Report

Overview of emerging country-level response to providing educational continuity under COVID-19

What are the lessons learned from supporting education in conflicts and emergencies that could be relevant for EdTech-related responses to COVID-19?

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Section 1: Executive Summary

Scope of study

- The report explores lessons from conflict and education in emergencies (EiE) seeking evidence-informed recommendations for policy makers that can help in the global response to Covid-19.
- The report explores transferability from EiE contexts to non-EiE Covid-19-affected contexts. The issue of how Covid-19 will impact on existing EiE contexts and displaced pupils is a vital one, but it is beyond the scope of this review[1].
- Although the majority of examples explored are technology-enabled, the report also considers how other lessons learned from how no-tech interventions in EIE have supported continuity of learning, and how technologies might support their adoption in other contexts.
- The scope of this review is largely limited to school-age learners.
- Given the other reviews currently being undertaken on gender, disadvantage and special educational needs, this review has not concentrated on these more specific areas.
- Also out of scope is evidence regarding attempts to mitigate the primary impact of disease outbreaks in EiE settings (i.e. preventing the spread of disease and further outbreaks).
- We have built on the two recent reviews on remote teaching and on Covid-19 distance learning responses, but we have not repeated their conclusions. We have attempted to find examples of practice that are consistent with the conclusions around effective pedagogies, whilst still including examples where 'teacher presence' may be impossible or precarious.
- The report largely uses meta-analyses of literature, but also includes a scan of the most recent (2019-20) peer-reviewed journal articles and grey literature.

Key themes

The overall research synergies and programmatic linkages between education in emergencies and in disease outbreaks remains weak. Research has tended to prioritise conflicts over natural disasters or disease. This has been reinforced by a recent concentration on refugee education.

Reviews of education technology in school systems facing protracted situations or crises, found that the general dearth of high-quality impact evidence is amplified in such contexts.

Despite this double-deficit evidence gap, EIE still provides a unique context from which to learn lessons for Covid-19, especially in Lower to Middle-Income Countries. EiE systems, and

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[1] For guidance on this issue, see INEE (2020c). *Technical Note on Education during the COVID-19 Pandemic*. [Online]. Accessed at:https://inee.org/system/files/resources/INEE%20Technical%20Note%20on%20COVID-19%20EN%202020-04-23.pdf

(especially where there is no clear 'system') education leaders, have demonstrated mindsets of urgency, adaptability and creativity in their responses.

Influenced by education technologies, EiE has stimulated:
- rapid new collaborations between governments, learning institutions, NGOs and the private sector – including education technology.
- significant progress in system level data strengthening.
- solutions that harness all platforms of digital technology and all channels of communication to ensure that no individuals or families are excluded.
- informal learning opportunities, both self-directed and mediated through family or community members.

Technology-enabled responses to Covid-19 can also learn from how education technology can:
- play a part in ensuring the effectiveness of double-shifting or multiple shifting.
- support education authorities communicate distance learning measures and in particular, school re-opening messages with learners and their parents
- support experimentation with innovative accreditation and certification mechanisms, often using digital tools and platforms.
- improved adaptiveness in the design, implementation, monitoring and evaluation of interventions

Other features include:
- Effective EiE education responses – from low-tech to high-tech – appear to include some element of psychosocial support, positioning emotional wellbeing and safety as foundations for improvements in learning outcomes.
- Effective teacher learning programmes in EiE Settings appear to have an adaptable, blended approach, where the 'trainer presence' is retained in some form. Education technology can also rapidly amplify the impact of most effective teachers and teaching practices.
- Accelerated Education Programmes (AEPs) show some promise in emergency settings, but education technology-related evidence is scarce.

Key issues of note include:
- Infrastructure is a key enabling condition for education technology in emergencies. In many cases, infrastructure is 'better on paper'; what is promised or assumed is not necessarily available.
- Distance learning interventions can never be 'equity-neutral'. Interventions that do not place inclusion at their heart are likely to exacerbate existing inequities and inequalities.

The report includes nine recommendations for policymakers that are informed by these themes.

Section 2: Evidence and Policy

2a. Key issues in evidence and transferability

The overall research synergies and programmatic linkages between education in emergencies and education in disease outbreaks remains weak.

EiE research has tended to prioritise conflicts over natural disasters. This has been reinforced recently by a concentration on refugee education, and (despite climate change), a continued lack of attention on natural disaster or disease amelioration or risk- preparedness[2]. The Inter-agency Network for Education in Emergencies (INEE) minimum standards, whilst written with conflict and natural disaster in mind rather than disease outbreaks, provide potentially relevant frameworks for prioritisation and implementation. However, this review found no documentation of whether these standards have been used to inform responses to disease outbreaks.

Reviews of education technology in school systems facing protracted situations or crises, including post-conflict, found that the general dearth of high-quality impact evidence, especially on at-home interventions, is amplified in such contexts.

This 'claims versus evidence' gap appears equally true for programmes establishing proof of concept and programmes attempting to upscale. Although the evidence base in such contexts is slowly improving, the understanding from this evidence base has not yet been specifically applied to education in disease outbreaks. In addition, most interventions focus on long-term development in post-conflict settings. In contrast, if school closures due to Covid-19 last for weeks rather than months, interventions focused on short-term boosts and catch-up initiatives may be more relevant.

Despite this double-deficit evidence gap, EiE still provides a unique context from which to learn lessons for Covid-19, especially in lower- and middle-income countries.

Despite the overall lack of attention and resources given to education in emergency contexts (in comparison to other forms of humanitarian aid), EiE provides grounds for optimism. Many conflict-affected contexts and regions hosting refugees have demonstrated urgency, adaptability and creativity in their educational responses to crises.

Attempting to understand what is different about disease outbreaks – and Covid-19 in particular – compared to other emergencies, can help provide a lens and filter through which to explore the evidence from education technology in emergencies.

Key differences to consider, which are becoming apparent in the Covid-19 pandemic, include the following:

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[2] Burde, D., Lahmann, H. and Thompson, N. (2019). *Education in emergencies: 'What works' revisited*. Education and Conflict Review, 2, 81-88. [Online]. Accessed at:https://discovery.ucl.ac.uk/id/eprint/10081593/1/Burde_Article_14_Burde.pdf

- At **system level**, Covid-19 has put education systems under severe strain and financial pressure, revealing and reinforcing existing systemic weaknesses, but systems do not appear to be at risk of fully breaking down.
- At **school level**, Covid-19 has not led to a large increase in displaced or migrating students, within or between countries (beyond a small amount of initial 'return' from cities to villages). Immobility, rather than mobility, is the key issue.
- At **teacher level**, Covid-19 is unlikely to create rapid changes or large-scale attritions in the teacher population. However, during and after school closures, many teachers' roles have been or are likely to be diverted towards disease control and social mobilisation activities.
- At **pupil level,** increases in levels or physical harm, trauma and PTSD are likely, on average, to be lower in Covid-19 contexts than, for instance, in conflict situations.
- At **pupil level**, inequities in support for home learning and access to technology means that Covid-19-related school closures may have different impacts from other emergency situations, for instance in terms of vulnerable or disadvantaged learners.

These differences and their consequences have informed the themes and recommendations of this paper, and the examples which underpin them.

To help us understand transferability, we have created a draft framework that assesses the relevance of the nineteen minimum standards of the Inter-agency Network for Education in Emergencies (INEE) to disease outbreaks, and links programme examples to these standards. This framework, designed for discussion, is included in Appendix One.

2b. Key evidence relating to INEE domains

This report organises its key themes around four of the five domains of the INEE's Minimum Standards for education in emergencies.[3] The fifth domain –policy – highlights the importance of educational continuity and recovery of free, inclusive, quality education, in coordination with national and international policies and goals. This cuts across the other four domains, so is not addressed separately.

INEE Domain 1: Community Participation, Coordination, Analysis
A successful response to education provision in emergencies should be embedded in and supported by the community. Efforts should be coordinated and based on the evaluation and monitoring of needs.

EiE systems, and education leaders (especially where there is no clear 'system') have demonstrated mindsets of urgency, adaptability and creativity in their policy responses.

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[3] INEE (2014). *Minimum Standards for Education: Preparedness, Response, Recovery*. [Online]. Accessed at:
https://inee.org/system/files/resources/INEE_Minimum_Standards_Handbook_2010%28HSP%29_EN.pdf

Reviews of education in conflicts and in situations where existing systems have embraced the challenges of hosting refugees or internally displaced people have consistently described a new 'policy mindset' — one of openness and genuine intent that actively seeks change and development and is open to moving at pace. Such mindsets can be catalysed by global or regional policy compacts and – of course, by donor funding – although bureaucratic systems, across state and non-state actors, can block or slow down the pace of change. [4]

The education system in Palestine – in particular through the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA), but also within the Palestinian Authority – has a particular approach to ongoing 'shock responsiveness', learning from the unpredictability of school closures. An existing education portal provides a channel for communication, teaching and learning, and resources are adapted and their provision increased in response to various crises and changes in context.[5] UNRWA was required to innovate in education provision, because of the protracted crises facing young people in the region.[6] Other systems may be able to learn from this, should future waves of Covid-19 further disrupt education provision.

Emergencies can stimulate rapid new technology-focussed collaborations between governments, learning institutions, NGOs and the private sector.

Some rapid, innovative partnerships have been developed to support mobile learning infrastructure in refugee contexts in the Middle East and Northern African (MENA) region. The International Rescue Committee's Connect to Learn (CTL) teacher training programme, delivered in partnership with Ericsson and AsiaCall and supported by US Bureau of Population, Refugees, and Migration (BPRM), is an example of a rapidly mobilised partnership. Establishing clear roles for each partner has been key to its successful delivery. More broadly, a review of private sector education investment for refugee education in Lebanon, Jordan and Syria found that half of these investments had a technology focus.[7] However, the review also found that many interventions were excessively led with a decontextualised technology focus. This was partly caused by insufficient coordination among private companies and foundations, and between the state and non-state sectors. Among these players, the review unearthed inevitable tensions between profit-led and outcomes-led agendas.

To facilitate the coordination of numerous actors and organisations within an emergency context, databases such as Humanitarian ID (developed by The United Nations Office for the Coordination of Humanitarian Affairs (OCHA)) can provide the coordinating authority, with real-time data on who is present in the region, collected through a 'check-in and -out' system. Such a database could support mapping and coordination of non-government organisations (NGOs) working to support the most

[4] Bengtsson, S., Fitzpatrick, R., Hinz, K., MacEwen, L., Naylor, R., Riggall, A. and West, H. (forthcoming) *Teacher management in refugee settings: Ethiopia.*Reading: Education Development Trust)

[5] World Bank Group (2020). *How countries are using edtech (including online learning, radio, television, texting) to support access to remote learning during the COVID-19 pandemic.* [Online]. Accessed at: https://www.worldbank.org/en/topic/edutech/brief/how-countries-are-using-edtech-to-support-remote-learning-during-the-covid-19-pandemic

[6] UNRWA. (2018). *Education in emergencies: ensuring quality education in times of crisis*. [Online]. Accessed at: https://www.unrwa.org/sites/default/files/eie_factsheet.pdf

[7] Menashy, F. & Zakharia, Z. (2017). *Investing in the Crisis: Private participation in the education of Syrian refugees*. Education International. [Online]. Accessed at:https://download.ei-ie.org/Docs/WebDepot/EI_Research_Syria_final.pdf

vulnerable whilst movement is restricted during the Covid-19 pandemic. The INEE is another body that supports humanitarian actors and governments, by providing resources and showcasing good practice. For example, they are currently providing a series of webinars on emerging responses to the Covid-19 crisis.[8]

Projects such as Ideas Box – used for example in Burundi to support 4000 Congolese refugees with learning through tablets, e-readers and the internet (and provision of a generator) – demonstrate how multilateral partnerships (in this case, between United Nations High Commission on Refugees (UNHCR) and the International Rescue Committee) can rapidly mobilise infrastructure and resources. Whilst there are inevitably barriers to progress and learning outcomes never improve as rapidly as required, many leaders in EiE contexts have demonstrated their commitments to working both at pace and with purpose, and have improved their capacities to do so.

Emergencies can stimulate significant progress in system-level data strengthening.

Whilst disease outbreaks such as Covid-19 inevitably force prioritisation of improvements in health-related data, this can encourage and provide technology-enabled platforms to make better use of education data. Providing practitioners on the ground with the technology to record data at school and student level also holds promise.[9] In Sierra Leone, for example, a consortium of NGOs utilised an improved 'culture of data' developed during the Ebola outbreak to stimulate improvements in data collection and data-informed actions through the 'Leh Wi Learn' secondary education programme.[10] The South Sudan School Attendance Monitoring System (SSSAMS), developed through the GESS programme, enabled education management information system (EMIS) intelligence, in particular on school attendance, to be gathered through SMS in a protracted conflict.[11] More recently, the Mobenzi smartphone app has been used to collect similar data in Syria.

FHI360 has piloted and scaled numerous initiatives designed to support the collection of education-related data through smart phone technology. These provide useful examples of the role of technology in supporting the data-strengthening process in emergencies. In South Sudan, data collectors were equipped with android phones with GPS functionality to collect EMIS data from over 1,900 schools.[12] The GPS coordinates and other specific data (including photos) for each school were collected, which were automatically sent to a centralised database for analysis.[13] In Kenya, Ethiopia, Rwanda and Malaysia, FHI360 developed a custom application for UNHCR to collect and share information on education settings in refugee camps and some urban areas. This includes the

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[8] INEE (2020b). *Distance learning during COVID-19. Continuing Education in low-tech and low-resource environments.* Webinar 7th April 2020. Summary [Online]. Available at: https://inee.org/system/files/resources/COVID-19%20Webinar%20Series%20-%20Webinar%203.pdf

[9] Baxter, P., Ramesh, A., Menendez, A., & North, L. (2016). *Accelerated education programs in crisis and conflict: Building evidence and learning.* Washington, DC: USAID. [Online]. Accessed at: https://thepearsoninstitute.org/sites/default/files/2017-02/36.%20Menendez_Accelerated%20Education%20Programs_1.pdf

[10] Hallgarten (2020).

[11] Dahya, (2016).

[12] Barry, B. & Newby, L. (2012). *Use of Technology in Emergency and Post-Crisis Situations. Global Education Cluster Working Group and IIEP-UNESCO.* [Online]. Accessed at: https://www.eccnetwork.net/sites/default/files/media/file/Technology-in-Emergencies-_-Post-Crises.pdf

[13] Ibid

location, any photographs, the number of teachers and students enrolled, and what facilities and resources are available. Mobile networks and internet hotspots are used to upload this data to Google Earth, which can be viewed by governments or partner organisations to inform decision-making around resource division.[14] This application has also been used in Liberia to support the Ministry of Education to build their understanding of the education system's capacity after the 14-year long civil war and the Ebola outbreak in 2014.[15] The data collection application was available to access through local mobile networks that allowed teachers and other members of the community to support the process.

Moreover, technology can support the mapping of vulnerable learners and the disaggregation of data, to better understand the educational impact of emergencies on particular localities or vulnerable groups. This lack of disaggregation and needs analysis has proved problematic in previous emergencies, for example, in the 2017 Sri Lankan floods.[16]

In the context of EiE, technology has been a driver and a beneficiary of improved adaptiveness in the design, implementation, monitoring and evaluation of education programmes.

In the past, insufficient troubleshooting and adaptability of education programmes' management systems before scaling has undermined the usefulness of technology in humanitarian responses.[17] In education contexts, adaptive learning is crucial in enabling a student-centred pedagogy.[18] For instance, the game-based learning programme *Can't wait to learn* was able to improve its materials, based on the feedback of students and teachers who used them.[19]

Adaptability is also key to supporting local ownership. Although it may be true that technology provision, implementation and usage choices should be informed by actors within that crisis, decisions in crises are sometimes, by necessity, taken rapidly through a prescriptive 'top-down' approach.[20] Adaptive approaches can ensure that local actors remain able to influence programme infrastructure and provision throughout an intervention. Technology that offers two-way feedback channels, such as the AidLink SMS service by Souktel in Palestine, Iraq and South Sudan, can

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[14] FHI360 (2013). *Mobile phone app increases access to education to refugees*. [Online]. Accessed at:https://www.fhi360.org/news/mobile-phone-app-increases-access-education-refugees

[15] FHI360 (2015). *Building the capacity of Liberia's Ministry of Education to harness the power of information.* [Online]. Accessed at: https://www.fhi360.org/sites/default/files/media/documents/glg-success-stories.pdf

[16] Cambridge Education. (2017a). *Strengthening resilience and response to crises guidance note.* Cambridge Education. [Online]. Accessed at:https://www.camb-ed.com/intdev/article/464/guidance-note-strengthening-resilience-and-response-to-crises

[17] De Hoop, T., Ring, H., Coombes, A., Rothbard, V., Holla, C., Hunt, K., Seidenfeld, D., Connolly, H., (2019). *Scaling Education Innovations in Complex Emergencies. Evidence From the Humanitarian Education Accelerator*. American Institute for Research. [Online]. Accessed at:https://static.globalinnovationexchange.org/s3fs-public/asset/document/HEA_MetaEvaluation_Final.pdf?NJA2oDGzgwHENLO8otzc9TJkq1PED3Hg

[18] UNESCO (2018). *A Lifeline to learning: leveraging mobile technology to support education for refugees.* [Online]. Accessed at: https://unesdoc.unesco.org/ark:/48223/pf0000261278

[19] De Hoop (2018); INEE (2020b). *Distance learning during COVID-19. Continuing Education in low-tech and low-resource environments*. Webinar 7th April 2020. Summary [Online]. Available at: https://inee.org/system/files/resources/COVID-19%20Webinar%20Series%20-%20Webinar%203.pdf

[20] See Joynes, C. Gibbs, E., Sims, K. (2020). *Overview of emerging country-level response to providing educational continuity under COVID-19*. [Online]: Accessed at: https://edtechhub.org/wp-content/uploads/2020/04/emerging-country-level-responses.pdf

usefully inform decisions about adaptations. Aidlink was originally used by the Red Cross in Palestine to support blood donations and food distribution, but was adapted by Mercy Corps to "help youth leaders communicate with one another and to receive course-listing alerts for post-conflict training and education."[21] Importantly, to support locally led adaptation, Souktel's role evolved from being delivery-focused to advisory-focused, whilst retaining overall accountability for success. Technology-enabled two-way feedback may be an effective means of collecting data should Covid-19 continue to disrupt the education community longer-term, especially where there are prolonged social distancing measures.

EiE also demonstrate the value of education technology in supporting practitioner-led or beneficiary-led collection of 'good enough', real-time monitoring and evaluation data that can inform adaptive programming. Baxter et al's analysis of accelerated education programs in crisis and conflict demonstrates how simple texting can effectively support programme monitoring and outcomes evaluation, especially if data can be uploaded and aggregated through a single repository. Smartphones or tablets can increase the quality and sophistication of data collection. These efforts, through reducing reliance on fieldworker teams, can build ownership and improve understanding of data amongst practitioners.[22]

Whilst adaptive programming is already a 'new normal' in development, it is especially relevant in the context of applying education technology solutions to mitigate the educational impact of Covid-19. As the duration and intensity of the disease outbreak is as yet unclear, programmes might be used in and adapt to contexts ranging from complete lockdowns to partial school openings and a gradual return to full-scale education.

INEE Domain 2: Access and Learning Environment
There is a need for equal access to high-quality education for all learners and the protection of learners, teachers and educational practitioners, including their physical and mental health.

A range of different modalities for education technology exists. They differ in what they can be used for and who can access them. EiE responses are pioneering solutions that harness all platforms of digital technology and all channels of communication to ensure that no individuals or families are excluded.

The four types of technology used for education are i) radio, ii) video and television, iii) mobile phones, and iv) online teaching and learning. These four technologies can be used separately or in combination and can also be applied in addition to face-to-face education. Radio is the most accessible technology because of its low cost, wide reach and easy use. However, it usually requires a high degree of self-regulation or supervision to be an effective means of learning for younger

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[21] Barry, B. & Newby, L. (2012). *Use of Technology in Emergency and Post-Crisis Situations. Global Education Cluster Working Group and IIEP-UNESCO.* [Online]. Accessed at: https://www.eccnetwork.net/sites/default/files/media/file/Technology-in-Emergencies-_-Post-Crises.pdf
[22] Baxter et al. (2016).

children.[23] Video and television have similar advantages and disadvantages for learners, but the associated cost is slightly higher. Mobile phones, in some geographical contexts, are widely owned and frequently used. They allow for interactive learning and the monitoring of students' progress can be integrated. Mobile technology is increasingly significant, especially in that it can enable two-way interaction that is not supported by TV and radio broadcasts, and can be used to collect feedback from target groups. However, the costs (i.e. for the device and for data) are higher than in the aforementioned technologies and mobile reception can be an issue in remote settings. Finally, online teaching and learning can be the most engaging education technology, and can make even remote learning in distance settings a group activity. However, there are significant issues with reach, access and costs, and a comparatively high degree of technological literacy is also required. In general, the more high-tech a solution is, the more technological literacy is required for learners to engage with it.[24]

Some policymakers across Sub-Saharan Africa have shown skepticism about the efficacy of older technologies such as radio-based instruction. However, "radio and phones are 'bottom up' technologies, widely used and valued by their owners. They have the kind of reach that computers and the Internet [sic] do not, particularly in remote geographic areas or areas of conflict where the digital divide is most stark, and where [interactive radio instruction] IRI, and phones could potentially provide access to greater learning opportunities."[25] As an example, the Technology Tools for Teaching and Training (T4) programme, originally built to support English language skills in conflict-affected regions of India through IRI, later evolved into a programme that covered more subjects and embraced emerging screen-based technologies, reaching 40 million students and 300,000 teachers.

The Rumie Tablet, designed for use in challenging contexts, is pre-loaded with offline content, as well as software to track pupil progress. It shows the value of an approach that both blends technology modalities and combines child and teacher learning. Trialed by Learn Syria, the Rumie was implemented in Liberia as part of a multi-country trial. After initial suspension of the programme in Liberia because of Ebola, additional funding enabled 500 tablets to be used by children from 2015-16. A small, mixed-methods evaluation showed positive results across five criteria (increased efficiency of teacher planning; increased range of activities teachers could lead; increased participation of children; increased participation of parents, and improved ability of teachers to teach effectively, as a result of education software), with no significant differences in results between Liberia and other participating countries.[26]

In response to Covid-19, governments seem to be prioritising high-tech solutions to support continuity of learning.[27] However, these examples demonstrate the benefit of implementing mixed

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[23] Good pedagogy for remote learning is the focus of another in this series of reports produced for the EdTech Hub – see McAleavy, T. and Gorgen, K. (2020) *Overview of emerging country-level response to providing educational continuity under Covid-19: Best practice in pedagogy for remote teaching.* EdTech Hub: [Online] Accessed at: https://edtechhub.org/wp-content/uploads/2020/04/research-best-practice-pedagogy-remote-teaching.pdf

[24] USAID (2020).

[25] Burns, M. Santally, M. I. (2019). *Information and Communications Technologies and Secondary Education in Sub-Saharan Africa: Policies, Practices, Trends and Recommendations.* MasterCard Foundation. [Online]. Accessed at: https://mastercardfdn.org/wp-content/uploads/2019/11/ICT-in-Secondary-Education.pdf, p. 58

[26] Dahya (2016).

[27] Joynes et al. (2020).

modalities of education technology responses, especially in prioritising equity of access for all learners.

Infrastructure is a key enabling condition for education technology. In many cases, infrastructure is 'better on paper' – i.e. what is promised or assumed is not necessarily available.

To avoid losing time and funds and to keep the required investment manageable, educational initiatives need to build on a good understanding of the current infrastructure availability and what that infrastructure is best suited for.[28] A 2018 review of the use of Information and Communication Technologies (ICTs) in refugee education advocated a 'resource restructuring' model. Under this model, existing technology is built on and existing educational and human resources are mobilised. Technology could be used to identify available resources within the community. Furthermore, by building educational initiatives on existing technological skills and hardware, such initiatives could be community-based, cost-effective and quick to implement, without requiring extensive preparation.[29]

In the Middle East, for instance, the internet and mobile phones are seen as 'basic survival tools', so smartphone- and tablet-based solutions are attractive options for remote learning.[30] In 2015, the Norwegian Agency for Development Cooperation (Norad), organised the "EduApp4Syria" competition, which called for smartphone applications to support Syrian children's reading and wellbeing.[31] The winners of this competition were *Antura and the Letters* and *Feed the Monster*. Both applications are opensource and incorporate educational content or learning objectives into digital games on a smartphone or tablet computer. Digital-game-based learning (DGBL)-type platforms can reduce barriers to accessing learning materials and alleviate the need for physical learning environments, whilst also offering opportunities for differentiated learning and quality improvement.[32] Both games are designed to be played independently on a smartphone with minimal adult supervision.[33] An impact evaluation of these applications found that both games led to statistically significant improvements in oral reading fluency and also led to improvements in children's psychosocial wellbeing.[34] Whilst deeper psychosocial support and therapy will inevitably require resource-intensive, individualised and face-to-face presence, technologies can play a role in more universalised, scaled approaches that can reach many more learners, and still have a sustained impact.

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[28] Tauson, M. & Stannard, L. (2018*). EdTech for Learning in Emergencies and Displaced Settings. A Rigorous Review and Narrative Synthesis*. Save the Children UK; London. [Online]. Accessed at:
https://resourcecentre.savethechildren.net/node/13238/pdf/edtech-learning.pdf
[29] UNESCO (2018).
[30] Lewis, K. & Thacker, S. (2016). *ICT and the Education of Refugees: A Stocktaking of Innovative Approaches in the MENA Region*. World Bank Education, Technology & Innovation: SABER-ICT Technical Paper Series (#17). Washington, DC: The World Bank. [Online]. Accessed at:http://saber.worldbank.org, p. 4
[31] Norad (n.d.). *EduApp4Syria*. Project website. [Online]. Accessed at: https://norad.no/eduapp4syria
[32] Comings, J. (2018). *Assessing the impact of literacy learning games for Syrian refugee children: An executive overview of Antura and the Letters and Feed the Monster impact evaluations*. Washington D.C.: World Vision and Foundation for Information Technology Education and Development. [Online]. Accessed at:
https://resourcecentre.savethechildren.net/node/13365/pdf/eduapp4syria-ie-summary-2018.pdf
[33] Ibid.
[34] Ibid.

Education technology can play a part in ensuring the effectiveness of double-shifting or multiple-shifting.

In times of conflict and crisis, approaches like double-shifting (having several 'shifts' of learners coming to school at different times), can be an effective means to provide continuity of schooling, as well as to deliver additional content, such as emotional learning and life skills.[35]

Evaluations of double-shifting in emergencies have produced mixed results. While opening Turkish schools for two shifts was found to increase educational access for Syrian refugees, other evaluations have found that double shifting can lead to an increase in child labour.[36] There are also concerns about how double-shifting decisions on who is taught when can reinforce segregation between ethnic groups and exclusion of low-income learners.

Education technology could be used to announce, organise and monitor double-shifting or to provide students with materials and exercises for self-study in the times that they are not present at school. This could be especially useful in the case of staggered, targeted re-opening of schools following the peak of Covid-19 outbreaks.

Distance learning interventions can never be 'equity-neutral'. Interventions that do not place inclusion at their heart are likely to exacerbate existing inequities and inequalities.

By ensuring that interventions are supported by the community (for example, by explaining the objectives and using existing technology), and that they are based on the existing technology use of young people, programme designers can help to make technology a more successful vehicle for the delivery of education to learners in challenging contexts.[37] High-quality technology programmes with the right focus on appropriate pedagogical practices also hold significant potential for reaching children who are already out of school, or whose learning levels are already very low.[38]

Educational quality plays a key role in the technology-enabled programme that UNRWA has prepared for students whose education is disrupted in the Middle East. The programme provides core educational content for pupils in Grades 1 to 9, based on the Syrian curriculum. It includes independent learning materials, interactive educational games focusing on literacy and numeracy, and UNRWA TV-recorded lessons for Grades 4 to 9 that can be accessed through YouTube.[39] Covid-19 school closures are already revealing widening disparities in educational access, opportunities and outcomes, many of them reinforced rather than ameliorated by technology. New interventions will need to focus on how these disparities can rapidly be narrowed.

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[35] INEE (2018). *GUIDANCE NOTE. PSYCHOSOCIAL SUPPORT facilitating psychosocial wellbeing and social and emotional learning*. [Online]. Accessed at: http://s3.amazonaws.com/inee-assets/resources/INEE_Guidance_Note_on_Psychosocial_Support_ENG_v2.pdf, p.19
[36] Dahya, N. (2016).
[37] Dahya, N. (2016); Tauson & Stannard (2018).
[38] De Hoop et al. (2019), p. 8
[39] UNRWA. (2018).; UNWRA. (2017). *Delivering education on the front line; the UNRWA approach*. [Online]. Accessed at: https://www.unrwa.org/sites/default/files/content/resources/2017_education_in_emergencies_fact_sheet_-_syria_v2.pdf

ICTs can support education authorities in communicating distance learning measures – and school re-opening messages – to learners and their parents, for example, through social media.

Technology can be especially important to communicate to parents how to re-enrol their children in school after the emergency. This is demonstrated by evidence from recent natural disasters and disease outbreaks, where almost all affected countries experienced significant challenges in encouraging school re-enrolment and preventing dropouts.[40]

Beyond re-enrolment into formal settings, SMS technology and mass distribution of messages enable authorities and schools to rapidly communicate the impact of emergencies on school attendance. UNWRA's strategy for delivering education in emergencies prioritises communication with parents to update families on security situations, and to encourage at-home learning. This includes SMS notifications for families in the Occupied Palestinian territories and in Syria.[41] In Gaza, UNESCO worked with the mobile technology firm, Souktel, to create a digital communication system for teachers and school administrators to update parents and students about attacks on and around schools, and when children can return to school.[42] Although disruptions to electricity supplies and maintaining up-to-date contact details for recipients present challenges to effective communication, the system has been successful in evacuating schools in response to armed conflict. Technology-enabled communication may similarly be an important tool for schools to inform parents and learners of future school closures due to outbreaks of Covid-19, or of phased reopening.

A number of reviews have revealed the importance of consistent communications from authorities, in particular around disease controls and school closures, to mitigate the risk of slow re-enrolment and increased dropout rates.[43]

INEE Domain 3: Teaching and Learning
Education should be relevant, inclusive and based on student needs, with a regular evaluation of student progress. Teachers should be supported through professional development.

EiE responses are finding ways to harness, structure and value informal learning opportunities, both self-directed and mediated through family or community members. Multi-modal education technology has played a role in this.

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[40] Lewis & Thacker (2016).

[41] UNRWA (2018).; UNRWA (2017).

[42] Al Hamaydah, B., Kelcey, J., Lloveras, F. J. (2015). *Palestine: Lessons from UNESCO's crisis-disaster risk reduction programme in Gaza*. UNESCO Country Note. Paris: UNESCO. [Online]. Accessed at: https://unesdoc.unesco.org/ark:/48223/pf0000234791; Souktel (2011). *UNESCO Uses Souktel Mobile Alerts System to Keep Gaza Schools and Students Safe*. [Online]. Accessed at: http://www.souktel.com/work/item-1537624459.html

[43] Hallgarten (2020); Joynes et al. (2020).

Referring to EiE contexts beyond basic education, Dahya (2016) notes how "multiple tools and devices, online and offline solutions, are combined to ensure that the target group can be reached through different channels, under unstable and fast changing conditions of crisis and conflict."[44]

An advantage of multi-modal and blended uses of education technology is that communities with limited access to ICTs can also facilitate learning. In Sudan, for example, the 'Can't Wait to Learn' project distributed tablets to communal spaces, which delivered an interactive and self-paced programme on the mathematics curriculum to out-of-school children.[45] The project is also being used in Chad, Lebanon, Jordan and Uganda, and has found that 'edutainment' (for example, education through gaming) is an effective learning tool for both girls and boys.[46] Ubongo Kids is an example of an informal learning platform, targeting learners across 31 African countries and engaging the learner's caregiver through additional content and user interaction on social media.[47] Ubongo has also been used in refugee camps across East Africa to support children's socioemotional learning.[48] The programme uses radio, television (both free-to-air and paid TV channels) and the internet to broadcast educational content for mathematics, science, financial and digital literacy, human and gender rights, and engineering.[49] The content is available in six different languages and has reached over 17 million viewers.[50]

Some of the most promising examples of ICTs supporting a blend of formal and informal learning have emerged from vocational and technical education. In protracted crises, demand for such education can increase, as there is an immediate need for improved livelihoods, while the possibilities of an academic university education may appear less feasible. In Somalia, The Education Development Centre's Shaqoodoon programme runs a youth livelihoods financial literacy and entrepreneurship training programme. This required one MP3-enabled mobile phone and external speakers per group of young people. Pre-recorded audio, divided into 20-minute lesson 'chunks', could be downloaded on one phone, and broadcast to many listeners. Instructors could also these phones to submit group quizzes at the end of the assignment, with responses uploaded for analysis by project staff.[51] This intervention also reinforced the value of learning as a social activity; although, in a context of lockdown or sustained social distancing, this may be less feasible. Where they are possible, tech-enabled learning activities that do not rely on 'one device per person' can encourage social learning amongst families or small groups of learners who will be isolating together.

Other examples of blended modality approaches used in EiE settings, as well as in other low-income contexts, which support teacher and family engagement where possible (but also pupil-only learning

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[44] Dahya (2016), p. 45

[45] Burns & Santally (2019).

[46] WarChild Holland (n.d.). *Can't Wait to Learn*. Project website. [Online]. Accessed at: https://www.warchildholland.org/projects/cwtl/

[47] Ubongo (2019). *Annual Report 2019*. [Online]. Accessed at: https://www.ubongo.org/wp-content/uploads/2019-Ubongo-Annual-Report.pdf; USAID (2020).

[48] Ubongo (2018). *Equipping Caregivers with Social Emotional Learning Games for Whole Child Development with IRC*. [Online]. Accessed at:https://www.ubongo.org/case-study/equipping-caregivers-with-social-emotional-learning-games-for-whole-child-development-with-irc/

[49] Ubongo (2019).

[50] Ibid.

[51] Barry & Newby (2012).

where necessary), include Kolibri, One Billion and Tabshoura.[52] Whilst there is still insufficient evidence of their impact, especially within EiE settings, these examples are being signposted by INEE as part of a portfolio of promising practices.

Accelerated Education Programmes (AEPs)– rapid catch-up for learners – show some promise in emergency settings, but education technology-related evidence is scarce, and lessons are difficult to transfer to Covid-19 contexts.

Despite a scarcity of evidence, technology-enabled AEPs could be relevant to the Covid-19 context for two related reasons. First, during school closures, high quality AEPs might be able to teach pupils who attend school but have low outcomes and/or low motivations more effectively than their normal schooling can. This provides an opportunity for these students to catch up. Second, when schools reopen, many pupils may need AEPs to ensure that they rapidly catch up with lost months of learning.

A review of AEPs in crisis settings – in addition to providing recommendations on compressing content and educator training (both of which could be technology-enabled) – also suggested that programmes 'utilise mobile technology to collect and systemise data', including data on medium- and long- term outcomes.[53] The general principles of AEPs, developed by a multilateral working group, can be applied to technology-enabled responses in Covid-19 contexts.[54] These principles include that AEPs have to be aligned with the national curriculum and prioritise inclusive approaches.

EiEs are, through necessity, experimenting with innovative accreditation and certification mechanisms, often using digital tools and platforms.

Due to the circumstances that emergencies produce, such as examinations not taking place or school records being lost, new approaches to accreditation and certification have been developed. It is likely that the Covid-19 pandemic will similarly require innovations in accreditation and certification mechanisms.

An example of such innovation can be found in the work of Kiron, a programme that aims to give Syrian refugees access to higher education. Kiron has developed an approach whereby learners can begin studying in Massive Open Online Courses (MOOCs) remotely, irrespective of their current or future location. MOOCs are often uncredited and therefore do not count towards a university degree. However, Kiron has partnered with selected universities, which have agreed to accredit the MOOCs that Kiron learners completed prior to enrolling at their institutions. Thus, by providing access to MOOCs and facilitating their recognition at universities, Kiron has allowed young refugees to immediately continue their education, even in cases of repeated displacement.[55]

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[52] INEE (2020a).

[53] Baxter et al. (2016).

[54] Shah, R., Flemming, J., Boisvert, K. (2018)/ *Accelerated Education Working Group: Accelerated Education Principles Field Studies*. Synthesis report. [Online]. Accessed at:https://www.eccnetwork.net/sites/default/files/media/file/AEWG%20Synthesis%20Report%20Accelerated%20Education%20Principles%20Field%20Study.pdf

[55] UNESCO (2018).

Effective EiE education responses – from low-tech to high-tech – appear to include some element of psychosocial support, positioning emotional wellbeing and safety as foundations for improvements in learning outcomes.

Psychosocial support (PSS) is a crucial element of EiE as students, as well as teachers and parents, are living through crisis and adversity. Five widely accepted and empirically supported principles that guide PSS interventions are: 1) to promote a sense of security; 2) to calm; 3) to foster a sense of self- and collective efficacy; 4) to promote connectedness; and 5) to instil hope.

These principles are used for immediate response interventions, as well as for medium term recovery efforts.[56] 'Healing Stories' *Worldreader's* digital Arabic Children's Collection and learning programme for Syrian refugees, demonstrates how psychosocial support can be built into a literacy offering, through a careful selection of resources that enable and provoke discussions about emotional wellbeing. In Jordan, the *Tuta to Tuta* project is working with vulnerable children impacted by the Syrian refugee crisis. Although it is designed to be 'teacher-free', to enable parental use, additional resources are available for teachers and community educators for when this input is possible. Thus, the programme enables but does not rely on a 'teacher presence'. Impact evidence is not yet available.[57]

While these examples tend to work without adult support or supervision, technology can also enable all teachers to retain some kind of 'teacher presence'[58], even if limited to pastoral care rather than pedagogical input. In fact, technology can enable teachers, provided they receive the right training, to play a key role in providing PSS to their students in times of crisis.[59] The International Rescue Committee's Connect to Learn (CTL) programme is an example of how teachers can be prepared to support students emotionally during and after emergencies. CTL was run in the Domiz refugee camp in the Kurdish region of Iraq and provided teachers with cloud-based materials focusing on social-emotional skills, literacy, and numeracy. Teachers could also access training materials on how to organise "healing classrooms".[60] Overall, to support shock-preparedness, systems suffering from repeated or protracted crises are often learning to integrate a focus on PSS and emotional learning into education provision. As INEE suggests, "PSS activities should not wait until a crisis hits. Education authorities should instead improve their preparedness and resilience by considering how to mainstream PSS and socioemotional learning into the curriculum, and by promoting appropriate pedagogies through training and ongoing support for teaching staff."[61]

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[56] Hobfoll, S., Watson, P., Bell, C., Bryant, R., Brymer, M., Friedman, M., Ruzek, D. (2007). *Five Essential Elements of Immediate and Mid-Term Mass Trauma Intervention: Empirical Evidence*. Psychiatry, 70(4), 283-315.; International Federation of Red Cross and Red Crescent Societies Reference Centre for Psychosocial Support. (2014). *Strengthening resilience: A global selection of psychosocial interventions*. Copenhagen: IFRC. [Online]. Accessed at: https://issuu.com/danskrodekors/docs/strengthening_resilience

[57] Smith, W. (2017). *Healing Stories: Worldreader's Arabic Children's Collection For Syrian Refugees*. [Online]. Access at: https://www.worldreader.org/blog/healing-stories-worldreaders-arabic-childrens-collection-syrian-refugees/

[58] McAleavy & Gorgen (2020).

[59] Lewis & Thacker (2016).

[60] Dahya (2016).

[61] INEE (2018) p. 63

INEE Domain 4: Teachers and other education personnel
Teachers are carefully recruited, their working conditions clearly defined, and they are supported by supervisors.

Effective teacher learning programmes in EiE settings appear to have an adaptable, blended approach, where the 'trainer presence' is retained in some form.

Overall, there is a dearth of evidence on the effectiveness of technology-enabled CPD in emergency contexts.[62] However, some lessons can be drawn from promising and emerging practices, as well as from the wider evidence base on effective professional development, which is applicable to emergency and non-emergency settings, and remote, blended and face-to-face delivery.

For example, to respond to the needs of qualified teachers in Kakuma Refugee Camp in Kenya, one of the largest refugee camps in the world – where 35.7% of primary aged learners and 95%of secondary aged learners are out of school – Teachers for Teachers piloted a professional development initiative for teaching staff.[63] This integrated teacher training from international and local experts with peer coaching with mobile mentoring (via WhatsApp and Facebook), creating both local and global communities of practice for the participant teachers.[64]

The Teachers for Teachers project was able to achieve a broad reach throughout the camp: 130 teachers were trained, including staff from 20 of the camp's 21 primary schools, and over 33,000 students were taught by the teachers who undertook the professional development.[65] The teacher-generated data reported increased preparation, confidence and pedagogical knowledge among teachers, which had led to a marked improvement in teaching effectiveness. Teachers also reported improvements in their non-academic roles with regard to child protection and positive discipline.[66] UNICEF's Raspberry Pi for Learning Initiative (Pi4L) demonstrates an effective model of simultaneous pupil and teacher learning, where one of four learning tracks is designed for teachers and teacher trainers.[67]

In addition, Connect to Learn supported nearly 200 Syrian refugee teachers in the Kurdish region of Iraq. The programme provided both hardware and connectivity for teachers, and encouraged and enabled peer support and practice-sharing, alongside training from external experts. Programme effectiveness was monitored throughout. The programme was adapted, for instance, in response to

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[62] Cambridge Education (2017b). *Quality and learning evidence brief*. Cambridge Education. [Online]. Accessed at:https://www.camb-ed.com/intdev/article/468/quality-and-learning-evidence-brief

[63] Mendenhall, M. (2017). *Strengthening Teacher Professional Development: Local and global communities of practice in Kakuma Refugee Camp, Kenya*. Promising Practices in Refugee Education. [Online]. Accessed at: https://static1.squarespace.com/static/583af1fb414fb5b3977b6f89/t/59bdbadc8419c21c1bd35570/1505606367450/11_PromisingPractices_Teachers+for+Teachers_WEB.pdf; McAleavy. T., Hall-Chen, A., Horrocks, S., & Riggall, A. (2018). *Technology-supported professional development for teachers: lessons from developing countries*. Education Development Trust. [Online]. Accessed at: https://www.educationdevelopmenttrust.com/EducationDevelopmentTrust/files/34/3463d85a-031c-4f1e-9002-969b4daf4cdf.pdf

[64] Ibid.

[65] Ibid.

[66] Ibid.

[67] Lewis & Thacker (2016).

feedback that showed that teachers, while handling the technology well, were finding it difficult to translate their knowledge from training into classroom contexts.

In MENA refugee contexts, 'only rudimentary steps have been taken so far in teacher training and mentoring. For the most part, ICT-enabled teacher training has been a component of a few tightly targeted projects related, for example, to entrepreneurship or computer programming.'[68] This illustrates the problem with technology-enabled interventions that are driven by the goals of technology partners, rather than those who understand the key learning needs of pupils and teachers.

Education technology can rapidly amplify the impact of the most effective teachers and teaching practices.

Technology can be used in cases of protracted emergencies to showcase the most effective pedagogical practices amongst serving teachers. During the 2014 Ebola outbreak, for example, the Ministry of Education in Sierra Leone identified 30 teachers nationwide, who recorded lessons for national broadcasting. Lessons were broadcast on 41 radio stations and the country's only TV station, with phone lines operating afterwards to enable students to ask questions. Programmes were purposefully aired between 11:00 am and 5:00 pm in 30-minute increments, so that children were able to attend to household chores around their lessons. The initiative was able to reach 81.6% of households, with listenership ranging from 69.2% of pre-schoolers to 75.8% of senior secondary school students.[69]

Education technology can also support expert teachers to train others (e.g. untrained teachers) in supporting the continuity of learning for children in their localities. This might, for example, be through training packs and mobile mentoring from qualified teachers. Such remote, on-the-job teacher training has been found to hold promise for increasing access and teaching quality in conflict-affected countries like Uganda, Sudan, and Mozambique.[70]

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[68] Lewis & Thacker (2016), p. 9

[69] GPE Secretariat (2020).*How did Sierra Leone implement radio instruction during the Ebola crisis?*.[Online]. Accessed at: https://www.globalpartnership.org/blog/how-did-sierra-leone-implement-radio-instruction-during-ebola-crisis; Burns, M. (2016). *Making (radio) waves. Global Partnership for Education*. Blog post. 12thFebruary 2020.[Online]. Accessed at:https://www.globalpartnership.org/blog/making-radio-waves

[70] Morpeth, R., Creed, C., Cullen, J., Page, E., & Raynor, J. (2009). *Open and distance learning for basic education in South Asia: Its potential for hard to reach children and children in conflict and disaster areas*. Nepal: UNICEF

Section 3: Recommendations for policymakers

1. **Balance quality pedagogy and equitable provision.**

The principles of sound pedagogy and teaching are unchanged, whether or not technology is involved. It is critical to take advantage of the special affordances that education technology has the potential to deliver, such as formative assessments and feedback to teachers, the ability to convene teachers and students in groups, or to offer new forms of interaction. An assessment of the quality of pedagogical approaches, combined with an analysis of the needs and contexts of learners, should be at the centre of decision-making around any technology-enabled responses. Solutions should always be built on sound pedagogical foundations – both utilising existing evidence and gathering new evidence – that constantly prioritises the needs of the most disadvantaged and vulnerable learners. Education technology has the potential to exacerbate inequities (in relation to access, capacities and costs). It is therefore essential that any effort that relies on or expands its use ensures that issues of equity are also addressed.

2. **View any education technology interventions as an enabler rather than a transformer.**

When using technology in education, the tools should always remain a means to the end of delivery quality education to all students. The INEE checklist can support decisions' immediate priorities. These priorities often involve sweating existing assets; for instance, exploring how radio – or ideally Interactive Radio Instruction – can be repurposed or rebroadcast, or using existing databases to support SMS messaging to teachers or families. However, it is also crucial to keep in mind that internet speeds can be influenced by many factors (such as local bandwidth-per-user), as can the availability, cost and performance of devices. The effects of these factors are multiplied by the need to respond rapidly. Technology infrastructure improvements rarely deliver at the pace and quality promised by providers, especially in emergency settings.

3. **Stimulate rapid collaboration solution design and scaling between non-tech and tech providers, fostering principles and practices of equal partnerships.**

In face of the Covid-19 challenge, policymakers have needed to become highly entrepreneurial overnight, rapidly building coalitions for change and action that can balance the interests and share risks and accountabilities across all partners, as well as withstanding justifiable public scrutiny (for instance, around procurement). Regulations and oversight need to be balanced with speed and potential efficiency. In all instances, transparency is a key requirement for the acceleration of decision-making processes and for implementation.

4. **Where possible, opt for multi-modal approaches that include a range of low-, mid- and higher-tech interventions, all of which can be dialled up or down in response to different local contexts and stages of school re-opening.**

Multi-modal approaches, as well as having greater built-in adaptability, also have the potential to absorb changing technologies as they emerge in any given context. Technology-enabled projects

should avoid "vendor lock-in" to the extent that it is possible to do so and should include as many channels of learning and communication as possible in their designs, ideally through open-source software solutions. Approaches to interventions also need to include supporting the transition from remote, technology-based learning back to school, which can be more challenging than assumed.

5. **Strive to be adaptive at all stages of your decision-making processes, building a greater adaptive tolerance amongst donors, governments, NGOs and school leaders and practitioners.**

In the context of rapid responses to emergencies such as Covid-19, technology-enabled interventions need the licence to take calculated, transparent, enquiry-spirited 'small bets', building on the bright spots of practice and the most enthusiastic practitioners. It needs to be powered by cycles of collective design and reflection, using data to make evidence-informed, politically smart decisions about adaptations. Above all, it needs to be underpinned by a leadership and management 'enabling environment' that fosters an adaptive tolerance amongst all partners, including a tolerance for flexible funding models. Education technology providers, in particular start-ups, often have a commitment to and expertise in agile methods and rapid prototyping, although this needs to be accompanied by a more rigorous approach to understanding impact.

6. **Ensure that psychosocial support – for learners, educators and families – forms part of any intervention.**

Technology-enabled distance learning channels can be levered to communicate messages or provide low-maintenance interaction opportunities that can be crucial to the wellbeing of learners, educators and families. In addition, education technology can help ensure that all individuals in any education system can access channels, avenues or contact information to pursue more intensive, face-to-face psychosocial support when needed. However, ed-tech can, and should, also include outreach to elicit users' pursuit of such support.

7. **Communicate regularly with school leaders and teachers, and encourage peer networks to support well-being and professional learning.**

Teachers can be also seen as community 'thought-leaders', trusted to provide families in their communities with accurate information about disease controls and education provision. Trusting them in this way, and supporting them to use available technologies to communicate with students, can reinforce mutual wellbeing between teachers, families and students. Teacher peer-learning groups and Communities of Practice (COPs) are among the structures for teacher development that are strongly supported by education technology in emergencies. It is vital, both during and after the pandemic, to ensure that these elements include opportunities for teachers to seek support for their own wellbeing.

8. **Use education technology to support lean but long-term evaluations of all interventions, simultaneously building capacities of practitioners.**

The dearth of good quality impact evidence complicates the task of initiating evidence-based, technology-enabled educational responses to Covid-19. While resourcing pressures will inevitably prioritize action over research, donors who can ringfence sufficient evaluation funding may find that

these efforts have a good long-term social return on investment, especially when the next pandemic arrives. Lean, context-appropriate evaluation methods can include user and practitioner data from WhatsApp groups, phone interviews and online focus groups—generating information that can be summarised and 'quantified' through descriptive statistics and methods. These approaches can encourage a reflective continual improvement mindset amongst practitioners, improving both dialogue and capacities around the use of data and evidence. Policymakers have a role to play beyond funding, in ensuring state-level coordination of data so that it is aggregable and comparable, ensuring that data protection and safeguarding regulations are upheld, and that programmes respond adaptively to the findings revealed through these methods.

9. **Use education technology resources to support future shock responsiveness, as well as immediate shock responses.**

Education technology infrastructure should be developed now, in preparation for future disease outbreaks. Teacher training programmes and institutions should introduce good practice in remote education (including online synchronous and asynchronous learning), as a preparatory measure. There will be school closures in the future – at local, regional and national levels, at the least – in response to conflict, disease, natural disasters and climate change. The current pandemic underscores the need to build capacity and systems for remote education to ensure that the necessary elements for continuity of learning are integrated and essential parts of the education system.

Appendix One: Draft framework to support transferability of INEE Minimum Standards to Covid-19 contexts

Standard	Relevance to Covid-19 contexts	Programme examples found so far
	(A heightened, B high, C medium, D low)	
Domain 1 Community Participation		
1: Participation Community members participate actively, transparently and without discrimination in analysis, planning, design, implementation, monitoring and evaluation of education responses.	C	T4
2: Resources Community resources are identified, mobilised and used to implement age-appropriate learning opportunities.	B	FHI360's K-Mobile Connect to Learn
Coordination		
3: Coordination Coordination mechanisms for education are in place and support stakeholders working to ensure access to and continuity of quality education.	A	Kolibri Ideas Box
Analysis		
4: Assessment Timely education assessments of the emergency situation are conducted in a holistic, transparent and participatory manner.	A	AidLink
5: 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.	A	
6: Monitoring Regular monitoring of education response activities and the evolving learning needs of the affected population is carried out.	A	FHI360's K-Mobile South Sudan School Attendance Monitoring System Mobenzi
7: Evaluation Systematic and impartial evaluations improve education response activities and enhance accountability.	B	Can't wait to learn
Domain 2 Access and Learning Environment		
8: Equal Access All individuals have access to quality and relevant education opportunities.	A	Rumie Kolibri T4 UNRWA TV

9: 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.	A	EduApp4Syria *Worldreader's digital*
10: 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.	A	

Domain 3 Teaching and Learning		
11: 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.	D	Tabshoura Shaqoodoon T4 *Worldreader's digital*
12: Training, Professional Development and Support Teachers and other education personnel receive periodic, relevant and structured training according to needs and circumstances.	B	Teachers for teachers CLIx Connect to Learn Raspberry Pi
13: Instruction and Learning Processes Instruction and learning processes are learner-centred, participatory and inclusive.	B	Can't wait to learn OneBillion Ubongo
14: Assessment of Learning Outcomes Appropriate methods are used to evaluate and validate learning outcomes.	A	EduApp4Syria Tabshoura Kiron

Domain 4 Teachers and Other Education Personnel		
15: 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.	D	
16: Conditions of Work Teachers and other education personnel have clearly defined conditions of work and are appropriately compensated.	C	
17: Support and Supervision Support and supervision mechanisms for teachers and other education personnel function effectively.	A	Connect to Learn Teachers for teachers

Education Policy		
18: Law and Policy Formulation Education authorities prioritise continuity and recovery of quality education, including free and inclusive access to schooling.	C	
19: Planning and Implementation Education activities take into account international and national educational policies, laws, standards and plans and the learning needs of affected populations.	B	Humanitarian ID

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