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## An emerging typology for analysing OER initiatives

Peter Bateman, Andy Lane<sup>1</sup> and Bob Moon, The Open University, Walton Hall,  
Milton Keynes, MK7 6AA United Kingdom

Email [a.b.lane@open.ac.uk](mailto:a.b.lane@open.ac.uk)

### Abstract

The investigation of OER initiatives requires rigorous appraisal based on theory as well as descriptions based on practice if we are to understand them and how they might be sustained. A robust typology or flexible classification scheme will enable better comparison of common elements over widely different OER initiatives and help inform and improve praxis at all levels and across all socio-economic and cultural systems. This in turn will help the variety of stakeholders to better understand what is happening and why. This paper describes how a typology was used between 2008 and 2010 to investigate three different OER initiatives in Sub Saharan Africa. The typology was first developed by careful scrutiny of the many OER and OER-related initiatives both globally and in Sub Saharan African. The typology was then both tested and further developed and refined by applying it to the TESSA, Thutong Portal and Rip, Mix, Learn initiatives. The typology uses four main categories – creation, organisation, dissemination and utilisation – and 18 sub categories to examine and analyse each initiative, with each sub category having a number of properties and possible dimensions. The data that informed this process included interviews with key personnel and the coding of a large body of white and grey literature and documentation produced by the initiatives themselves. This typology can thus be used to distinguish one type of OER initiative from another while grounding each in a wider context. For example, initially TESSA concentrated almost entirely on the ‘creation of OER’ while the Thutong Portal concentrated on the ‘Organisation of OER’ in that it spent a great deal of time and energy on the portal storage mechanisms. In other words the elements included in the Typology can be used to describe or ‘profile’ initiatives regardless of their particular emphasis or approach. None of the initiatives need possess all of the elements contained in the typology as long as they have all been considered. As there are different levels of categorisation the typology is simple at the highest level, with just four elements, for use by practitioners; but is detailed enough at other levels to enable researchers to generate research questions. Furthermore the typology is flexible enough to evolve over time as it is applied to more and more OER initiatives both within and outside Africa and also as existing initiatives change and develop over time and while new initiatives emerge. Indeed the relative immaturity of the case study initiatives used to test and refine the typology was a concern for both practitioners and researchers and it is no surprise that the studies main findings were that (a) greater investment was needed in capacity building, (b) more attention given to appropriate use of technology and pedagogy in higher educational systems and (c) more contextual research applicable to sub Saharan Africa to inform those decisions.

### Keywords

Open educational resources, Sub Saharan Africa, typology, HEIs, OER initiatives

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<sup>1</sup> Corresponding author

## **Introduction**

‘Knowledge’ has become a key component of successful economic, social and cultural development for a globalized world. Higher Education Institutions (HEIs) in Africa, as focal points for innovation and the creation, organization, dissemination and use of knowledge, are making every effort to be at the forefront of these developments. Higher Education systems, particularly universities and the ministries that support them, continue to strive to take the lead by developing policies and standards that actively promote Africa’s participation in the global knowledge discourse (Sawyer, 2004).

One factor inhibiting HEIs’ potential as catalysts for development in Africa is the lack of innovative, alternative methods of instruction currently offered. For example, African HEIs that incorporate Open, Distance and eLearning (ODEL) methodologies and technologies into their curriculum in an effort to increase access to Higher Education are uncommon (Bateman and Murray, 2004). The explanation most often cited for this is a lack of technical infrastructure. Yet access to innovative learning methodologies goes far beyond access to technical infrastructure alone. Issues concerning awareness raising, faculty support, materials development, localization, adaptation, translation, intellectual property, quality assurance, standards, and financial sustainability all require scrutiny in terms of increasing access to quality, affordable and relevant higher education and training.

The doctoral study (Bateman, 2011) this paper is based on suggests that the structured and appropriate development and use of Open Educational Resources (OER) may be able to contribute significantly to reinvigorating and expanding Higher Education in Sub-Saharan Africa. Not only does the OER Movement have potential in the development of much needed ODEL programmes, but it can also make a significant contribution to the way learning materials, educational resources and other knowledge assets are developed and shared throughout the Higher Education sector in Sub-Saharan Africa.

Those involved in the OER Movement early on tended to think of its origins as an extension of the online education model (Johnstone, 2005; Hylén, 2005). That is, a model that delivered education and training using materials (usually digitalized, though not exclusively) that could be used anywhere, anytime by anyone for no cost. However they soon came to realize that such a description risks oversimplifying the nascent OER movement. In identifying how OER might contribute to Higher Education in the future the story of how OER came to be requires further reflection. Though it bears similarities to its main predecessors, namely, the Open Access movement, the Open Education movement, the Free/Libre and Open Source Software (FLOSS) movement and the related ‘copyleft’ movement of the late 1990s, its genesis is a result of none of these in isolation. Rather, it is the progeny of several convergent developments.

The idea of OER was born of technological advances enabling the creation, organization, dissemination and utilization of educational resources, the notion that access to education is a right, and of a paradigmatic shift in the intellectual copyright movement that increasingly enables and encourages others to benefit from the production of knowledge resources at little or no additional cost (Atkins et al, 2007; OLCOS Roadmap, 2007). In short, OER can contribute to the learning process what educators across the globe value as a guiding principle: a willingness to share

knowledge. However, issues remain which threaten to undermine the OER Movement's expansion not just in Africa but across the globe.

In his influential work, 'Pedagogy of the Oppressed', Paulo Freire (1970) outlines what he considers to be a flawed perception which he feels can act as an obstacle when it comes to providing a meaningful educational environment. The perception is of education as a 'banking structure' where the teacher is the depositor of information and the student is the repository for it. An educational environment that lacks an interactive, or as Freire characterized it, 'problem-posing' atmosphere where the transmission of knowledge is multi-directional rather than uni-directional, cannot justifiably be considered education, rather, it is indoctrination. Instead of being emancipated, the learner is oppressed.

A similar view could be taken of the newly forming OER Movement, where information (in the form of OER) has mistakenly assumed the role of educator. Indeed, on occasion, the Movement itself assumes a further connotation: that of the benevolent, developed country 'providers' of OER and passive, developing country 'users' of them. Massachusetts Institute of Technology Linguistics Professor, Shigeru Miyagawa, has cautioned that by not addressing these concerns, we may see a global information society that resembles "*a map of the world in the 16th century composed of those that colonize and those that are colonized.*" (Miyagawa, 2005)

The promise of OER does not reside solely in the resources themselves, but also in developing the conceptual framework and methodological approaches that organize, manage and ascribe meaning to them in a variety of educational environments. As a result of its relatively late ingress into the OER movement, Africa enters the arena having little to no experience in the OER Movement and with an undefined OER trajectory. Consequently, there is a need to mitigate a very real possibility that African HEIs may tend to participate as unequal recipients of content with little control over its origin, quality and appropriateness. By involving African institutions in the entire OER development process, issues and inconsistencies pertaining to epistemological, ideological, cultural and social relevance as well as technology related challenges are reduced while enabling these institutions to participate actively so that they drive and own the process in terms of its form, content, quality, structure and orientation (Keats, 2003).

## **Methods**

This research study used a case study methodology. According to Schramm & Mayo (1974) the essence of a case study is that it tries to illuminate a decision or set of decisions; why they were taken, how they were implemented, and with what results. Equally Yin (2003) defines the scope of a case study as:

*"an empirical inquiry that...investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident".* (Yin, 2003:13)

This approach was deemed the most appropriate given that the key analytical tool used in this study was to iteratively apply the OER typology that was developed to several case studies in the SSA context in an attempt to ascertain how and why certain elements were contained within them and what the implications were for further iterations of the OER typology. With this in mind we have applied the entire set of typological elements to each of the case studies to ensure complete coverage of all the identifiable elements that each case exposed and to allow for additional elements that

could usefully be added to future iterations of the OER Typology. The data that informed this process included the coding of semi structured interviews with key personnel involved in the 3 initiatives and a large body of white and grey literature and documentation produced by the initiatives themselves, including their websites.

### **The case studies**

At the time of the study (2008-10) there were signs that several valuable OER initiatives were forming across Africa, emanating both from Africa itself and in partnership with OER initiatives abroad. While most of these initiatives were still new, there was, and still is, immense interest in the potential of OER to support and enhance Higher Education in Africa. However, there was a risk that as the various initiatives took shape there may be some that duplicate and perhaps even conflict with others resulting in a less than effective model for OER emerging

This study critically analyzed three case study OER initiatives taking shape in Sub-Saharan Africa between 2008 and 2010. In doing so it sought to establish:

- What were the origins of the OER Movement? How has it evolved?
- What is the current state of the OER Movement: a) globally; and b) in Sub-Saharan Africa?
- What were the key emerging issues facing the OER Movement generally and did these issues find commonality in the sub-Saharan African OER Movement?
- What was the role of the OER Movement in supporting the Higher Education sector in Sub-Saharan Africa?

The first two OER Case Studies examined were:

- Teacher Education for Sub-Saharan Africa (TESSA) programme<sup>2</sup>
- The Thutong Education Portal in South Africa<sup>3</sup>

A third 'supplementary study' was added: the Rip-Mix-Learn initiative at the University of the Western Cape in South Africa<sup>4</sup>. This latter project was not well enough progressed to enable a detailed analysis but since it illustrated a particularly interesting aspect of the OER phenomenon - that of student involvement in the creation of OER – it was included since the development process was not only unique in Africa but one of very few student centred OER initiatives in the higher education sector globally.

The wider literature review indicated that a substantial amount of research on OER is descriptive and based on anecdotal rather than theoretically-based, generalizable data. There was no single comprehensive, widely supported typology describing the OER Movement. Those investigating the movement had tended to categorize OER based on a single category (perhaps with related sub-categories) that is of primary importance to their area of interest. For example, educationalists tend to focus on the pedagogical considerations of the development and use of OER while ICT specialists tend to focus on the technical tools required to support OER. Likewise, there are those that tend to focus on issues of policy, legal frameworks and licensing, business

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<sup>2</sup> [www.tessafrica.net](http://www.tessafrica.net)

<sup>3</sup> <http://www.thutong.doe.gov.za/>

<sup>4</sup> <http://freecourseware.uwc.ac.za/ripmixlearn/>

modelling, awareness raising, development agendas, or philosophical perspectives (such as the notions of ‘freedom’ and ‘openness’) and so on.

### **Developing the typology**

This OER Typology has been developed by carefully scrutinizing the myriad of OER (or OER related) initiatives both globally and in Sub-Saharan Africa. Consequently, it is based on observations drawn from the discourse and activity reporting within the OER Movement which are described in the formal literature review, the critical analysis of OER issues and through more anecdotal information gleaned from the researcher’s active participation in the OER Movement. Finally, and perhaps most significantly - the OER Typology has been heavily informed (and tested) through the use of the same categorizations to analyse the case study narratives produced for the doctoral thesis (Bateman, 2011). These narratives were developed through a pattern matching technique that was structured according to the coding elements contained in the initial OER Typology, a coding scheme which began with four broad categories derived from the review of the wider ODeL and OER literature:

- The Creation of OER,
- The Organization of OER
- The Dissemination of OER.
- The Utilization of OER

From these four broad categories, several sub-categories along with the properties for each were established and, through an iterative process, these typological elements guided the later analysis of the OER initiatives selected for the case studies whilst each case study analysis equally informed the categorization of the typological elements. These final categorizations are presented in Table 1.

The classification variables within the table are described as ‘Category’ (first level), ‘Sub-Category’ (second level), ‘Property’ (third level) and ‘Possible Dimension’ (this fourth level is not shown here for clarity). The inclusion of the various descriptors involved a process of identifying the ‘OER Movement’ as a phenomenon and classifying the elements from which it is comprised. The Typology can therefore be used to distinguish one type of OER initiative from another while grounding each in a wider context. For example, initially the TESSA Programme concentrated almost entirely on the ‘Creation of OERs’ while the Thutong Portal concentrated its activities primarily around the ‘Organization of OER’ in that it has spent a great deal of time and energy on the portal storage mechanisms. In other words the elements included in the Typology can be used to describe various OER initiatives that exist within the wider OER Movement regard-less of their particular emphasis or approach. It is hoped that it may also be used to inform and guide the development of nascent OER initiatives (such as Rip, Mix, Learn) as they examine the various components they may need to consider during their formation.

Table 1 The final categories, sub-categories and properties that comprise the OER Typology for Sub Saharan African initiatives

| <i>Category</i> | <i>Sub-category</i>    | <i>Property</i>                 |
|-----------------|------------------------|---------------------------------|
| Creation        | Authoring original OER | Design approach                 |
|                 |                        | Instructional design principles |
|                 |                        | Media                           |

|               |   |   |
|---------------|---|---|
|               |   | Tools   |
|               |   | Capacity enhancement/training   |
|               | Interoperability and compliance to support re-mix   | Tagging and metadata systems  |
|               | IPR & Licensing Framework                           | Open<br>Creative Commons<br>GNU GPL<br>Closed (Copyrighted materials) |
|               |   | Editable  |
|               |   | Format  |
|               |   | Standards   |
|               |   | Granularity   |
|               |   | Searchable  |
| Organisation  | Collaborative processes for OER Creation            | Structured Communities of Practice (CoPs) of OER developers           |
|               | Governance and Management Schemes                   | Policy Framework  |
|               |   | Strategic planning  |
|               |   | Inter Institutional Collaboration Agreements                          |
|               | Storage/Portal mechanisms                           | Repository Development  |
|               |   | Storage and access  |
|               | Institutional Development                           | Developing a knowledge sharing culture                                |
|               |   | Scale Of Participation  |
|               |   | Institutional Framework for the use of OER                            |
|               | Sustainability                                      | Business Modelling  |
|               |   | Funding   |
|               |   | Strategic planning  |
|               | Research  | Research agenda   |
| Dissemination | Sensitization                                       | Awareness Raising and Advocacy  |
|               |   | Motivation for Participation in OER Movement                          |
|               | Delivery methods for remote and local access to OER | Mode of Access to Learning Opportunities                              |
|               |   | Packaging<br>Print on Demand  |
|               |   | Remix (Mix and Match)   |
|               | Technical Infrastructure                            | Connectivity/Bandwidth  |
|               |   | Access to computing infrastructure                                    |
|               |   | Software  |
|               |   | Capacity Enhancement/Training   |
| Utilisation   | Mechanism for accessing /updating / Repurposing OER | Accessibility   |
|               |   | Versioning  |
|               |   | Capacity Enhancement/Training   |
|               | Using existing OER                                  | Adoption/Uptake   |
|               |   | Scalability   |
|               |   | Capacity Enhancement/Training   |
|               | Quality Assurance Mechanism                         | Curriculum Design   |

|  |                            |                         |
|--|----------------------------|-------------------------|
|  |                            | Assessment              |
|  |                            | Curriculum review       |
|  | Accreditation of materials | Qualification Framework |
|  |                            | Credit Arrangements     |
|  | Pedagogical Model          | Learning Mode/Type      |
|  |                            | Learner support         |

## Discussion

While the OER Typology itself is the main focus of this paper its iterative development did enable some specific findings to be drawn out about the OER Movement in Sub Saharan Africa at that point in time when the analysis was undertaken. The research supported the view that a shift in thinking is required in the way Higher Education is provided in Sub-Saharan Africa and that elements of the OER Movement forming globally may be able to catalyze this shift. Further, this will need to be supported by adequate planning and resource provision, without which the ability of countries, institutions, educators and, indeed, the learners, to benefit from OER strategies and policies that will support the cost effective provision of quality Higher Education programmes, will be severely curtailed.

In any education system a supportive policy environment is essential to the success of improving education provision. This is particularly the case when it comes to informing and guiding the expansion of the OER Movement that is aimed at contributing to the levels of transformation required in Sub-Saharan African universities. The notion of ‘openness’ needs to become a key element of the policy discourse for countries in Sub Saharan Africa that seek to improve educational quality within the institutions they govern in order to ensure that their development objectives are met.

The research further suggests that appropriately designed OER policies and strategies should form part of existing education and development policy and should support the following:

- increasing access to educational programs in general with a renewed emphasis on information and communications technology (ICT) supported education;
- developing capacity enhancement programmes to ensure the requisite skills are readily available;
- developing quality assurance (QA) frameworks;
- developing workable business models and budgetary frameworks for OER that result in cost effective teaching and learning approaches; and
- supporting and coordinating the expansion of education-related infrastructure, including ICT.

This study also suggested that there is a need for further research into OER creation, organization, dissemination and use that ideally, emanates from the African HEIs themselves. There was little formal research available that analytically describes and evaluates good practice for OER in Sub-Saharan Africa. More specifically, there is need for further research into how OER might affect the costing, financing, management (including learner support systems, assessment, cross border

accreditation), pedagogy (including the impact of Web 2.0 tools and collaborative learning environments), technology (including mobile learning), access (including issues surrounding gender equity), and the value chain of teaching and learning provision in terms of its impact of realizing national development goals.

This research study suggests that there is a benefit to enhancing the capacity of institutions to make extensive use of OER in the design, development and implementation of education programs and that these can be further supported by the appropriate and effective use of ICTs. However, given the dynamic nature of ICT supported education and the on the horizon impact of Web 2.0 environments, rather than launching into this process largely unprepared and risking scarce resources, a step-wise progression is required that should build on Africa based OER initiatives such as the case studies examined during this study. This should include needs analyses, feasibility studies, and pilot programs that demonstrate improved models of demand driven, cost effective, affordable, and quality teaching and learning that are supported by the appropriate and contextualized use of OER.

To this end, inter-institutional collaborative partnerships (Keats, 2004) should be considered since they enable the:

- sharing of developed courses (as OER) in order to reduce development costs;
- joint development of new resources that are appropriate to the developing world context;
- sharing of facilities such as libraries and learning centres (for learner registration, distribution of study material, and examinations) to reduce duplication of costly resources;
- collaborative delivery of programmes to promote cross border accreditation and, in turn, a mobile labour supply; and the
- establishing of joint partnerships with external agencies providing professional development and/or funding

As the case studies attest, some HEIs (and Non Governmental Organizations) in Sub-Saharan Africa are beginning the process of developing and/or supporting the use of OER. At the same time, increasing numbers of African universities have embraced the possibilities the Internet enables in terms of expanded education provision (e.g. via eLearning). This research study suggests that, to a large extent, they tend to do so using content push methodologies based on Web 1.0 paradigms. There is yet to be wide scale roll out of initiatives that support collaborative development of OER for multi mode delivery of university programs. This is due in part to lack of extensive ICT infrastructure beyond the urban context and in part to an ongoing lack of understanding as to just how OER might contribute. On the other hand, there are some initiatives that are actively adopting the Web 2.0 tools and environments in the creation of OER. The cases analyzed in this study are among these.

Finally, the study suggested that the identification and inclusion of the key stakeholders who would participate in the development of an African OER Network focused on Higher Education and Training might be an effective starting point. This networked structure could then work collaboratively on developing and refining a set of coordinated support mechanisms, policies, training initiatives, research initiatives, funding initiatives that together would result in the sustainable development and use of quality OER to support Higher Education and Training in Africa.

## Conclusions

Previously, categorizations such as policy framework, interoperability, licensing framework, remix potential and the like were used to define OER initiatives at a broad level. However, as previously discussed, these are not appropriate categorization variables that can serve either interdisciplinary research agendas or multi-stakeholder participation because they tend to be too narrowly focused around single stakeholder areas of interest. The OER Typology presented here, along with the case study reports in the thesis (Bateman, 2011), demonstrate that the various categories, subcategories, properties and dimensions are descriptive of a diversity of OER initiatives. As such, it is not the intention that each and every typological element need be applied consistently to all OER initiatives.

It is hoped that the Typology is simple and pragmatic enough to provide for a basic understanding of the OER phenomenon by both researchers and practitioners. First, there are only four categories of involvement in the OER Movement in the Typology: creation, organization, dissemination and utilization. In this way, the Typology remains simple at the first-order level. This simplicity is intended serve academics across various disciplines that need a unified view of the ecology of the OER Movement in order to generate research questions. The Typology is also a classification system that may be useful to researchers who seek to pursue programmatic research and theoretical advancement of the OER Movement from a variety of disciplinary perspectives. Inevitably, OER community members and researchers may continue to debate the relevance and appropriateness of the OER Typology presented here. It is hoped that this debate will be enriched by knowledge generated from further empirical studies that are, at least in part, inspired by the Typology.

## Postscript

Since this doctoral study was carried out there have been many initiatives and developments that have indeed begun to address some of the issues for OER use in Sub Saharan Africa outlined earlier and to which the OER Typology could be applied. This is particularly seen in the work of new initiatives such as OER Africa<sup>5</sup> and the combined efforts of existing organisations working in Africa, namely the African Virtual University<sup>6</sup>, UNESCO<sup>7</sup> and The Commonwealth of Learning<sup>8</sup> (the latter two have recently developed Guidelines for OER in Higher Education developed together with the Commonwealth of Learning (UNESCO/COL, 2011) and launched an UNESCO OER Platform in November 2011. Indeed collaboration has been a key element within the OER Movement within Sub Saharan Africa.

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<sup>5</sup> <http://www.oerafrica.org/>

<sup>6</sup> <http://www.avu.org/>

<sup>7</sup> <http://www.unesco.org/new/en/communication-and-information/access-to-knowledge/open-educational-resources/>

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