://doi.org/10.1002/ijop.12728>>.

Turay, Samuel, 'Rapid Situation Analysis of the Effects of and Responses to COVID-19 in the Education Sector in West and Central Africa. Sierra Leone Country Report', UNESCO, Dakar, forthcoming.

UNESCO, Global tracking of school closures and reopenings, 2021, distributed by Global Education Coalition, <<https://en.unesco.org/covid19/educationresponse>>.

UNESCO, UNICEF, the World Bank and OECD, 'What's Next? Lessons on Education Recovery: Findings from a Survey of Ministries of Education amid the COVID-19 Pandemic', UNESCO/UNICEF/World Bank, Paris/New York/Washington D.C., 2021b, <http://uis.unesco.org/sites/default/files/documents/lessons_on_education_recovery.pdf>, accessed 9 September 2021.

UNESCO, 'Rapid Situational Analysis of the Effects and Responses to COVID-19 on Education Systems in West and Central Africa', UNESCO, Dakar, forthcoming.

UNICEF, *COVID-19 and School Closures: One year of education disruption*, United Nations Children's Fund, New York, 2021a, <<https://data.unicef.org/resources/one-year-of-covid-19-and-school-closures/>>, accessed 9 September 2021.

UNICEF, 'The Climate Crisis is a Child Rights Crisis: Introducing the Children's Climate Risk Index', United Nations Children's Fund, New York, 2021b.

UNICEF ECARO, 'Europe and Central Asia Humanitarian Situation Report No. 1', UNICEF Europe and Central Asia Regional Office, 2021.

UNICEF Guatemala, 'Hoping to Get Back to the Classrooms: Education in emergencies', UNICEF Guatemala, 2020, <www.unicef.org/lac/en/stories/hoping-get-back-classrooms>, accessed 9 September 2021.

UNICEF and International Telecommunication Union (ITU), *How Many Children and Young People have Internet Access at Home? Estimating digital connectivity during the COVID-19 pandemic*, United Nations Children's Fund, New York, 2020, <www.unicef.org/media/88381/file/How-many-children-and-young-people-have-internet-access-at-home-2020.pdf>, accessed 9 September 2021.

UNICEF ROSA, 'Guidance on Distance Learning Modalities to Reach all Children and Youth during School Closures: Focusing on low- and no-tech modalities to reach the most marginalized' UNICEF Regional Office for South Asia, 2020.

UNICEF and Universidade Pedagógica, 'Avaliação Longitudinal da Desistência Escolar (ALDE) Longitudinal Assessment of School Dropout', UNICEF Mozambique, forthcoming.

UNICEF Pakistan and UNICEF ROSA, 'Brief on Learning Continuity Amidst COVID-19 School Closures in Pakistan', UNICEF, forthcoming.

UNICEF Sri Lanka and UNICEF ROSA, 'National Survey on Learning Continuity in Primary Grades', 2021, <<https://www.dropbox.com/s/cwkudx2wtuob9d/Sri%20Lanka%20Distance%20Learning%20Findings%20July%202021.pptx?dl=0>>, accessed 9 September 2021.

UNICEF WCARO, 'West and Central Africa Coronavirus (COVID-19) Situation Report No. 4', UNICEF West and Central Africa Regional Office, Dakar, 2020, <www.unicef.org/media/79846/file/WCARO-COVID-19-SitRep-15-June-2020.pdf>, accessed 9 September 2021.

UNHCR, *Coming Together for Refugee Education: Education Report 2020*, United Nations High Commissioner for Refugees, Geneva, 2020, <www.unhcr.org/publications/education/5f4f9a2b4/coming-together-refugee-education-report-2020.html>, accessed 9 September 2021.

United Nations, 'RED ACTÚA: Segunda encuesta sobre el impacto socioeconómico de la COVID-19', United Nations, Dominican Republic, 2020, <[www.unicef.org/dominicanrepublic/media/3761/file/SEIA%](http://www.unicef.org/dominicanrepublic/media/3761/file/SEIA%>)>

van Cappelle, Frank, et al., 'An Analysis of the Reach and Effectiveness of Distance Learning in India during School Closures Due to COVID-19', *International Journal of Educational Development*, 102439, 2021, <<https://doi.org/10.1016/j.ijedudev.2021.102439>>.

Valenza, Marco, and Thomas Dreesen 'Reopening with Resilience - West and Central Africa', UNICEF Office of Research- Innocenti, Florence, forthcoming.

Wang, Yixin, et al. 2021, "Which children have internet access at home? Insights from household survey data", UNICEF Connect blog, <<https://blogs.unicef.org/evidence-for-action/where-do-children-have-internet-access-at-home-insights-from-household-survey-data/>>, accessed 9 September 2021.

World Bank, 'How Countries are using EdTech (including Online Learning, Radio, Television, Texting) to Support Access to Remote Learning during the COVID-19 Pandemic', World Bank, 2020, <www.worldbank.org/en/topic/edutech/brief/how-countries-are-using-edtech-to-support-remote-learning-during-the-covid-19-pandemic>, accessed 12 August 2021.

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