

COVID-19: How prepared are global education systems for future crises?

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KEY FINDINGS

This research brief is one of a series exploring the effects of COVID-19 on education. It focuses on how school closures affect children and the resiliency of education systems to respond to such disruptions and mitigate their effects.¹

- Unexpected school closures are shown to negatively influence children's learning outcomes. Whether and to what extent students may make up the learning losses varies over time. Some factors may include closure duration, quality of education before and after closure, proximity of the closure to a child's schooling transition, and whether the child experienced a traumatic event.
- Beyond the negative consequences on learning, school closures expose students to additional risks. Hundreds of millions of children rely on schools for free or low-price meals throughout the year. At the same time, school closures can expose children to violence (including sexual violence and forced marriage) at home and in their communities. Children's need for psychosocial support also increases.
- As it is likely the world will face more crises forcing schools to close, strengthening the resilience of education systems is a priority to mitigate the damage school closures have on children's learning and well-being. Countries must build capacity to deliver quality education remotely, using a blended approach (with increased capacity of teachers) and targeting vulnerable and marginalized children who are often forgotten.

CONTEXT

The ongoing COVID-19 pandemic has led to an education emergency of unprecedented global scale. At its peak, more than 190 countries had temporarily closed schools in response to the health emergency, forcing over 90 per cent of enrolled learners around the world into either distance learning or temporarily out of school (UNESCO, 2020). Although previous health emergencies – such as the H1N1 influenza pandemic

in 2009 and the Ebola outbreak from 2014-2016 – have caused short and long-term school closures in several countries, the COVID-19 crisis caught most of the world's education systems unprepared. Countries, and the regions and cities within them, had to decide how to continue providing access to education and related services, with many rapidly developing systems and content to implement wide-scale distance learning for the first time.

1 This brief is based on a review of literature from the commonly used journal repositories and search engines Elton B. Stephens Company (EBSCO), Journal Storage (JSTOR), and Google Scholar, using search terms related to schooling disruptions during pandemics and natural disasters.

EFFECT OF SCHOOL CLOSURES ON DISEASE TRANSMISSION

In their review of multiple studies Jackson et al. (2013) show that school closures can significantly reduce the rate of spread of seasonal influenza among schoolchildren. In a study of early school closures for summer breaks during the H1N1 epidemic in China, Hong Kong Special Administrative Region (SAR) in 2009, Wu et al. (2010) found that transmission fell by approximately 25 per cent. The optimal timing, duration and type of school closures (complete vs partial; select grades; etc.) are debatable and vary with factors such as the age-specific attack rate of the virus², the stage of community spread³ and whether other social distancing measures are employed simultaneously to help limit transmission outside of schools (Gemetto et al., 2014; Fumanelli et al., 2016).

Considering coronavirus outbreaks specifically, Viner et al. (2020) find that school closures due to Severe Acute Respiratory Syndrome (SARS) in China, Hong Kong SAR, China and Singapore did not contribute to controlling the epidemic. In a study based on a simulated transmission model (applied to the United States of America and the United Kingdom of Great Britain and Ireland), Ferguson et al. (2020) predict that closing school as an isolated policy would only reduce total COVID-related deaths by 2 to 4 per cent, lower than by other measures. However, it is important to note that countries are not employing school closures in isolation to combat the COVID-19 crisis, but rather, alongside other social distancing measures that limit children's interactions with others in the absence of school.

Epidemics are often caused by diseases that are not well understood, and correspondingly, governments often lack scientific evidence to know for certain if a specific intervention will help keep children and their families safe. Decision-makers inevitably face challenges in balancing the response to public health emergencies, ultimately aiming to limit the impact and toll these crises can take on human life, the global economy and children's learning outcomes.

In the case of the Ebola epidemic across West Africa, schools remained closed for five to nine months in the three worst affected countries: Guinea, Liberia and Sierra Leone. At the peak of that crisis, decision makers were also uncertain whether complete or partial school closures would yield the best results in curtailing the spread of disease (Gillard, 2020).

EFFECTS OF PREVIOUS HEALTH EMERGENCIES ON LEARNING

Although schools have closed during previous health emergencies, very few studies have captured the effects of school closures on learning during an epidemic or pandemic. Some studies did find that closures had affected learning. In an observational, cross-sectional ethnographic study on how the Ebola crisis had affected a community intervention in Sierra Leone, Kostelny (2018) reported evidence of numerous cognitive harms related to full year school closures, particularly that children had forgotten what they had learned. Being held back, some children lost interest in learning and dropped out of school altogether.

In response to the Ebola crisis, schools in Sierra Leone shut preventatively for more than nine months. Through focus group discussions (FGDs), Riso-Gill and Finnegan's cross-sectional qualitative assessment (2015) of children's recovery found that missing out on formal schooling also generated concern and anxiety among children of all ages (featuring in 45 per cent of FGDs). Older children reported that they lost interest in finishing their education, with girls particularly thinking that schools would never reopen, leaning them towards marriage and building their own families instead.

EVIDENCE ON THE EFFECT OF OTHER SCHOOLING DISRUPTIONS ON CHILDREN'S LEARNING

A wide range of literature provides evidence that summer break – a planned disruption in schooling – contributes to learning loss; a systematic review found that, on average, one month of school-year learning is lost while schools are closed for the summer (Cooper, 1996). This suggests that lengthy, unexpected school closures may exert similarly negative effects. Though not directly comparable to the pandemic and primarily drawn from high-income countries, evidence from other events that have disrupted schooling, including weather, strikes or protests, policy changes and humanitarian emergencies, can provide additional insights into how unexpected school closures deleteriously affect children's educational outcomes.

In the United States of America, short unexpected schooling disruptions due to bad winter weather have negatively affected primary-school children's learning achievement. Data from Maryland public schools found that the number of days schools closed due to snow negatively affected student achievement in state examinations (Marcotte and Hemelt, 2008). In winters with five unexpected "snow days", the number of third graders performing satisfactorily on state reading and math assessments was nearly 3 per cent lower than in

2 The attack rate is defined in epidemiology as the number of people who became ill divided by the number of people at risk for (i.e. exposed) to the illness (Pettygrove, 2016). Age-specific attack rates can highlight whether the disease differentially affects people in different age groups (WHO, 2007).

3 Community spread "means people have been infected with the virus in an area, including some who are not sure how or where they became infected" (CDC, 2020).

years with no school closings; meanwhile in winters with a high number (10) of days of unexpected closings, 5 per cent fewer students passed.⁴

Various studies also document lost learning from school closures and lost instructional time caused by teacher strikes and student protests (Eyles, et al, 2020). Baker (2013), for example, finds that long teacher strikes lasting 10 instructional days or more in grades 5 or 6 in Ontario, Canada, had a negative, statistically significant impact on test score growth, with the largest impact being on math scores.

In 2005, schooling disruptions during Hurricanes Katrina and Rita in Louisiana provide evidence that lost schooling contributes to reduced student achievement in the short-term, but that these losses can be made up for over time. The hurricanes displaced approximately 196,000 public school students in Louisiana, with the median evacuee missing five weeks of school before either returning to their previous school or enrolling in another school (Pane et al., 2008). Sacerdote (2012) found that the math scores of student evacuees from New Orleans dropped 0.17 standard deviations relative to other Louisiana students in the first year following the hurricanes. However, within two years, these students were performing as well academically as they had previously. By 2009, they had gained about 0.18 standard deviations above their baseline position in the state test score distribution, illustrating their long-term resilience. Moreover, the higher performing nature of schools that evacuees attended after the hurricane may have facilitated these positive gains.⁵

Disruptions in schooling may also affect advancement within education, particularly in the near-term or for students on the margin. Sacerdote (2012) found that New Orleans evacuees in 10th grade experienced a 4.2 percentage point decline in the rate at which they attend any two- or four-year college. However, for students in the eighth-grade cohort who were further out from transitioning to college, there was no such statistically significant effect. Pischke (2003) found that a 1966 German policy reform, which exposed some students to two-thirds of a year less of schooling over a two-year period, led to an immediate negative effect of increased grade repetition in primary school. This, however, did not negatively impact longer term outcomes, namely the percentage of students attending the country's highest secondary school track and students' later earnings in life.

A new study by Andrabi, Daniels, and Das (2020) analyzing the impact of the 2005 Pakistan earthquake also suggests that even temporary school closures can result in significant medium-term lost learning.

Schools in the affected area were closed for an average of 14 weeks, a little more than three months. However, four years later, children in affected areas were not just three months behind: they were the learning equivalent of 1.5 years of schooling behind children in a similar context whose schools were not closed. The direct effect of the school closures alone cannot account for such large deficits in later test scores, suggesting affected children learned less each year after they returned to school because of the short-term interruption. One possible explanation is that the curriculum and instruction did not adapt to the children's lower learning levels upon re-entry into school and hence, affected children fell further and further behind.

SECONDARY EFFECTS OF SCHOOL CLOSURES ON CHILDREN

Beyond the negative consequences on learning, school closures expose students to additional risks. Schools provide multiple secondary services in addition to education. Hundreds of millions of children rely on schools for free or low-price meals throughout the year (UNICEF and WFP, 2020). At the same time, school closures can expose children to violence (including sexual violence and forced marriage) in their homes and communities (Odhiambo, 2020). Children's need for psychosocial support also increases.

In Sierra Leone during the Ebola crisis, vulnerable students (especially girls) found it difficult to continue their education and became exposed to numerous risks. Studies by Plan International (2015) and UNDP (2015) document this increased exposure to domestic and sexual violence for girls. Students who needed to participate in household work or income-generating activities either fell behind or simply never returned to school. Teenage pregnancies – a vector for early marriage as well as school dropout – spiked during the Ebola crisis. For example, in a quasi-experimental evaluation of an economic empowerment program for young women in Sierra Leone, Bandiera et al. (2019) found that in the absence of the program, Ebola-related disruptions to schooling and economic activity significantly increased the time young women spent with men and increased pregnancy rates. School enrollment among younger girls in the sample decreased by 16 percentage points when schools reopened after the crisis, with many girls having reallocated their time to income-generation while schools were closed.⁶

4 Similar evidence from Massachusetts, however, found a different result: student absences due to winter weather on days when schools did not close negatively impacted math achievement, but missed school days where the entire school closed due to weather did not (Goodman, 2014).

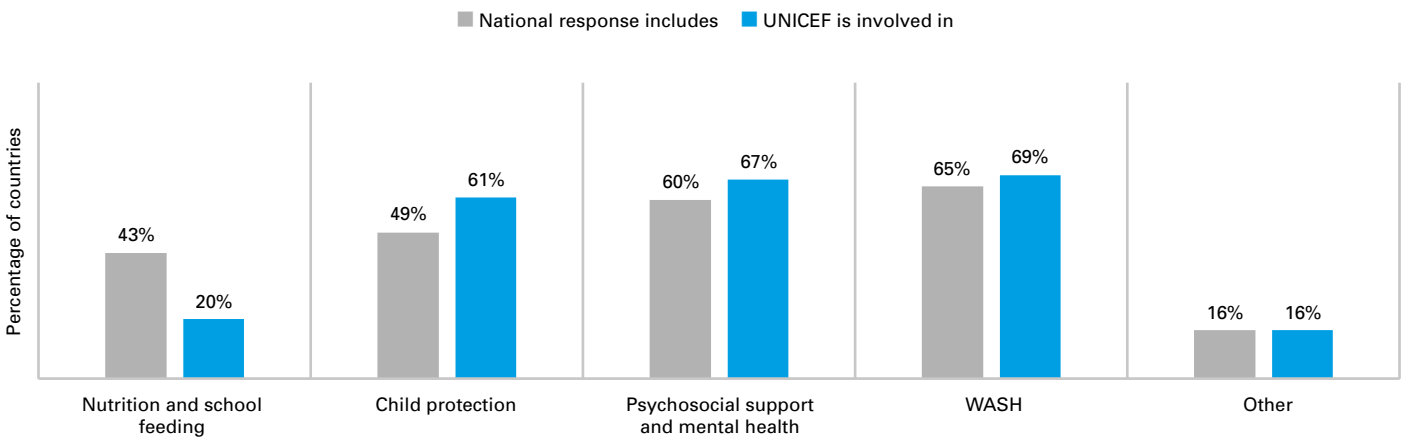
5 Pre-Katrina New Orleans students attended schools with an average math score 0.45 standard deviations below the state average, but after the hurricane, these same evacuees attended schools with math scores only 0.08 standard deviations below the state average. The increase in test scores by 2009 was largest for students who remained outside the New Orleans metropolitan statistical area post-hurricane and the test score gains were concentrated within the cohort of students who were initially within the lowest two quintiles of academic performance (Sacerdote, 2012).

6 Overall in Sierra Leone an estimated 13 per cent of students did not re-enroll when school reopened after the crisis; however, by 2016/2017, primary and secondary school enrollment rates had returned to, and exceeded, pre-Ebola levels (Selberbick, 2020).

In the current COVID-19 crisis, vulnerable children remain the most at risk. While interventions to address this are underway, many children are undoubtedly still left behind. With an estimated 370 million children missing out on school meals, in a recent survey of 134 UNICEF programme countries, only 43 per cent of countries reported that interventions in the area of nutrition and school feeding are part of their national response to COVID-19 as of 21 May 2020 (UNICEF and WFP, 2020; UNICEF, 2020b). Many of the children who benefit from school feeding programmes could already be nutrient-deficient, vulnerable or at-risk.

Half of surveyed countries reported that child protection is part of their national response, while 60 per cent are providing some psychosocial and mental health support to children during the period of school closures. Measures to address gender concerns in the education response are limited; just 12 countries reported that the gender reference group or Ministry of Education gender unit was consulted on the education response plan (UNICEF, 2020b). Furthermore, only 16 countries reported that they are providing information and channels for girls to access support or services for violence or abuse during school closures (2020b).

Figure 1: Child health and well-being in the education response to COVID-19



Source: UNICEF Education Tracker of National Education Response to COVID-19 (2020b).

CONTINUITY OF EDUCATION DURING SCHOOL CLOSURES

Despite challenges and setbacks, learning can and does continue in times of crisis. Technology offers a wide variety of methods to support distance education. The kinds of technology most appropriate varies due to differing access among populations in a country or region, particularly vulnerable groups. UNICEF has developed a decision tree that outlines an avenue for considering which combinations of interventions may be needed, from paper-based approaches to online classrooms (UNICEF, 2020a).

During the Ebola crisis, the Sierra Leone government, with support from UNICEF and other partners, created the Emergency Radio Education Programme (EREP) to continue learning during the school closures. To reach vulnerable children, the government delivered 50,000 solar-powered radios to the poorest households across the country with USB ports for content provision in areas lacking radio signal coverage. The use of an existing supply chain for delivering voting materials proved effective in delivering the radios and supporting educational materials to households.

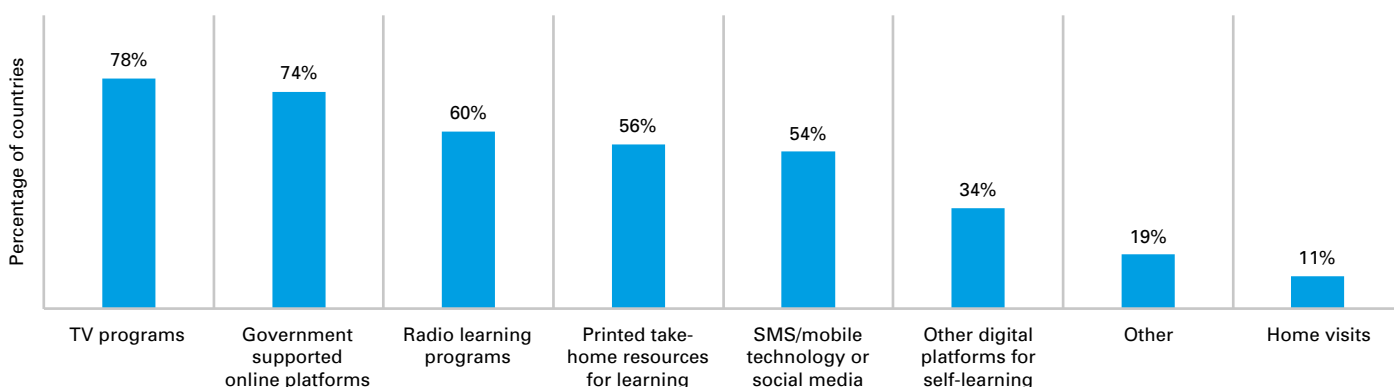
EREP household surveys showed that weekly listenership ranged from 40 to 80 per cent and was lowest during weeks that were normally school holidays. Families that did not engage with the radio content often cited that, since the content was not examinable, it was of no value. This challenge – that governments cannot make distance education mandatory and examinable because it may discriminate against those who lack proper access – lingers during the current COVID-19 crisis. Learning was not measured as part of the radio programme, but focus groups with various stakeholders after the crisis found that the radio programme was perceived as “a poor substitute for schools, but was taken seriously by the government and the communities, so it served a purpose of maintaining some link to education during the crisis” (World Bank, 2016). Another study found that almost half of children’s groups in Sierra Leone did not find the radio programmes to be useful (Plan International, 2015). In contrast, UNICEF’s programme monitoring found that the radio programme was reportedly useful to some learners, who could understand the radio content better than teachers speaking in overcrowded, noisy classrooms.

During the current COVID-19 crisis, the recent survey of UNICEF programme countries found that 93 per cent are incorporating distance education in their national response to the COVID-19 emergency. As depicted in Figure 2, TV education programming and government-supported online platforms are the most common methods employed, but most countries draw upon a combination of several methods to reach children with education (UNICEF, 2020b). However, 31 per cent of these programme countries reported that distance learning is not reaching vulnerable and marginalized children. Specific measures that countries reported taking to reach these children include: improving access to equipment or connectivity for learners in hard-to-reach locations or the very poor (28 countries); providing instruction, devices or materials accessible

to children with disabilities (23 countries); providing distance learning content or materials in minority languages (20 countries), and providing alternative learning methods and support for children on the move (14 countries).

Drawing on [MICS6](#) data on access to internet and broadcast media, two recent UNICEF blogs highlighted that relying on the internet alone will not ensure inclusive, equitable education; rather, television and radio broadcasts have the potential to reach a majority of the world’s children, especially the most vulnerable, but paper-based approaches remain a necessary alternative in some settings (Bell et al., 2020; Hereward et al., 2020).

Figure 2: Countries’ use of distance learning methods in COVID-19 response



Source: UNICEF Education Tracker of National Education Response to COVID-19 (2020b).

FUTURE PREPAREDNESS AND RESILIENCE

The education sector has rebuilt after natural disasters and delivered education during conflicts or in refugee settings; it is also increasingly adapting to climate change. However, COVID-19 is a global health emergency of unprecedented scale, presenting unique challenges that many countries are unprepared to address. While distance education is now varied and offered on a much wider scale than during Ebola or other crises, only 30 per cent or fewer of UNICEF programme countries reported on children’s use of distance education. If these evidence gaps are not addressed, a significant opportunity to learn about and improve the quality and implementation of the distance learning methods will be lost.

As the world will likely face more health crises in the future, strengthening the resilience of education systems is a priority to mitigate the damage school closures have on children’s learning and well-being. Countries must build capacity to deliver quality education remotely, targeting vulnerable and marginalized children who are often forgotten. Once the current crisis subsides, continuing to strengthen distance learning and incorporate aspects into everyday schooling for all children and youth will help countries be better prepared to respond to future crises that disrupt schooling.

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