

# Open Educational Resources

*Concept Paper Prepared by OER Africa*



**OER Africa**

*Building African education capacity through openness*

## The Potential of Open Educational Resources

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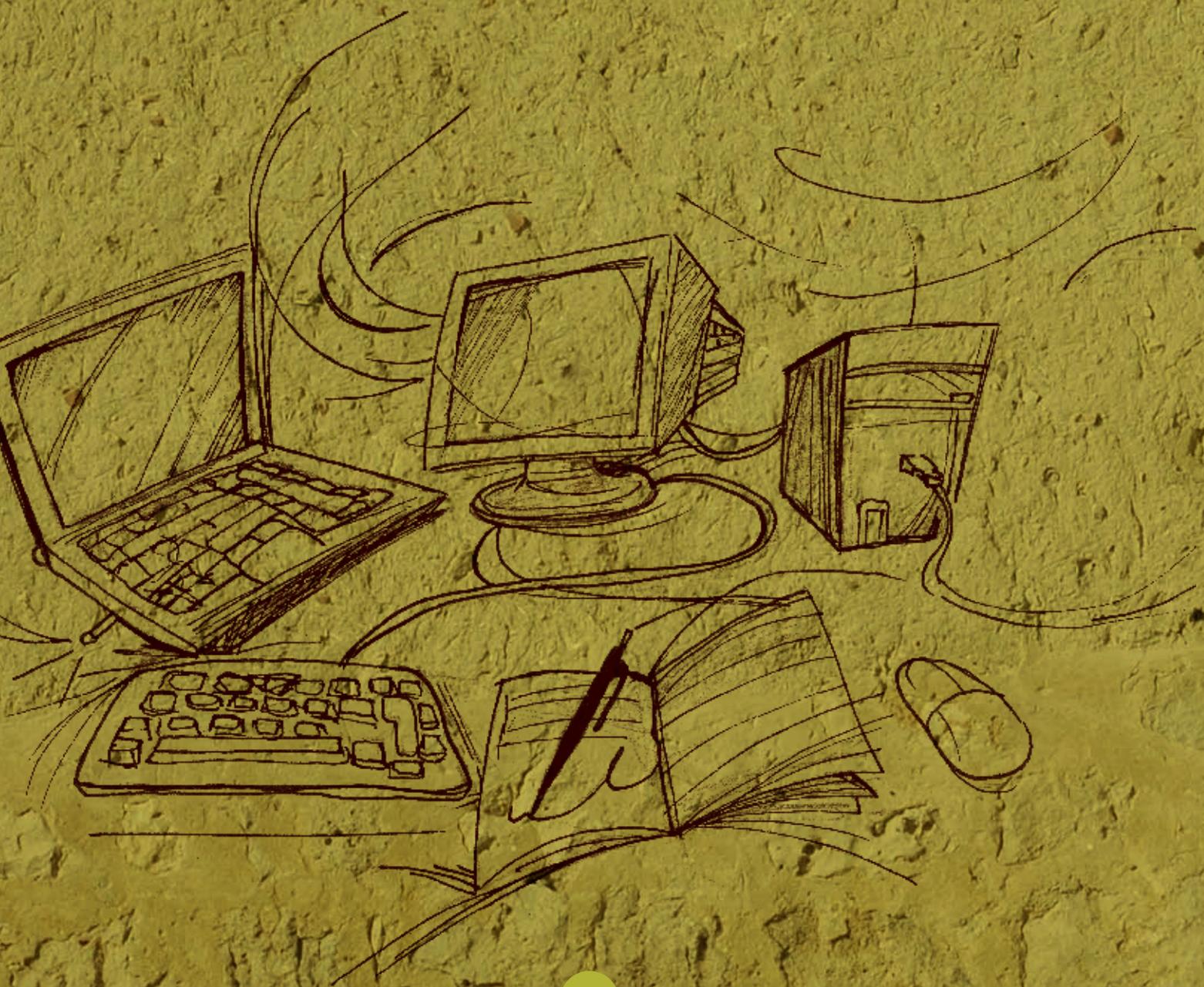
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# Introduction

The potential of Open Educational Resources (OER) has gained increasing prominence over the past few years. A myriad of OER projects and interventions has and is being implemented in a range of contexts. In a nutshell, the concept of OER describes educational resources that are freely available for use by educators and learners, without an accompanying need to pay royalties or licence fees. A broad spectrum of licensing frameworks is emerging to govern how OER are licensed for use, some of which simply allow copying, while others make provision for users to adapt the resources that they use.

The concept of OER is potentially powerful for various reasons, including:

1. Because OER removes restrictions around copying resources, they hold potential for reducing the cost of accessing educational materials.
2. The principle of allowing adaptation of materials contributes to enabling learners to be active participants in educational processes, whereby they learn by doing and creating, not merely by passively reading and absorbing.
3. OER has the potential to build capacity in African countries by providing educators with access, at low or no cost, to the means of production to develop their competence in producing educational materials and completing the necessary instructional design to integrate such materials into high quality programs of learning.

*OER Africa* believes the potential of OER is best achieved through a collaborative partnership of people working in communities of practice (CoPs). We have established *OER Africa* in the firm belief that OER has a tremendously powerful positive role to play in developing and capacitating higher education (HE) systems and higher education institutions (HEIs) across Africa. Our conviction is matched by our concern that – if the concept and practice of OER evolves predominantly outside and *for* Africa – we will not be able to liberate its potential. Thus, *OER Africa* has been set up to ensure that Africans harness the power for Africans through building collaborative networks across the continent.

In this position paper we explain the concept of OER in greater detail and explain why, and under what conditions, we believe OER holds such potential for HE in Africa.



# The concept of OER explained

## Unpacking the Concept of Open Educational Resources

The concept of OER was originally coined during a UNESCO Forum on Open Courseware held in 2002 (D'Antoni, 2007; Johnstone, 2005). During a follow-up online discussion, also hosted by UNESCO, the initial concept was further developed as follows:

*Open Educational Resources are defined as 'technology-enabled, open provision of educational resources for consultation, use and adaptation by a community of users for non-commercial purposes.' They are typically made freely available over the Web or the Internet. Their principle use is by teachers and educational institutions to support course development, but they can also be used directly by students. Open Educational Resources include learning objects such as lecture material, references and readings, simulations, experiments and demonstrations, as well as syllabuses, curricula, and teachers' guides. (<http://opencontent.org/blog/archives/247>)*

The OER community of the Development Gateway defines OERs as:

*Digitised materials, offered freely and openly for educators, students and self-learners, to use and re-use for teaching, learning and research. (Bekkers, 2007, p. 1)*

In a recent report reviewing progress within the OER movement, the following definition of OER was used:

*OER are teaching, learning and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge. (Atkins et al., 2007, p. 4)*

Geith and Vignare, citing Ahrash Bissel of Creative Commons, describe OER as follows:

*Open Educational Resources [OER] represents the efforts of a worldwide community, empowered by the Internet, to help equalise access to knowledge and educational opportunities throughout the world. They are teaching, learning and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and customisation by others. It is the granting of freedoms to share, reprint, translate, combine or adapt that makes them educationally different from those that can merely be read online for free. (Geith & Vignare, 2008, p. 2)*

While each of these definitions differs slightly, the key tenets of OER are that these are educational resources, which are freely available and adaptable. Many OER advocates around the world also call for publicly funded research and educational resources to be made available freely as open education resources. Funders are increasingly recognising that the job of research is incomplete if the results reach a very select audience only (SHERPA, 2006).

Drawing on their work in the Open e-Learning Content Observatory Services (OLCOS) Project, Schaffert and Geser (2008) note that:

*The knowledge society demands competencies and skills that require innovative educational practices based on open sharing and evaluation of ideas, fostering creativity, and teamwork among the learners. Collaborative creation and sharing among learning communities of OER is regarded as an important catalyst of such educational innovations. Therefore, OER should become a key element of policies that aim to leverage education and lifelong learning for the knowledge society and economy. (Schaffert & Geser, 2008, p. 3)*

These authors continue to argue that simply making use of OER within a traditional teacher-

centred learning paradigm will have little effect in developing the competencies noted above. For this reason, it is important to focus simultaneously on open education practices that are based on a competency-focused, constructivist paradigm of learning and promote a creative and collaborative engagement of learners with digital content, tools and services in the learning process (Schaffert & Guntram, 2008, p. 3).

In explaining the concept of OER, it is useful to consider the main theoretical principles, as well as practical applications on which the OER approach has drawn. These include, amongst others, open education or open learning principles and the free and open source software movement.

# Theoretical and Practical Underpinnings

## Open Education/Open Learning

The concept of OER draws on the principle of ensuring the right to education for all (as stated in the Universal Declaration of Human Rights). This is sometimes referred to as Open Education or Open Learning. Understanding the basic tenants of open education/learning is critical to understanding the OER movement, and its potential.

Consider the following observations made by Sir John Daniel, the CEO and President of the Commonwealth of Learning:

- Half of the world's population is under 20 years old.
- Today, there are over 30 million people who are fully qualified to enter a university, but there is no place available. This number will grow to over 100 million during the next decade.
- To meet the staggering global demand for advanced education, a major university needs to be created every week.
- In most of the world, higher education is mired in a crisis of access, cost, and flexibility. The dominant forms of higher education in developed nations – campus based, high cost, limited use of technology – seem ill suited to address global education needs of the billions of young people who will require it in the decades ahead. (Daniels, cited by Atkins, Seely Brown, & Hammond, 2007, p. 33)

The importance of finding ways of expanding educational opportunity cannot be underestimated. Open education/Open Learning seeks to put in place policies and practices that permit entry to learning with no or minimum barriers with respect to age, gender or time constraints, and with recognition of prior learning. This is a key educational philosophy on which to build systems and approaches that ensure rights to education. Open learning is based on the principle of flexibility in order to increase access to education and often forms part of broader equity efforts in society. This approach allows learners much more freedom

to determine what, how and when they want to learn than do traditional approaches to education. The aim is to provide learning opportunities for a diverse range of learners both originating from, and learning in, different contexts. Within open learning approaches, there is commonly reference to learner-centred approaches, as well as resource-based and autonomous learning. This means that the learner is central, 'learning to learn' is in itself a goal, and the learner develops critical thinking skills and the ability to learn independently. This philosophy becomes increasingly important in the context of lifelong learning and the need for people to be equipped to function in the knowledge society.

It is important to differentiate between distance education and open learning as these concepts tend to be conflated often. The term 'distance education' describes a collection of methods for the provision of structured learning. Its object is to avoid the necessity for learners to discover the curriculum by attending classes frequently and for very long periods in order to listen to it being spoken about. This does not mean that there is no face-to-face contact, but rather that most communication between learners and educators is not face-to-face. Instead, it makes use of different media as necessary. Distance education, therefore, provides techniques of educational design and provision that – under certain circumstances – can bring better chances of educational success to vastly more people at greatly reduced costs. Nevertheless, the provision of distance education does not automatically equate with openness in education. As Rumble points out, for example,

*...the technological basis of distance education may...lead to a closed system if undue emphasis is placed on 'programmed' media such as texts, broadcasts, audio- and video-cassettes, computer-based instruction, etc, where the content is pre-determined and communication is one way [from the teacher to the student]. (Rumble, 1989, p. 31)*

Both in Africa and internationally, a vast amount of distance education provision is closed in many respects. Consequently, although distance education is a collection of educational practices that has demonstrated great potential for increasing openness in learning, the terms should not be confused. Further, the concept of OER has great value in both distance and face-to-face educational provision, depending on how they are used.

Working within a human rights perspective, Tomasevski (2006) presents the '4-A Framework' for understanding access to education. This includes a distinction between the 'Right to Education' and 'Rights in Education' (see also Geith & Vignare, 2008; Tomasevski, 2006). The concept of rights to education is based on the availability and accessibility of educational opportunity, while rights in education include the acceptability of the educational offering in terms of language, culture and so on, together with the ability to adapt educational provision to the specific context in which it is being offered (for a detailed explanation of this approach to access see Geith & Vignare, 2008). This approach is also consistent with the open education paradigm.

The increasing focus and investment in OER has also been stimulated by a growing movement to make information and knowledge more freely accessible as a reusable resource, as a public good. The metaphor of the 'commons' has been used to understand the concept of the public good. The literature on OER makes references to a 'global education commons', 'learning commons' and so on (for example Bissell & Boyle, 2007; Hepburn, 2004; Schmidt & Surman, 2007). In 2001, Lawrence Lessig (who later launched Creative Commons – see below) published his book entitled '*The Future of Ideas. The fate of the commons in a connected world*'. The concept of the commons refers to:

*Resources that are not divided into bits of property but rather are jointly held so that anyone may use them without special permission. (Liang, 2004, p. 33)*

*A wide array of creations of nature and society that we inherit freely, share and hold in trust for future generations. (Hepburn, 2004, p. 2 citing Bollier, 2003)*

Hepburn (2004) continues to note that society has always seen the value of 'that which we hold in common' as a basis for building greater value and hence, maintaining common resources is 'good for all' – or a public good. As described in Hardin's essay on the 'Tragedy of the Commons', one of the challenges with maintaining common resources, such as grazing land or road networks for example, is the tendency towards overuse and possible depletion. However, in the context of open education or software the opposite is true – information on websites and open software does not become depleted as more users make use of it. In fact, the more people make use of the resource the better it is developed as users become co-developers and provide feedback and in this way lead to improvements. In sum,

*...In this inverse commons, the grass grows taller when it is grazed upon. (Hepburn, 2004, p. 6 citing Raymond, 1998)*

## **Free/Libre and Open Source Software (FLOSS) Movement**

The OER movement also has some roots in the Open Source Software movement (Keats, 2003; Moore, 2002). Open source, in the context of software engineering, refers to the fact that the source code for a software programme is kept open (or made available to other users), and that the software is freely available. Anyone is free to modify the software programme as long as they freely distribute their programme with its source code (Keats, 2003). Liang (2004, p. 24) notes that the FLOSS model has been important in creating a 'counter imagination to the dominant discourse of copyright' and in this way has created an alternative approach to how the production and distribution of knowledge takes place.

Moore (2002) argues that the values of the open source software (and content) movement can be shared by higher education. She notes that HE includes the idea of learning communities fostering development and sharing of ideas through a peer review system. The same values underpin the open source software movement. For this reason, she asks:

*Since higher education and open source software movement share these values, is it possible that higher education might use an open source metaphor or model as the academy comes to terms with its changing landscape – as institutions strain to integrate technology across content areas, struggle with operational tests of systems and processes associated with integration, and scrutinise the impact on faculty roles and student learning? (Moore, 2002, p. 44)*

Thus, the development of open licensing as an alternative to traditional copyright of educational materials has drawn heavily on the FLOSS movement and the lessons and practices that have emerged from this movement over time (see Section 4 in this paper) (Atkins et al., 2007; Bekkers, 2007; Schaffert & Geser, 2008; Liang, 2004) . Keats sums this up as follows:

*The idea of open content has its background in the open source software movement, and can be considered a license agreement, a philosophy, a way of doing things, as well as the content produced and distributed according to the open content license agreement. As philosophy, open content refers to the principle that content should be freely reusable so as to make knowledge available as common knowledge for the common good. A key fundamental of open content licensing is that any object is freely available for modification, use and redistribution with certain restrictions. (Keats, 2003, p. 2)*

# 1. Rationale for Participating in an OER Project: The Potential of OER for Higher Education

*Universal access to knowledge – with full freedoms to localise that knowledge – is not just a matter of development, science or security. It is a matter of the right to development. Open access fulfils this right in support of human enrichment and health, and is one of the pre-eminent methods to achieve the human rights goals and bridge the divides, digital and physical, between the developing and developed worlds. (Rossini, 2007, p. 22)*

Several arguments can be made for why institutions, faculties, and individuals should consider making their educational content freely available. Many of these were highlighted in the earlier section on open learning.

## Teaching and Learning Support

The research conducted at MIT found that the MIT OCW provided useful teaching and learning support for students and provided a means for staff to update their courses and advise students. Further, academics are able to share their work, research and courseware with others in their field. This provides opportunities for collaboration, for building on work others have started so minimising duplication. This has the potential to raise the academic standing of faculty members (Caswell et al., 2008; Smith & Casserly, 2006). In addition, evidence is emerging that research published in open access journals is cited more readily than research published in restricted access journals requiring paid subscriptions (Rossini, 2007). Consider the following example:

*If an article is 'Open Access' it means that it can be freely accessed by anyone in the world using an Internet connection. This means that the potential readership of Open Access articles is far, far greater than that for articles where*

*the full text is restricted to subscribers. Evidence shows that making research material Open Access increases the number of readers and significantly increases citations to the article – in some fields increasing citations by 300%. (SHERPA, 2006)*

## Quality Improvements and Capacity Building

The sharing and review of content, as well as participation in collaborative open content development initiatives, serve to enhance quality through additional review processes and the use of standards to facilitate adaptation and sharing of resources. In addition, when materials are openly available, faculty are noted to make an extra effort to ensure that their materials are of exemplary quality (Smith & Casserly, 2006).

Further, capacity of academics and students is developed through participation in collaborative content development processes as members of communities of practice (Moore, 2002). This capacity development can be in various areas, including in content/subject matter, instructional techniques, online approaches, review processes, production, presentation and publishing of educational materials. This is particularly important in an African context where expertise and knowledge, in the form of textbooks and journals, are often imported from other developed countries, most notably the USA and European countries. This challenge and related benefits of the OER movement are summed up in the following quotation:

*When we use textbooks in Africa that were developed in the US or Europe, we obtain content that may not be locally relevant. Our purchases go to support the publishing industry in that part of the world, and contribute to our*

*dependency on that industry. More importantly, this dependency means that African academics do not develop a strong tradition of authoring and publishing learning content, although of course there are some exceptions. Because of cost and unavailability factors, it is not uncommon for institutions to use out-of-date textbooks and older journals articles as learning content. This means that students may not be exposed to the latest ideas in the discipline of study. (Keats, 2003, p. 2)*

## Increasing Access

OER has the **potential** to support HE access in various ways, depending on the ways in which OER is approached and used. The 4-A Framework for access was briefly described above. OER has the potential to provide a means of increasing the right **to** education and rights **in** education when adaptation is allowed. Open education seeks to remove barriers to accessing education. One key barrier is the cost of education. The long-term reduction of content costs through the use of OERs can provide a means of making study opportunities more accessible. While OER has the potential to reduce costs in the longer term, in the shorter term costs are likely to increase as more time is invested in sourcing and adapting open content. If institutions attempt to use OER as a short-term cost-saving mechanism, it is unlikely that the materials will be of quality – so limiting the cost effectiveness of the intervention in the longer term. Cost savings in the shorter term can be realistic at the level of the student. Where institutions invest in creating and/or adapting open content, students will be protected from the increasing costs of textbooks and other proprietary educational content still often used.

In addition, institutions that may not have funding or expertise to develop high quality materials are still able to offer educational opportunities making use of materials developed elsewhere.

*To the extent that these are educational resources that are open for re-use, rework and redistribution, the collective commons of knowledge can support all dimensions of the human rights to and in education. OER as a way of participating in the creation of new knowledge fully enables availability, accessibility, acceptability and adaptability. (Geith & Vignare, 2008, p. 16)*

This potential benefit does, however, raise a perplexing paradox. A context in which funding and/or expertise for high quality materials development is not available, as is common in many African countries, implies some degree of institutional underdevelopment. In this context, simply making use of other freely available content would not build the human capacity needed to develop the institution (and the HE sector) in the longer term. In this way, the use of existing materials can create the illusion of developing capacity without actually building any human capacity in a sustained manner. For this reason, OER Africa places much emphasis on the development of communities of practice around OER initiatives in order to facilitate capacity building.

## Research Potential

The OER environment provides a range of research opportunities, including opportunity for research and reflection on the future role and nature of HE in an increasingly digital and networked environment. Thus, for example, the Open University notes that:

*OpenLearn gives us an exciting opportunity to see what happens when we release many of the restrictions that we are used to; copyright, fees, and geography. We see Open Educational Resources as having revolutionary potential that we must study but also as a basis for further innovation. Freely accessible and changeable, high quality content can underpin experiments in widening participation, use of mobile devices, development of tools for accessibility, geographically distributed experiment and community building. As a catalyst for further research Open Educational Resources have a significant part to play, as a possible indication of how people will learn in the future they are a vital move away from rigid structures that are causing their own pressures. We want to understand this future. (McAndrew, 2006, p. 6)*

## Market Orientation

At an institutional level, it has been found that making education content freely available can be a useful means of marketing the institution. For example, MIT found that 35% of entering students were aware of MIT OCW and that this had

influenced their decision to apply (Carsons, 2006; Caswell et al., 2008; Moore, 2002). Similarly, Smith and Casserly note that knowledge sharing can become part of an institution's branding (Smith & Casserly, 2006).

## **Moral Obligation**

Finally, a commonly cited reason, growing out of OER's roots within an open education and FLOSS paradigm, is that there is a moral obligation to release content freely if the Universal Human Right of Access to Education is to be achieved (Caswell, Henson, Jenson, & Wiley, 2008; Huijser, Bedford, & Bull, 2008). For example, Smith and Casserly state that:

*It takes a hardy and callous soul to reject the UN's Millennium Development Goal of education for all. We argue that one important step*

*towards this goal is to provide high-quality digitised, free educational materials to everyone in the world. We are not talking about secret information contained in patents. We are simply suggesting that the physics student in Kenya should have access to the same high quality knowledge as students in the US. We do not wish to reduce the value of a university education. We simply believe that that value is not a function of its scarcity.*

*... The real question is, can we continue to support widening and increasingly consequential inequalities in knowledge, our domain, across the nation and world? Can we afford the financial, political, and moral burdens created by such inequalities? Can we afford **not** to share freely what we are so rich in? (Smith & Casserly, 2006, p. 14)*

## 2. Challenges for OER Initiatives

While there are many arguments for adopting an OER approach, certain challenges have also been identified and need to be considered.

Many higher education institutions (HEIs) have been nervous about releasing their materials openly in case this might limit their competitive advantage should other education providers make use of their materials. However, to the contrary, OER projects have shown that this approach supports student recruitment – as highlighted in the examples of OER initiatives presented above. When engaging in this debate, it is important not to confuse courseware (or materials) with courses. Courses include much more than courseware/materials only, such as accreditation, assessment, facilitation, student support, peer groups, lecturer's expertise, the specific learning environment created on campus and so on. OER is not intended to replace degree-granting higher education or provide credits. Rather, the focus is on making the content that supports good quality education available to all who might like to use it. The production of course materials and the delivery system offered by an institution are not the same thing and institutions add value to the courseware in many ways (Huijser et al., 2008, p. 4; Moore, 2002).

Sustainability of OER projects is a complex issue, and a challenge that is attracting increasing attention. To date most large-scale successful OER initiatives have been dependent on large donor grants. When considering sustainability it is necessary to consider both the sustainability of producing the open content and the sustainability of sharing the resources (Wiley, 2007). Various options towards sustainability have been proposed (Atkins et al., 2007; Dholakia et al., 2006; Downes; Koohang & Harman, 2007; Wiley, 2007). The details of these debates are beyond the scope of this paper; however, it is worth highlighting that in the context of OERs it is essential to consider sustainability in a broader sense than financial terms only. In addition, to become sustainable OER must be integrated into institutional systems and operational level policy with dedicated budget and human resources, together with recognition and reward for OER production and/or adaptation.

It is argued that the educational value of OERs contribute to their sustainability as do the establishment of decentralised CoPs involved in the production and distribution of OERs (Koohang & Harman, 2007). Atkins et al. (2007) note the importance of institutional buy-in and commitment of resources, the value of OER collections as part of standard course preparation and management as opposed to resources distinct from courseware for enrolled students, and the role that consortia can play in distributing and sharing costs. In addition, these authors note that the potential roles of students to support OER should be explored, together with further consideration of volunteer contribution and the use of social software to support collaboration (Atkins et al., 2007). Downes (2007) presents a wide range of different approaches to sustainability, including funding models, technical models, content models and staffing models. Following an analysis of these different models, he concludes that:

*Though there is great temptation to depict the sustainability of OERs in terms of funding models, technical models or even content models – and no shortage of recommendations regarding how each of these should proceed – it seems evident that any number of such models can be successful. But at the same time, it also seems clear that the sustainability of OERs – in a fashion that renders them at once both affordable and useable – requires that we think of OERs as only part of a larger picture, one that includes volunteers and incentives, community and partnerships, co-production and sharing, distributed management and control. (Downes, 2007, p. 41)*

Barriers to OER access in developing countries have also received a fair amount of attention. Access to OER involves the ability to locate relevant resources, as well as find some assurance of their quality (Geith & Vignare, 2008; Larson & Murray, 2008; Rossini, 2007; Smith & Casserly, 2006). In a developing country context, where access to ICTs and broadband Internet remains restricted to a limited portion of the population who can afford such services (and in some instances limited

because technologies are not yet available), access to OER networks can pose challenges. In addition to technological barriers, issues of language, culture and contextual and pedagogic relevance should also be considered (Larson & Murray, 2008; Tomasevski, 2006).

### 3. Licensing Options for OER

*'Openness' is complex and not a black and white issue – a spectrum of degrees of resource openness is developing. The future holds opportunities and challenges for enriching and exploiting this spectrum. (Atkins et al., 2007, p. 28)*

The establishment of open licensing approaches has been essential to ensure accessibility (openness) as well as to protect the rights of authors and the integrity of their work. In advancing an argument for why HE should embrace open licensing, it is necessary to delve into the rather complex legal world of copyright and intellectual property.

#### OER Copyright Debates and Challenges

As we move into an increasingly digital world in which collaboration and sharing become commonplace, the possibility of inadvertently violating copyrights increases (Marshall, 2008). In addition, through various Free Trade Agreements countries are coming under pressure to enforce stricter copyright legislation (Hofman et al., 2005). This context impacts on academics who make use of a range of materials, with varying types of copyright restrictions, at the micro level of individual courses.

Although copyright originally served the purpose of regulating the publishing industry and ensuring that appropriate royalties were paid to authors/creators, over time copyright laws have come to regulate the authors/creators and their audiences. In most instances copyright is now owned by large corporations and publishing companies rather than the authors/creators themselves (Liang, 2004), and

*...consequently, a body of law that was initiated to spur creativity by protecting the rights of creators has morphed into rules and regulations that limit access to important information worldwide. (Smith & Casserly, 2006, p. 11)*

In an educational context, a careful balance is needed between creators of materials, publishers,

and consumers (educators and learners) if educational opportunities are to be expanded, education is to become increasingly cost effective, and human rights goals and Millennium Development Goals are to be achieved (Hofman et al., 2005).

Costs of education content, for example journal subscription costs and costs of proprietary course materials, often prohibit students and scholars from engaging fully in global knowledge production and so work against the principles of open learning (SHERPA, 2006). This is particularly so for developing countries where journal subscription prices continue to rise and are often unaffordable for educational institutions faced with a range of competing priorities with little available funding. For example, Hagemann writes:

*Who controls access to educational materials in the age of the Internet? Today many students are priced out of an education, not because of the cost of tuition, but because of the price of textbooks. (Hagemann, 2008)*

This challenge is a key focus of the OER movement. The Commonwealth of Learning (COL) presents the following position on learning content:

*COL sees access to learning materials as being important to the development and improvement of living standards. In the interest of a better educated and informed society, COL encourages educational and knowledge based organisations to make available as much content as possible with as few restrictions in the copyright licenses as possible.*

*This recommendation is made especially in the interest of making publicly-funded materials available free-of-charge. Public sector and non-profit institutions are funded from public and tax funds, which in turn, should allow free access to such materials. (Commonwealth of Learning, 2007, p. 1)*

Bisell and Boyle (2007) describe three levels of freedom in the 'open' copyright arena. These are:

- Level -1: The ability to read online without payment (but no copying or distribution);
- Level 0: The freedom to make verbatim copies without charge;
- Level 1: The freedom to modify, combine and customise, i.e. to make derivative works.

Different open licences allow different levels of freedom. To realise their potential, it is often argued that OERs should allow Level 1 freedoms as far as possible (Bissell & Boyle, 2007). The ability to create derivative works, together with a condition that these works should also be shared openly, has also been referred to as ‘copyleft’ (see for example Hofman & West, 2008; Liang, 2004). Although when considering educational materials that support teaching and learning the ability to create derivatives is important, there are conditions under which it could be inappropriate to allow derivative versions. For example, it would not make sense to allow changes to a research report based on a specific sample of data (although the data could be openly accessible for re-analysis). Similarly, an accounting lecturer making use of a company’s financial statement as an example in class would not need, and indeed it would be improper, to alter or make derivatives of such a document. However, the ability to distribute and use the financial statement as an example still has educational benefit.

A range of licensing challenges exist. For example, when openly licensed resources contain copyrighted material, copyright clearance needs to be obtained or the materials need to be adapted to remove this copyrighted material (Caswell et al., 2008; D’Antoni, 2007, p. 12). In addition, Caswell et al. (2008) note that open materials licensed under different licenses are not always compatible and license conditions may conflict (see also Bissell & Boyle, 2007). For this reason, it is of particular importance that careful consideration of different licensing options is undertaken before deciding on the licence best suited to a particular OER initiative.

## Overview of Open Licenses

When considering open licenses it is useful to remember that these are legal tools that make use of existing copyright laws. In particular the exclusive right copyright law that allows a copyright holder to license material with the licence of their choice (Hofman & West, 2008). Liang (2004) notes that:

*While phrases such as ‘free software’ and ‘copyleft’ conjure up an image of alternatives to copyright, it is relevant to note that it is not a model that abandons copyright. In fact quite the opposite, it relies on copyright law, but uses it creatively to articulate a positive, rather than a negative rights discourse. (Liang, 2004, p. 24)*

Open licences for content developed out of the success of the licensing approach adopted for open source software. One of the earliest open licences for non-software material was published in 1998 by David Wiley. This licence is no longer used, since newer alternatives are now more appropriate and adaptable to different conditions. In 2000, the Free Software Foundation released their first version of an open licence for non-software materials. Essentially this licence was to allow open-source software developers to produce open manuals and support materials, free of standard copyright restrictions. This licence is known as the GNU FDL (Free Documentation Licence). Although it used by the popular site Wikipedia ([www.wikipedia.org](http://www.wikipedia.org)), this licence is not widely used within the OER movement, partly because it is technically confusing and cumbersome in terms of procedural requirements (Liang, 2004). In some cases authors also create their own copyright conditions, although this is noted to be legally challenging in many instances and so tends not to be recommended for OER materials (Hofman & West, 2008). Instead the focus has turned to the Creative Commons (CC) set of licence options. Since CC licences are most commonly used, they are described in greater detail in this paper.

A range of other open licences exist such as licences specifically for music and art. Given the focus of this paper on OER this review has not presented details of the full range of open licences. For a comparative analysis of a wide range of open licences please see Liang (2004)

## Creative Commons Licences ([www.creativecommons.org](http://www.creativecommons.org))

The most developed alternative licensing approach is that developed by Larry Lessig of Stanford University in 2001, called Creative Commons (CC). Since CC licences are most often used for OER work, this paper focuses on the different CC options in greater detail.

The CC approach provides user-friendly open licences for digital materials and so avoids the automatically applied copyright restrictions. The popularity of CC licences has grown incrementally since its launch in 2002, and by 2006, it was estimated that 45 million web pages had been licensed with a CC licence (Smith & Casserly, 2006). Liang describes the philosophy of Creative Commons as follows:

*Inspired by the free software movement, the Creative Commons believes that a large vibrant public domain of information and content is a pre-requisite to sustained creativity, and there is a need to proactively enrich this public domain by creating a positive rights discourse. It does this by creating a set of licenses to enable open content and collaboration, as well as acting as a database of open content. Creative Commons also serves to educate the public about issues of copyright, freedom of speech and expression and the public domain. Liang (2004, pg. 78)*

The CC licences take account of different copyright laws in different countries or jurisdictions and also allow for different language versions. To make the licensing process as simple as possible for users the creative commons site makes use of a licence generator that suggests the most appropriate licence based on a user's response to specific questions regarding how their work can be used. In order to facilitate the searching for resources licences in a particular way, the CC licence is expressed in three versions:

- *Commons deed*: this is a plain language version of the licence, with supporting icons (see table below);
- *Legal code*: the legal fine print that ensure the licence is recognised in a court of law; and
- *Digital code*: a machine-readable translation that allows search engines to identify work by its terms of use ('About - Creative Commons'; Liang, 2004).

All CC licences include 'baseline rights': the rights to copy, distribute, display, perform publicly or by digital performance, and to change the format of the material as a verbatim copy (Hofman & West, 2008, p. 11). In addition, all CC licences assert the author's right over copyright and the granting of copyright freedoms and require licensees to:

- Obtain permission should they wish to use the resource in a manner that has been restricted;
- Keep the copyright notice intact on all copies of the work;
- Publish the licence with the work or include a link to the licence from any copies of the work;
- Not change the licence terms in anyway;
- Not use technology or other means to restrict other licences' lawful use of the work. (Liang, 2004, p. 82)

The six CC licences (see Table 1) that are available are based on four specific conditions (described in Table 1): attribution, share alike, non-commercial and no derivative works ('Creative Commons Licences – Creative Commons'). The aspect of CC licensing that is most controversial is the **non-commercial** (NC) clause (Commonwealth of Learning, 2007; Hofman & West, 2008; Rutledge, 2008). There are several reasons for this, including at the most basic level, what 'non-commercial' means in fact. Since CC licences are a new phenomenon within copyright law, little previous case history exists to assist in interpreting this clause. The most extreme interpretation of non-commercial is that no money should change hands as part of the process of using the materials. However, Hofman and West (2008) note that this is not how non-commercial is usually interpreted. For example a transaction is not commonly seen as commercial when it includes refunding for expenses such as travel. The transaction becomes commercial when making a profit is the purpose of the transaction. Similarly, writing from the CC perspective, Rutledge notes that:

*CC considers intent to be the primary test of whether a use is non-commercial. If the intent of a particular use is to generate profit, that use is commercial. Under this reasoning, cost recovery per se is not a commercial use. (Rutledge, 2008)*

While this approach may seem intuitive, many legal examples could be found that demonstrate the complexity of defining 'intent'. The Commonwealth of Learning (COL) Copyright Guidelines specifically address the issue of the NC clause and note that profit and cost recovery, which includes operating costs, should not be confused. This means that an organisation may still charge registration fees,

recover materials duplication costs and overhead costs incurred during customisation, duplication and distribution of materials. The COL guidelines continue to note that:

*If an institution declares and/or pays a net profit to shareholders, and a part of the net profit emanates from the sale of learning materials marked with the NC clause, a calculation should be done to determine the amount of net profit that has been earned by that section of the materials that has been marked with the NC clause. This is the critical point when the NC and non-NC materials differ. Organisations that provide materials without the NC clause have accepted that the materials they offer may be used to profit any other organisations' stakeholders [in addition to covering all reproduction costs]. (Commonwealth of Learning, 2007, p. 2)*

In working to better understand how the non-commercial clause is applied in different contexts, Creative Commons is currently conducting research into this issue, due to be released in early 2009 (Rutledge, 2008). Rutledge ends her commentary by suggesting that readers should also seriously consider whether the non-commercial clause is really necessary.

Rutledge (2008) notes that some believe that any for-profit businesses should not be able to charge course fees or make use of open content, hence the NC restriction. However, this would imply that a private school may not use NC materials (Hofman & West, 2008), or potentially a for-profit organisation using materials for non-profit work such a corporate social investment project. Other arguments against using the NC restriction include that it makes the materials incompatible with materials

licensed without this restriction (see for example Bissell & Boyle, 2007; Moller, 2005).

While it is understandable that an author who openly releases their materials would not want others to make a profit from them, this can be achieved in other ways. For example, it could be argued that, when materials can be freely accessible via the Internet, charging for the materials themselves becomes irrelevant, and to make a profit the individual or company would need to add sufficient additional value beyond what is freely available to make it worthwhile for users to pay. Work released on an attribution-share alike licence (see details below) requires that any work that is derived from the original work is released under the same licence. Thus, the value added by the for-profit individual/company would itself need to be released freely under an attribution-share alike licence (Moller, 2005).

The table below summarises the six CC licence options that are available and presents a fictional example of what each might imply for one of the *OER Africa* CoPs, the Skills for a Changing World programme.<sup>1</sup> The fictional examples present, in story form, an argument for why the Skills for a Changing World programme should adopt an **Attribution Share-Alike Licence**. The examples highlight why this licence would allow an educational programme to have the greatest educational impact, while also ensuring that any further developments to the programme remain freely available for use and adaptation.

In compiling this table, several sources were consulted, including the Creative Commons website, Bissel and Boyle (2007); Hofman and West (2008); and Liang (2004).

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1 The Skills for a Changing World Programme is a project of the Free State Higher Education Consortium (FSHEC) and Mindset Livelihoods in South Africa. Through this project, a consortium of HEIs are collaborating to develop an innovative foundation programme that will prepare young people who currently fall through the cracks in the South African education system for post-schooling education and/or the world of work. The programme is being developed within an open licensing framework and the *OER Africa* website is being used to facilitate the work of the Skills for a Changing World CoP. See: [www.oerafrica.org](http://www.oerafrica.org) for additional details.

**Table 1. Summary of CC Licences and their possible implications for the Skills for a Changing World Programme**

Licence Name	Acronym	Icon	Description	Fictional example of possible implications for the Skills For A Changing World Programme
Attribution	BY		This licence lets others distribute, remix, tweak, and build upon your work, even commercially, as long as they credit you for the original creation. This is the most accommodating of licences offered, in terms of what others can do with your works licensed under attribution.	University X in Country Y implements a foundation programme which they call 'Skills for the Future'. This programme is based entirely on Skills for a Changing World materials with small adaptations for the Country X context. There is an acknowledgment of the Skills for a Changing World programme and the materials author's names are noted on the first page of the slightly adapted materials used in the Skills for the Future Programme. As part of the adaptation process University X also developed an additional module on HIV/AIDS. The additional module is not uploaded to the Skills for a Changing World website. The university applies a traditional copyright to their Skills for the Future Programme materials, and sells these materials to students in the programme and via the institution's website as an additional support resource. Due to the cost of the materials, few students in Country Y are able to take advantage of the opportunity to develop their foundational skills.
Attribution Share Alike	BY-SA		This licence lets others remix, tweak, and build upon your work even for commercial reasons, as long as they credit you and license their new creations under the identical terms. This licence is often compared to open source software licences. All new works based on yours will carry the same licence, so any derivatives will also allow commercial use.	University X in Country Y implements a foundation programme which they call 'Skills for the Future'. This programme is based entirely on Skills for a Changing World materials with small adaptations for the Country Y context. There is an acknowledgment of the Skills for a Changing World programme and the materials author's names are noted on the first page of the slightly adapted materials used in the Skills for the Future Programme. As part of the adaptation process University X also develops an additional module on HIV/AIDS. The additional module and the adapted materials carry a CC BY-SA licence and in keeping with the licence conditions the new module and adapted materials are uploaded to the Skills for a Changing World website. Since the CC BY-SA licence does not preclude commercial use of the materials the university decides to sell the Skills for the Future materials to students in their programme and via the institution's website as an additional support resource. However, the institution finds that they make little profit from selling these materials as the possibility of accessing the materials free via the Skills for a Changing World website run from South Africa spreads. Students registered for the Skills for a Changing World Programme in the Free State find that the HIV/AIDS module developed by university X contains some very useful perspectives on how HIV/AIDS could be prevented in South Africa. Students request the Skills for a Changing World Programme Coordinator to include, for credit, an optional module on HIV/AIDS that is based on that developed by University X. University Z finds the Skills for the Future materials when searching the Skills for a Changing World website and decides that this version is better suited to their context so they download the materials to support their student support programme.

Licence Name	Acronym	Icon	Description	Fictional example of possible implications for the Skills For A Changing World Programme
Attribution No Derivative	BY-ND		This licence allows for redistribution, commercial and non-commercial, with credit to the author. The work may <b>not</b> be altered, transformed or built on.	<p>University X in Country Y needs to develop a foundation programme for students entering higher education. Country Y has high levels of poverty and University X is always pressed for funding, as a result little funding is available to support the development of the programme, despite the extent of the need. A lecturer at University X is searching the Internet for openly licensed foundation programmes that might help them to provide educational opportunities more widely in the country. She finds the Skills for a Changing World Programme website and is excited to read that the Skills for a Changing World programme use a CC licence. As she reviewed the Skills for a Changing World programme materials she identified a number of areas in which the materials would need to be adapted to take into account the specifics of the local education and economic context. In addition, since many students had very little exposure to English it would be important to translate the materials into the language of Country Y for them to really be beneficial. Just as the lecturer was about to email her colleagues to share the news of the programme she had found she discovered that the CC licence used was a CC BY-ND licence which means that no changes could be made to the materials. In this case, at best, University X would be able to use the Skills for a Changing World materials as a reference source and possibly provide copies of certain sections to students for reference materials. Unfortunately, despite Skills for a Changing World's claims to be committed to expanding educational opportunity, in this instance this was not possible due to the licence restrictions used.</p>
Attribution Non-commercial	BY-NC		This licence lets others remix, tweak, and build upon your work non-commercially, and although their new works must also acknowledge you and be non-commercial, they don't have to license their derivative works on the same terms.	<p>University X in Country Y needs to develop a foundation programme for students entering higher education. Country Y has high levels of poverty and University X is always pressed for funding, as a result little funding is available to support the development of the programme, despite the extent of the need. A lecturer at University X is searching the Internet for openly licensed foundation programmes that might help them to provide educational opportunities more widely in the country. She finds the Skills for a Changing World Programme website and is excited to read that the Skills for a Changing World programme use a CC licence. As she reviewed the Skills for a Changing World programme materials she identified a number of areas in which the materials would need to be adapted to take the specifics of the local education and economic context into account. In addition, since many students had very little exposure to English it would be important to translate the materials into the language of Country Y for them to really be beneficial. Since the materials carried a CC BY-NC licence this adaptation would not be a problem as there is no restriction on creating derivative works. University X went ahead and adapted and translated Skills for a Changing World to be offered at their institution. The Rector of the University, despite being advised otherwise by the lecturer who understood open licensing issues, decided that it would be best for the university to restrict others from adapting the new materials to ensure a competitive advantage for the institution.</p> <p>University Z, also in Country Y, faced similar challenges to University X and was excited to discover that University X had been able to adapt and translate materials from Skills for a Changing World. University Z wished to use the translated materials and update them to include activities and examples related to irrigation since this was a focus area of the university. University Z proposed to share this module with all Skills for a Changing World users. However, this adaptation was not possible due to the licensing conditions set by University X. University Y was thus not able to make optimal use of the Skills for a Changing World materials for their students.</p>

Licence Name	Acronym	Icon	Description	Fictional example of possible implications for the Skills For A Changing World Programme
Attribution Non-commercial Share Alike	BY-NC-SA		<p>This licence lets others remix, tweak, and build upon your work non-commercially, as long as they credit you and license their new creations under the identical terms. Others can download and redistribute your work just like the BY-NC-ND licence, but they can also translate, make remixes, and produce new stories based on your work. All new work based on yours will carry the same licence, so any derivatives will also be non-commercial in nature.</p>	<p>University X, in country Y, is a private university linked to a major for-profit corporation in the country. University X offers a range of high fee, profit-making courses for the business sector in the country. In addition, the university is committed to creating educational opportunities for those with limited access to university study. This is done by offering a foundation programme for which students are provided with full bursaries to cover their tuition costs. The investment of the university in these bursaries leaves little funding available for ongoing improvements and development of their foundation materials. For this reason, the foundation programme course coordinator was happy to locate the Skills for a Changing World programme offered in South Africa and licensed with a CC licence. He was most interested in the module on life skills since this was an area currently lacking in his programme. He obtained a copy of the Skills for a Changing World Life Skills module from the Skills for a Changing World website and proceeded to make a few small adaptations, including the addition of extra examples. He then uploaded his version of the module to the Skills for a Changing World website for others to use and also distributed it to a colleague at another university in the country. Prior to offering the module, all new modules needed to be approved within University X. The lecturer was not granted approval to use the materials since the university lawyers felt that the non-commercial clause of the Skills for a Changing World licence might exclude a private for-profit institution from using the materials, even for non-profit purposes. Although this was an unclear issue, the university decided that it was too risky to make use of the revised module, and so the potential application of Skills for a Changing World in this context could not be realised.</p>
Attribution Non-commercial No Derivatives	BY-NC-ND		<p>This licence is the most restrictive of the six main CC licences, allowing redistribution only. This licence is often called the 'free advertising' licence because it allows others to download your works and share them with others as long as they mention you and link back to you, but they can't change them in any way or use them commercially.</p>	<p>Like the example presented for the Attribution-No Derivative licence above, University X that wished to make use of the Skills for a Changing World programme as the basis for developing their own foundation programme in another language would not be able to do so. All the university would be able to do is make copies of the existing Skills for a Changing World programme as reference materials for students.</p> <p>In addition, like the example of Attribution Non Commercial Share Alike above, the private for profit university that also offered a non-profit making foundation programme would possibly be restricted from using the materials to support their non-profit work.</p>

# 4. The Importance of Piloting: Contributing to OER Theory and Practice

As a relatively new approach within the HE sector, the importance of piloting and documenting lessons from pilots should be highlighted. Each unique way in which OER is approached and projects are implemented in the HE environment has the potential to contribute to the emerging understanding of OER theory and practice.

Schmidt and Surman (2007) argue (based on discussions held at an iSummit bringing together OER advocates and practitioners) that rather than focusing exclusively on content and technologies supporting OER it is critical to approach OER as an ecosystem (see also Atkins et al., 2007). The OER ecosystem consists of processes, communities, institutions and people as well as content and tools (Schmidt & Surman, 2007). Writing several years earlier, Keats (2003) also highlighted the need to focus on processes, tools, and people when considering models for collaborative, open content development (Keats, 2003). Few OER initiatives to date have focused on understanding this ecosystem.

To contribute to OER theory and practice, the value of embedding OER initiatives within an action research framework should be highlighted. This allows the project to research and reflect on all the elements of this specific OER ecosystem. The lessons emerging from this project are likely to be of benefit far more broadly than just within the programme itself.

Schmidt and Surman (2007) argue further that little attention has been paid to the challenging

issues of quality assurance and accreditation in the context of open education and OER. Both of these issues are central to the success of OER initiatives in a higher education context. Specific lessons regarding these processes emerging from pilot projects will be relevant to the OER movement as a whole, and not just the specific intervention in question. Related is the role that OER might play in supporting pedagogic changes within higher education.

*All these examples point to expanding learning theories that include situated learning and learning-to-be (within an epistemic frame) rather than just learning-about. The stage is being set to reformulate many of Dewey's theories of learning informed by and leveraging newer cognitive and social theories of learning and delivered in conceptually rich experiential learning environments. (Atkins et al., 2007, p. 46)*

The importance of integrating OER approaches within the policies, procedures, and budgets of institutions is of critical importance to the sustainability of OER (Atkins et al., 2007; D'Antoni, 2007). Each OER intervention, no matter how small or large, will contribute to the documentation of good practice in the area of integrating this approach within the practice of higher education institutions.

# 5. Conclusions

*The knowledge society demands competencies and skills that require innovative educational practices based on open sharing and evaluation of ideas, fostering creativity, and teamwork among the learners. Collaborative creation and sharing among communities of OER is regarded as an important catalyst of such educational innovations. Therefore, OER should become a key element of policies and practices that aim to leverage education and lifelong learning for the knowledge society and economy. (Schaffert & Guntram, 2008, p. 3)*

This position paper has presented the perspective of OER Africa on the potential of OER for enriching African higher education. While there remain various challenges with developing and implementing OER initiatives, the potential provided by this approach is clear.

Drawing on their experience from working within the Open e-Learning Content Observatory Services (OLCOS), Schaffert & Guntram (2008) note that for the goal articulated in the quotation above to be realised it is essential to also promote changes in educational practices. If the dominant model of education remains teacher-centred knowledge transfer, the potential of using OER to support efforts aim at equipping teachers, students and workers with the competencies demanded by society is limited (Schaffert & Guntram, 2008). In ensuring maximum benefit of OER a series of recommendations for a range of stakeholders are made. These recommendations are summarised in Table 2 and implications drawn for OER Africa.

**Table 2. Key recommendations for successful OER initiatives and their implications for OER Africa**

Stakeholder Grouping	Recommendations (Schaffert & Guntram, 2008, pp. 3-5)	Implications for OER Africa
Educational policy makers and funding bodies	<p>Promote open educational practices that allow for acquiring competencies and skills that are necessary to participate successfully in the knowledge society</p> <p>Foster the development of OERs e.g. by creating a favourable environment for open access to educational content</p> <p>Support the development of widely used, state-of-the-art and sustainable open access repositories</p> <p>Demand public-private partnerships to concentrate on ventures for innovating educational practices and resources</p>	OER Africa can encourage its CoPs to provide examples of what an OER approach can achieve. In addition, CoPs should be encouraged to conduct action research and the results of the research should be made available to policy makers and funding bodies as a means of both lobbying for additional support of OER as well as proving data on which policy makers and funding bodies can made decisions on OER initiatives. OER Africa is in a unique position to facilitate such processes at a continental level.
Boards, directors and supervisors of educational institutions	<p>Scrutinise whether educational institutions are employing innovative approaches beyond teacher-centred knowledge transfer</p> <p>Promote sharing and re-using of OERs and experiences from open educational practices</p> <p>Establish reward mechanisms and supportive measures for developing and sharing of OERs and experiences</p> <p>Clarify copyrights and define licensing schemes for making OER available</p>	OER Africa should build up a body of knowledge and experiences of how OER advocates have won the support of institutional leaders and managers. Further, a range of support might be provided to assist OER advocates in mainstreaming their work within their institutions. In particular, support and sharing of experiences regarding licencing options would be important.

Stakeholder Grouping	Recommendations (Schaffert & Guntram, 2008, pp. 3-5)	Implications for OER Africa
Teaching staff	<p>Clarify the professional role, appropriate approaches and required skills for a teacher in the knowledge society</p> <p>Employ open educational practices to help learners acquire competences for the knowledge society</p> <p>Make use of tools and services that support collaborative learning processes and learning communities</p> <p>Share proven learning designs, content and experiences through open access repositories and open licences</p>	<p>Through the OER Africa website, teaching staff have access to a range of resources and supportive tools to help them develop OERs and share their successes and lessons. This sharing of both materials and practices should be actively encouraged by OER Africa.</p>
Learners and students	<p>Demand educational approaches that allow for acquisition of competences and skills for the knowledge society</p> <p>Suggest open learning practices using new tools and services</p> <p>Develop one's own ePortfolio and make study results accessible to others</p> <p>Respect IPR/copyright of others and make one's own creative work accessible under an open content licence.</p>	<p>The domain of learners and students mostly falls outside of the scope of <i>OER Africa's</i> work. Nonetheless, research to be conducted on OERs and CoPs are likely to support the educational approaches advocated.</p>
Educational repositories	<p>Do not follow a top-down strategy of delivering learning objects; empower teachers and learners</p> <p>Support individual content creators and communities of practice with useful tools and services</p> <p>Make licensing of content as easy as possible</p> <p>Allow for easy discovery of and access to resources</p> <p>Assist open content initiatives in the creation of rich meta-data and provide semantically enhanced access to resources</p>	<p><i>OER Africa</i> has based its website on many of the principles noted along side, although <i>OER Africa</i> is not an educational repository. In continually developing and maintaining a service that adds value to the higher education sector, it will be critical for <i>OER Africa</i> to conduct ongoing research and gather feedback on how the website is used and how it could be improved to better meet the needs of its target audience.</p>
Developers and implementers of e-learning tools and environments	<p>Involve teachers and learners in the development of learning tools</p> <p>Promote open educational practices through help in setting up appropriate tools</p> <p>Favour institutional learning environments that support group-based, collaborative learning practices</p> <p>Closely observe the development and consider testing of Learning Design systems</p>	<p>As above, <i>OER Africa</i> has embraced these principles in setting up its website and also in various other activities. It will be important for <i>OER Africa</i> to become known as a facilitator of the development and use of OER through providing support and access to relevant and user-friendly tools needed for the development and sharing of OER.</p>

Table 2 presents many areas in which attention should be focused as *OER Africa* moves forward. It is hoped that the innovative potential of *OER Africa* – not withstanding a variety of challenges as noted in this paper – has been highlighted. In the words of Hepburn (2004):

*As educators learn about open source development models and re-consider some long held assumptions about how educational resources*

*are produced, they can leverage open source processes to take control of meeting educational needs. In addition to producing substitutes for commercial resources, educators are likely to begin producing resources that are new and innovative. Education can quickly move toward the ideal of a commons and, perhaps more importantly, embrace the ideal of fostering a true innovative commons. (Hepburn, 2004, p. 8)*

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