

# Keynote Address: Higher Education in an Age of Disruption



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My topic today is 'Higher Education in an age of disruption' and I have prepared this presentation with my colleague Dr Sanjaya Mishra.

As you know, COL is an intergovernmental organisation established by Commonwealth Heads of Government thirty years ago, with headquarters in Metro Vancouver, Canada.

Our mission is to help Commonwealth member states and institutions to use technologies for expanding access to education and training.

COL believes that learning is the key to sustainable development. Learning must lead to opportunities for economic growth, social inclusion and environmental conservation.

This can be done by harnessing the potential of existing and new technologies.

In my presentation, I will first review the context of higher education today and then look at what we mean by disruption and how disruption takes place in education. I will then highlight some of the innovations in technology and look at the implications they have for higher education policy and practice. In conclusion, I will look at three gap areas in higher education which also present major opportunities for the next innovative disruptions to emerge.

First, the context.

In the decade between 2005 to 2015 we have seen a steady rise in Gross Enrolment Ratios in tertiary education from 25% to a global average of over 35 %.

There has been a gradual increase in the GER of tertiary education in Arab States since 2004. And the demand continues to grow.

Since the 1990s, more women than men complete tertiary education in most countries. According to recent data, there were more female than male graduates from higher education in three-quarters (77%) of the 124 countries surveyed. But despite this, women are less likely to continue to higher levels and research. Globally, women outnumber men at the level of the Bachelor's degree (ISCED 6, first degree), with men accounting for about 47% of graduates and women accounting for 53% in countries with

available data. However, in terms of participation in research and teaching positions in higher education their share is less than men.

Higher levels of education usually translate into better employment opportunities and higher earnings. “Among tertiary-educated adults, the relative earning advantages increase with the level of tertiary education. On average across OECD countries, those with a master’s, doctoral or equivalent degree earn twice as much as those with lower qualifications” (OECD, 2017)

Similarly, if we look at data relating to tertiary graduates in Canada, we find that the earnings of a PhD is almost double that of a college graduate.

Convinced that higher education leads to higher earnings and social mobility, policy makers have invested in higher education. Both developed and developing countries such as South Korea, Chile and UK have very high GER and the number of people with degrees grows worldwide.

But as Andreas Schleicher concludes ‘countries have skills shortages, not degree shortages’.

In countries as far apart as Japan and Israel, more than 50% employers report having difficulty filling jobs with people with the right skills.

Multiple surveys in 2016 indicated the demand for ‘soft skills’ such as critical thinking, communication, organisation and leadership were what employers were looking for. We have been talking about these 21st century skills since the turn of the century, but to what extent have we integrated these into our curricula? Have we harnessed the potential of new technologies?

Data indicates that about 50% of the global population is connected to the internet but over hundred percent have access to mobile phones.

In the Arab region, we see a similar trend, with the real growth happening in mobile devices. What has been the impact on higher education?

The higher education system as we understand today has three specific roles to carry out: teaching, research and extension activities. And higher education can take place beyond the four walls of university, to include colleges and research centres .

This is what a typical classroom at most college and universities look like. Are these spaces and transactions going to change and what will drive those changes?

Let us now turn to what we mean by disruptive innovations and how they relate to changes in education.

Clayton Christensen defines disruptive innovation in business as a process whereby a smaller entity with fewer resources is able to successfully challenge established players and displace incumbent businesses by addressing a specific need that had hitherto not been addressed.

What are the characteristics of disruption? First, it is a process not a product or service which is usually regarded as having lower quality in the beginning. It takes time to challenge and disrupt established businesses or organisations. New models emerge as a result. But we must also remember that all disruptions do not succeed.

This diagram shows how disruptions take place in business. The new product enters the market at the bottom to satisfy the needs of low-end customers. This need is not being addressed by the existing dominant players in the market. The new entrants improve their performance and quality over a period of time and eventually dislodge the dominance of the big players.

Using Christensen's disruptive innovation model in higher education, we find open and distance learning (ODL) as the real innovation at the bottom of the pyramid that continues to challenge the mainstream face-to-face higher education. The campus institutions have become mainstream over 900 years of existence and the state, students and parents continue to sustain the demand for them. However, ODL began to cater to those who were left outside mainstream higher education.

ODL as an innovation is now manifesting itself as online and blended learning. This is when the boundaries begin to blur between campus and ODL institutions. According to the Distance Education Enrolment Report 2017, about 30% students in higher education in the USA are taking at least one distance education course. MOOC, another form of distance education has been embraced by the top-tier universities. This shows that ODL, the initial disruptor is being mainstreamed.

We speak of the fourth industrial revolution today—what has been the impact of these revolutions on disruptive innovations in education?

In the first industrial revolution when the steam engine was invented, higher education made a transition from being elite to one which anyone could aspire to. The second industrial revolution was marked by the assembly line and mass production, when it became possible to produce self-instructional booklets and offer correspondence courses. The rise of the computer and internet in the third revolution led to the rise of open and distance learning and open universities and today in the fourth revolution marked by AI and Robotics, we have OER and MOOCs.

In short education has been opening up. The founding chancellor of the Open University of the UK, Lord Crowther defined openness in relation to people, places, methods and ideas. Open education is a philosophic construct that advocates the removal of constraints and barriers to learning— Open education refers to policies and practices that allow entry to learning with no or minimum barriers with respect to age, gender, or time constraints, thereby reaching newer constituencies.

Open universities were oriented towards the massification of higher education. Many open universities do not insist on entry qualifications, allow learners to accumulate credits at their own pace and convenience and are flexible enough to allow learners to choose the courses they wish to study towards their qualification. The principal technologies in this phase were print, radio and TV. A range of 'openness' in practice is manifested in the current MOOCs and micro-credentials.

ODL was seen as a second chance second choice option in higher education meant for those who had neither access nor opportunity for campus-based education. It served a specific need in society and harnessed technologies to reach the unreached with flexible learning options. As its quality and relevance was established, its methods began to be adopted by campus institutions giving rise to blended, flexible and online learning.

We have seen that disruptions emerge when mainstream providers fail to cater to the needs of a learning society. These are supported by innovations in technology and give rise to a new breed of providers.

Let us look briefly at the impact of technology on higher education.

Technology will have a great impact on the future of jobs and as an Oxford University study found, 47% of today's jobs could be automated in the next 20 years.

It is clear that developments in Artificial Intelligence and Robotics will result in changes that we may not be able to imagine today. Automation will have an even bigger impact in developing countries which provide labour.

The Horizon report finds that adaptive and mobile learning will impact higher education in the short term while next generation LMS and Artificial Intelligence will be adopted in the medium and longer terms.

The trends emerging from technology adoption will result in blended learning and collaborative learning. In the mid-term, there will be a growing focus on measuring learning and re-designing learning spaces. In the longer-term, the focus will be on innovation and deep learning.

Another important trend that has strong implications for learning is the rapid rise of Messaging. WhatsApp and Messenger have billions of users. Global traffic due to messaging apps is larger today than social network apps. This is largely because of the increase in the number of smartphone users everywhere including developing countries. The graph here shows that by the middle of 2015, Apps that worked only with Messaging platforms had more users than Apps that worked with social network platforms. Because Messaging is much more widely used, Messaging-based learning management platforms will have a faster uptake in the developing world, thereby reducing costs.

This Gartner Hype Cycle shows how technology moves from an initial phase of innovation to inflated expectations which cannot be fulfilled and this then leads to a phase of disillusionment before maturing and being adopted for mainstream purposes. The rise of MOOC is a good example of how they moved from an innovation in 2008 at the University of Manitoba to a situation when the international press declared 2012 as the year of the MOOC. Today the dust is settling down and MOOCs are being integrated productively into some mainstream HEIs such as MIT with its Micromasters initiative.

However, if we review developments over the last fifty years, we find that the many innovations driven by technology have not been adopted at the speed and scale at which they emerged. The pace to adopt innovation in higher education is rather slow.

Let us look at some disruptive innovations and their implications for higher education.

MOOCs with their flipped classroom and global reach are disrupting the classroom lecture. Blockchain has the potential to challenge the authority of accreditation bodies. Micro-credentials call into question the relevance of full degrees and OER are disrupting business models built on intellectual property rights.

MOOC platforms allows us to offer free online courses to thousands of students around the world. MOOCs are an important solution to three key challenges in the current education system: one that it is rigid, two, it is highly expensive and three, it takes a lot of time to complete. Top universities have taken the lead in offering MOOCs to a world deprived of quality education at a low cost. This is an evolving definition as there are hybrid/blended models of MOOCs such as the COL MOOC4D. The new business model emerging will not necessarily guarantee free MOOCs.

MOOCs are opening up education as never before. Universities have so far largely operated within national or regional jurisdictions. With the MOOC platform, the world becomes a connected classroom. Students had limited interactions in the classroom or on campus. Today, there is a greater emphasis on peer to peer interactions and the use of social media. Universities will increasingly make use of emerging technologies to support their learners, the digital natives.

Blockchain, a major development in the area of financial technology, is, in effect, an open source online register that is maintained cooperatively. A learner can have a distinct, persistent ID in this space. An agency that imparts learning could track progress and add scores and sign off making the entire set of records a block. Another agency where the same learner takes up learning can create a similar block. It is important to note that the records cannot be modified at all. Many such blocks can be “chained” together. A prospective employer could verify directly the veracity of claims about learning achievements.

This diagram created at the Knowledge Media Institute of the Open University, UK shows how different stakeholders including the students participate in maintaining the Blockchain. The student acquires the profile, institutions add credit and status information, accreditors determine qualifications, while the employer can verify the credentials. Blockchain certificates have been initiated at MIT which is pioneering blockchains in learning.

Blockchain will challenge paper credentials and paper certificates that are the norm today. The verification process will be possible online and this would deal a blow to digital diploma mills. Instead of the manual authentication of portfolios, institutions will be able to carry out this process online.

Credentials are important and credits can be transferred for an academic qualification or lead to employment. The MIT Micromasters is an innovation that provides online courses based on industry requirements and learners can collect credits leading to accelerated academic qualifications or employment opportunities.

The implications of such disruptive innovations are that they will introduce more flexibility into the existing system by introducing shorter courses, encourage the bundling of courses and result in portability of credits and qualifications.

Open Educational Resources or OER are a fairly new dimension of openness. Now there are millions of pages of open content available on the web. How can we benefit from world class quality content?

The rise of OER signals three shifts for institutions. Traditionally learners have had to bear the high costs of textbooks—the future could mean free content for all. There are course development teams within the university responsible for creating content. Now the teams will be dispersed around the globe and will adopt/adapt existing OER. The rise of OER will encourage the student to be a producer rather than simply the consumer of content.

Can technology help us make our learners more employable? A study of a Coursera MOOC platform published in Harvard Business Review indicates that MOOCs provide many tangible and intangible benefits to the learners. For example, 26% found a new job, 9% started their own business, and 62% improved their skills in current job roles.

Finally let us look ahead. Our institutions exist to serve the learner. Who is this learner?

In the 1980s, the ‘new learner’ was the adult who looked for education and training for personal development, promotion, change in career, and/or enhanced job requirements.

The turn of the century gave rise to the digital natives who are technology-savvy learners, usually young school-leavers entering the higher education system.

Today, the learner in higher education is one who has technological means to learn, often motivated, self-regulated with analytical and collaborative abilities to perform well.

What will the learner be in 2035? A typical learner may be using MindClock to remind her of upcoming events, use help from a Holographic Advisor Bot for critical thinking and design to plan for an assignment, use advanced communication tools to learn from multiple language materials on the Internet, take several micro-classes simultaneously, learn from home without attending physical lectures using tools that provide a virtual experience of real time events, and use teaching bots to prepare for assessments and exams. All activities will involve using technologies of the future. Some of these are still not invented. (Contact North, Insight paper, 2017)

The global community adopted the 17 SDGs of which SDG is dedicated to education and aspires to ensure ‘inclusive and equitable quality education and lifelong learning for all’ The higher education community cannot remain aloof from national and global goals.

In short we need to prepare an ecosystem that promotes lifelong learning for all. Higher education systems need to embrace lifelong learning and strengthen the outreach function to open up education to wider constituencies especially the unreached. Lifelong learning includes the whole spectrum of formal non-formal and informal learning. Simply reforming current education systems will not be enough. Countries will need to continually skill and reskill their workforce throughout their life

Changing 4 jobs by 32 is the new normal for the millennials. Thus, it would be imperative to prepare them to be employable. This will require a balance between theory and practice; a focus on hard as well as soft skills, a curriculum that addresses the needs of industry. The orientation will change to providing certification based on competence rather than the number of hours attended.

To create a higher education system that is responsive to the market needs and future requirements, it is necessary to look at the different stages of the employability pathway and re-imagine our policies and practices.

While the technology disruption would change the educational landscape for the better, without equitable opportunity for all, these developments may create further divides. Therefore, it would be important to have appropriate policies in place to provide affordable and lo-cost options to people with disabilities and everyone who needs higher education.

With so much disruption and change, where are the opportunities for higher education institutions? Reviewing the curriculum to make it more relevant to emerging need and linking it to the requirements of the labour market and industry, would be a good starting point. It is equally important to harness the potential of technologies by becoming early adopters for as we know, the early bird catches the worm!

Thank you for your attention.