
**OPEN EDUCATION RESOURCES: THEIR DEVELOPMENT AND
EXPANSION IN AFRICA**

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Abstract

Africa continues to face daunting challenges in the delivery of quality education for all. OER offers education leaders and policy makers a cost-effective approach to improving the quality of teaching and learning and reducing the cost incurred by governments and individual students in purchasing textbooks, and other teaching learning resources. These resources are being developed through collaborative partnerships by a number of institutions, especially in the global North. OER is gradually taking roots in Africa even though the pace is slow. Some of the players in Africa are TESSA, OER Africa, and African Virtual University. Higher education institutions in Africa are being called upon to develop their own OERs and make them available to other African countries. African governments through their Ministries of education should support the use of OERs in schools and universities.

Africa is one region that continues to face daunting challenges in education and development in the 21st century. African countries' commitment to the Millennium Development Goals (MDG), Education for All (EFA) and the institution of policies such as Universal Primary Education has increased enrolment in primary schools, and this has spiralled to increased access in secondary schools, colleges and higher education institutions over the last decade. At the primary level, gross enrolment ratio increased from 80% in 1999 to 102% in 2012 (UNESCO, 2015). At the secondary level, enrolment increased from 25% to 41% during the same time period. African governments spend a

reasonable percentage (4.9% of GNP in 2012, an increase of 1% over 1999 figure) of their total revenue on education in an elusive search to improve access and quality of learning. Total public expenditure on education as a percentage of total government expenditure is 18.4%. However, this increase in funding and access has not been commensurate with the quality of learning outcomes. The demand for high quality educational provision by the youth, at all levels of education including higher education is however, constrained by infrastructural and financial pressures and human resources. It is estimated that 3.8 million new teachers will be required in Africa apart from the millions of untrained teachers already at post who need extra training. Besides, existing curriculum tend to be based on outmoded content and pedagogical principles. Education provision is also discriminatory and unequally shared as disadvantaged and marginalised students continue to lag behind their colleagues in urban resource-rich environment (UNESCO, 2015). In addition, with a Gross Enrolment Ratio of less than 6% at the tertiary level, the sub region has a large target group that is ready, thirsty for knowledge, and is demanding to pursue quality tertiary education. There is also the challenge of increasing cost of education and educational resources.

It is clear from this that if we continue to offer education through the conventional approach to education, we cannot meet this demand for quality education. Definitely, quality is bound to elude us. To address this demand, African governments and educators need to modernise the approach to quality education delivery through the use of information and communication technologies (ICT) that is currently seen to be developing at a relentless rate and is transforming all areas of human life - the way we work, communicate, collaborate and succeed. One of these powerful new tools spawned by ICT is open education resources (OER), with its inherent capacity to promote innovation, creativity and personalised learning.

What is Open Education Resources?

The term open education resources (OER) was coined by UNESCO at UNESCO's 2002 Forum on open courseware and designates and was defined as "teaching, learning and research materials in any medium, **digital** or otherwise, that reside in the public domain or have been released under an open license that permits **no-cost** access, use, adaptation and redistribution by others with no or limited restrictions. Commonwealth of Learning (2013) defines open education resources as "materials offered freely and openly to use and adapt for teaching, learning, development and research." Wiley (2006) defines it as 'technology-enabled, open provision of educational resources for consultation, use and adaptation by a community of users for non-commercial purposes'. The philosophical notion behind this is that OpenLearn in Open University, UK with 5 million learners every year, Physics Education and Technology (PhET) OER interactive science simulations which has been translated into over 70 languages, Khan Academy with its over 4,100 openly-licensed videos in science, math and other subjects. These developments have been supported by a

number of organizations including William and Flora Hewlett Foundation, Commonwealth of Learning, and UNESCO.

The resources are being accessed by people all over the world including many from Africa. While these resources are being created and used extensively in the global North, Africa tends to be users and not producers, but even this capacity to use is at a low level. Not that there is anything wrong in using Western educational materials, (after all, we can contextualise them) but Africa needs to develop its own teaching learning open education resources and make them available to the world.

Fortunately, there has been, in the past decade, an intense effort on the continent to brew Africa's own OERs using lessons learnt from the global North. One of the major efforts was the development of Teacher Education in Sub-Saharan Africa (TESSA) open educational resources in 2005.

TESSA (tessafrika.net) is a Pan-African open educational resources supporting teacher development, created collaboratively through partnership by over hundred academics in sub saharan Africa with Open University of UK, Commonwealth of Learning, African Virtual University, BBC Service Trust, and SAIDE. It is a research and development network involving 12 countries and 19 universities, and presented in four languages - English, Arabic, French and Swahili. The countries involved are Ghana, Kenya, Nigeria, Rwanda, South Africa, Sudan, Tanzania, Uganda, Zambia, Mauritius, Malawi and Togo. TESSA is supporting 19 programmes, 700 African teacher educators and 300,000 teachers. In many context where internet is a challenge, print versions are made available. Knowledge is a collective social product, which therefore needs to be seen as a public good or a social property, belonging to every human being. This idea although simple is very powerful. They are materials that are made freely and legally available on the internet for anyone to use, revise, remix and redistribute. They are created under the Creative Commons CCBY license which allows for adaptation and remix to suit the users need. They include learning objects such as lectures, textbooks, lesson notes, references and readings, simulations, videos, audio recordings, multimedia, experiments and demonstrations, as well as syllabuses, curricula, and teachers' guides which are available for every level of education. These digital materials, give people everywhere equal access to our collective knowledge and provide many more people around the world with access to quality education by making lectures, books and curricula widely available on the Internet for little or no cost (Anamuah-Mensah, 2013). Costs incurred by governments if producing textbooks and other learning materials can be reduced drastically. They provide an unprecedented opportunity for the continuing improvement and dissemination of high quality units, courses and programmes to the door steps of schools, and universities. OER defines the role of technology in supporting learning and development, in offering quality education, expanding its reach, and promoting lifelong learning. It calls for and demonstrates the need for a broader understanding and approach to education and has a major role supporting the new Sustainable Development Goals (SDG), especially Goal

4, in working towards sustainable learning outcomes. One major defining characteristics of OERs is their openness. The openness means that it has the creative commons license (CCBY) which allows it to be edited, augmented, customised, repurposed, and reformatted.

Development of OER

Open education resources emerged in the global North through the MITCourseware initiative in 2001. Now there are many centres where OERs are produced. Many universities in North America and Europe are developing and making available their own OERs. Other centres of development include African Virtual University (AVU) (avu.org) is a Pan African intergovernmental institution whose drive is to increase access to quality higher education and training through the innovative use of information communication technologies. Through AVU's Multinational Project, 53 universities in 27 African countries have collaborated with AVU to design, develop and deliver OER programs in science, mathematics, and computer science in the three languages of English, French and Portuguese. Its portal hosts 219 OER textbooks that are available for Africans to use, contextualize, share and disseminate.

OER Africa (www.oerafrica.org) an initiative of South African Institute of Distance Education, provides support for the development and use of OER in higher education institutions. OER Africa, collaborated with University of Michigan and six other African universities to develop a set of OERs for teaching health sciences education.

African Teacher Education OER Network (ATEN) supported by OER Africa is a collaborative network promoting OER, facilitating dialogue and sharing existing teacher education content in various institutions as OER.

Free Libre Open Source Software for Education (FLOSS4EDU) Africa Network was formed in 2006 with the objective of making available appropriate educational content and Free Libre and Open Software (FLOSS) tools to educational institutions in Africa through a collaborative network of educational practitioners in the development of Free and Open Educational Resources on the continent. Its main activities involve establishing partnerships with its university institution members, building capacity around the use of technology, developing FLOSS solutions to support educational activities, and influencing policy change in African Educational Networks to share Open Educational Resources

Expansion of OER Adoption

So far, the creation of OERs has been dominated by the global North while African institutions have been mostly consumers of OER. This phenomenon of consumerism is however, not widespread but is limited to a few selected departments or sometimes individuals in a few institutions. It is in this light that Willmers (2014) stated

that "The African continent is in desperate need of national and regional initiatives to advance the open scholarship agenda".

In the recent Paris Declaration on OER (UNESCO 2012) to which many African countries were signatories, governments agreed to promote the notion of OER and to encourage the open licensing of all educational materials produced wholly or partly with public funds. This includes textbooks, syllabuses, and teachers guides produced for schools. However, in a number of African countries including Ghana, not much has been done by both the Government and higher education institutions to promote this accord. African governments can play a catalysing role through their national agencies responsible for basic, secondary education, and higher education.

The adoption of OER as an educational strategy in our countries will radically reduce costs, deliver greater learning efficiency, promote continuous improvement of instruction, personalise learning, encourage translation and localisation of content, and offer equal access to knowledge for all learners. As stated by Plotkin (2010), "the use of OER allows more rapid transfer of high-impact practices in pedagogy while also reducing a growing financial barrier to access in the form of increasingly costly textbooks and other instructional materials, such as password-protected online content. "

Barriers to Expansion of OER

Despite the many benefits that can accrue from OERs, a number of barriers/challenges can work against their effective adoption and creation. The challenges to the use of OER in African educational contexts include the following:

- lack of awareness of online resources,
- low level of collaboration and coordination among higher education institutions,
- low level of funding,
- limited connectivity,
- high bandwidth cost,
- unstable electricity supply,
- low levels of digital literacy, and
- geographical remoteness, which may further worsen inequalities and marginalize vulnerable groups.

These constraints are not unsurmountable. With deep commitment, right policy environment and financial support, we can overcome them; African governments and their higher education institutions should work together to achieve the best for Africa.

Conclusion

OER provides a great potential for transforming African educational systems. This can be realised if the right policies that will guide its adoption and use are put in place and implemented through political commitment. The 2012 Paris Declaration on open education places great responsibility on governments to take the lead by openly licensing textbooks and other educational materials produced with public funds.

Governments should furthermore create national OER Repositories in each country to which all institutions including non-governmental organisations can contribute to and access.

Higher education institutions have a responsibility to create awareness of OER among the faculty, set up a system for accessing all OERs on the net, incentivise the infusion of OER into their programmes being mindful of the contextual realities.

Africa needs enlightened and altruistic educators and governance officials who want to give next generation a better chance to succeed.

There is the need for African universities to find some middle ground out of their primary focus on competition, to collaborate in establishing national infrastructure, address intellectual property and licensing concerns, and work together to create and deliver open education resource repositories. According to Willmers (2014), "lack of coordination is one of the biggest obstacles in obtaining a sustainable open higher education framework in Africa." African governments can set up funding schemes to support collaborations among national institutions as well as collaborations with other African institutions.

Currently only a handful of higher education institutions in Africa have formal institutional policies or programmes in place that takes care of the opportunities offered by OER. All higher education institutions need to formulate policies that promote the creation and adoption of OERs. National accreditation boards have a role to play here by ensuring that all newly developed programmes make references to OERs as source of content and pedagogy. In addition, in re-accrediting already existing programmes, evidence of the use of OERs should be critical, this is how Africa can transform its educational system in order to produce people with 21st century skills who can transform the economy of Africa, people with critical and creative skills.

Nelson Mandela once said that "education is the most powerful weapon you can use to change the world." Africa stand a chance to transform the education ecosystem by improving its quality through a committed adoption and creation of open education resources.

"The future belongs to those who believe in the beauty of their dreams." Eleanor Roosevelt

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