Open Educational Resources: Innovation, Research and Practice

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Foreword

Since the UNESCO Paris Declaration on OER adopted by the global community in June 2012, there have been a number of developments, and the key question is no longer about the "how" of OER development. We are no longer talking about authoring tools or distribution systems. It is more about realising the value to be derived from OER. This involves defining an OER value chain that will help stakeholders identify the various sub-systems in the chain that link the individual teacher's or learner's contribution relating to OER use, to bigger initiatives such as good-quality open textbooks or Massive Open Online Courses (MOOCs) which could lead to viable academic qualifications and credentials involving institutions.

The development and exchange of OER continues to be a technologically intensive process. Technological considerations in OER are not limited to authoring or remixing tools. Collaborative production of OER requires well-designed and robust online spaces and infrastructure (Wikiwijs) and repositories. The latter can also be used to combine OER to create lesson plans online (Open Science Education Resources in Europe). Unless OER are consistently and adequately described, they cannot easily be located in online searches. The chapter on GLOBE considers these challenges and offers solutions. COL's earlier publications on OER offered insights and advice on good institutional practices, business models and policy matters.

However, the social dimension emerges as an important factor from a number of chapters in this book. The study on OpenLearn shows that when OER are taken directly from formal courses, the biggest impact is on the formation of communities of learners around the OER. This is similar to the conclusion of the chapter on OER for Lifelong Learning, both reflecting the experience of the UK's Open University. The African Virtual University (AVU) chapter reveals the importance of the formation of a consortium of OER producers across institutions and countries. This process requires subtle yet intensive facilitation for its sustenance and is important for the quality assurance of OER. The detailed analysis of the experience of the African Health OER Network also points to the viability of viewing OER as a social practice.

In two different chapters that focus on MOOCs (contributed by the global pioneers of MOOCs), what emerges is that even if the teachers do not use OER, the learners draw upon OER through their own social space and networks. The chapter based on COL's experience reveals that the existing hierarchies and power relationships in many developing country institutions do not allow for the decentralisation that fosters and encourages the use of OER. The experience of the Open University in the Netherlands reveals the significant role of trust in encouraging the increased use and sharing of OER.

The chapter on OERu identifies more fully all the linkages and sub-systems in the OER value chain. It also shows the importance of how trust-based interactions among institutions can advance the value of OER for a wide range of stakeholders. Thus, it is not just lack of policy that can hold back OER development and re-use, but an inadequate appreciation of the social aspects as well. Chapters on OER in academia (Mexico and South Africa) show the importance of blending bottom-up processes of OER generation and exchange among faculty with top-down policy support. It is significant that this book combines the technology aspects with social values and the impact that these have on the users and creators of OER.

Licensing considerations are inseparable from discussions of OER and are taken up in a separate chapter. This book of research articles about OER is itself an OER, as are the individual chapters, all available under a Creative Commons 3.0 attribution Share-Alike licence. Published by COL, the book is produced as part of the work plan of the UNESCO/COL Chair, which was granted to Athabasca University and is led by Professor Rory McGreal, one of the editors. The other editors, Dr. Wanjira Kinuthia and Emeritus Professor Stewart Marshall, are part of the international group of UNESCO/COL Chair partners.

Contributions in this volume provide insights, experience-based case studies and analyses which will help readers grasp the essential contours of the OER value chain. COL's OER publications in the last two years provide the most comprehensive view of the various sub-systems and linkages in the non-U.S. milieu, and this book is yet another contribution in that direction.

The individual book chapters are included in the OER Knowledge Cloud (oerknowledgecloud.org), which is a Web repository of more than 400 research papers and reports on OER. This Knowledge Cloud provides researchers with free and easy access to the OER research knowledge base, including refereed papers, presentations, dissertations, reports and other OER-related publications. The cloud has been created at Athabasca University as part of the international Chair work plan. The rationale for this is the growing need for a substantial expansion of the OER research base that can provide researchers with the means to explore new knowledge about OER. It is hoped that this book, along with the OER Knowledge Cloud, can provide a solid foundation supporting the introduction and implementation of OER innovations, increasing the research evidence and providing guidance for OER in practice.

Given COL's commitment to implementing the recommendations of the Paris OER Declaration, COL will continue its advocacy efforts, encourage the development of policy, support capacity building and promote OER research. Some of the key global leaders in the OER movement have shared their valuable experiences and insights along all these dimensions in this book, which I most heartily commend to you.

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Towards a Sustainable Inter-Institutional Collaborative Framework for Open Educational Resources (OER)

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Introduction

The objective of the African Health OER Network project is to advance health education in Africa by creating and promoting free, openly licensed teaching materials created by African academics to share knowledge, address curriculum gaps, and support health education communities. The Network is a collaborative project between a university in the U.S., two universities in Ghana, two universities in South Africa, and an educational non-government organisation (pseudo-named Edu-NGO) based in South Africa.

A primary focus of the project is to scale up teaching and learning capacity in institutions by creating new learning materials and converting existing materials into Open Educational Resources (OER) (Luo et al. 2010a). However, achieving this outcome is not as straightforward as it sounds. Harley (2011, p. 224) reports that "creating OER has increased the workload of pressurized staff at some African institutions" even though one of the main goals of OER is to reduce the "extra workload." In the current academic world, as Bossu and Tynan (2011, p. 261) rightly observe, "academics today are more overwhelmed and overworked than ever before," and it will impose a big challenge on OER adoption if OER is seen as creating another task.

Another challenge of OER is that they are not universally relevant. As Ngugi (2011, p. 284) cautions, "it is naive to assume that all OER created outside Africa [are] equally relevant in Africa." While this does not mean all OER are irrelevant outside the context of their creation, it stands to reason that if the amount of effort required for repurposing were high, the attraction to use OER would be reduced and the inclination to develop one's own resources increases.

In 2008, the University of Ghana and the Kwame Nkrumah University of Science and Technology began to develop health sciences resources from scratch because

the resources created outside Africa were not suitable for teaching and learning in the Ghanaian context (Omollo et al. 2012). Reporting on the status of OER in Africa's higher education institutions, Ngugi (2011) observes that encouraging collaboration in creating and sharing intellectual capital in higher education is one way of improving quality and achieving long-term cost-effectiveness in educational practice. The exchange of educational materials and co-creation of OER enable educators to be kept from reinventing the wheels and thus save their time and resources. The co-creation process also allows educators to integrate different social and cultural contexts into their educational materials.

Despite the potential benefits of a collaborative approach to OER production, sharing and distribution, little research has been directed to it. Furthermore, collaboration is not a panacea to the complex OER agenda, which is not limited to intellectual property rights, cost implications and academic concerns often evidenced through resistance to giving away educational resources for free (Bossu and Tynan 2011; Harley 2011). In this chapter, through examining the development of the Health OER Network, we focus on exploring how sustainable inter-institutional collaboration can facilitate OER production and sharing.

Conceptualisation

There is an increasing popularity of OER in higher education institutions worldwide due to resource constraints, faculty workload and acquisition of learning materials. Bonk (2009) observes that with 1,890 classes online, MIT (Massachusetts Institute of Technology) has almost its entire curriculum available for free to learners around the world. Although MIT expects students and instructors to be the primary users of its OpenCourseWare (OCW), 50 per cent of users of OCW are corporate self-learners (Bonk 2009, p. 164). In health and medical care, an increasing number of people are making important health decisions based on information found on the Internet (Masters et al. 2010). These users, also called e-Patients, are educating themselves using online resources much the same way they use "self-help" or "over-the-counter" self-medication. This has added increased pressure to ensure the high quality of learning resources, especially those that are freely distributed. However, the challenge is that OER producers are informed by their socio-cultural contexts and goals that could be different from those of the users. For example, medical educators and doctors in Sub-Saharan Africa might be well placed to write OER on malaria given that the vast majority of malaria cases and malaria-related deaths occur in Sub-Saharan Africa (http://tinyurl.com/3zsu4g7). Luo et al. (2010b) analyse social and technical needs for inter-institutional collaboration for OER production, and report on the barriers to inter-institutional collaboration for OER production. This chapter extends Luo et al.'s proposal for a collaborative framework for OER production, with an emphasis on the sustainability of an OER social practice.

One of the challenges of sustainability of OER production and use is that each learning material is like a unique puzzle piece, each created by different authors. Educators and learners must then identify an appropriate puzzle piece that could meaningfully fit a specific "teaching and learning" goal. The effective use of OER is therefore an outcome of finding the best fit of resources that matches pedagogy in a particular setting. It therefore follows that OER could be viewed as a pile

of puzzle pieces, with varying degrees of quality, and users (both experts and novices) "scratch" to find matching pieces (see Figure 16.1).

Figure 16.1: Open Educational Resources are like puzzle pieces that educators and students assemble to address a specific learning goal.
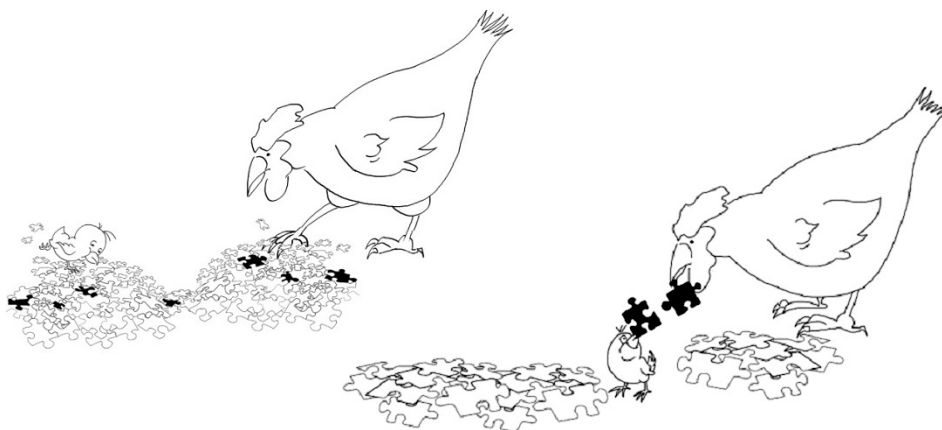
Source: "Chicken and Chick" on pile of puzzle pieces, by Stacey Stent, University of Cape Town, is licensed under a Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported License

One obstacle for educators and learners is that creators of OER are not obligated to wrap the pieces into a usable "picture." It can therefore be time consuming to find useful resources that can be used with less need for repurposing or remixing. Our argument is that although OER repositories could be made of "complete puzzles," most users want only to use pieces to complete their own puzzles. The repurposing of OER suggests flexibility of the puzzle pieces to allow a user to reshape, resize and recolour to fit a new puzzle, and the obligation to share the modified pieces and the newly constructed puzzle.

Our thesis is that a strategy that fosters collaboration in the production of OER is likely to create resources that are useable at least by member institutions in the collaborative community. It therefore stands to reason that an inter-institutional collaboration would enable the creation of more collaborative "complete puzzles" and individual pieces that would find use in different contexts. In their study of teachers' re-use, quality and trust of OER, Clements and Pawlowski (2012) observe that curriculum compatibility is a major barrier. We infer from this observation that it does not make sense to increase the production of OER when these resources are not used. Clements and Pawlowski add that teachers were left to judge for themselves the quality of resources they wished to use or share.

While educators might be in a position to judge the quality of the resource, most students and e-Patients might not be in a position to make the quality judgement. The quality of resources must be ensured before a resource is published. While there is no excuse for publishing poor quality resources, Bossu and Tynan (2011) attribute the suspicion about the quality of OER to the free and open characteristics of the OER agenda. We see this "suspicion" as a barrier to wider uptake and adoption of OER. Thus, the objective of our work has been to explore ways of improving user confidence in the OER, widening the scope of relevant resources, minimising the time and effort to find resources, and sustaining the OER practice.

Inter-Institutional Collaborative Framework

Ngugi (2011, p. 283) describes the interplay between use of OER by educators/students and changing teaching/learning practice this way:

> "As educators create and adapt OER, they have the opportunity to re-examine the ways in which they teach and rethink the ways in which their students learn — and need to learn; and as students gain access to OER, whatever their format — paper or electronic — they are empowered to study on their own, seek out alternative ways of learning, and play a role in how and what they learn."

The framework envisaged (see Figure 16.2) has teaching and learning goals (T&L) as a possible start point. These T&L are informed by the curriculum or content experts, pedagogical intentions and appropriate designs, all of which trigger the need for awareness of what is possible. The "awareness process" would be achieved either through searching OER directories or seeing what others have done through "show and tell." This process results in an individual or a collaborative activity of searching repositories. Ideally, the show and tell would lead to identifying people with shared interests/goals with whom the collaborative process can become possible. These activities lead to finally successfully finding the "puzzle piece" that fits the T&L.

The left-hand side of Figure 16.2 focuses on high-level activities that happen at the departmental or institutional level. The collaborative needs could include the socio-cultural context in which the institution is located, the technological constraints, issues of intellectual property (IP), and an audit of existing learning materials that could potentially be converted as OER. The collaborative needs result into some guidelines for designing and sharing OER, including possible incentives. As we expand on in the next section, the left-hand side of the framework depicts ways of achieving OER as a social practice, and the right-hand side shows how to support OER social behaviour.

Figure 16.2: Inter-institutional collaborative framework for OER sustainability, which can be used to collaborate with any number of institutions or used just at a single institution.
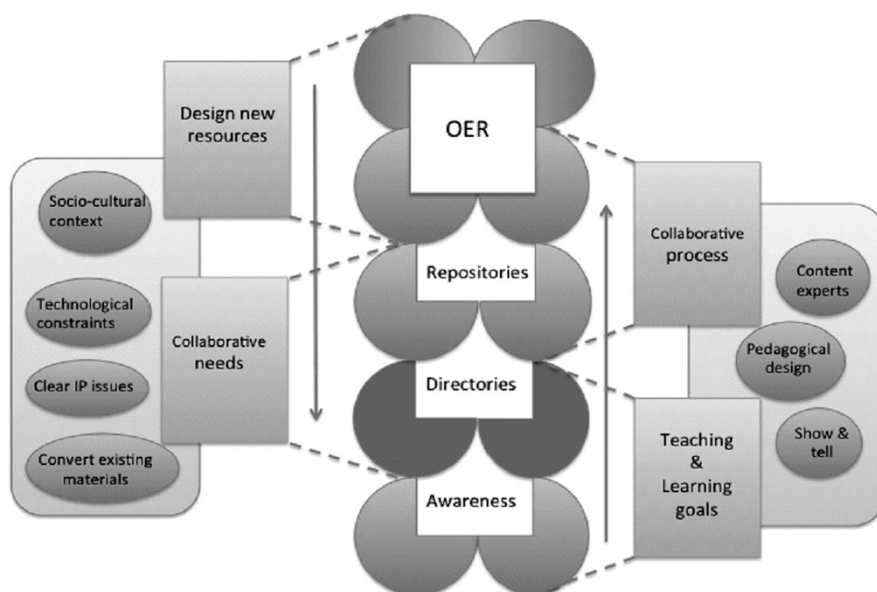
Our framework leverages "an incremental process in which the academics develop resources for their own students before releasing the resource as OER" (Harley 2011, p. 222) and shows how OER experiences can be shared with other institutions. We therefore argue that the model has potential for achieving unprecedented growth in both contributions and the use of OER.

Building OER Social Practices from Social Behaviours

In order for OER production and adaptation to be sustainable long term, the culture of creating and using OER should become a teaching and learning practice norm within a university. One of the challenges of institutionalising OER is transforming OER from mere individual social behaviour to OER as a social practice. Esfeld (2003) contends that social practices are regulated by normative attitudes, while for a social behaviour there is less need for co-ordination of one's behaviour with that of others because there are no sanctions. Sanctions (i.e., reinforcements or discouragements) are necessary for transition to happen from social behaviour to social practices. Currently, OER is mostly used as a social behaviour and is yet to become an institutionalised social practice. There are fragments of OER social behaviours (usually from OER enthusiasts or champions) at most institutions.

The challenge is that if these enthusiasts leave the organisations, unless the OER emerges as a social practice, there is a danger that OER might experience a slow and gradual death. One of the aims of the inter-institutional collaborative framework is to leverage OER social behaviours to build an OER social practice. The concept of "social practice" views actions in terms of a dual perspective: on the one hand, actions are concrete, individual and context bound; on the other hand, they are institutionalised and socially anchored and, because of this, tend towards patterns of regularity (Jorgensen and Phillips 2002). Although OER are products of concrete actions by individuals who are driven by a need to freely share educational resources, until these behaviours become practices and begin to assume patterns of regularity, it is unlikely that the OER agenda could be sustainable.

The other challenge is that social behaviours of OER contributors are sandwiched between non-existent institutional policies and their semi-conscious assumptions or unspoken motivations (Thompson 2004). In this chapter, we report on these unspoken motivations of OER enthusiasts and potential contributors (chosen on the basis of their OER social behaviours) from different organisation roles and portfolios (including management, subject experts, technical support staff and researchers). The participants were interviewed with the aim of soliciting insights that would help improve understanding of ways of transitioning from OER social behaviours to OER social practice. As already alluded to, an environment is said to have an OER social practice when it has a "social cognition" of OER. Van Dijk (1996) defines social cognition as beliefs, social representation or socially shared knowledge that includes attitudes, values, norms and ideologies. An example of social cognition is how academic staff understand the importance of research and need to publish in "good" journals. The sanctions, in terms of rewards or incentives for doing this, make most academicians see research as part of their jobs. It is this state that OER would have to reach through social cognition.

Methodology

The African Health OER Network was a collaborative project between a university in the U.S., two universities in Ghana, two universities in South Africa, and an educational NGO (pseudo- named Edu-NGO) based in Kenya. Semi-structured interviews were the study's primary data collection method. Selection of participants for interviews began with convenience sampling and was followed by snowball sampling methods. The purpose of the snowball sampling was to identify possible participants who were actively involved in OER. The Principal Investigator or a project manager was first recruited who then referred the researchers to active participants of the Health OER Network project. OER materials were not yet in use when we conducted the study, so we interviewed mainly individuals who contributed to OER content production.

The interview protocol included open-ended questions, which were built upon literature review and research questions. The interviews aimed to collect data on the need for inter-institutional collaboration in OER, as well as social and technical challenges in creating and sharing OER materials. We interviewed 52 participants from October to December 2009. Generally, the interviews lasted from 40 minutes to an hour. Most interviews were conducted in the interviewees' offices. When this was not possible, we conducted interviews by telephone or Skype. All of the interviews were audio-recorded with the consent of participants.

Analysis

Table 16.1 summarises thematic analysis used to identify key themes from the 52 interview transcripts.

Table 16.1: Institutional interviewees

Institution	Management	Subject experts	Technical support	Researchers	Total	% age
Two universities in Ghana	6	7	8	0	21	40
Two universities in South Africa	4	10	4	3	21	40
University in USA	1	5	0	0	6	12
Edu-NGO	3	0	1	0	4	8
Total	14	22	13	3	52	100
% age	27	42	25	6	100	

The participants were distributed as follows: 40 per cent in the two universities in Ghana; 40 per cent in the two universities in South Africa; 12 per cent in the university in the U.S.; and 8 per cent in the educational NGO in Kenya. Twenty-seven per cent of the participants were management, 42 per cent were subject experts, 25 per cent were technical support staff, and 6 per cent were researchers. Based on this distribution, it can be summarised that the majority of interviewees were subject experts from the universities based in Africa. Most contributors to OER are subject experts and the need for OER is amplified in resource-constrained environments.

Having established the source of the bulk of the data (i.e., subject experts), the data was then aggregated and therefore not reported in terms of their roles. The need for a framework was partly inspired by this call from one of the participants:

> "[P]eople really want to know good examples from other institutions.... [T]hey want to know how people achieve that... know what people are doing in their own institution... to know what's happening at other institutions and learn from others' experiences."

Our thesis is that a sustainable framework for OER is one that is responsive to the OER needs as expressed by a community of potential contributors and users of OER. In the next sections, we present the thematic analysis of the interviews.

OER Teaching and Learning Challenges

A point of departure in finding and/or repurposing OER is a teaching and learning need. It is this T&L need that also becomes a basis for collaboration. The comment below captures this need:

> "[H]is frustration was that students are not getting to see surgical procedures ... because there are too many of them. And they come into the operating theatre and they're standing, you know, 10 feet away from the table and ... not gowned.... [Y]ou get like 10 or 12 in the room so the room is very crowded ... [and you] can't hear anything. Even if he tries to explain something, he's talking through a mask and it's hard to even hear what's going on.... So his idea was ... to make surgical videos...?

The challenge of teaching surgical procedures in a crowed operating theatre was the motivation for exploring the creation and use of surgical videos to enhance student learning. In another case, it was the need to teach embryology in 3-dimensions, as indicated below:

> "[W]hen I started teaching, the biggest difficulty for the students was to understand things in the 3-dimensional form because I teach embryology and cell biology.... [T]he mandate I was given was to take it down to a molecular level so you can find embryology anyway. There's loads of websites where you can find embryology but you pay for them. And the other thing is ... we were taking cell biology down to a molecular level, different molecules on a cell, that I couldn't find...."

It can be inferred from the above statements that teaching goals and the absence of resources to support teaching strategies were the motivation to explore OER possibilities. To the extent that resources were available on websites but access to them required subscription is a good case for using OER. Through the inter-institutional collaboration, the academics will be able to share with other academics the pedagogy of surgical videos and the 3-dimensional embryology, and increase re-use.

OER Champions

One of the strategies for building an institutional environment that is congruent with the principles of the "OER movement of mutual exchange and collaborative development of educational resources" (Bossu and Tynan 2011) is to create a community of OER champions:

> "[We are] working with what we call champions of OER in the institution and on the other hand, we are working with people where there seems to be a sense of interest and we are trying to engage that sense and build — and play a role in building up — a network amongst people who are interested. We don't have the capacity to do things for people, but we want to enable people to do it themselves and serve as a kind of a network in the institution so that people know who else is doing it....

The OER champions are usually academics or senior management who are passionate about the OER phenomenon of sharing educational resources and are willing to acquire skills that empower them to accomplish these goals. It is these groupings of institutional champions that form the back-bone of an inter-institutional collaborative initiative. Inter-institutional collaboration has the potential to enable the champions from individual institutions to be connected with each other.

One of the increasing challenges of an OER agenda, say Bossu and Tynan, is keeping the momentum going:

> "[So] for OER sometimes it's not people's focus. So it's really hard for them to keep the momentum and they were asking questions like ... how can we keep the momentum? Who is monitoring the process and who could play the role to push each institution to move forward? ... [T]hey were asking questions like that...."

It can be inferred from the above statement that OER initiatives require impetus, advocacy and drive. It would be naïve to expect that self-motivation alone (i.e., social behaviour) is sufficient to sustain the practice (i.e., sharing educational resources freely). The African Health OER Network sponsored workshops and identified task groups for keeping the momentum going. These workshops and task groups ensure there are champions from different institutions to share their experiences among themselves and with a larger group of educators. OER momentum is therefore sustained at institutions:

> "[As] she champions OER and that develops in the faculty ... it's definitely having a spill-off to the blended learning, you know, because she is talking about it and she is having workshops...."

The OER champion could also be someone with power, someone who can be instrumental in mobilising resources, as suggested below:

> "[We] were totally underrepresented. And if OER is going to happen further in our department —then I mean, yes, we have lots of needs. If people know about it, surely there is money available to address those needs. But you can't do it without the permission of the dean. And if the dean is not involved, how are you going to do it?"

The use of an inter-institutional collaboration would also make possible the writing of joint funding proposals to address some of the mutual T&L challenges. Collaborative funding proposals assume that there is a shared need, and this could serve as a motivation for collaboration:

> "So in every respect our needs are different and if we are going to address educational needs, then this is an opportunity for Africa to

actually grab onto OER. We find everywhere that we struggle — and we struggle in every aspect of teaching. We don't have funds for this, we don't have funds for that, we don't have funds for digital imaging, we don't have a teaching set in pathology. Nothing. Because there is no funds, nobody does it...."

It is such contexts of daring to desire to improve T&L that OER renders itself potentially useful. Under these constrains, the champions need to be supported to ensure that they stay focused on pedagogy and the complexity of using OER. The inter-institutional collaboration would create an environment for mutual exchange, and enhance collaborative development of resources.

OER Sharing Culture

The sharing of educational resources is a culture and it needs to be nurtured. Developing a sharing attitude is therefore useful. The sharing culture is an invaluable experience to build on when adopting OER. The culture of sharing is not new, but it's how to harness this existing culture that remains a challenge:

"[P]eople are sharing informally quite a lot, but they don't necessarily share in a way that anybody else would know and so there's quite a lot of sharing happening between individual lecturers. But it's very difficult to actually find out what that is."

In addition to culture, some institutions already have learning resources that could be digitised and shared as OER:

"Like when N comes or when K comes and if my staff could go and look at what UM is doing or what GH is doing.... [We ask ourselves:] What do we have that we can archive? You know, what do we have in our archives that we can digitalize? ... Digitalizing all of these fantastic resources we already have...."

This underscores the need to start by documenting the source of existing resources that can potentially be converted into OER. This documentation could be a useful resource in its own right, and through inter-institutional collaboration, the digitalised materials and technologies and the skills needed for digitalisation could be shared among collaborating institutions on a need-to-use basis.

Another aspect of harnessing an OER culture of sharing is understanding the type of academics most likely to freely share educational resources. The quote below shows that academics close to retirement are more likely to give away their teaching resources as OER:

"[T]here is something particular about catching academics as they near retirement, as amongst those academics, there is a sense of preserving legacy. And to be frank, it's also a sense of frustration with how their teaching and learning materials and their teaching and learning activity has always come second to the research endeavor. So when we have shown an interest — 'we'd love to see that as an OER' — it's been met with a spark on their side of an appreciation that somebody else sees the value in something else that they have put so much energy and resources into over years and years, but which the institution hasn't necessarily recognized...."

This is fundamentally important, as it provides a way of understanding where the key resources within institutions could lie. By contrast, young and upcoming academics seemed not to be OER advocates:

> "[P]erhaps younger academics aren't necessarily attuned to this, and then also I think that young academics ... are so busy figuring out this enormous structure, learning the ropes, preparing teaching materials, getting their head around things...."

To the extent that OER include three types of resources — learning content, tools and implementation of resources (Bossu and Tynan 2011) — most young academics find the use of tools and incorporation of digital media in their teaching a key attraction. We infer from this argument that young academics will increasingly use and repurpose OER in their teaching.

OER Skills

It is not always possible to have all the skills required to create OER at one institution, as expressed in the statement below:

> "[W]ith the OER project I have got, we are busy making videos on how to do some clinical procedures. And so [we contacted] the digital media studio on main campus.... I thought, 'Well, they know — they know how to make everything,' you know? And then they said to me, 'Well, [we] have never had experience in making dental videos.'"

The specialised unit at the institution still lacked experience in making dental videos. These skills could be rare and have potential to stall an OER project if no work-around plans are put in place. The inter-institutional collaboration allows such specialist skills to be shared while creating resources that could be used at more than one institution.

Another area that could be time consuming if less than adequate skills are available is in converting existing materials into OER. Most of the teaching resources are prepared for use in a particular module to achieve a specified teaching outcome. In teaching these classes, educators either design new teaching materials or re-use existing materials. Usually the re-use is limited to resources created for a previous cohort of students or different yet related courses. These resources make good candidates for OER. However, further work is required on both of them in terms of ensuring copyright compliance and wrapping pedagogy around them. The statement below illustrates one of these aspects:

> "[A] lot of the materials that people have ... weren't originally intended as OER, they were intended as a demonstration in a classroom or they were intended as an adjunct to what the lecturer was saying in the first instance. To make them OER, they would actually need a little bit more of a wrap-around ... some kind of explanation of their context.... [O]therwise it might seem a little 'disembedded' from its context."

"A little bit more" in the above statement points to the need for skills that could be leveraged through the inter-institutional collaboration.

> "OER is very granular ... I think about OER as quite small actually. I think more in terms of open content and sort of not taking

somebody's whole course and using it but taking pieces here and taking pieces there. And so I don't think there's a great connection with the other person who created that piece.... [I]t's your personalizing your own OER based on OER...; you're the filter and — and it reflects your teaching...."

It can be inferred from the above statement that OER are like puzzle pieces (or granules) or completed puzzle pictures that users may choose to use as a whole or repurpose through integration of the pieces or granules wrapped in pedagogy. It is this wrapping that takes into account the context, the socio-cultural environment of users, technological constraints, and teaching and learning outcomes. A useful example of the impact of technological constraints on use of OER is narrated here:

"I was part of an International Association of Digital Publication Project where e-books were made available to students. So our rector then brought the students in the pilot program laptops and, you know, then — it was fine. But in downloading the e-books, the bandwidth was a huge problem."

In the above statement, the problem was low bandwidth available to students to access some resources. This suggests that there is need to explore locally viable alternatives. Inter-institutional collaboration would provide a way of learning from, and with, other institutions in finding feasible solutions.

OER Awareness

The creation of awareness of the value of OER and demonstrating some of the possibilities to peers is a useful start point:

"We've actually got to speak to people and ask them and — and for most of the time, they don't know what OER means. They don't know what the concept means. So we have used other terms like 'open teaching,' 'open content' to try and attract people to come to some of the seminars to hear us...."

One of the barriers to adopting and using OER is general ignorance among academics about what it is all about and the lack of understanding of copyright issues. Some academics are surprisingly IP naïve and less informed about the affordances of the Creative Commons licences. The use of descriptive terms to advertise OER seminars was to ensure that people attend to learn more about it. Even when people know about OER, they may not be aware of OER supporting structures at their institutions:

"So then we know somebody [is] looking for OER. But that person doesn't even know necessarily that we exist."

This problem is compounded by the lack of institutional policies and other campus-wide OER initiatives. As one person said, "There is no one central repository for OER.... There is no policy on OER." In the absence of these, the responsibility for creating awareness lies in the hands of academics and staff:

"But in ... our faculty, we need to emphasize the importance of OER. No one has come here to do it. And it's just RZ and I that are basically doing anything and so we really, really need to put it out there to the rest of the people. Because ... most of them feel there's nothing in it for them and so they don't do it. You know?"

One of the benefits of inter-institutional collaborations is an increase in OER awareness through widening access to what academics from other institutions are doing with OER. This is key in maintaining momentum at local institutions.

OER Evaluation

While it is relatively easy to measure the impact of open access publications using the number of citations, the educational value of OER is difficult to measure. The extract below from management puts it succinctly:

> "OER is a fantastic vehicle for institutions ... that's really what we are trying to make as policymakers at this university.... [I]t's difficult because it hasn't been measured ... there isn't a precedent. In open access publishing there is evidence of how making data available — particularly in the health fields [like] AIDS research, that kind of thing — is unlocking research and data for the benefit people."

Many academics have various motivations for contributing to and using OER. At the institutional level, the rationale for OER is captured in the following statement:

> "[Our] motivation seems to be about making sure we have a public space for [the university] material so anybody can access it because that's probably a very similar motivation to the University M.... We have considered the benefits of having the material stored in a place where new academics could use it.... [We] find new academics come to [the university] and they have to start building up all of their material from scratch...."

It can be inferred from the above statement that the goals for OER could be both inward and outward focused. Academics may create and distribute OER targeted at their own students, or may repurpose OER for use in their teaching. Students may use OER as supplementary resources to their study materials. And institutions may create a repository of educational resources to support new or young academics. Each of these goals would have different methods of evaluating their effectiveness. Some of the key OER evaluation questions are suggested in the statement below:

> "i) How are we going to get through the workload..., ii) How are we going to make sure we do good work, and iii) How are we going to ensure that the work we're doing is having some kind of positive impact."

These questions suggest that the production and use of OER impact existing social practices and need to be viewed more broadly than simply as freely available resources. This broader view of OER may result in policy formulation. The OER institutional policies would be a useful resource for other collaborating institutions.

OER Funding

Most OER initiatives at institutions of higher learning receive funding from external agencies. While this is commendable, examples abound where centres established through external funds cease to exist when funding runs out, as this statement suggest:

> "[The] Center for Open and Supported Learning was set up as this dedicated OER entity, … was funded with external donor funding and then as soon as that funding ran out, the center was closed down. That's a good example of how OER won't be sustained…."

Our argument is that dedicated OER units/entities are useful and should play a leading role in creating inter-institutional collaborative initiatives that will guarantee existence beyond an individual unit.

Discussion and Conclusion

The above analysis shows that OER as a social practice did not yet exit at the institutions represented. However, the social behaviour of OER was evident mostly from the sharing of resources and less on the use of OER. This observation could be attributed to the timing of the interviews, as anecdotal evidence shows that general use of OER is steadily increasing. The analysis has brought to the surface some of the challenges for ensuring a transition from the social behaviour to a social practice. The themes are indicative of social representation or socially shared knowledge in particular attitudes, values, norms and ideologies of the people interviewed. Rather than have each individual institution deal with these factors, an inter-institutional collaboration would make it a priority to resolve these factors.

Figure 16.3 depicts an overview of the sustainable collaborative framework for OER, in which some factors are bigger than others depending on the conditions of social practice.

Figure 16.3: Overview of the sustainable collaborative framework.
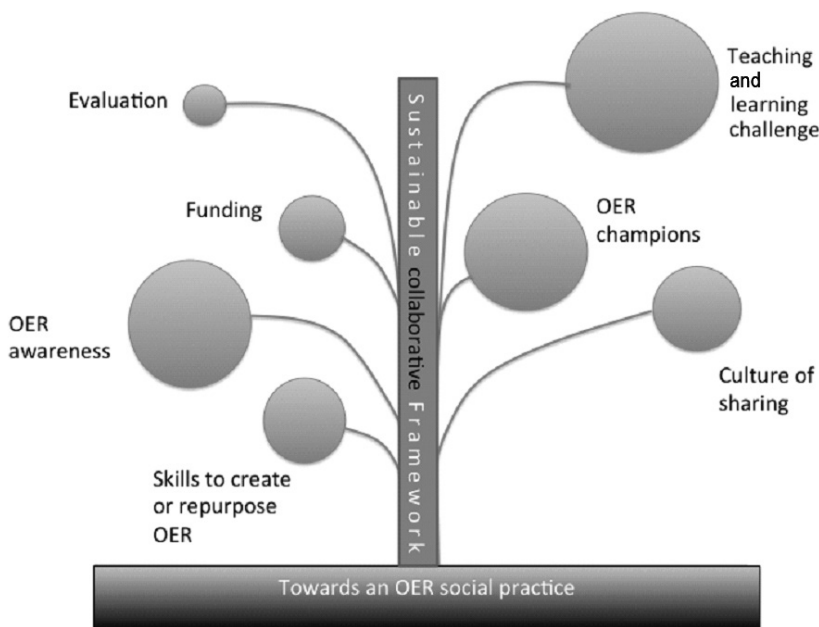
These factors do not exist in a vacuum, but are part of a social context in which OER behaviour happens. This framework, shown in Figure 16.4, gives insight to the production and repurposing of OER, and hints at key research questions relating to OER. One can take any factor (a bubble) and "dip" it into the cylinder to choose any condition or issue of interest requiring exploration. For example, teaching and learning challenges can be examined in terms of content experts or pedagogical designs, socio-cultural issues or technological constraints. For each of these, one can ask questions on how to enable, enhance, improve, optimise and so on. An evaluation factor could be associated with, for instance, content, pedagogy, show and tell (workshops) or conversion of materials.

Figure 16.4: A sustainable inter-institutional collaborative framework for OER.
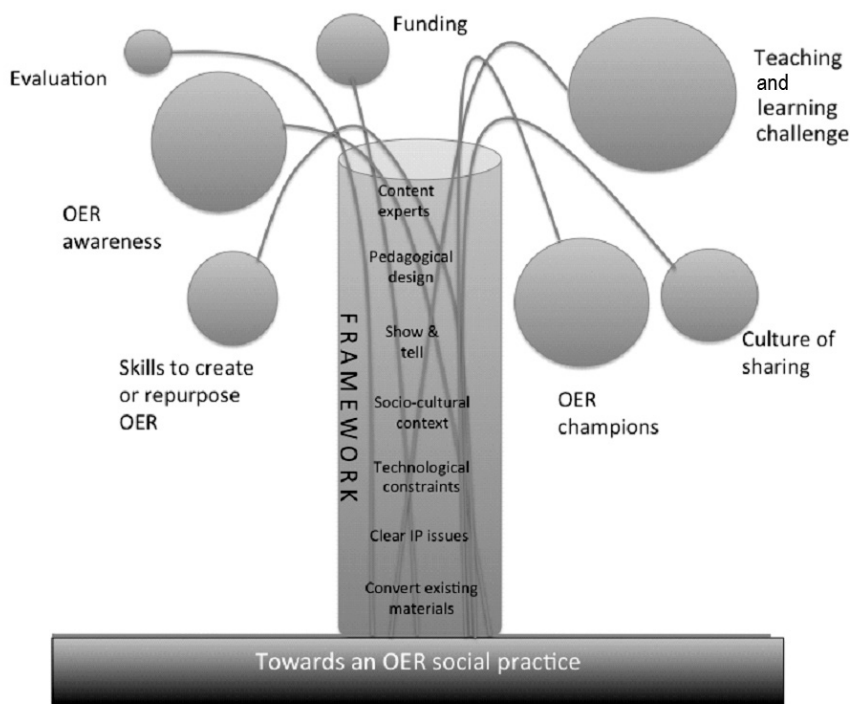
As already alluded to in the analysis, most authors of resources are educators targeting their own students and there seems be a greater propensity to developing locally relevant materials than to repurposing existing resources. The assertion that staff closer to retirement are likely be more open to sharing their teaching materials requires further investigation. The general target audience of materials (puzzle pieces) is usually local and it would be time-consuming to create pieces for different "pictures" that the international audience would find directly relevant. However, for OER to be sustained, there is need to create granules of OER that are flexible and easy to remix and repurpose.

Another challenge is that of reward. Most institutional reward systems are beginning to recognise the effort for creating OER. The University of Ghana and the Kwame Nkrumah University of Science and Technology have developed institutional OER policies, provide guidelines for creating/re-using OER, and equate creation of an OER to a research publication, thereby making it count

towards tenure and promotion consideration (Ngugi 2011; Omollo 2012). These policies are important for transitioning OER from being a mere behaviour to a social practice.

Although most users of OER could be educators wanting to improve their teaching portfolio, the use of OER still requires integration into the curriculum. The teaching value of OER is therefore not automatically evident. It could be observed that the older generation of educators, often closer to the end of careers, could be more likely to share resources than the new generation, but the use of such resources with less customisation would only be possible if there was a match between the context/audience and curricula. This suggests that encouraging experienced educators who would have created several resources during their career to distribute them as OER, but these resources need to be wrapped in pedagogy. There is, however, no guarantee that use of OER produced in one context would be used elsewhere without repurposing. The inter-institutional collaboration would therefore enable young and inexperienced educators to contribute modifications/remixes to OER. However, formulation of communities that are institutionally based and use and contribute changes to OER would create a sustainable environment of OER.

Our metaphor of puzzle pieces suggests that freely available lecture videos, images and slides may be potentially useful, but must be distributed with flexible licences to allow easy pedagogical integration and repurposing. Otherwise they risk being "locked" for use in their initial or very similar contexts. We are mindful of the fact that the decision to share or to use resources is driven my several imperatives. These needs influence decisions about the type of resources needed and, hence, which resources will be used. We infer from this that the focus ought to be in gathering resources that are developed for "localised" audiences aligned to different curricula.

The creation of an inter-institutional collaborative environment for OER requires difficult questions to be asked. For example:

- How would contributors to OER find the time to devote to an endeavour that an institution neither rewards nor recognises? In what ways does OER contribute to "student through-put" at an institution?

- Are educators who are approaching retirement more likely to contribute to OER than are those still building their careers?

- How can institutions leverage the richness of resources developed by their staff for social responsiveness?

- In what ways would an institution develop the capacity to use, remix, improve and redistribute OER?

- How would an institution ensure that knowledge about Creative Commons becomes common knowledge among its staff?

- What incentives would motivate educators to contribute teaching resources as OER?

- How would "openness" become an institutional norm?

- In what ways would an "open culture" influence teaching and research at an institution? How can we build an "open culture"?

- What would be the measure of success at an institution that adopts OER? How would success be defined at a pedagogical level and at a student learning level?

We conclude that the sustainability of the OER initiative requires a transition from OER being a social behaviour to OER becoming institutionalised as a social practice. We believe that the sustainable inter-institutional collaborative framework for OER we presented in this chapter has potential to help achieve this goal.

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