

## COVID-19 School Closures in Low- and Middle-income Countries: Emergent Perspectives on the Role of Educational Technology

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**Abstract:** The COVID-19 pandemic ushered in school closures at an unprecedented scale and prompted educational systems to find alternative teaching models at short notice. The role for educational technology in low- and middle-income countries (LMICs) has recently become the focus of much discussion. While prompted by the pandemic, the discussions surface latent issues in educational systems, and the perspectives and ambitions of organisations in relation to educational technology and LMICs. The influence of the discussions during this period is likely to extend beyond the initial crisis, and warrants investigation. This paper presents a thematic analysis, using a grounded theory approach, of documents published online between February and April 2020. Five themes emerge, in relation to access, responses, support from carers, teachers and communities, educational quality and the future.

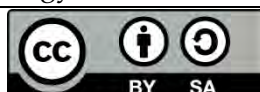
**Keywords:** COVID-19, digital divide, educational technology, education in emergencies, education systems.

### Introduction

As COVID-19 spread rapidly, from initial infections at the start of 2020 to pandemic status by March 11 (WHO, 2020), school closures were implemented with short notice at national levels across the globe and education systems were subject to an unprecedented level of disruption. By the end of April, closures were in place in 182 countries, affecting 73.5% of the total enrolled learners, which equates to more than 1.2 billion learners worldwide (UNESCO, 2020a).

While some countries have cautiously begun to reopen schools at the time of writing, there is considerable uncertainty, as further outbreaks are likely to prompt closures. Clearly, school closures have a detrimental effect upon educational progress, and the closures experienced so far equate to enormous learning losses (Azevedo et al, 2020). There is a risk that many children will not return to formal schooling following emergency closures (Kastelic & Kastelic, 2015), which may be more pronounced for girls (Bandiera et al, 2020). Lost learning is likely to have negative economic impacts in the future, from individual earnings to Gross Domestic Product (Hanushek & Woessmann, 2020). It will be some time before the full social and economic impact of school closures is known (Viner et al, 2020).

A shift to online learning has been a feature of many responses to school closures. In low- and middle-income countries (LMICs), pre-existing lower levels of access to online technology may present a challenge for enacting an 'online pivot'. However, even in the context of high-income countries, concerns have emerged in terms of technology and connectivity, and how to ensure that continued



access to education is equitable (Reich et al, 2020). Widespread school closures have provided an impetus for discussion and closer consideration of educational systems and practice, and the role that technology could play, in the context of LMICs, which is the focus for this study. Although the changes being implemented in the immediate term are in response to an emergency, the discourse prompted by the current situation is surfacing underlying issues around educational technology (EdTech) in LMICs which are relevant for supporting education during the pandemic and in its aftermath. For example, the concept of 'EdTech readiness' has been discussed as a way of gauging whether countries are in a position yet to implement educational technologies at scale (Trucano & Cobo, 2019). Responses to the current crisis, and their impacts in practice, potentially provide a practical dimension to this framework.

Many discussions around broader issues in relation to the potential role for EdTech in LMICs in the crisis have taken place through online reports and commentary. There is value in examining the discourse relating to these less-formal publications, for three main reasons. Firstly, they lend themselves to immediate publishing. This is of particular benefit in a rapidly changing situation like COVID-19; while some academic literature is emerging, the time taken to publish a paper may be longer than the duration of school closures. Secondly, influential organisations that are likely affecting decisions made in LMICs may not publish academic journal articles but blogs and organisational reports can give insight into an otherwise hidden discourse. Thirdly, it is possible that discussions and decisions made now during the pandemic will have considerable influence on education in LMICs in the future, particularly in relation to EdTech. Some have identified the formation of new 'EdTech power networks' (including partnerships between influential international organisations such as the OECD and UNESCO, technology giants such as Facebook, Google, and Microsoft, and a host of other smaller scale organisations which are part of the EdTech industry (Williamson, 2020)), which seek to exert influence on educational systems via the pandemic.

To understand how the present situation may lead to longer term changes, it is important to capture themes in the discourse through systematic analysis of this material. Even if possible, an 'online pivot' brings political and pedagogical assumptions (Williamson, Eynon & Potter, 2020). The aim of this study was to explore the key themes and arguments made in the online commentary around the potential use of EdTech in place of school closures in LMICs. Analysis of this discourse helps to identify key issues for developing longer term EdTech support in LMICs. Examining the examples cited in the articles will provide practical insights in terms of identifying practices which could be deployed in other countries and contexts where support has been missing, in this or future emergencies. The purpose of the study is to explore the main themes which featured in the online discourse around EdTech and school closures in LMICs between February and April 2020.

## **Methods**

### **Research Methodology**

As the study is focused upon understanding online commentary around an event, qualitative content analysis of a sample of online documents was the methodology used for the study (Jensen, 2013). This approach was used in part for pragmatic reasons. While the aim and research questions focus specifically on online commentary surrounding EdTech and school closures in LMICs, similar issues could have been explored through interviews, for example, to reveal the experiences of using EdTech

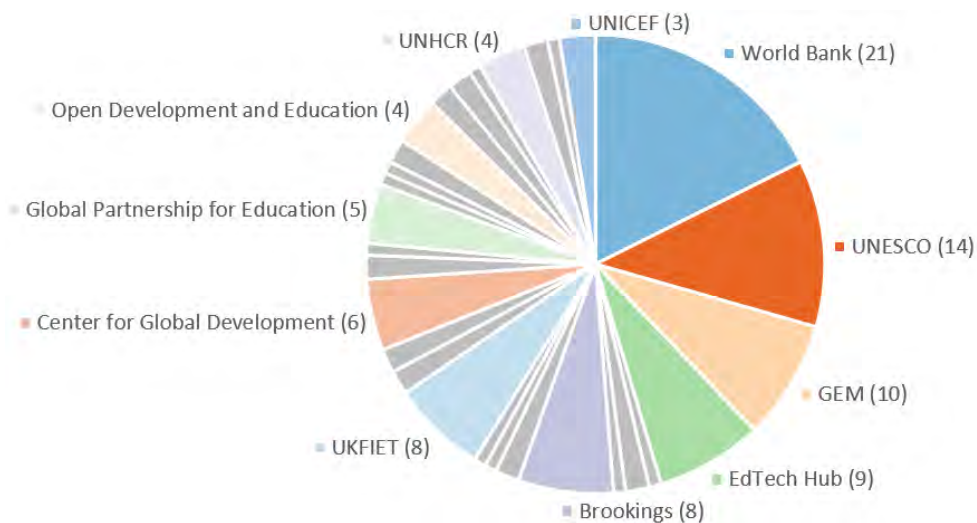
in response to closures. However, the context in focus here is upon the immediate discussions around emergency school closures, early in a global pandemic unprecedented in modern times. There would have been ethical questions about conducting active research under these circumstances, when participants may be under high levels of stress and anxiety, and researchers have a responsibility not to increase this burden (Townsend et al, 2020). The type of online documents included is also important; the study focuses on sources where there is a reasonable expectation that the authors intended their documents to be a form of fully public publication, and suitable for independent analysis without the authors' consent (BERA, 2018; Davies et al, 2016).

### **Sampling**

To build the sample of documents, a combination of approaches was used, as it is challenging to systematically search for content such as blog posts (Hookway, 2008). The search strategy included Web and social media searches, recommendations from colleagues and mailing lists, and snowball sampling for related articles linked from other documents. The sampling frame was based on the following criteria: (i) articles must have been written in response to school closures and refer to EdTech (broadly defined; see below) specifically within LMICs (those with a Higher Education focus, or schools within high-income countries, were excluded); (ii) articles must have been published between February 1 and April 30, 2020; and (iii) curated lists of resources or links were not included, as articles which simply listed tools or links were popular but did not contain enough new information to be analysed. In instances where articles had been cross-posted, the original publication source was selected for inclusion. 'EdTech' is a wide-ranging term. The search strategy was intended to be inclusive rather than restrictive, and include perspectives from across all levels of education systems, so a broad definition of EdTech was applied. This includes any use of information and communication technologies at any point within the education system, from homes, to schools, to ministries. This definition was purposefully not restricted to digital technologies, and included radio and television, even when they were non-digital.

### **Procedure of Data Collection**

The resulting sample comprised 122 documents. The full-text articles were imported into qualitative analysis software (Dedoose) for tagging and to facilitate searching across full texts (Salmona, Lieber & Kaczynski, 2020). The majority (90) were organisational blog posts or opinion pieces, which were often multi-authored. Two personal blog posts were included. The other 30 articles were more substantive pieces, available as files to download, which included briefing reports or rapid literature reviews. The sample spanned 31 unique organisations, and 136 unique contributing authors. The main organisational contributors are shown in Figure 1. Based on information in author biographies, the majority of authors were based in either the USA (44%) or the UK (30%), while 12% were based in LMICs. Additionally, the collection of documents is available as a searchable online library, with links to all sources, openly available for any follow-up work at <http://www.katyjordan.com/covid19>.



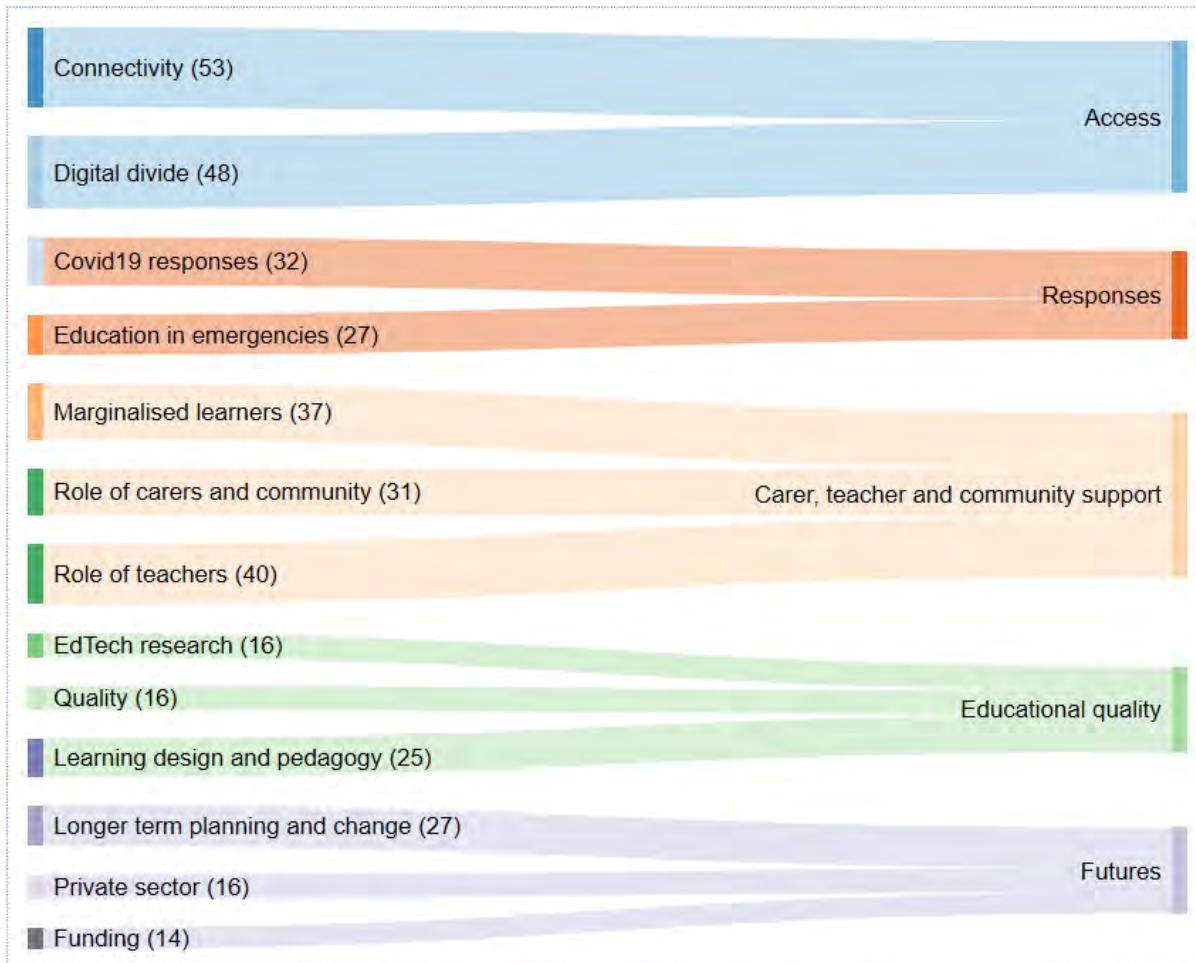
**Figure 1: Number of documents from each of the main publishers within the sample. Note that only those with a frequency of three or more are labelled.**

### Data Analysis

Once assembled, qualitative analysis was undertaken using a grounded theory-based approach (Charmaz, 2014). In this model of research, the analyst is central to data collection and analysis and represents the research instrument (Roller, 2019). As such, there is subjectivity in this type of analysis; to mitigate against risks to validity, data analysis was carried out following the steps required in a grounded theory analysis. As the study is exploratory in nature and required themes to be identified from within the data rather than being pre-defined, open coding was applied in the first instance. Constant comparison was made during coding, and memoing was done to note articles of particular detail in relation to the emerging themes (Strauss & Corbin, 1998). While open coding was applied to the whole sample, a sense of theoretical saturation emerged after approximately 40 articles (Morse, 2007). Open coding generated 85 unique codes; merging synonyms and closely-related terms yielded 57 unique codes, which were grouped into 13 categories. Axial coding identified links between categories. Finally, the categories were arranged into five over-arching emergent themes.

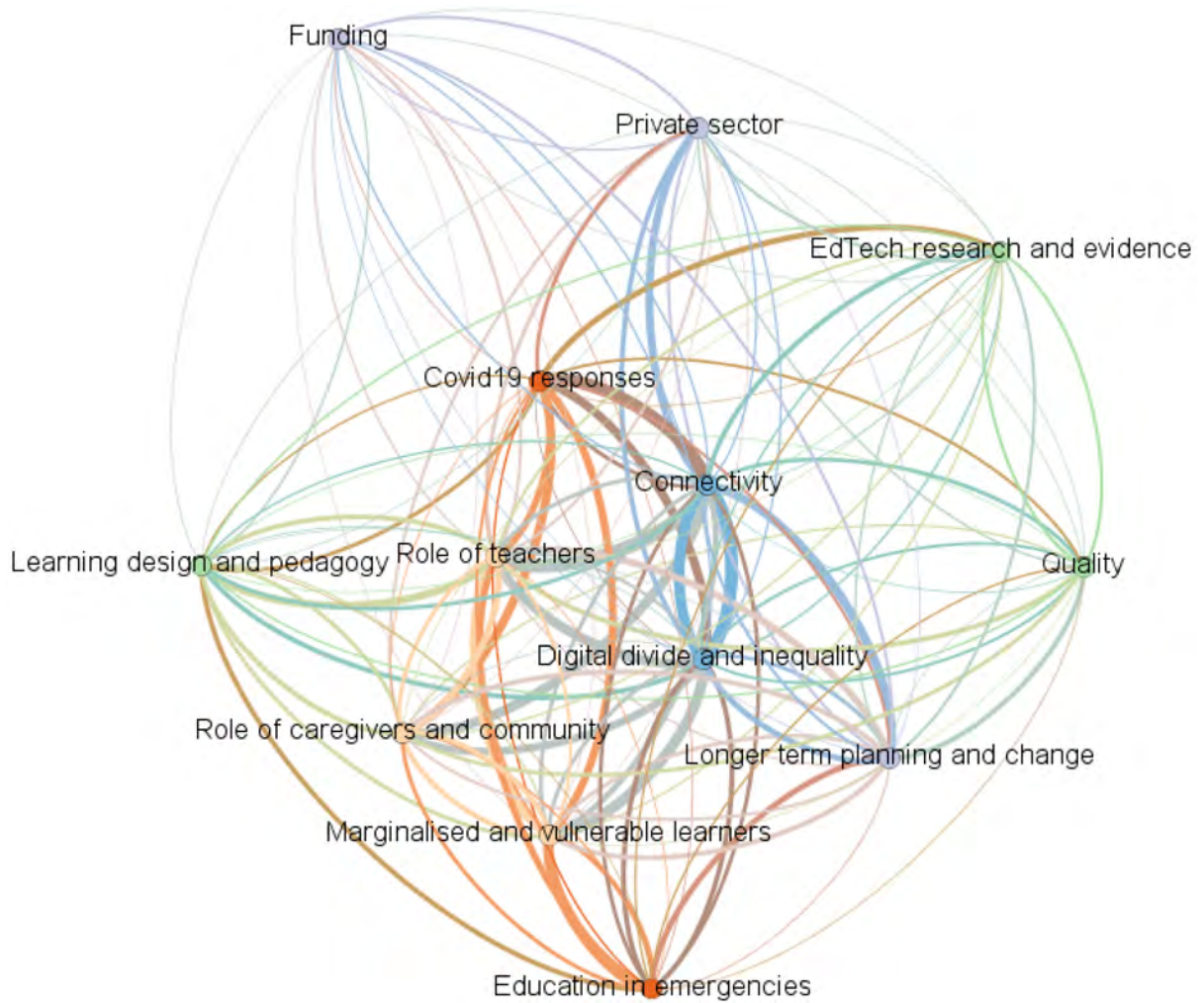
### Findings and Discussion

The 13 categories, and the five emergent themes which they contribute to, are shown in Figure 2. The number of articles included in each category is indicated in brackets. Note that individual articles were coded within multiple categories; the extent to which different categories appeared together is shown by the co-occurrence network depicted in Figure 3. There is a high degree of overlap between the categories; that is, there are not areas of the network which are distinctly unconnected from others. Most of the categories have been discussed together to some extent. However, there are some categories which are more frequently discussed together, as shown by closer proximity in the network, and more heavily weighted connections between them (such as 'connectivity' and 'digital divide and inequality', for example).



**Figure 2: Main coding categories (left), grouped into emergent themes (right)**





**Figure 3: Network to illustrate co-occurrence between categories. Edges (connections) are weighted to reflect frequency of articles being tagged with each pair. Nodes are colour-coded to match the colour-coding of themes as shown in Figure 2.**

In this section, each of the main emergent themes, and the categories within them, will be discussed in turn.

**Access**

The theme of ‘Access’ was one of the most prevalent, being explicitly addressed in approximately two thirds of the sampled documents (76), and underpins the other themes. The theme includes two categories:

- ‘Connectivity’: the infrastructural aspects of access to technology, hardware and the Internet.
- ‘Digital divide and inequality’: the socio-economic limitations that persist in relation to access and use of technology, even if the infrastructure is there.

Both are linked to the risk that unequal access will exacerbate and amplify inequalities.

Connectivity represents a starting point for much of the discourse – for example, a range of types of response is necessary because assumptions about access cannot be made. Connectivity includes a

range of obstacles to being online, such as having the required hardware at home in sufficient numbers, and having reliable Internet infrastructure. The latter can also be highly variable within countries, contrasting between urban and rural settings. The close link between ‘connectivity’ and ‘digital divide and inequality’ (Figure 3) underscores the importance of looking beyond providing hardware; for example, whether carers’ level of digital literacies enables them to support childrens’ learning effectively.

The theme also contributes to arguments for longer term improvement and systems change (e.g., Diop, 2020). Trucano (2020) provides a practical example about ways to improve connectivity in the immediate term, drawing on World Bank experiences working in South Africa, Kenya, Turkey, Oman, Egypt, the USA, Ecuador and the Kyrgyz Republic. Trucano presents nine tips to lower the financial and technical barriers to online access, through co-operation between education ministries and telecom providers, which also relates to questions of future sustainability and public-private partnerships (see also ‘Futures’).

It is also important to caution that while connectivity is a major theme, the extent and nature of this varies greatly according to context. For example, smartphone use may be widespread despite poor infrastructure overall, and television or radio access may not be ubiquitous. If access is usually shared across households, for instance, this may not be feasible due to social distancing measures.

## **Responses**

‘Responses’ takes its lead from the immediate challenges regarding access, and was addressed by approximately half of the sampled documents (57). It includes:

- ‘COVID19 responses’: includes reports of measures implemented in immediate response to school closures.
- ‘Education in emergencies’: provides the rationale for responses and recommendations, drawing principally upon Ebola-related closures.

‘COVID-19 responses’ focuses primarily on the types of technology deployed in the immediate response. While the majority of articles in this category cite individual examples of countries’ responses or present a general recommendation of low-tech approaches, Vegas (2020) presents a comprehensive overview of types of responses, drawing upon a database maintained by the Center for Global Development (2020). At that point (April 14), fewer than 25% of low-income countries had adopted any form of remote learning, rising to over 70% in middle-income countries. In both groups, a combination of broadcast (TV and radio), and broadcast plus online provision, accounted for a majority of the responses. Approximately 25% of lower-middle and upper-middle income countries’ responses were solely based online. Additionally, there were regional differences in the prevalence of different strategies, with the lowest response levels seen in Sub-Saharan Africa (Vegas, 2020).

Considering broadcast media in detail, the World Bank (2020) provides practical advice for designing programmes, linking to examples from a range of countries (Zacharia & Twinomugisha, 2020). Mexico-based Telesecundaria is provided as evidence of efficacy. As a well-documented and recent example of school closures, the example of the Ebola crisis in West Africa (2014-16) is the key link between COVID-19 responses and education in emergencies. Hallgarten (2020) presents a comprehensive review of the research and evidence. In this instance, it is notable that radio instruction

was found to be effective, while other forms of technology were not. Richmond (2020) also draws upon Ebola responses to provide practical guidance for television and radio programming. Minetti (2020) draws upon experiences supporting education in conflict-affected areas to describe strategies for engaging interactive radio instruction.

Although not a prevalent strategy, the 'online' category (Vegas, 2020) may warrant further examination. For example, simply broadcasting TV programming through YouTube, or hosting interactive discussion forums through WhatsApp, would both be termed 'online' but represent contrasting pedagogical models and interactivity.

### **Carer, Teacher and Community Support**

This theme extends the immediate responses beyond a focus on technology, to strategies for its use and support, particularly to reach the most marginalised learners. Approximately two thirds of the documents were associated with this theme (75). Categories here include:

- 'Role of carers and community': focuses upon the ways in which caregivers and the community can support childrens' learning and provide support in the absence of formal schooling.
- 'Role of teachers': how teachers' practices can be adapted to support learners during closures.
- 'Marginalised learners': includes instances where it is acknowledged that marginalised learners are those whose education and prospects are likely to be negatively impacted to a greater extent, and ways in which their needs particularly can be supported.

The 'role of carers and community' category relates to the need for parents to fulfil the role of educators at home, and the assumption that parents are in a position to do so underpins the immediate switch to remote learning. The role of carers is particularly important in relation to early years and primary education; Devercelli and Humphry (2020) outline fifteen recommendations for how to support parents and carers in this respect. The recommendations range from practical steps to ensure that childrens' basic needs are met, to low-cost, low-connectivity educational materials. Distribution of books and play materials is also recommended. The role of the carer is key, and establishing support networks through social media or phones is also recommended.

The 'role of teachers' is linked to the caregivers' category, as both are concerned with how to actively support childrens' learning, have converged to an extent in the crisis. Whereas caregivers may be assuming the role of teacher, both may find the switch to technology-mediated teaching challenging, and teachers need to adapt to ways of supporting carers. In terms of how governments have supported teachers in the shift to remote learning, there has been a greater emphasis on training for communication rather than for remote teaching, and this provision varies (Vegas, 2020). UNESCO (2020a) present a thorough and practical discussion of the role of teachers, including how they can support learning during the pandemic, and considerations around their own positions and developmental needs.

While not explicitly focused upon LMICs, the Education Endowment Foundation (2020) published a rapid systematic review of research evidence in relation to remote learning, with implications for the role of teachers. The main findings align with the discussions in this theme (particularly



foregrounding pedagogy over technology; ‘Teaching quality is more important than how lessons are delivered’, and ‘Peer interactions can provide motivation and improve learning outcomes’). McAleavy and Gorgen (2020) consider pedagogy for remote teaching in LMICs. While considering context is important, this also suggests that there is more that can be usefully done in terms of EdTech research sharing and collaboration (which also links to categories within ‘educational quality’).

Communication and interaction are recurrent suggestions in terms of how carers and teachers can provide support. In this respect, notwithstanding questions about data and connectivity, this is an area where digital technologies can play a useful role. Peer support, feedback and the potential for social media and text messages may be effective strategies as a compliment for broadcast media (King, 2020; Mundy & Hares, 2020).

As introduced in the ‘Access’ theme, the digital divide and socio-economic factors surrounding EdTech are likely to be most pronounced for already marginalised and vulnerable learners. These have been considered in the ‘marginalised learners’ category, which is included here within the ‘carer, teacher and community support’ theme as it moves beyond simply access to questions of support and educational design. The link is made to the role of carers and teachers, through the need for teaching activities to be designed with supporting the most marginalised in mind.

Save the Children (2020) drew upon humanitarian experiences to highlight that girls are most likely not to return to school following closures, and that online provision must include safeguarding; also, that inclusive design needs to be applied to learning materials so as not to exclude learners with disabilities. Rafaeli (2020) presents a review of TV and radio interventions which can support gender equity and girls’ life skills. A range of programmes are reviewed and could be repurposed quickly (Rafaeli, 2020). Refugees also require particular support (UNHCR, 2020a; UNESCO, 2020b), although barriers and responses vary according to local contexts (UNHCR, 2020b).

### **Educational Quality**

The final two themes are distinct in that the focus is looking beyond emergency responses to the immediate crisis, and to the longer-term role for EdTech in LMICs. This is reflected in Figure 3 through their location at the periphery of the network; that is, this group of categories are not part of the immediate, core issues discussed so far. The focus shifts from immediate questions of continuing educational provision, to considering the efficacy and quality of education mediated by EdTech. The ‘Educational quality’ (46) theme includes three categories:

- ‘Quality’: questions of how to ensure that technology-mediated alternatives to in-person educational provision are of sufficient quality.
- ‘Learning design and pedagogy’: moving beyond technology provision, to considering activities and pedagogic affordances of the tools.
- ‘EdTech research’: research evidence would help to inform decisions about what would constitute quality educational interventions.

The category of ‘EdTech research’ is also included within this theme, as it is used in the discourse to highlight the need for more robust and rigorous research in order to make informed decisions about what will achieve quality education using technology.

While the need to support at-risk learners has been discussed in the previous section, the distinction between those and issues here are looking toward the role of EdTech in the longer term. Learning design and pedagogy are included here in terms of a need to understand and evaluate what works and why in relation to the use of EdTech. Related issues include the need for teacher education, and broadening conceptions of learning to include social and emotional learning (Holla & Cobo, 2020). As Moreno and Gortazar (2020) note, the digital divide is also manifest at the level of different schools.

Discussing educational quality is underpinned by a question of how we know what represents quality education. This is a gap which could be addressed by the research literature; however, there is a need for further high-quality, contextualised research in EdTech in LMICs (Outhred & Lipcan, 2020a). This is also reflected by the sample of documents analysed here; examples cited in the documents are more likely to point to tools or anecdotal evidence than research. Outhred and Lipcan (2020b) suggest that one of the reasons why EdTech research is problematic is the need for concerted efforts between stakeholders across all levels of educational systems, citing sustainability science as a field with similar challenges.

In the immediate term, there is greater scope for collaboration and sharing knowledge across different regions and countries (Azzi-Huck, Blom, & Bend, 2020; Lwamba, 2020). As an example of how to foster scalable initiatives, Hannahan (2020) describes the model of the Real-time Scaling Labs, currently active in Botswana, Côte d'Ivoire, Iraq, Jordan, Lebanon, the Philippines, and Tanzania. Some view the current crisis as an opportunity to test new approaches; however, this is controversial, due to concerns around potential exploitation and safeguarding. While it would be sensible for any developments to be well-documented (e.g., writing up a case study as a final step of an initiative; UNICEF, 2020), research standards for crisis-affected areas must be upheld (INEE, 2020).

## **Futures**

The 'Futures' theme is also concerned with longer term educational transformation and technology in LMICs (44), at a broader, systems-level. Categories include:

- 'Longer term planning and change': plans for return to schools, and ways of strengthening systems in the longer term to improve resilience.
- 'Funding': discussions of potential and actual funding models for supporting change, frequently involving non-governmental organisational donors.
- 'Private sector': instances where a role for for-profit organisations (of varying size) is discussed.

As shown in Figure 3, the categories of 'funding' and 'private sector' were closely linked within the theme, via the potential role for public-private partnerships. Informed by experiences with conflict-affected and vulnerable populations, UNESCO (2020c) recommended a focus on catch-up and recovery in the immediate aftermath, followed by looking toward building preparedness for the future. As the extent of learning loss during the closures will be unequal, an initial imperative is to gauge this loss and provide extra support as required (DeStefano, Piper & Stern, 2020). The phrase 'build back better' appears several times, and the crisis is linked to an opportunity to improve educational systems and their resilience (Whizz Education, 2020). For example:

This is a challenge but also an opportunity. Thought is required now on how to reboot education systems, to build back better, stronger integration between services, real local ownership, smart use of technology and with a recognition that we ignore our environment at our peril. (Bangay, 2020)

Even at this early stage of the response, examples are given of new private sector partnerships. Diop (2020) calls for investment in infrastructure to improve connectivity; Amaglo-Mensah (2020) outlines the partnership between UNESCO and corporate partners to improve digital infrastructure in Ghana in the wake of the pandemic. GEM Report (2020) draws upon the example of Bridge Academies, in discussing balancing the ethics and risks associated with the dilemma of enacting strategies which may exacerbate inequalities.

Supporting education during the pandemic has been a key area for donor funding, and partnerships with private companies are taking root (Carvalho, Hares & Mundy, 2020). However, the authors caution that for-profit partnerships may prove unsustainable; Menashy (2020) reflects upon the issue of business involvement through the example of recent research in the context of Syrian refugee education (Menashy & Zakharia, 2017). Colenso (2020) notes that the private education sector model may be unprofitable during the crisis, and suggests ways in which the private and state sector may work together.

## **Conclusions**

The advent of the COVID-19 pandemic prompted school closures across the globe, and much of the discussion about how to ensure continuity of educational provision turned to the potential role for EdTech. The intense focus of discussion has shone a light on the benefits and constraints of EdTech in LMICs, in the immediate term and future. The discussions surrounding school closures in immediate response to the COVID-19 pandemic have focused voices from a range of organisations in relation to education and issues per EdTech readiness in LMICs. This study has provided a rigorous analysis of the themes underpinning this phenomenon. By doing so, it has identified focal areas for further research into the role that EdTech has played in practice in response to the current crisis, and important issues to be considered for further development in the longer-term response to the pandemic and future provision.

The discourse takes issues of lack of connectivity as a central theme, preventing an 'online pivot'. Connectivity is not simply an infrastructural issue, and is closely linked to socio-economic aspects of the digital divide and inequality. The risks associated with exacerbating inequalities through technology-mediated education in light of school closures are also prominent, with the poorest students, girls and other marginalised learners at greatest risk. It is therefore critical that responses are planned in a way which does not deepen inequalities and makes best use of the access and infrastructure that currently exists, which may differ substantially according to context and will need careful consideration of local circumstances.

In the immediate responses, multimodal provision (principally radio, television and online) and methods for supporting continuation of education take their lead from the literature on education in emergencies, particularly recent experiences of Ebola outbreaks in West Africa. This aligns with the characterisation of the immediate responses as 'emergency remote education' (Bozkurt et al, 2020). As a short-term response, this is a useful framework. However, the role for EdTech is also linked within the discourse to longer term change, so drawing upon emergency responses will be insufficient. To be

able to deploy remote teaching at short notice in the future, for instance in response to localised school closures, developing educational materials in a range of formats would be useful.

It is also important to note that improved research and reporting would be helpful; Anderson (2020) points to examples of a range of other crises in recent years where EdTech or distance education was deployed but not well documented. Although research may not be a priority in the current emergency context, it may be possible for informal network building to take place, to allow practitioners to share accounts of emergent practices. This is an area in which technology could usefully play a role.

Overall, the discussion in the sampled articles focused on broad, systems-level and social issues. Although the risks of exacerbating inequalities through EdTech were a major focus, and the need for caregivers and teachers to adapt their roles was highlighted, there was relatively little discussion around learners, and the actual process of learning was not foregrounded. This may reflect the short time period being studied, that is, immediate responses, at which point there was not a clear picture of how responses would be implemented, in policy or on a practical level. Furthermore, a more detailed examination of the impact upon learners and the role for technology would need to be much more nuanced, to account for educational level and context. This is an area which would be valuable to explore in further depth.

The focus on connectivity carries an implication that, if it were achieved, such a pivot would be unproblematic. This is not the case and would also call for a critical reflection on pedagogy, improving teacher and carer support, and caution in developing commercial relationships. If calls to 'build back better' are to be successful, all aspects must be addressed, not technology alone. While education in emergencies provides a useful, evidence-based framework to an extent in guiding the immediate responses, looking beyond this evidence base and towards wider EdTech research will be necessary in the future. Furthermore, there may be negative effects in the future if EdTech is implemented at reduced cost in response to the immediate crisis but proves to be unsustainable in the longer term. Commercial partnerships initiated under these circumstances must also consider the future relationship and implications.

There are three main limitations to the study. First, while the best efforts were made to search widely for documents for inclusion, the sample is unlikely to be exhaustive, and will exhibit an English language bias. Nonetheless, the themes surfaced in this paper provide a snapshot of the discourse during this period and the critical issues brought to the fore regarding the role of EdTech in LMICs. The articles included in the study are unlikely to have undergone peer review, although this is an inherent limitation of considering this medium as an object of study. Second, the analysis is exploratory and subject to the researchers' interpretation. The analysis does draw upon a large sample of articles; to ensure that the emergent themes are well supported by the data, however, the themes identified are quite broad. There would be value in follow-up work to examine each of the main themes in further detail. Third, the present study is also limited in that it focuses upon a narrow period of time, and by focusing on broader themes within the discourse, detail may be lost. Making the collection of links to articles available may be useful for others to follow up on any areas of more specific interests. Although this time period was chosen because of its unusual levels of activity and discussion around the topic at hand, discussions have continued to evolve beyond the date selected as a cut-off point. In terms of future work, all of the areas discussed would be valuable starting points for

further detail and exploration in practice, as the impacts of the pandemic and school closures are likely to be felt for some time.

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