



Education

Using technology to improve education outcomes

Enoch Randy Aikins and Jakkie Cilliers

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Using technology to improve education outcomes

Although the COVID-19 pandemic stimulated changes in education, it also caused many students to lose considerable education in 2020 and 2021. In the wake of the pandemic, teachers and policymakers are busy reassessing education, particularly the current limits with distance learning in a situation where broadband Internet access in much of Africa is still limited. After the pandemic, a new model could catalyse systemic improvements to education, particularly for children in distant and under-resourced districts, but only provided the necessary infrastructure is available.

The potential comes in various forms. On the one hand, augmented reality (AR) may soon become accessible as a practical teaching mode, with billions of dollars already being spent on research and development.[1] The application of new technologies could replace a teacher in front of a whiteboard (or chalkboard) with apps, gameplay and entirely new ways of teaching. If the promise of 5G speeds and connectivity examined in the leapfrogging theme comes to Africa, students can consume lectures much more effectively. Using an AR headset, students studying biology can dissect virtual animals and view their organs. Medical students will be able to do the same with the human body, and trainee nurses will be able to track blood flow, explore the digestive system and see how muscles work.

AR will make learning more immersive, exciting and effective. It could enable students in the most isolated and disadvantaged rural areas to see and do things they would otherwise never have the opportunity to do. It is a powerful way of providing individual and flexible learning, connecting theory with the real world. In tomorrow's world, understanding technology and coding will be crucial. AR and artificial intelligence can help students get to grips with concepts of computation, sensors, networks, digital printing, genetic engineering and robotics, to name a few.[2]

On the other hand new technology also helps with basic literacy and in areas with limited broadband access. An example is the use of an app such as Daariz which has, according to its user data, taught over 410 000 people in the Horn of Africa to read and write. Different to the connection speeds required by AR, Daariz is an education-entertainment app that, once downloaded, allows off-line use on a smartphone. Daariz was developed by Ismail Ahmed and his [Sahamiye Foundation](#) who previously developed the World Remit app that allows cheap money transfers. Want to get a child to learn a foreign language or to understand computer coding? Get them to play a game in that language or to experiment with coding. On its website the Foundation claims that it reduces the time to become functionally literate in one's mother tongue from 450 to just 50 hours.

Education systems are notoriously slow-moving, and in most African countries particularly so. African countries will not close the gap in average levels of education compared to the rest of the world by using current systems and practices. Technology can fundamentally change the nature of teaching and enable the move away from brick-and-mortar campuses to virtual campuses that will facilitate much broader access for both students and teachers. Much of that is already possible in so-called point learning, where the curious African can use the Internet to make, disassemble, repair, cook or understand almost anything by watching videos. You do not need to be an accredited technician with years of formal training to repair or replace smartphone parts; you need the Internet and a set of tiny screwdrivers. But this is only possible with electricity and broadband access, and getting these basics in place will largely determine the extent to which Africa can leapfrog in education.

Endnotes

1. In 2017, spending on education technology investments surpassed US\$9.5 billion, up 30% from the year before. Also see: PH Diamandis, [A model for the future of education](#), Singularity Hub, 12 September 2018
2. For example: Winners of the 2019 XPRIZE (aimed at eliminating adult illiteracy in the US, retooling tomorrow's workforce and encouraging lifelong learning) included Learning Upgrade, which has developed an app that helps students learn English and mathematics through videos, songs and gamification from pre-school to adult education, and PeopleForWords, which offers an immersive virtual environment and gamification to improve vocabulary and comprehension.

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About the authors

Mr Enoch Randy Aikins joined the AFI in May 2021. Before that, Enoch was a research and programmes officer at the Institute for Democratic Governance in Accra. He also worked as a research assistant (economic division) with the Institute for Statistical Social and Economic Research at the University of Ghana. Enoch's interests include African politics and governance, economic development, public sector reform, poverty and inequality. He has an MPhil in economics from the University of Ghana, Legon.

Dr Jakkie Cilliers is the ISS's founder and former executive director of the ISS. He currently serves as chair of the ISS Board of Trustees and head of the African Futures and Innovation (AFI) programme at the Pretoria office of the ISS. His 2017 best-seller *Fate of the Nation* addresses South Africa's futures from political, economic and social perspectives. His three most recent books, *Africa First! Igniting a Growth Revolution* (March 2020), *The Future of Africa: Challenges and Opportunities* (April 2021), and *Africa Tomorrow: Pathways to Prosperity* (June 2022) take a rigorous look at the continent as a whole.

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