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A woman wearing a pink hijab is shown in profile, looking at a computer monitor. She is holding a black pen in her right hand and has an open notebook in front of her. The monitor displays a web application with various icons and text. A keyboard and a camera are also visible on the desk.

**Quality  
and Equity  
in Digital  
Learning:**  
POLICY BRIEF

The Commonwealth of Learning (COL) is an intergovernmental organisation created by Commonwealth Heads of Government to promote the development and sharing of open learning and distance education knowledge, resources and technologies.



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# Quality and Equity in Digital Learning: POLICY BRIEF

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## Abstract

High-quality digital learning offers potential economic and social advantages but also could easily lead to a widening gap between economically advanced and low-income countries. Within countries without suitable policy, it could also generate increasing inequity between the rich, who can afford the technology, and the poor, who will not be able to access it. The main purpose of this paper is to look at what policies are needed to maintain high-quality *and* equitable access to digital learning, especially in light of experience from responses to the COVID-19 pandemic. The paper addresses technological, social and age factors influencing access to and uses of digital learning and makes several different policy recommendations for governments, institutions and teachers.



# 1. Introduction

Digital learning — the use of computers, tablets and the Internet for teaching and learning — will increase dramatically over the next few years at all education levels. Certainly, in North America, digital learning was increasing rapidly prior to COVID-19, especially in post-secondary education. The massive pivot to emergency remote learning necessitated by the pandemic will accelerate and deepen this change. While high-quality digital learning offers potential economic and social advantages, it may also widen gaps between economically advanced and low-income countries. Within Commonwealth countries, in the absence of appropriate policies, it may increase disparities among groups, based on income, ability, gender, race, ethnocultural identity, refugee status and other differentiating features. With this in mind, education systems now face the challenge of balancing quality, equity and cost with respect to digital learning.<sup>1</sup>

This policy brief considers how to leverage digital technologies to expand educational access and support teaching and learning at all levels while addressing current and potentially new forms of social inequalities. This entails identifying multi-level (international, national, institutional) interventions that support both high quality and equitable access to digital learning, while controlling or even reducing cost, especially in light of experience from responses to the COVID-19 pandemic.

## 2. Factors contributing to the expansion of digital learning

Digital learning will increase for several reasons. Automation and technology are leading to increasing volatility in jobs and work, requiring ongoing learning and continuous development of the skills needed to succeed in a digital economy. Digital learning is poised to expand in the context of at least three trends linked with these developments.

(i) Educational institutions are diversifying their programming beyond conventional offerings to include alternative and portable credentials, such as micro-credentials, to be more responsive to labour market needs and support graduate employability. (ii) Lifelong learning is becoming an essential part of the digital economy and requires differentiated strategies based on diverse learners at various life stages. These include school leavers seeking a pathway to a degree program, graduates interested in upskilling, and mid-career and mature workers requiring retraining. (iii) Digital learning requires various platforms for delivering programmes (in-class, blended and online, synchronous and asynchronous) and entails an expanding role for private-sector companies that design, develop and host educational products and services (EdTech). The global eLearning market was estimated at USD 250 billion in 2020 and is expected to reach USD 1 trillion by 2027 (Global Market Insights, 2021). Education institutions will increasingly rely on EdTech products and services such as learning management software and video conferencing systems.

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<sup>1</sup> This is a refinement of Sir John Daniel's triangle of quality, access and cost for distance education (see Daniel et al., 2009).



### 3. Quality assurance and innovation

The provision of online teaching and learning for over 25 years has rendered a body of knowledge on what works, what does not, and why. This research-informed knowledge base ensures the quality of online learning and encompasses organisational and institutional policies, as well as evidence on course design and the delivery of open and distance learning. The Commonwealth of Learning has published several toolkits related to the quality assurance of distance and online learning (see the Key Resources section at the end of this brief).

**While much can be learned from the past, digital learning also needs to be open to innovation, to doing things differently, if the full benefits are to be realised.**

While much can be learned from the past, digital learning also needs to be open to innovation, to doing things differently, if the full benefits are to be realised. Digital learning is a rapidly developing area in terms of emerging technologies such as video conferencing, simulations, educational games, open educational resources (OER), massive open online courses (MOOCs), virtual reality and artificial intelligence, as well as a range of innovative practices that include OER-enabled learning, connectivism, competency-based learning and authentic assessment. The challenge is to be open to innovations that will increase the quality of learning, especially with respect to preparing learners for a digital age and ensuring equal access to and use of these innovations.

Accordingly, the principle of equity should guide policies, processes, quality management and innovation practices to reduce the structural barriers that limit access and inclusion and contribute to social injustice. In the absence of equity-based approaches, historically contingent structural inequalities may be unintentionally reproduced, deepening the digital divide for marginalised groups. Moreover, given the expanding role of the private sector in digital learning, equity-informed design is an issue that should cut across stakeholders, including developers, vendors and platform operators, who may be inclined to consider time, cost and quality dimensions without necessarily attending to equity. This might involve decisions that exclude persons with disabilities, reflect implicit and explicit biases in content,

reinforce the use of English without due consideration for other languages, including indigenous languages, and so on. Quality assurance and innovation in digital learning need to be rooted in equitable access to technology and to leverage the affordances of technology for learning.

A technology can be used in two fundamentally different ways (Puentedura, 2014). It can *substitute* for another technology or mode of delivery, with the *process* remaining the same. An example from education is replacing an in-person lecture by delivering the same lecture via video conferencing. The mode of delivery has changed, but the lecture (the process) remains exactly the same. Alternatively, a technology can be used to replace another mode of delivery and thereby *transform* the process, making the best use of that technology's affordances — for instance, by doing more than what can be done in a classroom; one example is the use of virtual reality to demonstrate the three-dimensional structure of a chemical molecule. Any definition of quality in digital learning should consider the transformational potential of the use of technology for teaching. Hence, when teaching is moved online, it must be redesigned to make full use of its potential for transforming teaching and learning.

## 4. The issue of equity in digital learning

Defining, developing and assessing digital learning is all very well, but what if it is not equally available to all? Will digital learning merely increase existing inequalities, especially if it succeeds in preparing some students better for a digital age than others who cannot access it? Will digital learning produce new forms of inequalities yet to be measured? Technology in itself is often not the cause, but it can and does amplify existing inequalities. We must therefore adopt systematic policy approaches and research-informed practices while using technology for teaching and learning.

**Technology in itself is often not the cause, but it can and does amplify existing inequalities.**





## 4.1. Inequalities related to access

The most obvious area of inequality is in access to affordable technology. When teaching moved online during the pivot to emergency remote learning, far more students had difficulties accessing the necessary technology than had been anticipated; challenges included Internet connectivity, bandwidth, and the cost of equipment.

### 4.1.1 Internet access in the home

Regional and cross-national statistics indicate that Internet access varies widely, and national-level statistics mask sub-regional disparities. For example, in Africa, 14.3 per cent of households had Internet access in 2019, compared with 57.4 per cent globally. The proportion of individuals using the Internet in 2019 was 28.6 per cent in Africa and 51.4 per cent globally. In four African countries — Mauritius, Cabo Verde, Seychelles and South Africa — the proportion of Internet users was above the world average. But in most African countries, individual Internet use remains below 30 per cent and urban–rural gaps are prevalent (ITU, 2021). A range of non-technical factors contribute to these gaps, including geography, demography, armed conflict, level of urbanisation, and governance issues.

### 4.1.2. Bandwidth infrastructure

Connectivity speed is also a contributing factor for access. In Canada in 2020, 87 per cent of households had broadband access at a speed of at least 50 Mb/s for downloads and 10 Mb/s for uploads. However, only 46 per cent of people in rural areas and 28 per cent of people in First Nations communities had such access (CRTC, 2020); most in these areas had narrowband access of 10 Mb/s or less, often around 2 Mb/s. A small portion of all Canadian households, about 5 per cent, had no access at all.

Household-level factors also contribute to access. The number of devices used in a family further reduces the available bandwidth, and some tools demand higher bandwidth. For example, videoconferencing technology, such as Zoom or Microsoft Teams, requires 1.5–2.5 Mb/s, so a one-hour Zoom session will use more than 1.3 Gb of data. In comparison, learning management systems require between half and a third of the bandwidth of a videoconferencing application and will therefore usually work well even with narrowband service to the home (2–10 Mb/s). Learning management systems (LMSs) are also asynchronous (i.e., can be used at any time), so compared to a live lecture, they can be accessed at times when the network is less busy. Being asynchronous and low bandwidth, LMSs enable students to spend more time connected, and their studying is less likely to be

interrupted by poor connections. Up to a point, LMSs are therefore a better all-purpose technology, in terms of equity, on which to base home-delivered learning. Asynchronous learning does require students to exercise self-regulation and goal-directed behaviour, which may be challenging for some learners, such as those with learning disabilities.

### 4.1.3 The cost of equipment and data

Most online learning requires a digital device, at minimum a smartphone or a tablet but preferably at least a laptop or desktop computer. The cost of the device itself can be prohibitive for some students and families. Issues of access signal how income levels may affect students' learning by constraining their ability to purchase a laptop or other devices and an adequate data plan. The high bandwidth demand for synchronous video use in online learning could be a broader problem for many low-income families if students are receiving ten hours a week or more of continuous video lectures (recorded or live).

A significant number of learners will always be disadvantaged by not having adequate Internet or equipment access. The poorer the country, though, the more likely access will be unequal. In many less economically developed countries, the only people able to access streamed video lectures will be wealthy families in the core of large cities. In other words, inequalities in digital learning reflect broader social inequalities globally and nationally.

**A significant number of learners will always be disadvantaged by not having adequate Internet or equipment access. The poorer the country, though, the more likely access will be unequal.**

## 4.2 Digital inequalities and social inclusion

When discussing digital inequalities, researchers refer to multiple levels (Ragnedda, 2020; van Dijk, 2020). The first level focuses on inequalities in access to hardware, software and Internet connectivity, as outlined above. The second level refers to disparities in usage and has implications for socially disadvantaged individuals and groups, such as women and girls, racialised groups, indigenous communities, and persons with disabilities, among others. Left unattended, these inequalities can amplify social exclusion. To mitigate this risk first requires identifying which learners have unequal access and/or are unable to use technologies effectively, and the structural and sociocultural factors that contribute to these inequalities. Understanding the scale and nature of the gaps and causal factors enables effective targeting of resources and services to support social inclusion, such as digital literacy training.

Third-level inequalities refer to disparities arising from algorithmic decision making and will likely grow in importance as learning analytics and LMSs become more sophisticated and facilitate personalised learning. The risk associated with these “new” digital inequalities centre on discrimination by algorithms based on race, gender, age, ethnicity and other social factors. For this reason, it is important to support the critical thinking and practical skills necessary for understanding how algorithms and artificial intelligence tools work, and to ensure these technologies are transparent and do not contribute to social inequalities.

## 5. Policy implications

**Without deliberate policies and strategies, the use of digital technologies will reinforce existing social inequalities.**

The changing nature of work and society due to technology requires fundamental rethinking of the way education is envisioned, designed and delivered. This will in turn influence our concept of quality, and the relationship between technology and inequality. COVID-19 has accelerated this rethink, made the issues somewhat clearer, and created a sense of urgency. Without deliberate policies and strategies, the use of digital technologies will reinforce existing social inequalities. Diverse actors operating at various levels have roles to play in acknowledging and mitigating the potential adverse implications of these technologies. The Commonwealth of Learning, as an

intergovernmental organisation mandated to promote the development and sharing of open learning and distance education knowledge, resources and technologies, has been working with governments and educational institutions to strengthen their capacities to leverage digital learning. This section identifies actions that can be taken up by various stakeholders to improve quality and equity in digital learning.

### 5.1 National governments

Policy makers must take decisive steps to prevent the learning gap widening and further damaging the lives of students who are already at a significant disadvantage compared with their peers. However, while there is an obligation on schools, universities and colleges to provide adequate services and support for all students, institutions alone cannot directly impact the underlying economic and social causes of inequality, including inequality of access to technology at home. Although it is necessary to take actions to ensure more online learning access for resource-poor families, such as loans of tablets, the long-term solution is to reduce poverty in the first place. Poverty is the problem, not unequal access to equipment or the Internet, which is most often a consequence of poverty.





The use of technology for teaching does not itself cause or resolve these inequalities; but without countermeasures, it will magnify them. In other words, the solutions for dealing with inadequate Internet access suggested in this article are more mitigation than proactive adaptation; they do not get to the root causes of inequality. That is the broader responsibility of government. To address inequities in digital learning, governments must take the following actions:

- Adopt appropriate policies to ensure equitable access to digital learning opportunities and create an ecosystem for obtaining devices, bandwidth, repair and maintenance, and teaching and learning resources.
- Mandate a quality assurance agency/body to focus on equity in digital learning provision. Quality assurance should (i) incorporate the need for innovation and the effective use of technology in teaching, (ii) establish and uphold standards based on best practices and (iii) adopt frameworks and mechanisms that ensure students obtain the knowledge and skills they will need in a digital age.
- Invest in broadband access as a critical infrastructure for mitigating the digital divide in education. Engage telecommunication providers to offer zero-rating of educational websites and free Internet provision using the Universal Service Fund.
- Collect disaggregated data along multiple variables (age, gender, residence, etc.) that allow the tracking of trends and gaps in access to digital technologies, and more specific targeting of underserved populations and regions.
- Support interdisciplinary research on digital inequalities, particularly on new digital inequalities based on algorithmic decision making, that combines qualitative and quantitative approaches.
- Ensure “no one is left behind” when using digital learning, by taking a needs-based approach to providing access to digital devices.
- Collaborate with for-profit enterprises, civil society organisations and philanthropic foundations to understand the needs and capabilities of marginalised groups and develop roadmaps to address digital inequalities affecting teaching and learning.
- Create suitable mechanisms and support structures for building the capacity of teachers at all levels to leverage the power of digital technologies for teaching and learning. Teachers’ access to devices and bandwidth for the Internet must be part of policies for promoting digital equity in learning.
- Integrate equity as a crosscutting approach in teacher education programmes that include courses on designing and delivering courses digitally.
- Support digital learning for students with disabilities by providing training and funding for assistive technologies.

## 5.2 Educational institutions

Teachers, educational administrators and heads of institutions must adapt to the changing needs of a digital age. This imperative has implications for curricula, teaching methods, assessment, teacher training/faculty development and Internet access. Each country needs to assess the importance of digital literacy and the digital economy for its long-term future

**Ensuring the quality of digital learning alongside equity requires educational institutions to understand their students' access to digital tools.**

and ensure that its education systems reflect reality. After COVID-19, many education institutions are likely to want to integrate and expand some elements of online learning in their course delivery. This will require adequate Wi-Fi access and high-speed Internet on campuses as well. Again, this could be a challenge for resource-poor institutions and those based in more remote areas.

New technologies can enable different learning outcomes and will demand changes in teaching and assessment methods if they are to be used effectively. New technologies will also provide some of the tools necessary to develop the knowledge and skills students will need in a digital age. Ensuring the quality of digital learning

alongside equity requires educational institutions to understand their students' access to digital tools. Educational institutions can help increase equity and improve the quality of digital learning by taking the following actions:

- Invest in the infrastructure necessary for online learning on campus (in classrooms, administration buildings and student dormitories), including high-speed Internet access and computer labs.
- Use a completely online learning approach only when it is possible to ensure all the learners have access to the Internet. Wherever possible, make alternative arrangements for access to digital tools and the Internet by offering needs-based bursaries for computers, particularly for marginalised groups such as refugees, persons with disabilities and resource-poor students.
- Design learning for low bandwidth situations, and employ asynchronous learning to help learners use technology flexibly.
- Ensure course developers adopt Universal Design for Learning principles to accommodate the needs of students with disabilities.
- Adopt a differentiated approach that allows for specific interventions based on needs. For example, consider using an alternative mode of delivery, such as audiobooks, for visually impaired learners.
- Develop a dynamic suite of online, open-access courses, preferably with tutoring support, tailored for various groups (faculty, administrators, students), levels and types of users, based on evolving understandings of sector-specific needs and digital inequalities. In most cases, such training is voluntary, but incentive structures can increase uptake (e.g., inclusion on a student's co-curricular record).
- Set clear policies and allocate adequate resources for faculty and part-time instructor training that specifies a minimum of number of hours to be spent on digital learning.
- Use learning analytics ethically to assist student learning. Any use of an algorithm-based course recommender system should be ethically designed to ensure equity in participation for men, women and marginalised groups.



- Ensure that algorithm-based recommender systems do not restrict decision making and career development through profiling and streaming that may affect groups in different ways.
- Support interdisciplinary and interorganisational research on digital inequalities, involving, for example, researchers in education, science and technology, sociology and engineering.
- Support curricula, teaching and learning by encouraging the development of new pedagogical approaches for online learning as well as alternative and authentic assessment tools that integrate equity as a cross-cutting issue.
- Use OER to increase equitable access to course materials and ensure cost is not a barrier to learning.
- Consider arrangements for local facilities open to the public, such as community centres or libraries, with good Internet connections that can give students access to equipment at set hours.
- Ensure that public–private partnerships (i) give serious consideration to the impact of products and services on digital inequalities, in contractual agreements and implementation schemes and (ii) adopt measures to mitigate gaps.

## 6. Concluding remarks

The pandemic exacerbated inequalities in digital learning, prompting a re-examination of online learning. Of course, we need all students back in school, full-time, as soon as is safely possible. Moving forward, we need to ensure appropriate policies and systems are in place so that students can at the very least access education during any emergency. The pandemic proved beyond doubt that online learning is a reasonable way to do this where Internet access is widely available. Ensuring equity and quality in digital learning will not only make our educational institutions more resilient but also move us closer to meeting the needs of learners in a digital age.

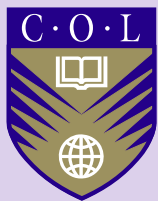


## 7. Key resources

- Commonwealth of Learning. (2014). *Handbook for the Commonwealth of Learning Review and Improvement Model (COL RIM)*. Commonwealth of Learning. <http://oasis.col.org/handle/11599/602>
- Commonwealth of Learning. (2016). *Guidelines for quality assurance and accreditation of MOOCs*. Commonwealth of Learning. <http://oasis.col.org/handle/11599/2362>
- Kawachi, P. (2014). *Quality assurance guidelines for open educational resources: TIPS framework*. Commonwealth Educational Media Centre for Asia. <http://oasis.col.org/handle/11599/562>
- Mohee, R., & Perris, K. (2020). *A guide for implementing a quality assurance institutional review tool for blended learning*. Commonwealth of Learning. <http://oasis.col.org/handle/11599/3734>
- Perris, K., & Mohee, R. (2020). *Quality assurance rubric for blended learning*. Commonwealth of Learning. <http://oasis.col.org/handle/11599/3615>
- Ramsamy-Iranah, S. D., & Maguire, M. (2020). *Assistive technologies: Inclusive teaching guidelines for educators*. Commonwealth of Learning. <http://oasis.col.org/handle/11599/3661>
- Sankey, M., & Mishra, S. (2019). *Benchmarking toolkit for technology-enabled learning*. Commonwealth of Learning. <http://oasis.col.org/handle/11599/3217>
- Watkins, C., Treviranus, J., & Roberts, V. (2020). *Inclusive design for learning: Creating flexible and adaptable content with learners*. Commonwealth of Learning. <http://oasis.col.org/handle/11599/3690>

## References

- Canadian Radio-television and Telecommunications Commission (CRTC). (2021). *Broadband fund: Closing the digital divide in Canada*. Government of Canada. <https://crtc.gc.ca/eng/Internet/Internet.htm>
- Daniel, J., Kanwar, A., & Uvalić-Trumbić, S. (2009). Breaking higher education's iron triangle: Access, cost and quality. *Change*, 41(2), 30–35. <http://oasis.col.org/handle/11599/1442>
- Global Market Insights. (2021). *E-Learning market size by technology*. Global Market Insights Inc. <https://www.gminsights.com/industry-analysis/elearning-market-size>
- International Telecommunications Union. (2021). *Digital trends in Africa 2021: Information and communication technology trends and developments in the Africa region, 2017–2020*. ITU Publications. [https://www.itu.int/dms\\_pub/itu-d/opb/ind/D-IND-DIG\\_TRENDS\\_AFR.01-2021-PDF-E.pdf](https://www.itu.int/dms_pub/itu-d/opb/ind/D-IND-DIG_TRENDS_AFR.01-2021-PDF-E.pdf)
- Puentedura, R. (2014, September 24). *SAMR and Bloom's taxonomy: Assembling the puzzle*. Common Sense Education. <https://www.common sense.org/education/articles/samr-and-blooms-taxonomy-assembling-the-puzzle>
- Ragnedda, M. (2020). *Enhancing digital equity: Connecting the digital underclass*. Palgrave Macmillan.
- Van Dijk, J. (2020). *The digital divide*. Polity Press.



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