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Realising the potential of technology in education

Your Questions Answered: Using Technology to Support Gender Equity, Social Inclusion and Out-Of-School Learning

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Introduction

On Thursday, May 21, 2020, the EdTech Hub participated in a DFID / Girls' Education Challenge COVID-19 webinar which welcomed development professionals from 21 countries including the UK, Kenya, Zimbabwe, Afghanistan and Nepal. The session focused on how to stay committed to issues regarding gender and social inclusion during the COVID-19 crisis.

This document provides answers to a consolidated list of 10 questions received from stakeholders during the session. To address any overlap, we have occasionally combined multiple questions into one. In other cases, where multiple important issues in a single question merited focused responses, we split apart questions. The questions answered in this document are:

1. What are some good practices to support girls to engage with technology, to ensure educational programmes do not do harm, and to address the digital gender divide?
2. How can technology support those with a disability?
3. How can we provide learning to children in remote, rural, and hard-to-reach areas?
4. What devices work in areas with low connectivity or electricity?
5. How can we engage groups with low technological understanding or technophobia?
6. How can we engage groups with a lack of literacy, who have recently begun schooling, or who have never been to school before?
7. How can we support the education of those with compounded disadvantages?
8. How can tech, no- and low- tech options help teachers and local government staff support their vulnerable students?
9. Can tech support communication between individuals who do not speak the same language? Can technologies be easily adapted to the local language?
10. How can the barriers of availability, costs and coverage that developing countries face with regard to the use of EdTech be addressed?

Many of the questions answered in this document start by asking, "How can technology...". This phrasing assumes that technology is necessarily the right solution. This is often not the case when it comes to disadvantaged populations since, even when they can access technology, their ability to use that opportunity is proportional to their socio-economic status (↑Adam, 2020). Hence, when reading our answers, it is important to keep in mind that policymakers and education decision-makers should try as much as possible to ask instead, "What are the needs of the learners I am responsible for, what needs to be done to address them, and what role might technology play?" (↑Coflan & Kaye, 2020).

The above questions are relevant to audiences beyond the webinar participants. They are generally representative of questions we receive from similar groups around the

world. In order to provide insights to policy-makers, programme funders, private sector actors and other stakeholders working on EdTech, we have therefore made this document publicly available.

Questions and answers

1. What are some good practices to support girls to engage with technology, to ensure educational programmes do not do harm, and to address the digital gender divide?

A more in-depth answer to this question can be found in Ruth Naylor and Kristine Gorgen's recently published report[1] on supporting marginalised girls' education through EdTech during the COVID-19 crisis.

When planning educational interventions which utilise technology, it is important to consider the barriers limiting access to technology for girls. These interventions are otherwise likely to result in increased gender disparity (↑Barringer, et al., Forthcoming; ↑Naylor & Gorgen, 2020). Education technology can work equally well for boys and girls. Girls may in fact feel more empowered by the use of ICT than boys and are likely to make greater use of technologies when given access (↑Barringer, et al., unpublished). However, access to technology is often unequal. Inside the home, girls disproportionally bear the burden of household chores (↑Wenham, et al., 2020) and may be limited by gendered attitudes and gatekeepers. Outside of the home, girls are likely to have more limited access to community internet and media facilities due to concerns for their safety.

To ease this gender divide, education professionals can:

1. Raise parents' awareness of the out-of-school education resources available and of the benefits that girls' access to education technology could bring. Such messages could efficiently be conveyed through the channels already used to deliver out-of-school education (↑Naylor & Gorgen, 2020).

2. Explore a range of ICT options (mobile telephony, television, radio...) to offer girls additional ways to access education (↑Barringer, et al., unpublished).

When planning new technology-based learning opportunities to support out-of-school learning during COVID, this set of recommendations can help to improve learning opportunities for girls:

1. Women should be well represented among the presenters and producers of educational content.

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[1] https://docs.edtechhub.org/lib/SLJSKY8J

2. Content should support group learning, high-engagement learning, real-world learning, and project-based learning.

3. Girls should have access to safe spaces (virtual and / or physical) where they can interact and learn together. For girls with access to mobile technology, this can be facilitated through social media platforms. When technological access is limited, marginalised girls may still need to meet with other girls physically (↑Naylor & Gorgen, 2020).

4. The scheduling of broadcasts should take into account girls' workload and preferences. Evidence arising from the use of radio indicates that girls prefer to listen in the evening.

5. Wherever possible, out-of-school education courses should include the provision of study centres and in-person facilitators or teachers. Programmes which solely use a mix of print media, online content and television in combination with tutorials and workshops are less likely to be effective.

6. The fact that girls are more often subject to compounded disadvantages should be taken into consideration. In the Democratic Republic of the Congo, for example, girls are more likely to only speak Nande and other local languages than men. Designing out-of-school education courses in official languages such as French and Swahili could further marginalise such girls. However, this consideration needs to be weighed against the fact that members of linguistic minorities can expand their ability to communicate and earn higher salaries by learning the dominant language (↑Grenier, 2015).

More generally, to support the out-of-school education of girls, a number of strategies have been shown to be effective (↑Naylor & Gorgen, 2020):

1. Cash transfers, best delivered through mobile phones, can help to ensure household food and basic livelihood security. In turn, this may serve to reduce the likelihood of girls facing harm during the lockdown, and can help them return to school after the end of the crisis (↑Akmal, 2020; ↑Jenkins & Winthrop, 2020). The provision of cash can also reduce the direct cost of accessing education (cost of devices, cost of accessing software and content, electricity costs, data costs, etc).

2. Providing girls with devices or with internet connections and data as part of a broader out-of-school-education package can enable them to continue learning. We know that the provision of devices on its own, without training or support, does not improve learning.

3. Taking into account safeguarding considerations can help to mitigate the risks faced by girls (↑Jenkins & Winthrop, 2020). Girls face increased risks of online abuse when provided with internet access for educational purposes, and generally increased risk of abuse during emergencies (↑Hallgarten, 2020). Technology can be used to allow girls to report abuse, to send targeted or

general messages to girls regarding pathways to support, or to engage in bi-directional communication. Caregivers and teachers can also be contacted to raise their awareness of safeguarding issues and protocols.

2. How can technology support those with a disability?

A more in-depth answer to this question can be found in:

1. *Caitlin Moss Coflan and Tom Kaye's recently published report[2] on using EdTech to support learners with special educational needs in low- and middle-income countries.*

2. *This recent report[3] by the Education Development Trust on reaching the most disadvantaged learners during the COVID crisis.*

While technology on its own is no silver bullet, it can play a supporting role in inclusive education approaches that work for all types of learners. Technology can help facilitate the application of three Universal Design for Learning principles[4] of representation, engagement, and action and expression (↑CAST, 2018). However, we know that access to accessible and assistive technology is limited in low- and middle-income country contexts. Coflan and Kaye's (↑2020) brief includes an annex of accessible and assistive technology with information on costs and availability in LMICs.

During school closures due to COVID-19, education decision-makers are looking to technology to support out-of-school learning. When providing hardware and software, investment in accessible technology[5] can help promote inclusion (↑G3ict, 2020). Decision-makers should also consider targeting the provision of assistive technologies based on learners' specific needs. The Inter-agency Network for Education in Emergency's (INEE) guidance note[6] points to available online, offline, print and audio resources that can support inclusive distance learning (↑McGeown, et al., 2020). A second guidance note[7] provides resources and ideas specifically for teachers to support children with disabilities during the COVID-19 crisis (↑McGeown, et al., 2020).

3. How can we provide learning to children in remote, rural, and hard-to-reach areas?

Household access to technologies varies widely within countries. A recent UNICEF research brief[8], for example, reported that in 40 out of the 88 countries they sampled, TV-ownership rates among urban households were more than double that of rural households. The largest disparities were in sub-Saharan Africa. To ensure that

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[2] https://docs.edtechhub.org/lib/355HPKG3
[3] https://docs.edtechhub.org/lib/G647DH86
[4] http://udlguidelines.cast.org/
[5] https://buyict4all.org/
[6] https://docs.edtechhub.org/lib/I44RINL4
[7] https://docs.edtechhub.org/lib/LEYPBIJF
[8] https://docs.edtechhub.org/lib/RIGJ57SP

populations living in remote areas have access to education, governments need to gain an understanding of who has access to what devices[9]. Using this data, they can ensure that learning is delivered through multiple channels that respond to their population's varied needs (↑Haßler, et al., 2020; ↑Dreesen, et al., 2020; ↑World Bank, 2020; ↑Burns, 2020).

Individual country responses to the COVID-19 crisis offer examples of how various technological channels can be used to educate children in hard-to-reach areas. In Somaliland and Burkina Faso, governments and educational actors are delivering radios to those living in remote areas. In Burundi, SD cards meant for mobile phones and preloaded with audio content are being distributed (↑Dreesen, et al., 2020). HundrED, a global education non-profit initiative, provides a list[10] of other solutions used to reach remote populations with little to no connectivity (↑Aladin, 2020). When delivering such tech-based solutions, it is important to consider how the type of technology chosen will differently influence disadvantaged sub-groups (girls, those with a disability, linguistic minorities, etc.). It is equally important to remember that technology on its own, without support or training, does not raise learning outcomes (↑Naylor & Gorgen, 2020).

Alternatively, methods that rely on individuals to provide access to technology and/or learning might be a cost-effective type of solution to reach those in remote areas. ↑Hallgarten (2020), in a review of solutions used during the Ebola crisis, for example, describes how radios were distributed to facilitators in Kailahun (one of the poorest districts in Sierra Leone). The facilitators then created listening groups, thus enabling an audience of 137,000 to hear programmes created in three languages and leading to high levels of child engagement. Likewise, in Zimbabwe, using mobile phones, IGATE-T[11] has recruited around 100 'Learning Champions' who are literate, numerate and willing to help. After being given a monthly data allowance, these individuals share activities sent to them on their mobile phones with parents and caregivers (↑Power, 2020). This programme was put into place in response to the COVID-19 crisis and has not yet been evaluated. However, ↑Naylor & Gorgen (2020) state that local facilitators have been demonstrated to be effective in delivering foundational literacy and numeracy skills for marginalised girls when they are equipped with structured pedagogical materials, ongoing training and regular supervision.

Finally, it is important to keep in mind that tech-based solutions are not always the right answers. Governments also need to consider low- or no-tech solutions.

4. What devices work in areas with low connectivity or electricity?

For an in-depth overview of the tech-based modalities available for out-of-school education, alongside an analysis of the equity factors associated with each modality, please see USAID's

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[9] https://docs.edtechhub.org/lib/JMDCGPBJ

[10] https://hundred.org/en/innovations/reaching-children-students-in-remote-locations
[11] https://docs.edtechhub.org/lib/8RXKC68I

recent report[12] (↑Morris, et al., 2020). A shorter piece[13] is also available on the Global Partnership for Education's website (↑Burns, 2020). For an answer to this question, which moves away from tech-centred advice, please see this Center for Global Development's blog post[14]. It looks at equity-focused approaches to learning loss during COVID (↑Mundy & Hares, 2020).

Considering that access to electricity and connectivity remains limited in many low- and middle-income countries, it is important to look into low- or no-tech solutions for the implementation of out-of-school learning programmes. Programmes that rely solely on technologically-mediated learning are otherwise likely to increase within-country inequality of learning opportunity (↑Mundy & Hares, 2020).

Where children have access to devices but have a limited ability to connect to the internet, a large number of 'offline' resources which are usually part of learning platforms are available. Some of those platforms are designed for individual use while others are designed for classroom use. A notable resource is Kolibri[15], a free, open-source Learning Management System. This system allows educators to download content and updates when they have access to the internet. Users can later share the items they downloaded with other devices, thus creating an offline network which can be accessed by communities without network access. Kolibri is thus designed for offline, school-based usage, but could contribute meaningfully to out-of-school learning too (↑Learning equality, 2020). A description of Kolibri, together with an extensive record[16] of other resources, many of which can work offline, has been made available by the World Bank (↑World Bank, 2020).

Rather than relying on individual media consumption as described above, most countries rely on broadcast media, such as radio and television. These media can be paired with text messaging, digital downloads, and low-cost newspaper inserts to maximise student engagement (↑World Bank, 2020). An in-depth review of these options by the EdTech Hub can be found in the work of Chris McBurnie with regard to radio[17], and that of Joe Watson for television[18] (↑Watson, 2020; ↑McBurnie, 2020). Alternatively, experimental programmes suggest that SMS messaging or phone calls may be used to provide simple learning activities and to maintain student engagement in their learning. This option, however, does not replace formal education (↑Mundy & Hares, 2020). ↑Mundy & Hares (2020) suggest that such low-tech solutions are likely to be most effective when combined with opportunities for interactive engagement (including with family members), outreach from teachers, and access to learning materials.

It should be noted that the technological solutions detailed above might not be available to every child. The Center for Global Development, for example, points out

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[12] https://docs.edtechhub.org/lib/D8JL8DRY
[13] https://docs.edtechhub.org/lib/PSW9X5JE
[14] https://docs.edtechhub.org/lib/INAZVHPJ
[15] https://learningequality.org/kolibri/
[16] https://docs.edtechhub.org/lib/6ZR5TDX6
[17] https://docs.edtechhub.org/lib/A3T2DQ4D
[18] https://docs.edtechhub.org/lib/BGP7GCNU

that fewer than 40% of all households in low- and low-middle-income countries own radios and televisions (↑Mundy & Hares, 2020). In contexts where technology-based interventions are not feasible, countries can make use of paper-based learning packs, a solution implemented by almost half of the countries recently surveyed by UNICEF (↑Dreesen, et al., 2020). UNICEF provides an overview[19] of the advantages and limitations of paper-based approaches, together with some illustrative examples (↑UNICEF, 2020).

5. How can we engage groups with low technological understanding or technophobia?

Individuals can have negative feelings such as fear, stress and anxiety when using different technologies (↑Khasawneh, 2018). Understanding how this can be addressed is especially relevant in the current context, where numerous students around the world must access education through technology while schools are closed. Unfortunately, the literature on the subject is scant. With regard to students, a study of low-income groups in Colombia, Mexico, and Peru finds that lack of education is the most important factor limiting the ICT usage of these populations. Governments and NGOs thus need to implement tailored training courses for individuals who have not received formal education. Since this option is not available in the short term, governments may wish to, at the moment, turn to low- or no-tech options to reach populations which are not comfortable with technologies.

Aside from students, education professionals also need to consider teachers' digital confidence. A lack of self-confidence among teachers is commonly seen by experts as a central barrier to the successful use of technology in education (↑Pellini, et al., 2020). To overcome this issue, professional development activities can be put into place to develop teachers' digital skills and improve their confidence (↑Braun, et al., 2020). In the current COVID-19 context, such professional development would have to take place remotely. ↑McAleavy, et al. (2018) provide a helpful summary[20] of how technology can be used to support teacher education. The EdTech Hub is also currently working on releasing advice on the features of effective teacher education and how technology can support it.

Additionally, it is important to acknowledge that there are gender differences with regard to confidence in the use of technology. Although this does not reflect a difference in actual ability, women tend to be less confident about their digital skills (↑Braun, et al., 2020; ↑Achuonye & Ezekoka, 2011). ↑Meno (2012), for example, notes that girls may be afraid about breaking computer hardware, or feel uncomfortable using the internet without prior knowledge of what could be on websites. Research by ↑Hilbert (2011) suggests that this may be a result of women's unfavourable position with regard to education, employment and income. Once differences between men and women in terms of these variables have been removed, women turn out to be more

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[19] https://docs.edtechhub.org/lib/UP46B6GB
[20] https://docs.edtechhub.org/lib/FXXS4882

active users of digital tools than men. However, since differences in education, employment and income cannot be ignored in practice, educational officials should take into account gender differences with regard to confidence in the use of technology to ensure the digital divide does not grow further.

6. How can we engage groups with a lack of literacy, who have recently begun schooling, or who have never been to school before?

To engage students with low levels of literacy, media based around auditory and / or visual input are most appropriate. The UN, for example, mentions that radio shows are an essential way to reach a large number of individuals in cases where a population has variable levels of literacy (↑United Nations, 2020). Likewise, TV could be an appropriate medium to use. Please see the World Bank's guidance note on how best to use television for educational purposes (↑World Bank, 2020). Phone calls and printed resources focused on using images to communicate could also help education professionals engage with populations with low literacy levels. However, it might be difficult to fill gaps in individuals' literacy skills using solely technology. Lessons learned through the education of refugees indicate that there is currently no strong evidence that technology (at least in the form of apps) can be successfully used to support individuals with low levels of literacy become fully literate (↑UNESCO, 2018).

In terms of helping caregivers with low-level of literacy support their children's learning, the EdTech Hub suggests that parents and caregivers could develop their children's academic and life skills through their daily routines. For further details please see ↑Kaye, et al. (2020)'s response to Nepalese audience questions. Alternatively, it might be possible for local facilitators to be recruited so that they can support the learning of children whose parents are not fully literate. For more information, see Tom Power's recent blog post[21] on the subject (↑Power, 2020), as well as our previous description of methods that rely on facilitators to provide access to learning.

With regard to young learners who may have only recently begun schooling, or have never been to school before, the World Bank has released a guidance note[22] detailing 15 ways that these children and their families can be supported during the COVID-19 crisis. In terms of advice related to education, they mention that radios[23], televisions[24], mobile phones and distance-education platforms can disseminate educational content adapted for young learners, as well as key messages for families. In fact, the World Bank points out that younger students require more audio and visual input than older students, making television and radio predominant out-of-school-learning tools for this demographic (↑World Bank, 2020). Additionally, they point to the fact that social media can be used to amplify key messages for parents and to allow them to build support

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[21] https://docs.edtechhub.org/lib/8RXKC68I
[22] https://docs.edtechhub.org/lib/PQHEWVUR
[23] https://docs.edtechhub.org/lib/A3T2DQ4D
[24] https://docs.edtechhub.org/lib/BGP7GCNU

networks (↑World Bank, 2020). Further information can be found in a second guidance note[25] on investing in early years during the COVID-19 crisis (↑World Bank, 2020).

7. How can we support the education of those with compounded disadvantages?

When thinking about how to support those with compounded disadvantages, it is important to first understand that disadvantages do not merely add up, they multiply (↑UNESCO, no date). This is illustrated by the example of Mexico, where women who only speak Spanish are less likely to have finished primary school than men who only speak Spanish by three percentage points. Men who only speak Spanish are also 18 percentage points more likely to have completed primary school than men who speak an indigenous language. Given these indicators of the size of the gender and ethnic gap in Mexico, we might expect that women who speak an indigenous language are less likely to have completed primary school than men who only speak Spanish by a margin of 21 per cent. However, since disadvantages multiply, women who speak an indigenous language are in fact 30 percentage points less likely to have completed primary school (↑Tas & Reimao, 2014).

The above example suggests that we cannot assume that the experiences of, say, women with disabilities are simply a combination of those of women and those of individuals with a disability. Instead, individuals with compounded disadvantages are likely to face challenges that are unique to them. To respond to these distinctive needs, education officials should begin by gathering qualitative and quantitative data on the way the intersectionality of various disadvantages affects the educational experiences of affected individuals. Using technology to gather this data may help to increase speed and reduce costs, as suggested by the World Bank's experience[26] in Sierra Leone (↑Namit & Mai, 2019). Based on this information, officials can then develop targeted interventions, ensuring that the populations they are working to assist are part of the decision-making process (↑Lokot & Avakyan, 2020).

8. How can tech, no- and low- tech options help teachers and local government staff support their vulnerable students?

For more information on how to unlock the potential of teachers in response to COVID-19 in low-income countries, please see this recent Global Partnership for Education blog post[27] (↑Bullard & Sonnenberg, 2020).

Technology may be used to help teachers continue with their work during the COVID-19 crisis. It can, for example, help to connect teachers with disadvantaged students. In

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[25] https://docs.edtechhub.org/lib/EVLP58NV
[26] https://docs.edtechhub.org/lib/TIEFATQQ
[27] https://docs.edtechhub.org/lib/43SE8ETE

areas where this population has access to devices, and where internet connectivity is good, teachers can be involved in distance teaching using platforms such as Zoom[28] or Google Meet[29]. This is for example being done in Lebanon (↑Beteille, et al., 2020). When engaging in distance education, teachers should take into account the current understanding of what constitutes effective pedagogical practices[30] for this context (↑McAleavy & Gorgen, 2020). In situations where this is not possible, phones may offer a suitable communication medium. WhatsApp or text messages can allow teachers to share materials, assign work and offer feedback, as is the case in South Sudan and Bhutan. Alternatively, call-in centres can link teachers with disadvantaged students, as has been done in Sierra Leone and El Salvador (↑Bullard & Sonnenberg, 2020).

To allow such use of technology to take place, the World Bank[31] suggests that teachers should be provided with access to broadcast and digital communication channels (radio, television, text, phone or email) (↑Beteille, et al., 2020). For example, as schools were closing in the Kyrgyz Republic, teachers were provided with SIM cards which enabled them to access WhatsApp and online materials. However, government officials should remember that, "The best technology is the one you already have, know how to use, and can afford." (↑Trucano, 2013). It should also be noted that teachers will need to be supported through professional development to ensure they make the best use of the technology that is available to them (↑Beteille, et al., 2020; ↑McAleavy & Gorgen, 2020). See ↑McAleavy, et al. (2018) for more information on tech-based teacher education.

Alternatively, teachers could be asked to move away from their work of 'leading' students' learning to focus on more supportive roles. In the Maldives, for instance, video lessons are followed by interactive sessions between students and teachers. During the Ebola outbreak in Sierra Leone, teachers likewise reinforced the key messages of radio lessons by convening small (socially distanced) learning groups. Such supplementary engagement with teachers can help to establish 'teaching presence', which benefits students (↑McAleavy & Gorgen, 2020). In addition, teachers could help guide parents and caregivers to enable them to support their children's learning, obtained either through curriculum-based out-of-school learning or informal, play-based learning. Teachers hold valuable insights regarding their students' academic and social-emotional needs. They should thus be actively involved in helping ministries and schools develop their educational response (↑Bullard & Sonnenberg, 2020).

With regard to local government staff, as previously discussed, technology could help them to convey messages that address the needs of disadvantaged individuals. Technology also holds the potential to help local government staff in their data-gathering efforts. Indeed, educational policy responses to the COVID-19 crisis should be based on an understanding of the extent to which the local population has access to devices and on an analysis of their needs (↑McAleavy, et al., 2020). Members of the EdTech Hub suggest that local government staff need to gather data about:

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[28] https://zoom.us/
[29] https://meet.google.com/
[30] https://docs.edtechhub.org/lib/CKA82YZA
[31] https://docs.edtechhub.org/lib/EVVG746M

- The central government's COVID-19 policy response.

- The population's device and internet availability rates.

- The infrastructure that is already in place and which might support remote learning.

- The ongoing impact of responses to COVID-19;

- The side effects of school closures (↑Hassler, et al., 2020).

Using technology can help to increase the speed with which this information is acquired, and can serve to decrease the cost of the process (see Sierra Leone's example; ↑Namit & Mai, 2019).

9. Can tech support communication between individuals who do not speak the same language? Can technologies be easily adapted to the local language?

Language barriers can prevent individuals from accessing the educational information and services they need, thus putting them at risk of falling behind. Furthermore, it has been recognised that there is a link between gender and language. In the Democratic Republic of the Congo, for instance, relying on official languages such as French and Swahili could be especially problematic for girls, who are more likely to only speak Nande and other local languages. In this context, technology can help facilitate interactions between people who do not speak the same language (↑McCulloch, 2020) and ensure that education initiatives are inclusive.

In the context of work with refugees, online translation services such as Google Translate[32] and DeepL[33] have been used to instantly translate typed texts. The written translations can then be read out loud by the software, to support spoken conversations (↑UNESCO, 2018). The quality of these instantaneous translations does not match those of translations produced by a professional translator. However, this method can be appropriate when the texts requiring translation are written in simple, formulaic structures (↑The Translation People, no date).

Sometimes mainstream automated translation solutions are not appropriate. Google Translate for example only supports around 100 languages. In this case, apps can be designed to respond to a specific population's needs and to link individuals with live translators (see Tarjemly Live[34] as an example). Text messages can also be used to provide individuals with translation services when access to smartphones is low (see Nowall[35] for an example) (↑UNESCO, 2018). Including a translator in phone calls may

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[32] https://translate.google.com/
[33] https://www.deepl.com/translator
[34] https://www.tarjemly-live.com/en/
[35] https://docs.edtechhub.org/lib/DFM4L4LJ

offer an additional solution to instantly interpret spoken conversations (see Wuqu' Kawoq[36] for an example) (↑McCulloch, 2020). Skype[37] provides an interesting model of online translation, where two individuals on a video call can choose to have the other person's speech instantly subtitled and for these subtitles to be translated to a language of their choice.

Not only can technology be used to allow people who do not speak the same language to communicate, but it can also be used to quickly translate digital content. In the case of websites, plugins can be used to ensure that, when the content of the website is updated in one language, new information is automatically translated into a target language (↑The Translation People, no date). This process, of course, suffers from the same drawbacks as other automated forms of translation. Additionally, it should be remembered that translating content is not a substitute for ensuring that it is adapted to the local context. This is where the distinction between translation and localisation[38] comes in (↑Clear words translations, 2017; ↑Trucano, et al., 2012).

10. How can the barriers of availability, costs and coverage that developing countries face with regard to the use of EdTech be addressed?

Availability, cost and coverage are just some of the many barriers that limit the uptake of EdTech. Issues such as a lack of appropriate teacher training, lack of political will, insufficient funding, as well as cultural and social factors, all contribute to explaining why the use of EdTech is less developed in low- and middle-income countries compared to high-income countries (↑Khan, et al., 2012). Since availability, cost and coverage are issues linked with countries' infrastructure, they are unlikely to disappear in the short term. Even if structural issues could be instantly removed, the diffusion of technologies often takes a long time, given that it requires institutional, social and organisational changes (↑LaFleur, et al., 2016).

Therefore, for use with children, governments should only draw on technologies that are already available to those learners. Given that children in many contexts are very unlikely to have direct access to technology, this means that it would be unwise to invest in technology-based solutions. Instead, governments should focus on supporting other education stakeholders (ministry workers, district supervisors and, in some contexts, teachers) who do have access to some technologies. Alternatively, the Broadband Commission for Sustainable Development[39] has also put forward ideas about immediate actions that organisations can undertake to support the development and strengthening of digital networks in response to the COVID-19 crisis (↑Broadband Commission, 2020).

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[36] http://www.wuqukawoq.org/
[37] https://www.skype.com/en/
[38] https://docs.edtechhub.org/lib/ZTFVGY6P
[39] https://docs.edtechhub.org/lib/8UAYJE3V

In the long term, governments may be able to reduce the cost of digital technologies by reducing the import taxes placed on these items and prioritising their import. Coverage could be improved by making use of innovative technologies such as television whitespace[40], which takes advantage of unused broadcasting frequencies in the wireless spectrum. This could help to bridge the digital divide faster than wired technology such as fibre-optic connections (↑Harris, 2019; ↑Gilpin, 2014). Working with private companies [41] could also help to reduce household costs associated with online learning (↑UNESCO, 2020), as exemplified by zero-rating[42] (↑McBurnie, et al., 2020) or BRCK's Moja[43] product (↑McAleavy, et al., 2020). However, for these policies to be effective, governments will need to adopt long-term, system-wide thinking. Governments need to realise that, when it comes to technology, they are operating with significant uncertainty and will thus need to adopt a trial-and-error approach. This will allow their policies to be shaped by new experiences and developments (↑LaFleur, et al., 2016). To reap the full benefits of ICTs, the UNESCO[44] suggests that in addition to increasing access to ICT and broadband, governments will need to:

1. Incorporate ICTs into job training and continuing education;

2. Teach ICT skills and digital literacy to all educators and learners;

3. Promote mobile learning and open educational resources;

4. Support the development of content adapted to local contexts and languages (↑Williams & Parkes, 2013).

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[40] https://docs.edtechhub.org/lib/BRHSZUJB, https://docs.edtechhub.org/lib/B2C9UCII
[41] https://docs.edtechhub.org/lib/D8N5ZP96
[42] https://docs.edtechhub.org/lib/8HLJ54Y8
[43] https://www.brck.com/moja/
[44] https://docs.edtechhub.org/lib/N8IVNWBY

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