

# ODL in the Fourth Industrial Age: Opportunities for Africa



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Greetings from the Commonwealth of Learning. It's a pleasure to be 'virtually' present at the first Annual Colloquium hosted by the Research and Training Institute in Distance and Open Learning or RETRIDOL and I'm grateful to Prof Patrick Eya and his team for the invitation. The theme 'ODL in the fourth industrial revolution: opportunities for Africa' is very relevant today as we deal with an unprecedented global pandemic. Technology is keeping us up to date with developments as they happen but also provides the opportunities to keep open the doors of learning when everything around us is being closed. I have prepared this presentation with my colleague Dr Sanjaya Mishra.

I would like to begin by thanking the Federal Ministry of Education, Nigeria for their consistent support to my organisation the Commonwealth of Learning or COL since it was first established 32 years ago. COL enjoys a very productive partnership with some of the top institutions in the country which include the NUC, NOUN and NTI to name some. I would also like to thank the Vice Chancellor, NOUN for hosting RETRIDOL which has become a key hub for ODL capacity building in both the country and the region.

NOUN has also seen exceptional leaders who have made outstanding contributions to open and distance learning in the Commonwealth. COL has conferred the title of COL Fellow on Prof Jegede and Prof Adamu for harnessing the potential of ODL in bringing quality education and training to hundreds of thousands of Nigerians.

In my presentation, I will first look at the context in which we operate today and then focus on the evolving role of ODL in the fourth industrial revolution. Finally, I will look ahead at three concrete steps that we can take to make ODL relevant to the needs of Africa.

First, the context.

Africa's growing population of 1.2 billion is estimated to double by 2050. Africa is a young continent with a median age of 19.

And yet the gross enrolment ratio in tertiary education at less than 10% is among the lowest in the world.

How can we achieve SDG 4 which aspires to ensure inclusive and equitable quality education and lifelong learning for all?

Similarly, youth unemployment in SSA at 13% is higher than the global average of 12%.

If we look at Africa's Agenda 2063, we find that the first aspiration is to build a prosperous Africa. One of the goals of this Agenda is to develop well educated and skilled citizens through technology and innovation.

But access to ICTs is limited with only 22 internet users per hundred. The real growth is seen in mobile devices with 70% having mobile subscriptions.

Within such a context, how do we leapfrog to the 4th industrial revolution? From mechanization in the first industrial revolution to artificial intelligence and robotics in the fourth industrial revolution we have come a long way.

What has been the impact of these revolutions on ODL?

Fifty years ago, ODL was a disruptive innovation. 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. If we use Christensen's disruptive innovation model in higher education, we find that open and distance learning (ODL) was the innovation that challenged mainstream face-to-face higher education and catered to marginalized and unreached constituencies.

ODL as an innovation has evolved and served the needs of different contexts and constituencies. –by increasing access to education, improving quality, reducing costs, supporting inclusion and lowering the carbon footprint of the education sector.

Let us begin with the issue of access. When COL surveyed 27 open universities in the Commonwealth in 2016, we found that these institutions alone catered to 4.4 million students.

In Nigeria, ODL has opened up access to hundreds of thousands of learners right from the days of the correspondence courses started at the University of Lagos in 1974 with the establishment of NTI and ODL at Ibadan shortly thereafter.

NOUN was the first dedicated distance learning university in the country which has now become a mega institution.

One impact of the fourth industrial revolution has been the phenomenon of the massive open online courses or MOOCs, which can be a useful platform for skilling and reskilling our citizens for lifelong learning and livelihoods. NOUN has already taken the lead by offering two MOOCs. We can use a blended approach in MOOCs by offering the courses offline and online and using various devices including mobile phones. In the fourth industrial revolution, learners have more choices and will demand greater flexibility. Micro-qualifications will be as important as degrees.

What of quality and what is quality in ODL? Sir John Daniel identifies four dimensions—personal support to each learner, high quality multi-media materials, efficient administration and teaching that is rooted in research. As we know, that if done well, ODL delivery is as effective as campus provision in leading to successful learning outcomes.

How can we harness the technologies of the 4th industrial revolution to improve outcomes? Intelligent Tutoring Systems use AI techniques to simulate one-to-one human tutoring and provide immediate feedback, all without the presence of a human teacher. AI helps to analyse and summarise the discussions

in online courses so that a human tutor can guide the students towards fruitful collaboration and problem solving.

ODL systems have struggled with providing adequate learner support. The Open University of Malaysia has developed chatbots for tutoring a course and this is becoming a viable option for many institutions.

Augmented Reality and Virtual Reality technologies have great potential to improve learner experience. However, these are so far available in well resourced urban centres—we can use these technologies to conduct virtual experiments and experience real-life situations without leaving the classroom. These technologies will be particularly relevant for providing skills training at scale. Are we ready to harness emerging technologies to make learning more affordable, interactive, personalized and interesting in Africa?

One of the reasons that many of our young people are not in tertiary education is the issue of costs. In the USA, 65% students do not buy textbooks because of high costs (USD 1200 annually). In Uganda a student pays USD 266 for textbooks annually while her Kenyan counterpart is no better off and spends USD 207.

Open Educational Resources or OER can be one way forward. As we know, OER are free resources that can be reused and repurposed to suit different needs. This free content can be localised and help reduce the costs of course development.

In traditional mega-universities, which achieve economies of scale, the costs per student can be anything from one half to one third of what it costs to put a learner through a campus institution.

Online provision can also result in significant costs savings. As a study by Insung Jung shows, cost per unit effectiveness of online training was USD 3.7, which was 55% less than face to face training (USD 6.7), with comparable outcomes.

With 15% of the world's population suffering from some form of disability or another, the participation in higher education in different countries is dismal.

Research shows that more and more people with disabilities are joining ODL institutions. First, ODL is convenient for them as they can study at their own pace, place and time. They don't need to travel to campus or seek accommodation near the institution. Second, ODL is more flexible and offers content in various formats so learners can read, listen or watch lectures. Third, ODL is more affordable as it costs significantly less than campus-based instruction. Finally, ODL also provides a degree of anonymity—where students with disabilities can interact with professors and peers without feeling discriminated.

In South Africa, 80% of disabled people aged 20-24 are not in tertiary education. The University of South Africa is taking a proactive approach and the number of students with disabilities has grown by 59% between 2007 to 2011. The total number of disabled students may be comparatively small at nearly 2500, but the numbers are increasing. The university has set up a Resource Centre which provides personalized services to students including texts in Braille and providing services in sign language.

OUT helps students with visual disabilities to access tertiary courses through assistive technologies.

We have seen some of the technologies that have typically been used by ODL institutions. These include print, audio, video, online courses, email, chatrooms and social media. Assistive Technologies in use are voice recognition, braille displays and various mobile apps. The point would be to combine the two from a pedagogic perspective.

The world is facing a climate crisis—how can ODL contribute? The education sector, from primary to tertiary, contributes to both direct and indirect emissions, with an impact on environmental degradation and associated economic costs.

Perhaps the most comprehensive project assessing the environmental impacts of different modes of delivery in higher education is the SusTEACH project, supported by the Open University, UK. The findings showed that online and blended ICT-enhanced distance teaching models had significantly lower environmental impacts than face-to-face teaching modes (Caird et al. 2013; Caird et al. 2015). COL conducted a similar study in Botswana, which found that the average carbon footprint of the face-to-face group is nearly three times greater than that of the distance learning group. Within the overall carbon footprint, emissions from travel were by far the greatest contributor to this disparity. This suggests that ODL or blended modes can decrease emissions by reducing face-to-face contact hours.

The fourth industrial revolution has the potential to help Africa take ODL to the next level. AI can help generate data that can help us to customise and improve student learning. Blockchain technologies become more relevant in the age of micro-credentials and student mobility with tamper-proof certification. AR/VR can help develop skills at scale and robotics makes it possible for us to provide chatbots or teaching assistants that can provide personalized support to thousands of learners.

As ODL institutions what is the road ahead?

The first question to ask is what kind of graduates are we developing? Are we producing lifelong learners who are ready for employment in the changing job market? Do they have a positive mindset for working with others? Are they responsible global citizens?

First, in the fourth industrial age the most valuable skill that we can impart to our learners is innovation.

In their book *The Innovators' DNA*, Dyer, Gregerson and Christensen identify innovation skills that can be learned: questioning, observing, networking and experimenting. Let us ensure that we create an institutional culture and curriculum where these skills can be acquired and reinforced.

Second, address the issue of employability for our youth. Youth unemployment is high in many of our countries. We will need to prepare our youth for livelihoods—employment and entrepreneurship. This will require a curriculum that addresses the needs of industry and society. ODL institutions must play a leadership role in responding to market needs and future requirements by re-imagining their policies and practices.

Whether we teach science, arts or humanities, let us ensure that our graduates have the three literacies that Robert Aoun proposes. First, the human literacy, prepares students to perform jobs that only human beings can do. Human literacy will help them to make ethical choices, equip them for social engagement through effective communication. Second, data literacy is essential in a world driven by data. Learners must be able to find meaning in the flood of information around us. Third, technological literacy is essential if we are to understand machines and their uses. Learners must be able to deploy software and hardware in order to maximize their powers to achieve and create. If we can equip our learners with these three literacies, we will be preparing them for reaping the benefits of the fourth industrial age.

I am sure some of these thoughts will resonate with you and lead to fruitful discussions and action plans. Thank you.