

conservation and economic-development journey. Their collective experience on what works, and what doesn't, can provide important learning opportunities for countries as they look to slow down and eventually reverse biodiversity and ecosystem loss. These researchers are in the academy of sciences; in universities; in the academy of environmental planning; and in the community of Chinese and international non-governmental organizations.

Many are also active in the China Council for International Cooperation on Environment and Development, an organization located in both Canada and China, which last week concluded a two-day conference presenting its latest research outputs. This important but little-known advisory body, now nearly three decades old, has been instrumental in connecting China's environmental-science and environmental-policy communities with international counterparts.

Next year will be the first time that China has hosted an international environmental meeting – similar to the 2015 Paris climate accords – where the stakes are too high to fail. It must draw on its rich diversity of talent and experience. Other nations' researchers must be equally forthcoming with their knowledge. All sides must put aside political differences to agree on ambitious targets, ways to achieve them and methods to measure that progress.

The best way to preserve and revive biodiversity is to acknowledge where we've all failed it before, to learn from that and to try again, together.

## The education revolution must be equalized

**The switch to online learning risks widening educational inequalities.**

Every day, hundreds of millions of students, teachers and support staff, are participating in a learning revolution: the COVID-19 pandemic has upended the centuries-old tradition that students travelled to a physical institution to learn. Now, in many places, school and university classrooms are on laptops and smartphone screens, and the Internet has replaced physical books.

It's been an extraordinary – and extraordinarily fast – transition, affecting everyone from the youngest children entering school right up to young adults in universities. Researchers are starting to study its full impact and its implications – for students, for staff and for the organizations that create and supply educational-technology platforms.

Tertiary education has been venturing into online education for some time. Long before the pandemic, universities

around the world were offering massive open online courses (MOOCs) as a supplement to face-to-face teaching and learning. Now, as online courses become more central to university teaching, it will be important to rigorously assess the impact of this change.

We already knew that this educational revolution presents significant risks. Before the pandemic, countries were making good progress towards ensuring that by 2030 children would at least complete a primary-school education – one of the few United Nations Sustainable Development Goals potentially within reach. That might no longer be the case – a prospect that should worry us all.

As of this week, a staggering 850 million children and young adults – half of those enrolled in schools, colleges and universities worldwide – are not in education or training because of COVID-19, according to the UN science and education organization UNESCO. The agency is also tracking closures of schools up to secondary level daily and, although schools are reopening in many places, they remain closed in 52 countries.

The majority affected are in the southern half of the globe, encompassing many low- and middle-income countries. That means that students there are much less likely to be taking part in the online revolution. Internet penetration in this hemisphere is low – and some 360 million young people do not have access, according to the International Telecommunications Union. Many countries are using terrestrial television and radio to broadcast lessons as a lower-cost alternative to broadband.

While the pandemic continues, reopening educational institutions in poorer parts of the world – including deprived areas in high-income countries – is often not possible. Overcrowding prevents social distancing, and funding isn't available to make schools COVID-19 secure.

All this means that students from the poorest families, without Internet access, are more likely to be denied education – widening already deep educational inequalities. Because education is strongly linked to later jobs, income and health, setbacks now will last a lifetime.

In universities, the transition to online education is enabling institutions to reach out to students from underserved areas and under-represented communities. But paradoxically, if children from these communities are unable to access earlier schooling, fewer will be able to proceed to higher education.

The pandemic will force a large number of institutions will remain closed, and online learning will substitute for the real thing. But if broadband and laptops are the equivalent of the teacher, the library and the laboratory, it cannot be acceptable that these are available to only a fraction of students.

If online education is to become more inclusive, public educational institutions – and those that fund them – must do more to ensure that more learners can benefit from new technologies. That includes prioritizing access to broadband, smartphones and laptops – something that is increasingly affordable in many countries.

It's a small price to pay now for an educated and resilient population decades down the line.



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