



Task Force 4  
**Digital Transformation**

## Policy brief

# DIGITAL LEARNING FOR EVERY CHILD: CLOSING THE GAPS FOR AN INCLUSIVE AND PROSPEROUS FUTURE

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# ABSTRACT

Pre-COVID-19, half of the world's children were already unable to read a simple text by the age of 10. School closures have deepened pre-existing learning disparities, within and among countries, due to inequities in access to technology. This brief summarises research findings and provides actionable recommendations for how to equitably scale up digital learning and provide children and young people with the skills to improve their prospects and safeguard their well-being. It pinpoints solutions for education systems' use of digital and blended learning anchored in a sound pedagogical approach and urges the G20 and other countries to overcome the barriers that limit the potential benefits of digital learning.



# CHALLENGE

**Even before COVID-19, 48% of the world's children – and 90% of children in low-income countries – were 'learning poor': unable to read and understand a simple text by age 10** (World Bank 2019). The global figure is expected to rise to 58% as a result of the pandemic (Azevedo 2020).<sup>1</sup>

**Inaction not only threatens efforts to achieve Sustainable Development Goal 4 – to ensure inclusive and equitable quality education – but is also contrary to the Convention on the Rights of the Child and General Comment No. 25** on children's rights in the digital environment. Recognizing the importance of meaningful access to digital technologies, including in educational settings, it points out that “if digital inclusion is not achieved, existing inequalities are likely to increase, and new ones may arise.”<sup>2</sup>

**Major barriers to digital learning persist.** During school closures, more than two-thirds of children globally were unable to access online learning (UNICEF and ITU, 2020). Lack of electricity (particularly in Africa), connectivity, affordable data and devices are compounding factors that impede equitable access to digital learning. Parents' lack of literacy and digital skills and reluctance to let children – girls in particular – access the internet are added obstacles. Children's own lack of digital skills, even in wealthier countries, can also stand in the way; children from the poorest families feel less confident in their capacity to cope with digital learning activities (Vuorikari et al. 2020).

**Designing content for specific context and learning goals are vital for effective learning platforms.** Incentivized by the pandemic and school closures, the digitalization of education is leading to profound changes. Evidence increasingly shows that digital learning is more effective when embedded in a clear pedagogical framework supporting teachers (Tamim et al., 2011). It raises new challenges regarding the role and required skills needed for teachers to effectively deploy technology.

**Shifting to more digital learning can change children's daily routines.** Unless well-managed, this can challenge their well-being and development in the long run, especially among the most deprived children. Children's time on the internet also generates growing volumes of data which raises risks in relation to cybersecurity, safety, privacy, data ownership and data privacy.

**While evidence has shown some positive results for the use of technology-enabled adaptive learning, significant evidence gaps remain, especially in low-income settings.** Specifically, evidence is still largely missing on i) the most efficient models and implementation strategies to reduce the digital divide; ii) the optimal conditions for the effectiveness of digital learning solutions within large-scale education systems – namely, to look beyond the technology itself to its integration within education professionals' skills, practices and



pedagogy; iii) the impacts of digital learning solutions (used either remotely or in the classroom) on learning outcomes in adverse settings, especially those areas with low or no connectivity; and iv) the impacts of the increased use of digital technology on children's safety, well-being, security and privacy.



# PROPOSAL

Unlocking digital learning for all children has the potential to create societies that are both more inclusive and more prosperous. As education systems recover from COVID-19 school closures, we can choose to reimagine education and address the learning crisis – to expand opportunity for millions of children and young people, giving them the chance to learn and earn a decent living.

Scaling up equitable digital learning requires actions by governments, international organisations, civil society, academia and the private sector to

1. Bridge the electrical and digital divides
2. Ensure the effective implementation of digital and blended learning for all children and their teachers
3. Protect children's well-being, safety and security
4. Invest in data collection and further research

## ***1. BRIDGE THE ELECTRICAL AND DIGITAL DIVIDES: PROVIDE ALL CHILDREN WITH AFFORDABLE ACCESS TO HIGH-QUALITY ONLINE RESOURCES***

Digital technologies have the potential to deliver education content widely and rapidly. However, the promise of digital learning remains out of reach for most of the world's children.

Digital devices require electricity. World Bank data show that, in Sub-Saharan Africa, only 47% of the population has access to electricity and progress in electrification is slow. Disparities also exist within countries.<sup>3</sup> In some countries, less than 10% of the poorest households have electricity (Dreesen et al. 2020). Even with connectivity and access, lack of electricity would still prevent children in many parts of the world from using the internet.

In terms of connectivity, an estimated 2.2 billion – or two thirds – of children and young people worldwide do not have a fixed internet connection at home (UNICEF 2020). These children predominantly live in the least developed countries where 4G mobile networks cover only 40% of the population, compared to 85% of the global population (ITU 2020).

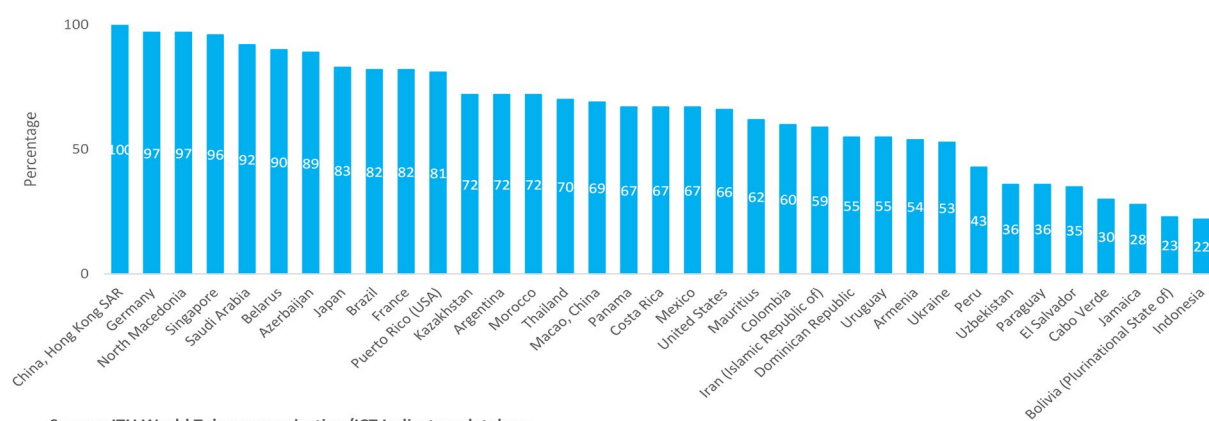
While detailed statistics on the proportion of child internet users remain scarce, internet use by children is usually associated with country wealth (Kardefelt-Winther et al. 2020; see Figure 1).

Even in high-income countries, where internet use seems ubiquitous, inequities persist. In Italy during COVID-19, one-third of children from connected households reported being un-



able to fully engage in digital learning due to a lack of adequate connectivity or devices (Mascheroni et al., 2021). In 10 European countries, grade 4 pupils from lower socio-economic backgrounds were half as likely to have internet access compared to their more advantaged peers (European Commission, 2020).

**FIG. 1 – PROPORTION (%) OF CHILDREN UNDER 15 YEARS OF AGE WHO ARE INTERNET USERS, BY COUNTRY OR AREA**



The digital divide is not only about having the basic systems and services that grant access to the internet. The kind of engagement and whether it is beneficial, highlighted as ‘meaningful connectivity’ by the Broadband Commission,<sup>4</sup> is equally important. For example, even a family with a broadband connection, or a mobile phone with 3G/4G technology, might not be able to afford going online in a meaningful way or for sufficient amounts of time.

Even with improved connectivity and more affordable data and devices, many children are still not able or allowed to use the internet for their benefit. Digital divides – linked to social norms, poverty, gender, limited skills and literacy and availability of relevant content (EQUALS, 2019; Datta et al., 2020) – endure even after connectivity is provided.

Efforts to provide meaningful access to children must, therefore, address more than just connectivity and infrastructure. Poor and marginalised girls and boys, including those with disabilities, ‘children on the move’<sup>15</sup> and those living in remote areas, are often left out of education. Moreover, students from disadvantaged backgrounds are more likely to experience a stressful home environment – with no quiet space to study or limited or lack of devices, for example – and parents who face financial and job security pressure that can prevent them from supporting their children (Di Pietro et al. 2020). However, with specific learning provisions in place that ensure inclusivity and accessibility, technologies can be game-changing for vulnerable groups.

Quick wins can stem from using readily available technology already familiar to children and families (Trucano, 2013). Research shows that children in Europe are most at ease with smartphones and tablets (Chaudron et al. 2018), which is likely to be the case globally as



smartphones are now the device most used by children. Still, only a small proportion of children own these devices (Lobe et al., 2021), which limits their access and use, and ownership is not synonymous with having digital devices that are appropriate for learning (Cachia et al., *forthcoming*).

Technologies evolve rapidly. Today's high-speed internet will soon be low-speed. Investments in infrastructure should ensure that marginalised communities are not left behind and can in fact leapfrog to higher speed networks. At the same time, digital learning solutions should be accessible to those with varying levels of connectivity. To reach all children requires finding the right balance between producing high-quality, interactive content, while also optimising applications and content to be lightweight and function with low or no bandwidth.

To address the digital divide and enable equitable digital learning:

1. **Invest in electricity and connectivity with a focus on marginalised communities and users.** Coordinated, large scale investments from G20 member states, national governments and the private sector are needed to bring electricity and connectivity to the millions of unconnected children around the world. Based on current trends, Sub-Saharan Africa won't reach electricity for all before 2081. This can, however, be accelerated through partnerships and significant capital investments to the enormous benefit of children and their future societies and economies. The GIGA initiative, for instance, leverages public-private partnerships to digitally connect every school, especially those hardest-to-reach. This initiative works not only to connect schools but also their surrounding neighbourhoods because it recognises that all households need access to electricity and connectivity.
2. **Reduce the cost of connectivity and devices.** The right to non-discrimination requires States to ensure that all children have equal and effective access to the digital environment in ways that are meaningful to them.<sup>6</sup> Yet, cost is a common barrier to access. Governments working with telecommunication companies can address this by subsidizing -appropriate for learning- devices; lowering costs to make data and content affordable; and providing educational content for free – without monetizing children's data. For instance, in May 2020, the Airtel Africa-UNICEF partnership made browsing selected websites hosting educational content free of any data charges in 13 African countries.
3. **Design inclusive digital learning and increase investments in learning systems that reach the most marginalised.** Critically, digital learning systems must not crowd out investments in quality education that can be used by the unconnected. Where digital solutions are used, minimise data costs and prioritise lightweight options that are usable offline and on affordable devices.



4. **Recognise and address cultural and social norms as barriers to access for children.** Perceptions of internet use as more or less meaningful and entrenched gender norms reducing girls' access to digital devices are barriers that need to be addressed at a normative level. Efforts to provide electricity and connectivity will help reduce the digital divide only if these barriers are also addressed and children are given the opportunity to use the internet and build digital skills. Awareness raising and providing information and education to parents, teachers and community and/or religious leaders are essential steps.

## **2. ENSURE EFFECTIVENESS OF DIGITAL LEARNING SOLUTIONS AT SCALE**

While societies work to address challenges around infrastructure and social and gender norms, digital learning solutions must be designed and implemented in ways that promote inclusive learning for all children.

Digital learning solutions have the potential to accelerate learning through various pathways. Software can be designed to support self-paced learning; enable access to learning opportunities in times of emergency (Tauson and Stannard, 2018; De Hoop et al. 2019); and adapt to each student's level through computer-assisted learning (Muralidharan et al. 2019).

Evidence increasingly shows that the introduction of technology alone is not sufficient to improve learning outcomes. Much depends on *how* technology is used within a learning system (Bulman and Fairlie, 2016). Digital solutions are effective in improving learning when they supplement and support teachers rather than replace them (Tamim et al. 2011).

To support the implementation and scale of effective digital and blended learning:

1. **Develop a clear pedagogical approach to guide the use of digital learning from a young age.** Digital initiatives work best when they are underpinned by pedagogic principles and incorporated into the educational process (Redecker et al. 2017). Co-creation between software developers and educators helps ensure that digital programmes are fit for their educational purposes (Karamperidou et al. 2020). Digital

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