

INTEGRATING TECHNOLOGY TO ADULT AND DISTANCE LEARNING IN BOTSWANA, NIGERIA, AND SOUTH AFRICA: PROSPECTS, CHALLENGES, AND MITIGATIONS

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ABSTRACT: The technology utilization gap experienced almost one decade ago in many African countries had by June 2017 become a thing of the past when different African governments began to repudiate investment in fixed-line infrastructure in favor of the mobile infrastructure. Many networks providers have since migrated from 3G to LTE-based services. Telecommunication technology has been changing the way Africans do business in commerce, agriculture, health management and, largely, education. Botswana, Nigeria and South Africa have been actively engaged in enforcing Internet penetration such that by June 2017, there were 923, 528 (39.4%) Internet users reported for Botswana, 91, 598, 757 (47.7%) users for Nigeria, and 29, 935, 634 (54.0%) users for South Africa (Miniwatts Marketing Group, 2017). Whilst it might be correct to say that the improvement in Internet penetration in the three countries could imply major prospects for its integration to adult and distance learning, there are challenges related to energy supplies, availability of hardware, expertise, cybersecurity and many others that can impede success in effectively digitalising program offers. This paper briefly examines the major prospects of integrating technology to adult and distance learning, possible challenges, and how best these might be mitigated so as to enhance the prompt entry of all three countries into the era of technology enriched provision of adult learning programs for personal and national development.

Keywords: Achievements, challenges, capabilities, capacities, integration, mitigations, prospects,

Adult and distance learning programs in Botswana, Nigeria and South Africa are in the cusp of visible achievements in terms of lowering adult illiteracy rates and broadening and deepening access to higher education in significant ways. Equally well, adult and distance learning programs in all three countries have been exposed to the pervading powers of the latest computer-based technologies for transforming and making more attractive and relevant learning experiences targeting their adult populations. Such have been the efforts made by all three countries that by June 2017, the Miniwatts Marketing Group (2017) reported that there were 923, 528 (39.4%) Internet users in Botswana, 91, 598, 757 (47.7%) in Nigeria and 29, 935, 634 (54.0%) in South Africa. Considering the prospects for a real breakthrough in adapting technology to, and transforming, adult and distance learning in the three countries, it seems to me that there should be urgent need for more incisive studies on how the achievements envisaged can be made more realistic. Studies reported in the literature, to the best of my knowledge, have simply provided insights into pervading achievements in the use of technology in teacher education and distance learning related to higher education in contra-distinction to what has actually occurred in the broader field of the mission of adult and lifelong learning in Botswana, Nigeria and South Africa. Indeed, we are yet to have more detailed research-based information, say, on machine learning that could help African adults replace radiologists and pathologists, interpreting billions of digital x-rays, CT and MRI scans and identifying copious abnormalities in pathology slides more reliably than humans to the same extent and levels anticipated by Emanuel (2017) for adults in the United States of America. That should imply, in this context, that the pervading effect of integrating technology to adult

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and distance learning in all three countries to the same level envisaged for the United States of America or Britain or Australia or Germany or Japan or China could sound too good to be true at the moment because of tacit challenges that are often glossed over by optimists. For example, one may ask if there are any reasons to think that virtual learning will succeed in indulging most adult illiterates to enrol in literacy programs. You may even wonder if technology application will not end up in mundane everyday usage for phone calls, face-time or Facebook and YouTube that may not produce any tangible adult learning outcomes. Furthermore, one may ask if Botswana, Nigeria and South Africa will not sooner than later arrive at the threshold of what is now known as tech-obsessing.

Good enough, pessimism cannot and should not overcome optimism because where there is a will and committed leadership as the case should be in all three countries, the prospects for success could be high. Herein lies the urgency and value of a discourse such as this that seeks to explore more dispassionately and technically, the contexts, challenges and possible mitigations with respects to programmatic intervention in integrating technology to adult and distance learning in all three countries, the differences notwithstanding.

Contextual Background

The three African countries in reference are diverse in so many ways but very much converged in terms of the use of English as an official language of business, politics, democracy and veritable contributor to their relatively growing economies, increased regional trade, investment and the emergence of a modern middle class (Africa Progress Panel, 2014). Even at that, the three countries possibly still feature traces of human development levels that remain much lower than the world average, visible evidence of high levels of inequality and substantial disparities in access to health and education as against that reported for the rest of Africa by the Organisation for Economic Co-operation and Development (hereinafter, OECD) (OECD, 2015). Perhaps, it might be more appropriate for one to report for each of the three countries the enabling related contexts of the diversities that exist among them.

Botswana

Botswana obtained her political independence in September, 1966. Since then, the nation of about 2.02 million people has made significant strides in political, economic and social development such that it has been recognized by the Commonwealth Secretariat (2015) and the World Bank (2015) as providing Africa's success story in terms of stability and development. This is deemed to be so because Botswana had recorded a near-universal primary education and adult literacy rate of 88.5 per cent as far back as 2013 (Commonwealth of Learning, 2015).

Botswana has equally taken steps to increase its tertiary enrolments. That has been made possible largely by the efforts of Botswana's two wholly public-funded universities, the University of Botswana and the Botswana University of Agriculture, one public-private university, the Botswana University of Science and Technology, Palapye, the Botswana College of Open and Distance Learning (BOCODOL) and more than three privately owned universities. Even so, Botswana has its own challenges in pursuing rapid

development. Foremost among the challenges is its reliance mainly on diamonds as its major national income earner, its inability to integrate ten per cent of its learners into the primary schooling system, high levels of graduate unemployment and a skills mismatch with the labor market (World Bank, 2015). Moreover, the 2012-2013 reported life-expectancy of 64.4 years (UNDP, 2014a) is constantly threatened by the HIV and AIDS epidemic it has been battling for years now.

It is cheering to note that despite the challenges observed, Botswana is poised to maintain its political stability whilst guaranteeing the fundamental freedoms and rights of its citizens. Botswana is also ready to promote its economic and social growth, drawing much strength from a national Vision and economic framework enunciated in her national development plans. Vision 2016 in Botswana, in particular, has been directed at ensuring that the nation enters steadily into the information age, perhaps, on the same footing as other countries, and she has been pursuing that dream.

Improving access to technology-based education and learning by all Botswana, as a tangible pillar of growth, remains a major goal for Botswana (Government of Botswana, 1997, 2009, 2015). Whether these goals have translated into a set of measurable actions will be revealed in the subsequent discussions in this paper.

Nigeria

Like Botswana, Nigeria obtained her political independence from Britain in October 1960. With an estimated population of 183.5 million people as at 2013, Nigeria remains, ostensibly the most populous country in Africa. It is very rich in natural oil and gas. Unfortunately, its enormous wealth in natural resources has not translated into much benefit in terms of improving the lives of Nigerians, and that must have been responsible for its classification as a country with a low human development index of 0.504 (or 152nd out of 187 countries and territories) in 2013 (UNDP, 2014b).

In terms of its quality of education system, the World Economic Forum (2015) ranked Nigeria 121 out of 143 countries probably because its secondary education attainment rate stood at 56.3 per cent, and that for tertiary attainment 15 per cent for its citizens aged between 25 to 54 years.

In 2009, Nigeria adopted what it called Vision 2020 which became a blueprint for her economic development, and to bring her up as one of the top 20 economies in the world (Government of Nigeria, 2009; Commonwealth Secretariat, 2015a). Its educational development is guided mainly by a National Policy for Education, 1977 (revised in 1981, 1998, 2004 and 2005). However, in the context of this discussion, it was only in Year 2010 that Nigeria adopted a National Policy on ICT in Education (Government of Nigeria, 2010a, 2010b, 2012a & 2012b; UNDP, 2014b; Commonwealth of Learning, 2015). What we need to explore here is how well Nigeria has been able to articulate its relevant policies into effecting relevant changes in accelerating the integration of technology in education, and adult and distance learning.

South Africa

South Africa became democratically and politically independent in 1994, that being the year it rid itself of the obnoxious apartheid rules that had enthroned segregation, inequality and inequity in its education system for several decades. With a population of about 53.5 million people, South Africa is said to belong to the medium human development index (UNDP, 2014c). It ranks 118th out of 143 countries in terms of education system (World Economic Forum, 2015 and Commonwealth of Learning, 2015). Compared with Nigeria which recorded a 2013 secondary education attainment of 56.3 per cent that of South Africa was 64.3 per cent meaning that her performance was far better.

South Africa's life expectancy in 2013 was 56.9, and she recorded a per capita gross national income of United States Dollar 11, 788. The Commonwealth Secretariat (2013) reported that South Africa recorded 56.9 mean years of schooling and tertiary education population of 3, 858, 000 in 2013, something higher than that recorded for both Botswana and Nigeria. Guided by a national constitution, national development plans, and technology relevant policies and structures and infrastructure, South Africa has entered into category of nations that are reporting dynamic, vibrant and well-connected information society that is a basic requirement for entry into the global competitive knowledge economy, come 2030. In this connection, attention is paid to the National Education Policy (1996) and the South African Schools Act (1996) both of which form the bedrock for integrating technology to learning by all South Africans.

Baseline Data and Prospects

The gauge of the capacities and capabilities in terms of the prospects of integrating technology to adult and distance learning in the three countries, as recommended by the Commonwealth of Learning (2015) should be located in policies, priorities, initiatives and institutions that are very closely linked to the process. To that end, all three countries are very much aware that the perfect provision and management of technology should help in no small way in reducing or eliminating unnecessary costs, creating greater efficiencies in all sectors of the society and increasing productivity in a competitive manner such that their citizens can become participants in global competitiveness. That is why all three of them have embarked upon actions that are directed at integrating technology in almost all spheres of development.

Botswana's plan to provide and enforce accessible quality education encapsulated in lifelong learning was enshrined in the National Constitution, the 1967 Education Act (Revised 1994), Vision 2016 and the National Development Plan (2009-2016). The National Development Plan recognizes ICT and innovation as the key drivers of its economic competitiveness. Based on the National Development Plan, provision was made for Botswana's Community Access Centres and School Net (known as Thuto Net) (Commonwealth of Learning, 2015). Seeking to drive the dream of developing the knowledge economy, Botswana has initiated its National Policy on ICT (2007) which is aimed at launching the nation into using technology for socio-economic and political transformations, and bringing into reality the Sub-Saharan African ICT hub it anticipated

many years ago (Commonwealth of Learning, 2015). In this connection, Botswana has planned to implement seven key programs aimed at enhancing connectivity.

Within the context of this discourse, it should be noted that Thuto Net has been designed to provide the basic foundation for integrating technology with adult and distance learning. Considering the fact that, according to the World Economic Forum (2015a), Botswana scored 3.4 on a scale of 1 to 7 in Internet access in schools, broadening this initiative into adult and distance learning stand a chance of success.

Like Botswana, Nigeria's integration of technology to learning finds strength in the National Policy on Education (1977, updated in 1981, 1998, 2004, 2005, and 2014) and the National Policy on ICT in Education (2010) and Vision 2020 all of which placed emphasis on ICT-mediated education within the contexts of lifelong learning (Government of Nigeria, 2010a & 2010b). Nigeria is pursuing with vigor the provision of universal access to information, wider access to education and a broad range of instructional options and opportunities anywhere and anytime.

Relevant ICT personnel development is one of the lead projects that are intended to give strength to the strategic move towards promoting awareness and proficiency in integrating technology to mass and non-formal education (Ministerial Committee on ICT Policy Harmonization, 2012). In 2015, the World Economic Forum (hereinafter, WEF) (2015b) scored Nigeria 3.4 on a scale of 1 to 7 in terms of Internet access and use in schools. As observed by Ifebhor (2014), the Open Data Development Initiative, the Skool Nigeria.Com, Osun State of Nigeria school-based ICT project and those undertaken by the National Open University of Nigeria (NOUN) are among the major initiatives that are pointing the way towards integrating technology to learning in Nigeria.

Perhaps much more than Botswana and Nigeria, South Africa's National Development Plan 2030, the South African Schools Act (1996), and, in particular, the Electronic Communications Act (2005, amended in 2014) have all helped in providing the legislative and regulatory specification of access to and integration of technology to learning in South African schools. Indeed, to mitigate the high costs of communication technology usage, South Africa's e-Rate regulation makes allowance for a 50 per cent discounted rate for the provision of Internet services to schools (Commonwealth of Learning, 2015). In a spectacular way, the promulgation of the e-Education White Paper (2004) in South Africa has since been accelerating the national commitment to connecting learners to teachers and professionals whilst establishing e-Learning platforms.

Accessibility, equity and affordability are at the forefront of the drive towards integrating technology to learning in South Africa. In this connection, South Africa adopted a White Paper on Post-School Education and Training in 2013 which sought to ensure that all who either dropped out of school or had never attended any school are reached through the use of ICT (Government of South Africa, 2015a & 2015b). South Africa has made significant strides in pursuing open learning, the development of open learning resources and support systems, and this is an initiative that has been further enhanced by the National Integrated ICT Policy Green Paper (2014).

Related to that development is South Africa's National Policy commonly known as SAConnect. It envisioned that by 2016, 50 per cent of public schools should have access to broadband at 10Mbps, and that by 2020 all of them should have been reached. That plan was backed up by launching ICT literacy for teachers and the integration of technology to learning at all levels and in non-formal settings. By 2014, the South African Government reported that ICT was served to 12, 655, 436 learners in ordinary public and independent schools as well as 425, 090 educators (Government of South Africa, 2014). But this notable effort is constrained, as it the case is with Nigeria, by inadequate supply of electricity and/or unreliable supply of electricity. In South Africa, 3,544 schools had no electricity and 804 schools had unreliable electricity supply source as at 2011 (Government of South Africa, 2011a & 2011b). Good news is that solar powered computers are being provided now in several places although the problems accompanying that innovation have not been indicated in the literature. Such is the stride that South Africa has made in Internet access that the World Economic Forum (2015c) ranked it 3.4 on a scale of 1 to 7 in terms of Internet access in schools and 75th out of 143 countries in terms of Network Readiness Index (NRI) in 2015.

South Africa promises to be a leading African country in many ways, and if it can sustain its initiative tagged "Operation Phakisa ICT in Education Lab", in collaboration with the World Bank, it may well prove to technology pessimists in Africa that it is possible to apply effectively modern technology to basic education and, indeed, lifelong learning.

South Africa provides an impressive array of the involvement of higher education institutions in the rapid integration of technology to widening access to learning. Leading in this direction is the University of South Africa (UNISA), a largely open and distance learning institution with more than 300, 000 students distributed across Africa and parts of the world. It adopted in 2011 its lead project known as the Open Education Strategy 2014-2016 whose major goals are spelt out in the Africanization of the content of study materials, a commitment to openness, excellence, integrity and relevance (UNISA, 2014; Commonwealth of Learning, 2015). It is noteworthy that, in terms of integrating technology in distance learning, UNISA is being competed against by other universities in South Africa. For example, it has been reported that the University of Cape Town (UCT) and Wits University in Johannesburg have both sought to offer free MOOCs to learners in Africa and, indeed, the world with the collaboration of Harvard University and the Massachusetts Institute of Technology (MIT) (Commonwealth of Learning, 2015).

These efforts are, for all intents and purposes, indicative of the technology commitment and readiness of the three countries reported upon.

The Challenges and Mitigations

Overall, the literature has revealed that Botswana, Nigeria and South Africa have featured the requisite policies, infrastructures and frameworks that should mediate a valuable extension of the same sets of actions to adult and distance learning. However, there are challenges that Botswana, Nigeria and South Africa must deal with. The challenges faced by them should expectedly differ, but the resolve to succeed should be the same.

For all three countries, the first challenge scholars in this specialization must be deal with is the present relative lack of or inadequate reporting on the actual application of technology to andragogy in Africa, especially in dominant provisions like adult basic education, workers education, correction education, extra-mural studies, continuing education and community education. Although the literature does indicate that the social utilization of technology could be somewhat profound in the three countries, this does not count for full-scale application to credential and non-credential based adult and distance learning. Only perhaps in Botswana and South Africa can one come across some elements of the integration of technology to continuing and community education in public adult learning centres. For example, Botswana's initiative known as *Sesigo* has made possible the provision of ICT in four community libraries and 69 village reading rooms (Commonwealth of Learning, 2015). Even at that, sustained research on the efficacy of the integration process in all three countries is either extremely weak or not sufficiently indicated in the existing literature.

It is relieving to note that for all three countries, the integration of technology to distance learning especially that related to higher education has been well reported. For example, the Botswana College for Open and Distance Learning (BOCODOL) is innovatively exposing out-of-school youth and teachers to technology and Open Educational Resources (OER) (Sultana, 2014; BOCODOL, 2015). However, we do not have research based reports on the effectiveness of many of the initiatives that have been reported in this paper.

Reports on adult and distance learning technology-related initiatives in Botswana, Nigeria and South Africa have not yet revealed instances of large-scale adoption of technology to dominant aspects of programming and provision as well as access at this stage. Indeed, universal access to technology based learning in the rural areas and widespread spots of neglected poor urban populations in all countries seem to be inadequately served. Perhaps, it is possible that as the governments in the three countries continue to invest in technology related to adult and distance learning in the nearest future, one can only hope that this challenge will be addressed.

Research-based information on the large-scale impact of investment in technology in terms of deepening access to education, equality and equity is not readily available or reported. If adult and distance learning organizations, technology in education and other major stakeholders in technology should ever want to lend Africa in accelerating the adoption of technology to lifelong learning, one area of interest should be sustained research and computer personnel development.

The efforts Nigeria has made in adopting technology in adult and distance learning appear to be constrained largely because of challenges related to adequate supply of human resources capacity and expertise, infrastructural problems and its relatively low provision of electricity. However, given the present sets of actions Nigeria has undertaken or is undertaking in terms of applying technology to adult and distance learning, notably in continuing professional teacher development, it is possible that the nation is able to take valuable steps towards much broader accessibility and adaptation in the coming decades. But this optimism should be based on possible large-scale provision of electricity.

If South Africa is able to sustain its tempo in integrating technology to education, adult and distance learning for her citizens should be steadily making a major advance. If the South African National Research and Education Network (SANREN) is able to pursue with vigor its lead project in providing network connectivity between all public higher education institutions and research organizations, the prospects could be much more realistic. If one adds to that such Provincial Governments' innovative actions like the Square Kilometers Array in the Northern Cape, the Internet Broadcast Project (IRP) in the Free State, the Gauteng Province Paperless Classrooms and the Western Cape's Smart Classrooms and eLearning Project, to name just but a few, South Africa stands in a good stead to become the leading African nation in terms of standing a chance to implement large-scale integration of technology to adult and distance learning in Africa. Even at that, the country still needs to pay more attention to the challenge that the 2012 Bridge Report has identified. That Report drew attention to the challenge of lack of policy direction and clear implementation strategy that had ended in fragmented and uncoordinated practices (Commonwealth of Learning, 2015). This challenge is largely being mitigated by the involvement of the Departments of Basic Education and that of Communications in coming up with some form of regulatory frameworks. And this should be the case for the other two countries as well.

Conclusion

For all three countries, the literature has not sufficiently revealed detailed country-wide data on the nature of the contexts and experiences of learners and teachers as far as technology application is concerned. There is very scanty reporting on the pervasive application to adult and distance learning in the three countries selected for discussion. Therefore, the most probable intervention would rely largely on extrapolation of what is generally reported in terms of policies, regulations, structures and frameworks for the most part. This is a limitation that subsequent research must address with concrete evidence. It does mean, therefore, that the somewhat "rosy" and encouraging reports that one gets may not be without any flaws at all. Be that as it may, sustained scholarship, research, collaboration, cooperation, private and public investments in infrastructures, electricity, personnel development, and in applying technology to adult and distance learning could hold out much hope in Botswana, Nigeria and South Africa, all things being equal.

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