Introducing MOOCs to Africa:

New Economy Skills for Africa Program – ICT

Sandi Boga & Rory McGreal

Athabasca University
Canada

January 2014

Introduction

MOOCs (Massive Open Online Courses) are highly interactive online courses open to all on the World Wide Web. Some use OER and others rely on commercial content that can include video, multimedia and computer applications as well as text and graphics. MOOCs have the potential to enhance online education in developing countries by facilitating collaboration between people, places and technology. In fact, Coursera, the prominent American MOOC platform provider, has recently partnered with the World Bank and the Tanzanian government to provide MOOCs to African students in an ICT education initiative. In this paper, the Tanzanian pilot project is investigated as a lens through which to examine the strengths and weaknesses of MOOCs in the developing world.

MOOCs can be seen as a formal manifestation of globally networked learning environments (GNLEs). Starke-Meyerring (2010) describes GNLEs as partnered learning environments with multiple boundaries connecting learners, their teachers and wider communities and aiding in the development of new ways of learning and building "knowledge cultures". They can include "collaboratively developed curricula, pedagogies, and learning spaces" (p. 128). This scenario becomes reality when the MOOC provider works with local people to develop curriculum and content.

There are a number of challenges in implementing MOOCs in the developing world. MOOCs, as a type of GNLE, rely on digital technologies and e-learning spaces to achieve their goals. Many regions of the developing world lack not only adequate telecommunications infrastructure, but also access to computers, technical expertise, online learning skills and English language proficiency. Despite these challenges, MOOCs can be successful in the African context, as long as MOOC instructors are able to adapt content and make use of available and appropriate technologies. Mobile phones are ubiquitous in the developing world, most people already know how to use them, and their use in education can be based not only on traditional pedagogies, but also on constructivist principles, which complement the connectivist principles upon which many MOOCs are based. Combining MOOCs with mobile phones could be a very powerful way to educate large numbers of people in the developing world.

Mobile technology can be used with other technologies such as interactive radio, compact discs and even paper to provide African students targeted by the MOOC with a more accessible

learning experience. Open Educational Resources (OERs) that can be modified, mixed, localized or translated can be used to more cost-effectively deliver training in a wide variety of formats. Decision-makers responsible for bringing MOOCs into developing countries should not try to replicate the North American course experience, but rather focus on making the best use of the technologies already in place to empower the learners they are trying reach.

The Issue: African Students Need ICT Skills Training

The New Economy Skills for Africa Program – ICT (NESAP-ICT) was launched in 2008 to support countries in Sub-Saharan Africa in building skills for the knowledge economy. Its focus is to support the development of "globally benchmarked, employable skills for the Information Technology and IT Enabled Services industries – sectors that can create thousands of new jobs and catalyze economic and social transformation" (Trucano, April 4, 2013, para 5). This project is also contributing to the development of SMART Knowledge Hubs, which will form a "backbone" for the development of new economy skills" (Trucano, April 4, 2013). Tanzania is building submarine fiber-optic cable networks, along with terrestrial networks, to power these hubs, thus bringing affordable, high speed broadband to Africa (The World Bank, 2013).

A Solution: Massive Open Online Courses

With support from the World Bank, NESAP-ICT has launched a pilot initiative to incorporate Coursera offerings to help equip students with market-relevant IT skills. The curriculum will be aligned to the needs of Tanzanian private sector employment tracks.

MOOCs as a Disruptive Technology

Clayton Christensen, the influential Harvard Business School professor who coined the term "disruptive technology", noted that disruptive technologies find success initially in markets "where the alternative is nothing" (Regalado, 2012, para. 5). MOOCs started in North America but have the potential to positively impact students in many regions of the world where access to high quality education has been minimal or non-existent, making it an example of a potentially disruptive technology. Coursera, an initiative born from an alliance between Stanford and 62 other universities, claims that it has had over 1.5 million students from around the world sign up for courses (Coursera, 2013). Even though only a small fraction of those students will actually

complete a class, the MOOCs nevertheless point to a means of delivering free, top-quality education on a global scale. "MOOC purveyors have found that 60 percent of their sign-ups are self-starters from knowledge-hungry nations like Brazil and China" (Regalado, 2012, para. 7). While MOOCs have enrolled students from developing countries from the start, they were not originally targeted at low-income developing countries (Trucano, April 4, 2013). Regardless, MOOCs are opening access to education and this has awakened the interest of the developing world. MOOCs have the potential to be an invaluable tool in offering education to marginalized groups (Liyanagunawardena et. al., 2013) such as women or minorities. They may also provide a way to fill a gap in local expertise by providing large-scale access to high quality courses on required skills.

MOOCs support free interaction among participants, establishing a critical point of idea interaction and a place for the creation of knowledge. Trucano (August 7, 2013) notes that the challenge for policymakers in developing countries is that most MOOCs emanate from urban environments in developed countries, and as a result the 'solutions' are imported and 'made to fit'. Technology should never be a barrier to learning. It is imperative that students be able to interact with the medium used to present instruction with ease, and this will not happen if the MOOC is offered in a manner that requires ample bandwidth, constant connectivity, and a knowledge of how to work with sophisticated hardware and software. MOOCs must be delivered using technology that is familiar in the local context – technology such as radio, mobile phones, compact discs, print and other course materials using open licenses.

Once a MOOC has been implemented within a country, online forums can support collaboration and networking among learners long after the MOOC has ended (Liyanagunawardena, et al., 2013). Before this level of collaboration can be achieved, a common language, literacy level, technology and interest, along with a willingness to share ideas, are needed to enable participation in a MOOC (de Waard et al, 2011). From this common ground, participants can interact with one another and share innovations and ideas, in the hope that these interactions will trigger other insights.

Challenges of Implementing MOOCs in Africa

Access to Digital Technologies

A large majority of MOOC participants are from North America and Europe, with limited participation from Asia and even less from Africa (Liyanagunawardena, Williams and Adams, 2013). Access to technology is most likely a prohibitive factor in developing countries. While there are often pockets with good infrastructure, such as the capital city and a few other major urban areas, many of the towns and almost all of the rural areas will have only unreliable or part-time electricity, and no internet connectivity (Liyanagunawardena, Williams & Adams, 2013). The literature on learner experiences in MOOCs has shown that "digital literacy, English language proficiency, structure of learning, the delivery environment, the perceived value of learning and critical literacies to efficiently evaluate large quantities of information play a key part in shaping a learner's MOOC experience" (Liyanagunawardena, et. al., 2013, p. 2). Thus, if these elements are lacking, students are less likely to succeed in a MOOC. It is also important to remember that meaningful access to ICT comprises far more than merely providing computer and internet connections using mobile devices (Warschauer, 2003, as cited in Liyanagunawardena et. al., 2013).

Language and Culture

The majority of the MOOCs today are run in English and this prevents many students in developing countries from fully participating. Many students from developing countries are not competent enough in English to take an online course; they may not understand the colloquialisms used in discussion forums or the learning culture typical for North American and European students). Even MOOCs that have been translated were originally created for a North American audience, so the content doesn't accurately reflect the reality of students in other countries. These difficulties can be mitigated by ensuring that local instructors have the ability to create their own content and conduct classes in the local language.

Coursera's copyright rules could prove to be a real barrier to the success of their platform in developing countries. Their MOOCs are made available under strict copyright terms. An open-source platform solution (such as the solution offered by edX) would increase the chances of MOOCs' long-term success in the developing world by giving local educators control over the

applications, content and curriculum, and would addressing critics' concerns about cultural imperialism. Like Coursera, edX offers courses from leading universities for free, but many of the supporting textbooks and other materials are published as open educational resources (Carr, 2013) that can be used, reused and modified by anyone.

Strengths of MOOCs in the Tanzanian Project

As previously mentioned, the NESAP-ICT pilot initiative will incorporate Coursera offerings to help equip students with market-relevant IT skills. The goal is to create a MOOC IT curriculum aligned with the needs of Tanzanian private sector employment tracks. This is the type of MOOC that has real potential to positively impact local people. It also matches the description of globally networked learning environments (GNLEs).

Two noteworthy objectives of the NESAP-ICT pilot are to have "globally-benchmarked, industry-rated skills assessment, training and certification" and "new partnerships with the best-in-class learning institutions, industry associations, global certification providers, and global technology companies" (The World Bank, 2012). Udacity, another MOOC provider, provides an example of such a partnership. They are offering a skills-based program in conjunction with Georgia Tech, sponsored by AT&T. AT&T in turn benefits from a wider pool of trained talent, and also receives training for existing AT&T employees (Chafkin, 2013). Similar partnerships may one day be pursued by for-profit companies like Coursera in the context of projects undertaken in the developing world, especially in light of existing partnerships that the World Bank has with American technology companies. This may compromise locally-developed curriculum, but it may also improve student job prospects. This raises the question of whether or not it is better to focus on globally-relevant job skills or to maintain local autonomy when implementing MOOCs in the developing world. Or perhaps one goal shouldn't exclude the other? NESAP-ICT is looking for "industry collaboration, for example, through 'knowledge hubs' to develop curricula, learning content, and testing and certification standards" (The World Bank, 2012). Specific implementation information was not provided, as the program is still in the planning stages. However, the development of knowledge hubs, and the encouragement of South to South collaboration on the creation of shared resources may encourage regional partnerships and the growth of local technology companies, providing independence from external interests.

In light of the fact that technical infrastructure is being created, many of the challenges mentioned in the previous section in regards to access to digital technologies may not apply to students in this program. Nonetheless, it is still worth evaluating how mobile devices may be used within the NESAP-ICT MOOCs for three reasons. First, enrolled students may not have access to high-speed internet or specific hardware or software at home, so including mobile devices in course design will help free students from the constraints of a particular location, and enable them to study and learn on a continuous basis. Second, students in a MOOC are expected to develop social networks comprised of people from whom they can learn. If they are only able to communicate with other people who have computers, their access to knowledge through dialog and social connections will be severely limited. Third, if this pilot shows that MOOCs in Africa can educate large numbers of people, scalability will be key. Students in rural and outlying areas will still need access to the courses, and providing them with the option to use accessible technology will be key to normalizing such e-learning initiatives.

Strengthening the Initiative by using Existing Technologies

Mobile Learning in the Developing World

Mobile phones are the most prevalent ICT in the developing world, and their use is growing. For students in rural areas, mobile phones are particularly useful because they make educational content accessible not only in their villages but also at times of their own choosing (Valk, Rashid, Elder, 2010). In addition, m-learning provides a method of educational delivery that could be more cost-effective than other e-learning methods, and the ubiquity of mobile phones means that many people are already familiar with mobile phone applications, which will reduce cognitive load for students taking part in a MOOC for the first time. Moreover, students learn within their own context, making the experience more meaningful. This will be particularly helpful in the NESAP-ICT context, where students from a variety of backgrounds are likely to enroll in the course to improve their prospects for the future. Finally, m-learning may also exert a "democratizing effect on the learning experience as learners take a greater responsibility for the learning process instead of being passively fed information by an instructor" (p. 120)

Conclusion

In summary, MOOCs as a type of globally-networked learning environment (GNLE) could become a very useful delivery model in the developing world – but not necessarily when tied to a specific platform like Coursera. If developing countries allow themselves to be locked in to a certain MOOC platform, they may have to adhere to the foreign values put forth by the platform owners. As a result, developing nations may lose some of their autonomy and exclude potential local partners who may not be a part of the same platform (Siemens, 2013). This exclusivity will make developing countries vulnerable to the effects of cultural imperialism, and prevent true collaboration with other developing countries that may be facing similar issues.

A danger of for-profit companies like Coursera delivering MOOCs to the developing world is that they are revenue-focused. This compels them to be open to the possibility of accepting corporate partnerships that may not have the best interests of the learners in mind. Another issue is that commercial MOOC platforms copyright-protect their materials, which means that developing countries will lose the ability to adapt, localize or translate content to their own context. Coursera's less flexible approach may also limit MOOC instructors in their ability to use publicly-available, high-quality OERs in their MOOCs. This will negatively impact instructors' and learners' long-term ability to take control of their own learning.

A more appealing option would be to use an open-source MOOC platform in combination with OERs, so that local instructors have the flexibility to adapt curricula to meet the unique needs of their learners. Further to this, it seems unwise to import North American MOOC course formats wholesale, since many of the technological competencies required to complete such a course simply do not exist in developing countries, creating barriers to access for many students. Instead, to take full advantage of the MOOC format, implementers should plan to use existing technologies such as radio and mobile phones. Instruction designed for mobile phones has a similar pedagogical underpinning to the instructional design of MOOCs, meaning that students can receive high-quality instruction on devices they are familiar with, while taking part in learning activities that are similar to those offered in North American MOOCs.

References

Carr, D. (2013). edX MOOC Software Goes Open Source. *InformationWeek: Education.* Retrieved from http://www.informationweek.com/education/online-learning/edx-mooc-software-goes-open-source/240150815

Chafkin, M. (2013). Udacity's Sebastian Thurn, godfather of free online education, changes course [web log entry]. *Fast Company*. Retrieved from http://www.fastcompany.com/3021473/udacity-sebastian-thrun-uphill-climb

de Waard, I., Abajian, S., Gallagher, M., Hogue, R., Keskin, N., Koutropoulos, A., & Rodriguez, O. (2011). Using mLearning and MOOCs to understand chaos, emergence, and complexity in education. *The International Review of Research In Open And Distance Learning, 12*(7), 94-115. Retrieved from http://www.irrodl.org/index.php/irrodl/article/view/1046/2026

Liyanagunawardena, T., Williams, S. and Adams, A. (2013). *The impact and reach of MOOCs: A developing countries' perspective*. eLearning Papers (33). Retrieved from http://www.openeducationeuropa.eu/en/article/The-impact-and-Reach-of-MOOCs:-A-Developing-Countries%E2%80%99-Perspective?

Regalado, A. (2012). The most important education technology in 200 years. *MIT Technology Review*. Retrieved from http://www.technologyreview.com/news/506351/the-most-important-education-technology-in-200-years/

Schunk, D. H. (2012). Constructivism. In *Learning theories: an educational perspective*. Upper Saddle Hill, NJ: Pearson Education, Inc

Siemens, G. (2013) *Keynote speech at the Open Education conference in Park City, Utah*. Retrieved from http://www.youtube.com/watch?v=3a_uMs9H96I#t=41

Starke-Meyerring, D. (2010). Globally Networked Learning Environments: reshaping the intersections of globalization and e-learning in higher education. *E–Learning and Digital Media*, (7)2, 2010. Retrieved from www.wwwords.co.uk/ELEA

The World Bank (2013). New economy skills for Africa program- Information and

    communication technologies (NESAP-ICT). Retrieved from

    http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTEDUCATION/0,,content

    MDK:22335863~menuPK:617610~pagePK:148956~piPK:216618~theSitePK:282386,00

    .html

Trucano, M. (April 4, 2013). MOOCs in Africa [web log entry]. *EduTech: A World Bank Blog*

    on ICT use in Education. Retrieved from http://blogs.worldbank.org/edutech/moocs-in-

    africa

Trucano, M. (August 7, 2013). 10 principles to consider when introducing ICTs into remote,

    low-income educational environments [web log entry]. *EduTech: A World Bank Blog on*

    ICT use in Education. Retrieved from http://blogs.worldbank.org/edutech/10-principles-

    consider-when-introducing-icts-remote-low-income-educational-environments

Valk, J., Rashid, A., & Elder, L. (2010). Using mobile phones to improve educational outcomes:

    An analysis of evidence from Asia. *The International Review of Research in Open And*

    Distance Learning, 11(1), 117-140. Retrieved from

    http://www.irrodl.org/index.php/irrodl/article/view/794