enabler for achieving inclusive excellence at universal scale. In short, HEIs – rather than the Silicon Valleys of the world – are the ultimate conveners and initiators, making them the REAL ICT hubs of society. Will we step up at this critical moment and act like it?

02 Can technology solve the problems of higher education?


by **Asha Kanwar**, *President & CEO and* **Sanjaya Mishra**, *Education Specialist, eLearning, Commonwealth of Learning, Canada*

The short answer is yes. Can technology address the challenges faced by higher education? Has it increased access and bridged divides? Has technology led to improved outcomes? These are some of the most frequently asked questions that the Commonwealth of Learning (COL) has been asked in the last 30 years. Heads of Government created COL with the express mandate to use distance learning and technologies to increase access to quality education and training. COL believes that technology-mediated teaching and learning can transform lives, making access to education available to anyone, anytime, anywhere. However, the choice of technology must depend on whether it is appropriate, available and affordable. Technology by itself cannot be a panacea for all that ails higher education today but must be placed in an appropriate social, cultural and political context.

In 2012, there were 165 million tertiary education students globally, and it is estimated that the number will grow to 522 million by 2035. The gross enrolment ratio in higher education in 2015 is 30.6, while it is 8.5 in sub-Saharan Africa and 20.8 in South Asia. Projections based on data from International Institute for Applied Systems Analysis (IIASA) shows that most populous countries like China and India will have 14.16% and 17.02% of population with a degree by 2050. As more countries achieve universal secondary education, the demand for higher education will continue to escalate.

Brick and mortar institutions will not be able to absorb the surging demand. Alternative options will be required and technology will play a significant role in enabling institutions to expand. In the United States, 29.7% of all students enrolled in 2015 were taking at least one distance course. A recent study on Open Universities in the Commonwealth revealed that there were over 4.4 million students in 27 open universities alone. In 2017, over 78 million learners were reached by over 9,400 massive open online courses (MOOCs) offered by over 800 universities. In terms of outcomes, research shows that there is 'no significant difference' in the learning outcomes of campus, distance or online learners.

The COL experience shows that to use technology effectively in teaching and learning, it is important to focus on: (i) policy, (ii) capacity, and (iii) appropriate technology. Integrating these three dimensions help universities to leverage the power of technology to increase access, improve quality and sustainability. We have been supporting policy development for technology-enabled learning, capacity building for blended learning delivery as well as online delivery of programmes, including MOOCs. In the process of developing appropriate policy, we need to take into consideration the level of existing capacity and access to technology for both students and faculty. Findings from our surveys on higher education institutions show that students have access to technology, especially smartphones, but they spend huge sums of money in buying textbooks for learning. Higher education teachers are either not aware of relevant technologies and open educational resources (OER), or lack the capacity to use these to enhance the quality of learning. Based on these findings we promote the integration of OER in teaching and learning.

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The rising cost of textbooks is a major problem for students, not only in developed countries but also in developing countries. In the USA, the price of textbooks has gone up by 87.5% since 2006 and an average student spends USD 1,250 per year on textbooks. According to a recent study in Canada, due to the prohibitive cost of textbooks, 54% of students in the Province of British Columbia (BC) study without, at least, one of their required textbooks, while 27% take fewer courses and 17% drop courses altogether. COL is making efforts to develop and support OER in advanced ICT skills such as media, web programming and mobile computing. In Antigua State College (ASC), the student use of open textbooks resulted in savings of approximately Eastern Caribbean dollar (ECD) 704 per student per year, and increased student learning outcomes by 5.5%. The use of open textbooks in all the courses at the ASC is estimated to result in student savings of ECD 904,640 per year. However, the OER movement should not just be seen as a means of saving

costs and improving outcomes but also opening up educational policy and practice. It must be harnessed in the interests of equity and inclusion so that no one is left behind.

Many higher education institutions around the world are taking steps to integrate technology and OER to improve access to quality learning opportunities for their students. Integration of technology in teaching and learning can clarify many of the doubts that we have about the effectiveness of technology. In higher education, we should ask the effectiveness of what we do daily in our classrooms, and question why we do what we do? Is there no other alternative before us to change the status quo? Recent developments in technology (such as artificial intelligence, robotics, blockchain) have far-reaching implications for higher education institutions in terms of curriculum, pedagogy and certification. Technology is here to stay. How can we harness the potential of technology to prepare our learners for the uncertainties that lie ahead? Are we bystanders, reluctant adopters or are we ahead of the game? The future of higher education will depend on our response today.

03 Technology in higher education: opportunities for bridging divides

by **Gard Titlestad**, *Secretary General, International Council for Open and Distance Education (ICDE)*

Universities in all regions of the world are providing online access to millions of students that would not have been included in quality higher education if left without the online opportunity. Examples are University of Maryland University College, USA, UNISA in South Africa, Open University, UK, Universitas Terbukas, Indonesia, to mention a few. Some started as online universities, like Open University Catalunya, Spain, the first online university in 1995. In the US, almost 40% of students take at least one course online. In Brazil, most federal universities collaborate under the umbrella of the ministry for Health, to provide continued education for almost 3 million health professionals. This would not be possible without an online approach. One of the main findings in a European funded project, IDEAL (Impact of Distance Education on Adult Learning), coordinated by ICDE (UNESCO Institute for Lifelong Learning, 2015), was that online education as the main mode of distance education fulfilled most adult learners' requirements for more flexible learning opportunities.

We are at the beginning of a new wave of innovation, a wave that so far has brought many new opportunities to higher education. A credo for this wave is "what can be digitized will be digitized". Artificial Intelligence (AI) and Cognitive Technologies (CT) are high profiled technologies that are rapidly emerging at the marketplace. In times where technology seems to be everywhere and in increasing speed to market, I find it relevant to remind of the often cited statement from one of the pioneers in technology enhanced learning, Tony Bates: "Good teaching may overcome a poor choice of technology but technology will never save bad teaching".

So, we are back to basics, what are the divides needed to be bridged, what are the problems to be solved?

Major changes seem to happen in the population aiming for higher education. Professor Mark Brown, Dublin City University (DCU) noted previously that, in Ireland, "the demand from part-time mature students for more online and flexible learning pathways continues to increase as people look to earn as they learn." In 2017, DCU alone accepted a record number of new registrations for online degree programmes. In my home country, Norway, more than 25% of the students are above 30.

We can already observe dramatic consequences from digital disruptions, automatization and job destructions. New competencies on higher education level are needed for the new jobs. New skills are needed to adapt the workforce to the massive innovation taking place.

> "Higher education will have to respond to new and massive demands for continuing, informal, non-formal and formal educational needs to help transforming society and transforming lives."

Job-destruction and creation arising from automation and early AI require a fundamental change in lifelong learning. Higher education will have to respond to new and massive demands for continuing, informal, non-formal and formal educational needs to help transforming society and transforming lives. Online and technology enhanced provision will often be the best solution.

Estimates show that future student enrolment is set to more than double from now to 2030. This need requires taking the best from online and open in combination with campuses. The future is "blended". Open and Open Education Resources (OER) came together with the massification and democratization of higher education. Open and digitalisation makes a new vision reachable: For the first time in human history it is possible to achieve inclusive and equitable quality education and lifelong learning for all (Sustainable Development Goal 4, Education 2030).