Beyond the first steps: Sustaining Health OER Initiatives in Ghana

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Abstract

The introduction of open educational resources (OER) in two Ghanaian universities through a grant-funded project was embraced with a lot of enthusiasm. The project started on a high note and the Colleges of Health Sciences in the two universities produced a significant number of e-learning materials as health OER in the first year. Growing challenges such as faculty time commitments, technological and infrastructural constraints, shortage of technical expertise, lack of awareness beyond the early adopters and non-existent system for OER dissemination and use set in. These exposed the fact that institutional policy and integration was essential to ensure effective implementation and sustainability of OER efforts. Informed by the early OER experiences at the two institutions, this paper proposes that institutions in low resource settings perhaps need to pay close attention to awareness creation, initiative structuring, funding, capacity building, systemization for scalability and motivation if OER sustainability is to be achieved.

Keywords

open educational resources, sustainability, higher education, low-resource settings

Introduction

Open educational resources (OER) have been described as "digitized materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research" (OECD 2007). Their introduction in the early 2000s was embraced by many as the new way of offering learners and teachers wide access to educational material for their personalized use and adaptation. The role of these resources in enhancing teaching and learning in higher education is becoming even more pivotal in developing countries as educational institutions are usually faced with increasing student intake and deepening resource constraints such as limited access to print resource materials, inadequate numbers of faculty members, limited infrastructural capacity, low research capacity, and uneven development of basic ICT infrastructure.

Openness of educational resources has been immensely facilitated by the introduction of open licensing. The Creative Commons[1] for example, provides free licenses that enable authors and other creators to customise the licensing of their work based on the freedom they want it to carry. The authors determine how others may share, remix, commercialize, or alter the resource. Thus, Creative Commons Licensing has been widely used in OER development by clarifying the limits of resource usage. OERs typically come in various textual, audio, video or even simulative formats. Most are electronic and are usually distributed via the internet or local networks; thus promoting access on demand and learning at the learners' own pace. Such learner-centred teaching and learning materials go a long way in helping to address the challenges faced by higher education institutions in low resource settings.

The Colleges of Health Sciences (CHS) at two Ghanaian universities, the Kwame Nkrumah University of Science and Technology (KNUST) and the University of Ghana (UG) adopted the OER paradigm in 2009. With the help of a grant provided by the William and Flora Hewlett Foundation, KNUST and UG, in collaboration with the Universities of Michigan, Cape Town and Western Cape and OER Africa, piloted a Health OER initiative. Activities carried out under the project included a series of sensitization, policy, and production workshops for administrative heads and faculty members in February 2009. These workshops were organized in conjunction with University of Michigan and OER Africa. The two Colleges at KNUST and UG therefore became the implementing units for the broader introduction of OER at their respective institutions.

The First Steps

The OER concept was embraced with a lot of enthusiasm at the two institutions, and the initiative started on a high note. This was demonstrated by the several pilot e-learning and OER projects that were proposed by faculty members who attended the first production workshops at KNUST and UG. Following these workshops, faculty members began creating instructional modules on self-chosen topics and in their preferred format using the Creative Commons licensing. Technical support was provided by media specialists to ensure that content and designs were web-friendly and user-friendly. The productions were checked for possible copyright issues (a process referred to as

'dScribing' by University of Michigan[2]) prior to being forwarded to the web administration team for online publication. These efforts were assisted by one of us (NCE), a visiting professor from the University of Michigan who worked with the two institutions for a year to nurture their OER efforts. These exploratory endeavors also brought institutional resources that could further promote the initiative to the fore. The College of Health Sciences at KNUST for instance, discovered the potential of the Department of Communication Design which provided the media and technical expertise required for OER production. Similarly, leaders at UG engaged a resident multimedia expert to be responsible for the technical aspects of producing the desired materials. Drafts of institutional policies on OER were drawn up to create the necessary environment for the development, publication and dissemination of OER by addressing issues such as human resource, infrastructure, collaborations, publication rights and licensing, technical support, review process and quality assurance, access, potential liability, motivation and academic rewards.

The Colleges were particularly enthused by the opportunity OER presents as it helps improve the teaching of scientific processes through the use of images, animations and other visual means and the use of electronic resources to facilitate clinical demonstrations, which are conventionally taught to large groups of students simultaneously. The enrollment of large numbers of students well above the infrastructural and resource capacity of the institutions as well as the current promotion of learner-centred approaches in teaching and learning made the OER initiative more welcome. Indeed e-learning, which is the basis for all our OERs, has proved to be an effective method of teaching the complex physiological and biochemical processes associated with health sciences (Greenhalgh 2001, Ruiz et al. 2006, Bridge et al. 2009).

Initial efforts at the two institutions led to the production of thirteen (13) health OER materials from scratch and the creation of an OER-dedicated website for dissemination. Initially the OER materials were password-protected on the websites. However, institutional administrative approval was later granted to make the productions accessible pending the approval of the institutional policies. The OERs became freely accessible, and Ghana became a producer of health OER, making the institutions and authoring faculty more visible.

An unpublished survey by the teams at KNUST and UG that used self administered questionnaires to assess the acceptability of electronic OERs in their respective Medical Schools indicated extremely positive feedback. Two narrated animations that explained the polymerase chain reaction (PCR) were distributed to 150 third-year medical and students at KNUST. This topic was chosen because of student feedback on the difficulty they faced in understanding it from lectures or books. Similarly, a comprehensive learning package on Total Abdominal Hysterectomy (TAH) including narrated videos describing the surgery, interactive cases, and a self-assessment quiz was also distributed to nineteen fifth-year students at UG at the beginning of their clinical clerkship. With 73% and 100% response rates from KNUST and UG respectively, 82% of the KNUST students and all the UG students viewed the materials. On a 0 to 4 point scale used to rate the usefulness of the material; 4 being "extremely helpful" and 0 being "unnecessary", the average rating for the PCR animation was 3.5 and the average for the TAH videos was 3.6. All students who viewed the programmes at both institutions (100%) indicated that the e-learning programmes were "more effective" in comparison to other methods of learning. These results suggest that the dividends of adopting the use of e-learning and OER in higher education will be significant.

The Learning Process

As with every new initiative, difficult and unique challenges must be confronted as the process grows. Over-committed faculty time, technical, administrative and funding constraints became more apparent as the programme grew.

First, the heavy demand on the time of overstretched faculty resulted in a considerable wane in the initial excitement about OER and a decline in the level of activity among faculty as a typical OER module for instance, required about 35 man-hours which were supplemental to their regular responsibilities. Challenges including technological and infrastructural constraints and lack of the appropriate technical competencies also contributed to a stalled OER drive. Additionally, the promotion of the use and re-use of the materials being created was conspicuously ignored being limited to the authoring faculty and students in their class. Beyond that, the OERs were seen as being distinct from regular coursework and no plan for a formal integration into regular teaching and learning existed. Most effort and resources were directed towards just the production and publication of these OER materials to the detriment of their effective usage.

The resource gap experienced at the end of this donor-funded project also had a significant effect on OER efforts. The project period was relatively brief and sustainability measures had not been established. As is the case in many institutions, policies and procedures usually evolve with excruciating slowness (D'Antoni 2008). KNUST and UG were no exceptions and the adoption of OER into the organisational culture of the two institutions for both individual faculty and the institution as a whole, was a slow process.

Implications for Sustainability

The challenges revealed during the natural growth process of this initiative raised some valid sustainability questions. One can consider "sustainability" for this purpose, as the continued viability and achievement of one's OER objectives over the long term. Most OER initiatives start as grant-funded projects and rarely last beyond the life of the project (Friesen 2009). A UNESCO-initiated survey of over 600 participants from 98 countries listed sustainability as the fourth most important issue out of fifteen, in promoting OER (D'Antoni 2008). Even the top three issues that emerged - awareness raising and promotion, communities and networking, capacity development – are factors that also promote sustainability. The key lesson learnt by various OER implementers and evaluators is that sustainability cannot be attained without institutional integration at all levels (Dholakia et al. 2006, Downes 2007, OECD 2007, D'Antoni 2008, Friesen 2009). Based on our experiences in Ghana, we reinforce this assertion by proposing six areas that require institutional focus if OER sustainability is to be achieved (See Figure 1).

First, awareness creation is a process that seems especially important for driving the institutional adoption of OER in the first few years. At the two institutions, the policy and production workshops, the institutional draft policy and the first few OER projects served to launch OER awareness. The draft policies also helped to orient the governing bodies at the various levels about

institutional responsibilities and issues regarding intellectual property and copyright, quality assurance, staffing, training, motivation and academic rewards, as well as other administrative and infrastructural support. Continuous sensitization among faculty members and students is another effective way of facilitating OER implementation in institutions. Both KNUST and UG have done this by appointing OER Coordinators within their Colleges of Health Sciences whose tasks include getting additional faculty involved in material production, increasing student awareness and encouraging the use of these materials. Similarly, acquainting national bodies responsible for education and financing aware of this new direction and its benefits to education will go a long way to advance the OER cause in Ghana.

Secondly, a structural framework must be established within which OER activities operate. This is one way of addressing the post-project gaps created by the over-dependence on grants as the main driver of OER initiatives in our institutions. Structure must be instituted right from project design. A key deliverable of any OER initiative should be the business or sustainability plan which must contain short, medium and long term strategies to ensure its sustenance within the implementing institution. This plan will include strategies on funding, continuous awareness creation, building human and infrastructural capacity, systemized production of materials and mechanisms for integrating the use of OERs in mainstream teaching and learning. Such a plan will facilitate the continued production and use of OER and also lay the foundation for institutional take-over and integration.

Funding is another area of concern crucial to sustainability and must be tackled frontally. KNUST and UG, being public universities, are mainly financed by the government and therefore face funding challenges. One approach as suggested by Friesen (2009) is to link the tangible benefits of OER initiatives to core institutional priorities thus making a strong case for institutional funding. MIT's evaluation of its Open CourseWare revealed its significant influence on the selection of that institution by prospective students (MIT 2006). Similarly, KNUST has in recent times, embarked on increasing its visibility and contribution to global knowledge through digitization and opening up of all its printed scholarly work. The OER initiative can therefore link its objectives to this institutional priority in order to obtain the necessary support. UG is also committed to new ways of increasing the number of students trained in its health disciplines and OER can play a key role in this initiative. Institutional and government funding support however will eventually have to be supplemented by other funding models. The array of sustainable funding models for OER extensively outlined by Downes (2007) and Dholakia et al. (2006) provide enough choice for most settings.

Capacity development within the institution for OER production is also essential to most sustainability efforts. This includes, but is not limited to, the training of faculty members on material development and pedagogy so that they are able to contribute their intellectual content to the institutional effort. The Communication Design Department at KNUST has committed to capacity development by incorporating interactive design into its curriculum. Students will receive training and exposure to the creation of OER and thus become a valuable resource to the OER efforts of our universities. Local and global networking and collaborations also present a potential for cross-institutional capacity building. OER Africa's African Health OER Network, of which both KNUST and UG are members, is one example of platforms which promote the free access and sharing of educational resources as well as professional interaction among academics.

Another vital input to sustainability is the systemization of OER operations to facilitate scalability of material production. It is essential to design an operational system for the production and use of OERs that is informed by the experience of the introductory phase and the institutional OER structural framework proposed above. Workflow processes for creation and adaption of materials, mode of integration into regular coursework and formative evaluation will be useful constituents of such a system. Faculty will need to be supported to continue authoring OER materials. It may be helpful for instance, to schedule residential OER material production workshops for faculty and support staff where they would be free from regular work and could put more time into producing the materials. Student involvement in the production process has also been proposed by various authors (Atkins et al. 2007, Wiley 2007) and proven by some institutions such as University of Michigan's dScribe process, to be a valuable resource in OER initiatives. The two Ghanaian universities intend to explore the student corps system as support for creating, designing and adapting content, as well as clearing these materials for publication. At KNUST, Communication Design students supervised by faculty, work with College of Health Science faculty to produce OER as part of their required coursework for which they get academic credit. This has created a symbiotic relationship between the Colleges of Health Science and Art. Similar schemes could be replicated with students in other relevant disciplines, thus building OER competency and helping to reduce faculty time requirement in OER creation and the cost of required personnel.

Cross-institutional collaboration is another way to strengthen a systemized OER production process, especially in low resource settings. KNUST and UG so far, have produced modules on different topics and the two institutions freely share these resources for use and storage in each other's institutional repositories. Going a step further, the collegial approach to OER creation adopted by the Teacher Education in Sub-Saharan Africa (TESSA) programme promises even more benefits (Wolfenden 2008). It makes use of collaborative creation of resources with collective originality and authorship by using common templates in order to enable use in different environments. Such approaches do not only save resources and eliminate duplication of efforts but also enhances capacity building and the quality of materials created. Above all, greater numbers of OER productions become more likely than by pursuing insular individual approaches.

While focusing on the production of these materials, consideration should also be given to the appropriate enabling technology required. In spite of technological and connectivity challenges, innovative measures could be pursued to facilitate the dissemination and use of OER. Promoting interoperability and creating small-sized modular materials which are downloadable and could be distributed via simple physical media such as CDs and USB 'thumb' drives are examples of such measures. Enabling access of OER materials containing streaming video or audio on the local institutional server (intranet) is another way of circumventing the connectivity challenges.

Lastly, motivation and reward will facilitate the active participation of stakeholders to ensure the sustainability of OER in institutions. This can take the form of release time for OER activities and the recognition of published OER as credit towards promotions, particularly if OER products are endorsed by peer-review organizations, such as the Med Ed Portal of the American Association of Medical Colleges. This will increase interest and commitment from faculty. Students could also be motivated to assist in the development of OER through training, sponsorship to inter-institutional meetings, stipends and prestige.

Conclusion

The positive role of OER in enhancing education and access to knowledge cannot be over-emphasized. It has undoubtedly presented an opportunity for higher educational institutions in developing countries to make up for the shortage of educational resources that most grapple with. OER can be a solution much as mobile telephony has been to developing countries due to lack of fixed telephone infrastructure. Developing countries now have more than twice as many mobile subscriptions as in the developed world and percentage share of total world subscriptions for developing countries saw a sharp increase from 40% in 2000 to 70% in 2009 (ITU 2010). OER therefore can be the analogous "leap-frog" technology for developing country educators to bypass the long resource building period and provide high quality education through access to world class educational resources. This presents the opportunity for developing countries to become key producers of such resources especially in geographically bound knowledge areas for global use. Several OER implementers over the years have confirmed that challenges associated with sustaining these initiatives are unavoidable (Atkins et al. 2007, Friesen 2009) and each institution will therefore, contend with its own sustainability challenges. The areas discussed in this paper are only meant to serve as guideposts for institutions that seek to pursue this new direction in education. Wiley (2007) rightly predicts that open educational resources, like institutional websites, will soon become a service that the public will expect from every institution of higher education. Each institution will then have to find the will and the resource within itself to integrate and sustain the development and use of OER in its educational efforts.
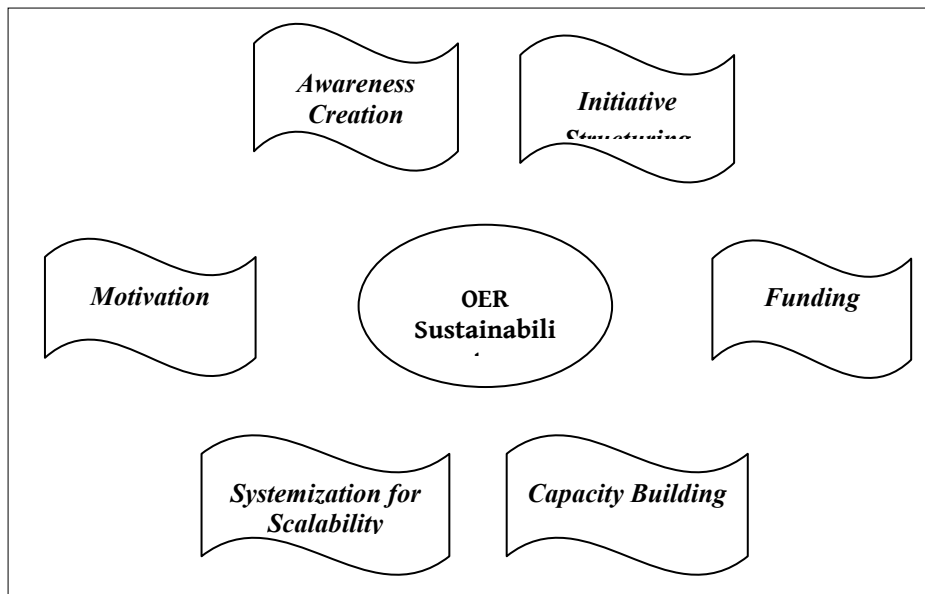
Figures

Figure 1 Proposed OER Sustainability Focus Areas

Notes

1. http://creativecommons.org/about/licenses/

2. https://open.umich.edu/wiki/DScribe

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