The use and production of OER & OCW in teaching in South African higher education institutions

Case Study

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Abstract

With thousands of materials having been produced and shared openly and freely on the Internet as Open Educational Resources (OER) or OpenCourseWare (OCW), the focus of the Open Education movement has shifted toward the need to demonstrate how such materials are being used, by whom and with what impact.

This paper reports on the uses, the motivation for and perceived benefits of use, as well as the challenges of using or producing OER/OCW among academics at public Higher Education Institutions (HEIs) in South Africa (SA). Findings revealed widespread use of OER/OCW amongst respondents in their teaching endeavors, with a number of reported benefits. Findings also revealed respondents' educational rationale for using or producing OER/OCW. Identified challenges to using or producing OER/OCW are related to licensing issues, institutional challenges or infrastructural problems. The paper proposes several recommendations to advance the use and production of OER/OCW in SA public higher education.

Keywords: Higher Education; OCW; OER; Open Education; Production; Teaching; Use

Introduction: Mapping the landscape of OER & OCW

More than a decade has passed since the Massachusetts Institute of Technology (MIT) made the announcement[1] that they would make course materials from across their entire curriculum available online for free, under an open license, as OpenCourseWare (OCW). Subsequently, in 2002, UNESCO organized a meeting of prominent educators interested in the concept of opening up education, during which the delegates adopted the term Open Educational Resources (OER) (UNESCO, 2002). Since 2002, thousands of OER and OCW have been produced. They have been used by millions of people around the world. However, as we are moving towards the next decade in the Open Education movement, it is becoming increasingly important to demonstrate how such materials are being used, by whom and with what impact.

OER are commonly referred to as "digitized materials offered freely and openly for educators, students and self-learners to use and re-use for teaching, learning and research" (OECD, 2007, p. 30). OER refers to a range of learning objects, such as stand-alone video or audio materials, course or research materials, open textbooks, etc. OCW is a particular kind of OER, denoting courseware materials for a full course. OCW are a compilation of materials, openly licensed for reuse and modification, corresponding to a full course offered by the authoring faculty or institution (OCWC, n.d.). Both OER and OCW are licensed under conditions[2] that permit their use, reuse, redistribution and/or adaptation.

Hundreds of organizations and HEIs have joined the Open Education movement during the past decade, making their materials available openly and freely online as OER[3] or OCW. For instance, nearly 50,000 OER, available in numerous subject areas, can be located through OER Commons[4].

Number of original and translated courses reported by OCW Consortium members (October 2012)
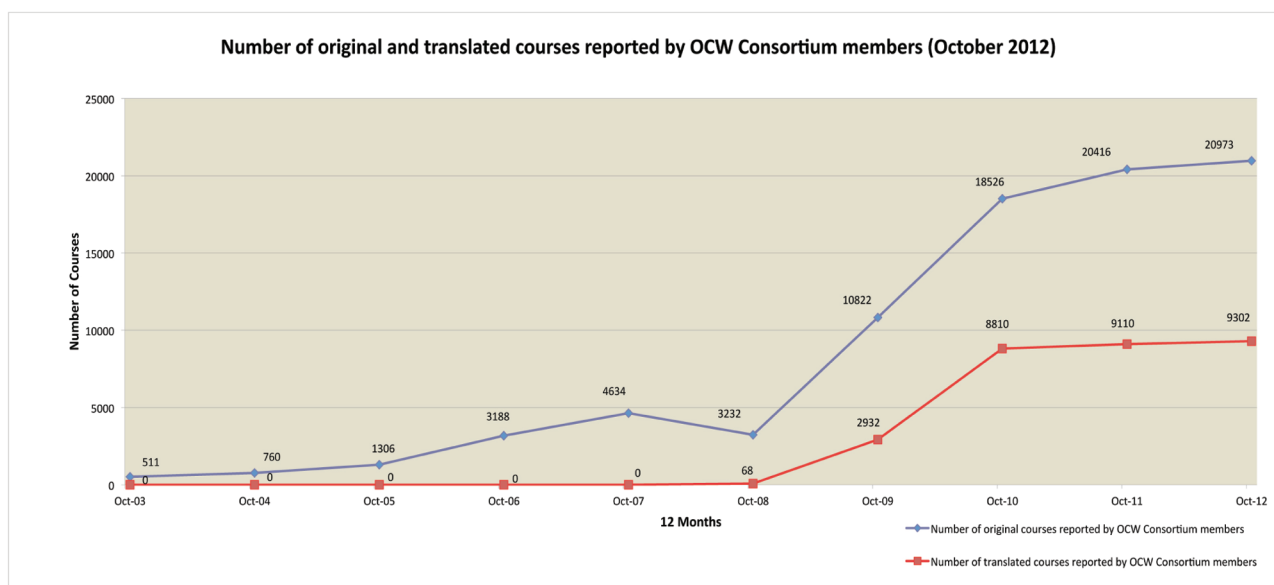
Graph 1: OCW Consortium Course Statistics (as reported by OCW Consortium members), October 2012

Furthermore, in 2008, the global OCW Consortium[5] (OCWC) was established, which has since grown to incorporate more than 260 Higher Education Institutions and associated organizations from more than 30 different countries around the world[6]. To date, OCW Consortium members have published more than 30,000 OCW & OER (Graph 1) under open licenses, appearing in 22 different languages[7]. On average, 7 million people per year visited courses available through OCW Consortium members between the years 2008–2012 (OCWC, 2012a).

In Africa, the use and production of OER & OCW has been pioneered by organizations such as OER Africa together with numerous HEIs. In 2009, OER Africa[8] in partnership with the University of Michigan initiated "Health OER[9]" project with several universities from Africa. During this project, circa 150 learning modules together with numerous videos and open textbooks on health-related matters have been created collaboratively and released as OER. The resources available through this initiative have been accessed on average by 8,500 visitors per month from 190 countries, with the video collection available on YouTube having had 2,5 million views (Omollo, 2012). Furthermore, during its Multinational Project I, the African Virtual University (AVU), in partnership with 12 universities from 10 African countries, collaboratively developed 219 modules in Mathematics and Sciences; ICT Basic Skills; Teacher Education professional courses and integration of ICTs in Education. These courses are available openly and freely on AVU's portal as well as on an external Scribd portal in English, Portuguese and French[10]. From December 2010 to August 2011, AVU's open courses were cumulatively accessed by nearly 300,000 people from countries such as the United States, France, Portugal, Brazil and more. 50% of all the visitors were accessing materials in English, with 30 % in Portuguese and 15% in French (OCWC, 2011). Following the success of its Multinational Project I, AVU's Multinational Project II has expanded into 21 African countries. In South Africa, the University of the Western Cape[11] and the University of Cape Town[12] have been producing and sharing teaching resources as OER or OCW for several years. The University of South Africa has an OER portal[13] and is one of the anchor partners of the OER University[14].

With thousands of materials having been produced and shared openly and freely on the Internet as OER or OCW, the focus of the Open Education movement has shifted toward the need to demonstrate how such materials are being used, by whom and with what impact. It is in this context

that a number of evaluation studies have emerged in recent years. The findings from these studies revealed that OER & OCW had been used by numerous stakeholders. These include students, educators, self-learners, working professionals or life-long learners; variously using such materials to supplement their learning or teaching materials, as an indicator of existing course offerings in order to decide on a next course of higher education study, to create teaching materials, to update their knowledge or skills in the field, and more (Redd, 2011; Dopper, 2011; MIT OCW, 2011; Xanthopoylos, 2011). The OCW Consortium has been running a user feedback survey on its website since April 2011. Data gathered from 1037 respondents from over 80 countries revealed that nearly half of all the users (43%) are students currently undergoing secondary or university-level education. Self-learners represent 22% of all the respondents, followed by a group of working professionals (22%). Teachers and faculty members form 9% of all the respondents. Furthermore, in their responses to how they use OCW, amongst other forms of use, 20% of respondents indicated that they use OCW to supplement or create teaching materials (OCWC, 2012b). One of the key challenges in determining the impact of OER & OCW initiatives is related to obtaining feedback from users visiting OER & OCW websites. Keeping with the philosophy of open sharing, users can access OER & OCW materials without the need to log into specific websites. Such initiatives can only rely on voluntary feedback, and where the feedback is obtained, it does not guarantee a representative sample of users. Many OER & OCW initiatives therefore rely on website user statistics for data, documenting the number of downloads, time spent on websites or reporting users' geographical location (Forward, 2012; OER infoKit, Learning and Teaching Considerations, 2011). Despite recent efforts to demonstrate their impact thus far, we only have a limited understanding about who is using materials, why they use it, and with what impact. These gaps include which materials are being used, re-used and/or adapted, which factors enable or hinder such practices, and more (Windle *et al.*, 2010)

In the context of higher education in Africa, it has been argued that OER "have the potential to revive higher education standards, make curricula once more current and contextually relevant and to foster collaboration and knowledge sharing between institutions, all of which will in turn benefit the students" (Ngugi & Butcher, 2011, p. 3). Incorporating OER into teaching practices can have wide-ranging implications for the quality of teaching, quality of teaching materials, student engagement and more (Dhanarajan & Abeywardena, 2013). This paper reports on the uses, the motivation for and perceived benefits of use, as well as the challenges of using or producing OER/OCW among academics at public Higher Education Institutions in South Africa.

Methodology

As part of a project on *Emerging ICTs in Higher Education*[15] in South Africa, a national survey was conducted in 2011 with academics and e-learning practitioners based at various public HEIs in SA. Respondents were probed about innovative teaching and learning practices using Information and Communication Technologies (ICTs) over the past 3 to 5 years. They were identified through purposive and snowball sampling methods. Purposive sampling method was applied in order to identify and recruit initial respondents. Identified respondents were then asked to help identify additional respondents thought to have been engaged in innovative teaching and learning practices using ICTs (snowball sampling method).

In the survey (Table 1), 120 respondents indicated that they used OER/OCW on a regular basis or at least once in 2011. A subsequent survey[16] containing 26 questions (closed and open-ended) was developed in December 2011 and was piloted with several academics and practitioners in January 2012. The survey was subsequently amended, incorporating feedback and questions

Table 1: the use of OER/OCW in teaching in 2011

The use of OER/OCW in teaching in 2011	Frequency	Percentage
On a regular basis	62	24%
At least once in the past year	58	22%
Never	80	31%
I don't know what you mean by this	3	1%
No answer	58	22%
Total	**261**	**100%**

proposed by respondents during the pilot phase. During the period 15 February 2012–31 March 2012, the survey was distributed to 97 respondents who had agreed to be contacted for follow up questions. The questions in the survey were related to the following aspects:

- Characteristics of respondents
- Characteristics of OER & OCW materials used in teaching
- Ways of using OER & OCW in teaching, the impact of such practices on teaching methods and results, respondents' rationale for using OER & OCW in teaching and engagement with production of OER & OCW
- Practices related to use of OA journals
- Respondents' understanding of regulations (license terms) that govern ownership and use, reuse or modification of OER & OCW
- Challenges related to using or producing of OER & OCW

The findings reported on in this case study are a compilation of results obtained from the follow up survey. Due to the application of non-probability sampling methods (purposive and snowball) in the national survey, the results from this case study should not be generalized to provide a representative view of academics across higher education institutions in South Africa. However, many results from this case study, in general, resonate with results from recent international surveys on the OER use and production (see later), including factors that enable or inhibit such practices in higher education institutions. In this context, recommendations derived from this case study might find their applicability not only across higher educations institutions in South Africa but also beyond.

Survey responses were received from 48 individuals, representing 17 public HEIs in South Africa[17]. Respondents hold appointments ranging from junior lecturers to professors to non-academic staff (Table 2).

Academic staff teach both undergraduate and postgraduate classes.

The use of OER & OCW in teaching

The most frequently used OER in teaching (Graph 2) are video and audio lectures (47%) and graphs or data representations (47%).

Lecture slides are used by 44% of respondents; followed by 40% of those who also use quizzes, exercises, assessment tools or worksheets released as OER. Full free courses have been used by 25% of respondents. A selection of respondents' comments included:

Table 2: Level of Appointment

Level of Appointment	Frequency	Percentage
Junior lecturer	2	4%
Lecturer	17	35%
Senior Lecturer	8	17%
Associate professor	7	15%
Professor	5	10%
Non-academic	6	13%
No answer	3	6%
Total	**48**	**100%**
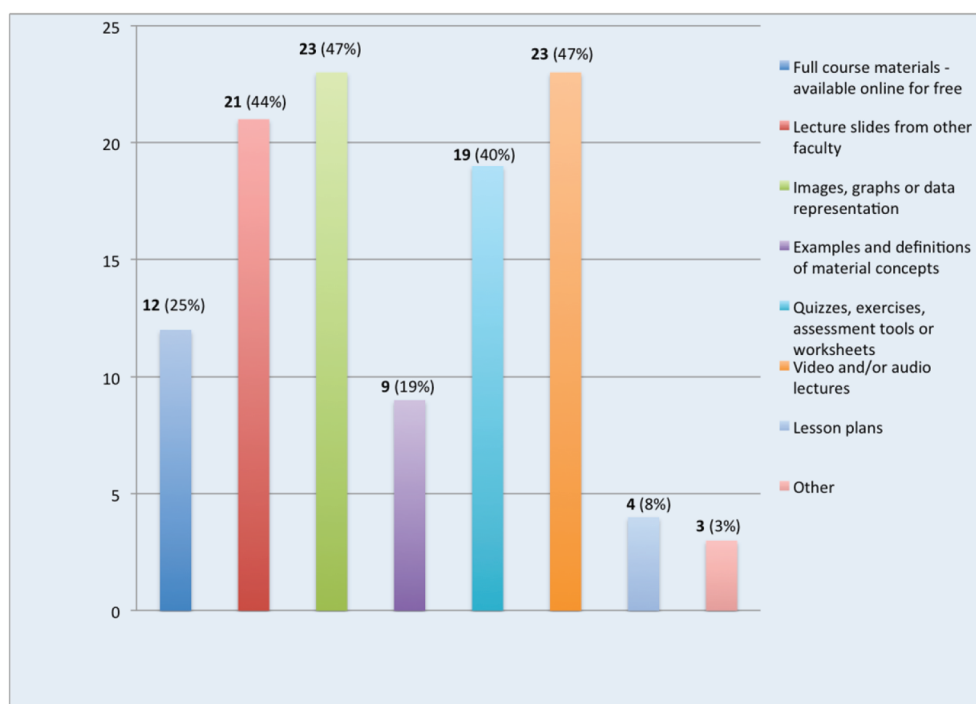
Graph 2: Use of OER & OCW in Teaching.
Note: Respondents could choose more than one option so responses >100%

"I have been using materials from the MIT OCW site. I have been using slides, images and graphs related to Materials Science from a variety of sources on the Internet."

"Lecture slides and exercises from MIT for a Data Communications course."

"The team of librarians adapted the framework of an information literacy tutorial prepared by US library for our own use (with written permission). The online tutorial provided seven different modules, which covered the international standards for information literacy. The team adapted the content but re-used some of the quizzes. We wrote to ask another international library whether we might use a comic strip that illustrates academic honesty. This was used wholesale in our online tutorial."

"I have used course notes. I have included images (pictures, graphs, applets) on occasion in my own 1st year lessons, which I have found on OER repositories. I have made available links to reputable looking courses for my senior students to consult as supplementary material."

"I have used Creative Commons licensed presentations and YouTube videos, also free and open articles."

"Most videos were either downloaded from YouTube or Vimeo or images from Flickr."

"Presentations from SlideShare."

"I found Business English courseware—from OUUK."

"I have used Creative Commons licensed presentations and You Tube videos, also free and open articles. I have also been part of a course Community Self and Identity which has uploaded all the materials on OER Africa."

The findings appear to suggest that various institutional OCW websites are preferred by respondents when trying to locate full courseware materials. On the contrary, SlideShare, YouTube, Vimeo, Flickr and various OER repositories appear to be used when looking for individual OER such as audio and video, images or presentation slides. It also appears that stand alone OER such as videos, audio, images or presentation slides are used more frequently than full courseware materials.

Respondents have identified images and video resources (42% and 42% respectively, Table 3) as the most useful OER in their classroom setting.

Images and video resources are followed by lecture slides (33%), tutorials and learning exercises (27%) and theoretical or conceptual explanations (23%).
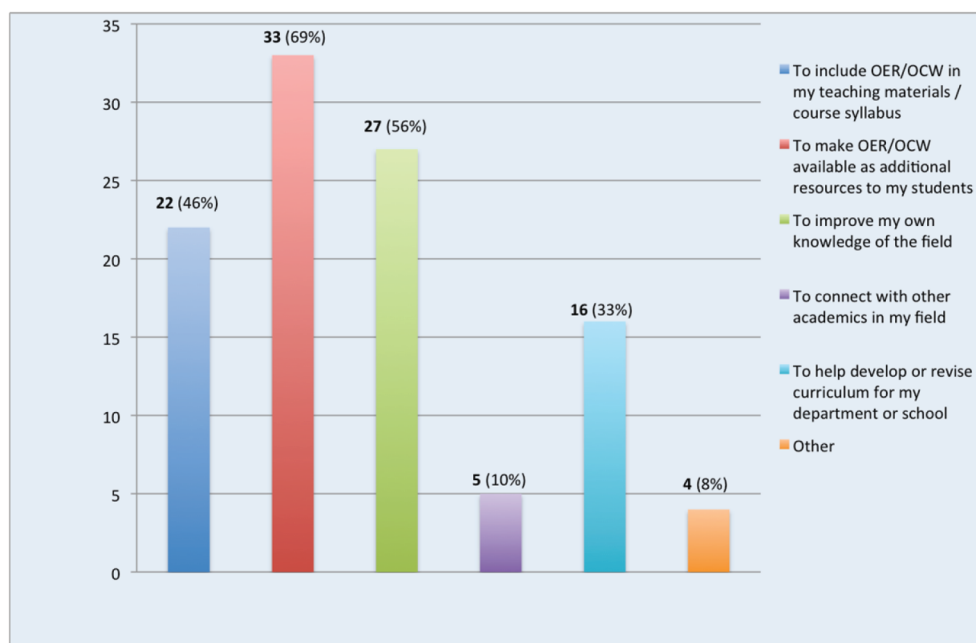
Reasons for using OER & OCW in teaching

When asked about the reasons for using OER & OCW in teaching (Graph 3), 69% of respondents stated that they were making such materials available as additional resources to their students, followed by 56% of those who use OER or OCW to improve their knowledge in the field and 46% of those who include OER or OCW in their teaching materials or course syllabus. Of interest also is the fact that 33% of respondents have used such materials to help develop or revise the curriculum for their departments or schools.

Table 3: The most useful OER in teaching.
Note: Respondents could choose more than one option so responses >100%

Which OER/OCW do you find most useful in your classroom setting	Count	Percentage
Lecture slides	16	33%
Images	20	42%
Audio resources	7	15%
Video resources	20	42%
Theoretical or conceptual explanations	11	23%
Tutorials and learning exercises	13	27%
Assessment grids	6	13%
Other	6	13%
Total	99	**208%**

Graph 3: Reasons for using OER & OCW in teaching.
Note: Respondents could choose more than one option so responses >100%

Further investigation into the educational rationale for using OER in teaching and the ways such practices inform respondents' educational practices elicited the following responses:

"I am experiencing a shocking level of 'ability to study,' 'ability to critically assess materials' etc, even at post-graduate level. Scarcity of resources in South African Education could at least partially be overcome by encouraging students to discover certain aspects of content for themselves."

"It is important that I provide various avenues for participants to engage with the content material and add their own understanding and using OER/OCW helps me do that."

"Student centered learning—the student is in charge of their studies and knowledge creation. To find knowledge and to create knowledge nowadays is so very easy. I am just the facilitator, students need to use all available information."

"OER fits my philosophy of teaching and learning i.e. that knowledge is for the public good. Why should privileged people have more access? I believe in using interactive participatory approaches that empower students to find their content for learning then use the classroom for critical discussions. OER broadens the scope for learning. It offers students and teachers greater opportunities to do this."

"Using these resources expands the dialogue within my discipline by connecting other disciplines and countries to my own context. This enables students to visualize their role in the international dialogue and evidence based practice."

"Gleaning useful and credible information from the web is an important skill these days. As lecturers we need to do this ourselves and teach our students how to do so. When teaching undergraduates you are not re-inventing the wheel but you do need to add your own insight and personality to existing knowledge as you convey it to students. Students need to see you do this and the process of refining OER material is one helpful part of preparing for teaching."

"The best reason to use OERs in South Africa is to share expertise with similar context, or to develop South African contexts for various educational resources, by using the best quality content from around SA, around Africa & the world."

"Provides access to other 'tested-out' pedagogical practices. Also provides a 'starting-point' for new course development—see what is out there and adapt/change to fit my own teaching context."

"I like to use a variety of information sources and get students to compare and critic content. They also need to know that information changes rapidly and they should be able to access it and use it appropriately."

From further elaborations by respondents above it appears that their educational rationale for using OER & OCW in teaching is related, but not limited, to the following aspects:

- Because of scarcity of content in certain areas
- To enhance teaching practices—a variety of perspectives related to a specific subject matter
- To encourage supplemental independent learning and to develop critical thinking skills as well as digital literacies in order to find and evaluate appropriateness of online content
- Such materials save time to develop teaching materials
- To encourage a more learner-centered learning approach
- To share expertise in specific fields or because of respondents' beliefs related to benefits of open sharing in education

Reported benefits to using OER & OCW in teaching

The findings revealed a number of reported benefits to using OER & OCW in teaching (Table 4). Among those, 52% stated that their classes are more interesting and/or engaging for their students, followed by those who state that they are able to improve their teaching materials (48%) or incorporate new concepts into their teaching (44%). Nearly 34% of respondents claim that OER & OCW help them save time preparing courses materials, and 31% state that they are more motivated to teach. 25% of the respondents stated that they have more content to teach with an equal number stating that they are able to use their class time more effectively for class discussions as a result of using OER or OCW.

These findings are consistent with results obtained from other studies where respondents reported enhanced quality of teaching and learning, development of critical and creative thinking skills or development of information literacy skills, ability to stay up to date with recent developments in their field, ability to save time to prepare teaching materials or ability to offer a range of different perspectives on a specific subject matter to be amongst the main benefits of using OER in teaching (Yuen & Wong, 2013; Daryono & Belawati, 2013).

In addition to using OER & OCW, 75% of respondents indicated that they had used Open Access (OA) journals in the past year (Table 5). Of these, 42% had used information obtained from OA journals for teaching and nearly 71% had used OA journals for research purposes.

The widespread use of OA journals for teaching or research amongst the respondents is encouraging. OA access journals facilitate the most up to date research outputs to be available and accessible without the barrier of high journal subscription fees. In this context, OA journals are an important component of an open education ecosystem**.**

Production of OER & OCW

In addition to using OER & OCW in their teaching, 33% of respondents stated that they have also produced or contributed to the production of OER or OCW (Table 6).

Table 4: Benefits of using OER in teaching.
Note: Respondents could choose more than one option so responses >100%

Reported benefits of using OER & OCW in teaching	Count	Percentage
I am more motivated to teach	15	31.25%
I am able to save time preparing course materials	16	33.33%
I am able to save time preparing to teach new subjects	9	18.75%
I have improved my lecture skills	8	16.67%
My classes are more interesting and/or engaging for my students	25	52.08%
My course evaluations are more positive	4	8.33%
My students get better grades	3	6.25%
I have more content to teach	12	25.00%
I am more able to use class time for discussion	12	25.00%
I am able to incorporate new concepts into my teaching	21	43.75%
I am able to improve my teaching materials	23	47.92%
OER/OCW have not discernibly impacted my teaching methods or results	1	2.08%
Other	5	10.42%
Total	**154**	**320.83%**

Table 5: Reasons for accessing OA journals.
Note: Respondents could choose more than one option responses >100%

For which purpose (s) have you been accessing OA journals?	Count	Percentage
For teaching	20	42%
For research	34	68%
Other	3	6%
Total	**57**	**119%**

Table 6: Production of OER materials

Have you ever produced any OER/OCW materials yourself?	Count	Percentage
Yes	16	33%
No	19	40%
No answer	13	27%
Total	**48**	**100%**

Such materials would include lecture presentation slides, lecture notes or tutorials. Respondents claim to have licensed most of the resources using Creative Commons licenses. Some of the respondents also commented on the benefits of increased exposure or visibility through the production of OER or OCW materials. When asked about the reasons for creating OER or OCW, about the type of materials created, license terms applied and how they would describe the experiences of creating OER or OCW respondents commented:

> "After my paper explaining my innovative teaching was rejected by a journal I chose to publish it as an OER. It is on UCT OpenContent website. I used CC BY-NC-SA. I was thrilled with this option. I've enjoyed watching the clicks grow, having the opportunity to take control of my contribution and so able to update the material, using it as an example to promote OER. I am busy working on my next resource."

> "I use, and therefore I share. I created slides and used Creative Commons Licensing. It was great!"

> "In my research by publishing journal articles. Posting my lecture slides and videos using creative commons license."

> "OER materials were mostly in the form of video, audio and images. The licensing was Creative Commons. It felt liberating as I was able to contribute without all the usual bureaucratic processes we have to go through."

The fact that only 30% of respondents using OER or OCW in teaching claim to have also produced or claim to have contributed to the production of OER or OCW is disappointing, and yet also encouraging. These findings suggest that a substantial number of OER or OCW users also contribute to their creation. Results from similar surveys appear to confirm these findings. While academics generally seem to recognize the value of OER or OCW, fewer engage in their production, with even fewer willing to share produced OER. Some of the frequently stated concerns in this regard are related to concerns over quality, attribution, lack of control over reuse or modification patterns, lack of incentives/reward mechanisms for producing OER and more (Yuen & Wong, 2013). Furthermore, a study conducted by Yawan & Ying revealed that institutional authorities ranked ownership and possible legal barriers together with concerns over impact on institutional reputation, through concerns over quality, amongst the most significant barriers to producing OER (2013, pp. 21–39).

Identified challenges to using or producing OER & OCW

A number of challenges were identified through this case study that have implications for using or producing OER & OCW. These could be categorized as:

- Lack of knowledge related to regimes governing ownership and use, reuse and modification of OER & OCW
- Lack of awareness about policies/regulations that govern ownership and use of course materials created by faculty
- Institutional support & infrastructural challenges
- Lack of knowledge about the existence of OER or OCW and ability to find appropriate or quality OER & OCW

Licensing issues

The findings revealed that only slightly more than half (52%) of all the respondents (users of OER & OCW) are aware of license terms that govern ownership and use, reuse or modification of OER & OCW (Table 7) and have correctly identified a range of CC licenses to this effect.

Furthermore, only 31% of respondents are aware of policies and regulations that govern ownership and use of course materials created by faculty (Table 8).

Table 7: Awareness of license terms that govern ownership and use, reuse, or modification of OER

Awareness of license terms that govern ownership and use, reuse or modification of OER	Count	Percentage
Yes	25	52%
No	10	21%
No answer	13	27%
Total	**48**	**100%**

Table 8: Awareness of policies and regulation governing ownership and use of course materials created by faculty

Awareness of policies and regulation governing ownership and use of course materials created by faculty	Count	Percentage
Yes	15	31%
No	12	25%
Don't know	10	21%
No answer	11	23%
Total	**48**	**100%**

In the context of producers of OER or OCW, the majority of respondents (75%) are aware of license terms governing the ownership, use, and modification of OER (Table 9).

However, only half of the producers of OER or OCW are aware of institutional policies that govern ownership and use of materials created by faculty (Table 10).

In the context of users of OER & OCW, lack of knowledge related to license terms that govern their ownership and use, reuse or modification might lead to their incorrect use (such as failure to attribute the original source, or performing modifications of existing OER or OCW where the license terms applied prohibit their adaptation). In the context of producers of OER or OCW, lack of knowledge about copyright might lead to incorrect choice of licenses, or to not assigning an open license

Table 9: Awareness of license terms that govern ownership and use, reuse or modification of OER amongst producers of OER

Produced OER	Awareness of license terms that govern ownership and use, reuse or modification of OER			
	YES	**NO**	**No answer**	**Total**
YES	12 (25%)	4 (8%)	0 (0%)	16 (33%)
NO	10 (21%)	6 (13%)	3 (6%)	19 (40%)
No answer	3 (6%)	0 (0%)	10 (21%)	13 (27%)
Total	25 (52%)	10 (21%)	13 (27%)	48 (100%)

Table 10: Awareness of policies and regulations that govern ownership and use of course materials created by you and other faculty amongst producers of OER

Produced OER	Awareness of policies and regulations that govern ownership and use of course materials created by you and other faculty				
	YES	**NO**	**Don't know**	**No answer**	**Total**
YES	8 (17%)	7 (15%)	1 (2%)	0 (0%)	16 (33%)
NO	5 (10%)	5 (10%)	8 (17%)	1 (2%)	19 (40%)
No answer	2 (4%)	0 (0%)	1 (2%)	10 (21%)	13 (27%)
Total	15 (31%)	12 (25%)	10 (21%)	11 (23%)	48 (100%)

at all (in which case the default "all rights reserved" copyright applies). This is demonstrated through comments received from respondents who produce OER or OCW:

"I created Lecture slides/notes. I used no license. It has proven to be very useful."

"I created OER (visual and audio) to improve retention. License: Copyright. It improved attention and interest."

Furthermore, in the context of producers of OER, lack of knowledge about existing institutional policies that govern ownership and use of course materials created by faculty members might lead to conflict between faculty and their institution when, for example, faculty want to release teaching materials as OER or OCW under open licenses, but institutional policy dictates that copyright is held by the university.

The results above appear to resonate with findings by Yawan & Ying, where 53.8 % of producers of OER in their survey did not deal with copyright issues, and with 66.2% not having used any licenses to express the rights that others have to use resources that they have produced (2013, pp. 21–39). While there might be sufficient general knowledge about copyright legislation and Creative Commons licenses, the findings indicate that in-depth knowledge of existing copyright legislation and regimes governing use, reuse or modification or production of OER & OCW is insufficient. This has been identified as one of the principal barriers to using or producing OER by faculty or by institutional authorities (Yawan & Ying, 2013; Daryono & Belawati, 2013; Yuen & Wong, 2013).

Institutional & infrastructural challenges and finding appropriate OER & OCW

Institutional challenges, such as existing intellectual property policies, internet speed or usage rules, lack of support, incentives or reward mechanisms, finding appropriate OER or OCW and lack of awareness about their existence have been identified as additional challenges related to using or producing OER or OCW.

When asked about these challenges, respondents commented:

"Lack of institutional support."

"Some students in neighboring countries battle to download such material."

"My university blocks many sites, amongst them YouTube, not only for students, but also for staff. Furthermore, whilst we have many computer labs and computers many of these are not open to the Internet, as access to the Internet is thus not as easy as it should be for students."

"Time is the biggest challenge. Sometimes I cannot find what I'm looking for. Frequently, it is because I have not used the correct search. If we had a hub for OER in our Faculty we could draw on the expertise of others who are more familiar and experts in finding materials."

"I would like to have more time to explore OER so that I can use it effectively in class. I sometimes have problems with the internet connection being down or too slow."

"Mindset of some in the institutions about OERs."

"Some lecture slides and videos make reference to international terms, which are not used locally."

"Sometimes difficult to upload and download big files dues to bandwidth problems."

"It is a wonderful pathway towards better education for all. However, many teachers and people in powerful positions such as those with vested interests in traditional publishing are creating barriers to further its use."

"More awareness of its existence to lecturers at Universities."

"Materials should be reviewed/moderated by another colleague whose details (experience in the field, qualifications, etc) should appear on the materials—this should become the norm, so that confidence in the correctness of the materials can be enhanced."

"Institutionally, I think many universities in SA are way behind in enabling the use of OER/OCW by staff and students for teaching and learning. For one, open access to all Internet sites in all labs at my university would be a great start."

"The institution holds copyright on all the materials produced as part of my work, so it is not clear if I can make it freely available without consulting the IP office."

The findings have not provided answers as to why certain institutions apply strict Internet usage rules, for example by blocking certain Internet sites. However, it could be argued that many HEIs in South Africa, in particular resource-poor universities in rural areas, exercise strict controls over internet usage, to a large extent, due to the fact that access to reliable, sufficient, and high speed internet is restricted due to infrastructural challenges or relatively high cost of bandwidth.

The respondents have also identified user ability to find relevant and quality OER or OCW amongst challenges inhibiting the use and/or production of OER or OCW. The survey has not probed respondents on their practices related to finding appropriate and relevant OER or OCW. However, findings from recent surveys reveal that lack of awareness related to finding relevant and quality OER or OCW act as one of the main deterrents to using OER or OCW in teaching (Kim, 2013) and appear to suggest that generic searches (such as google or yahoo) are used more frequently than specialized OER repositories which could be linked to lack of knowledge about specialized OER & OCW repositories (Harishankar *et al.*, 2013).

Finally, the findings revealed that lack of institutional support such as existing IP policies related to specifications or lack of clarity as to who owns copyright on teaching resources and lack of support, reward or incentive mechanisms inhibit the use or production of OER & OCW amongst academics further. These findings are consistent with results from other surveys (Abeywardena *et al.*, 2013; Kim, 2013; Yamada, 2013; Daryono & Belawati, 2013; Yuen & Wong, 2013; Yawan & Ying, 2013).

Summary of the main findings and recommendations

The findings from this case study have provided important insights into the current uses, and motivations for using and producing OER or OCW among academics in SA public HEIs. Participants in the case study have been using a variety of OER & OCW in teaching, with images and video lectures identified as the most useful OER in a classroom setting. Making OER & OCW available

as additional resources to students, using such materials to improve their knowledge in the field, including OER & OCW in their teaching materials or course syllabus and using such materials to help develop or revise curriculum for their departments or schools were among the most frequently stated reasons for using OER & OCW. Further elaborations by respondents in this regard revealed that OER & OCW are particularly useful in a context where there is a scarcity of content in certain subject areas, or in their efforts to encourage a more learner-centered approach by helping students develop skills needed in order to evaluate appropriateness of online content. Making classes more interesting and engaging for students, using class time to emphasize class discussions, improving and incorporating new concepts into teaching materials, and streamlining course preparation were identified as the main benefits of using OER & OCW in teaching. In addition to using OER & OCW in teaching, a number of respondents have also produced or contributed to the production of OER or OCW, such as lecture notes or presentation slides, and have identified the resulting increased exposure or visibility as one of the main benefits related to them producing OER or OCW.

The benefits of using OER & OCW in teaching identified through this case study resonate with reported benefits from other studies (Yuen & Wong, 2013; Daryono & Belawati, 2013). The findings revealed that the use of OER & OCW in teaching can have significant positive impact on quality of teaching and learning or quality of teaching and learning materials; all of which, in turn, benefit the students. Furthermore, the findings revealed that many users of OER & OCW, in turn, also contribute to their production. Findings from the OER Health initiative indicate that collaborative production of OER resources has numerous benefits. It leads to the production and sharing of contextually relevant and up to date knowledge; which, in turn, has benefits for all stakeholders involved, including academics, students and higher education institutions (Ngugi & Butcher, 2011). Such findings clearly demonstrate that use, production and sharing of OER or OCW should be encouraged and actively supported by higher education institutions.

Recommendation 1: Emphasize the value of using and producing OER & OCW

In order to encourage institutions to provide support for practices such as use or production of OER & OCW, it can be argued that their use and production is a cost-effective mechanism to revise existing curriculum, and to create teaching resources. It can be argued that it is an extension of higher education offerings in their attempts to provide relevant, quality and up to date educational resources. It can be argued as a potential launch initiative into new collaborative partnerships, as opposed to considering such practices new initiatives, requiring additional resources that are detached from the core activities of higher education institutions.

In the context of this study, further research with students would provide valuable and important insights as to how they perceive the value and benefits of engaging with OER or OCW in their classes. Furthermore, additional research is needed in order to understand how academics practically incorporate or adapt OER & OCW into their teaching resources, examining how they address copyright and investigating what challenges they encounter in this regard. Such information would help to design appropriate and relevant support interventions for such practices.

A number of challenges that have implications for using or for producing OER & OCW have been identified through this case study. These are related to lack of in-depth knowledge about existing copyright legislation, regimes governing ownership of materials created by faculty or open content licensing framework governing use, modification and creation of OER & OCW. Further inhibiting factors in this regard are related to lack of institutional support such as existing IP policies or lack of support mechanisms and incentives. Infrastructural challenges, lack of awareness about their existence and ability to find quality and relevant OER & OCW have been identified as factors further inhibiting their use. These findings, in general, confirm results obtained through similar surveys

(Yuen & Wong, 2013; Yawan & Ying, 2013; Daryono & Belawati, 2013; Harishankar *et al.*, 2013; Abeywardena *et al.*, 2013; Kim, 2013; Yamada, 2013).

Infrastructural challenges, with some universities imposing strict Internet usage rules by blocking certain sites, have been identified by some respondents as inhibiting factors to using OER & OCW in teaching. However, it can be assumed that some of the infrastructural challenges will be mitigated in the near future which could lead to universities relaxing their internet usage rules. For example, in 2010, the Ministry of Higher Education and Training allocated 28 millions to help partially fund development of Internet access networks for rural campuses (Department of Higher Education and Training, 2010). Furthermore, with the installation of new undersea cables this will not only increase access to high-speed, reliable Internet infrastructure but will also contribute to a gradual decrease in bandwidth prices (Gedye, 2012).

The lack of awareness related to finding quality and relevant OER or OCW appears to point, in general, to lack of knowledge about the existence of general as well as specialized, subject or discipline specific, OER & OCW repositories.

Recommendation 2: Address challenges associated with finding appropriate and evaluating the quality of OER & OCW

In addition to highlighting benefits of engaging in the use and production of OER & OCW, there is a need for targeted outreach and awareness-raising about OER & OCW, including how to locate and use appropriate OER or OCW through existing OER & OCW repositories.

More research is also needed to understand which factors academics take into account when evaluating quality and appropriateness of existing OER & OCW for their teaching practice or teaching resources. This would be particularly useful in order to develop vetting mechanisms or indicators that could be used by academics to rank/rate existing OER and OCW for quality.

Furthermore, lack of in-depth knowledge related to existing copyright legislation, regimes governing ownership of materials created by faculty or regimes governing use, creation or modification of OER & OCW is a serious inhibiting factor and requires prompt intervention not only because it can discourage use and production of OER & OCW by academics but also, as demonstrated through other studies, can discourage universities to provide adequate support for such practices.

Recommendation 3: Address copyright-related challenges

Intervention aimed at faculty members clarifying matters related to the ownership and use of materials created by faculty at universities.

Training for faculty and administrators on copyright and open licensing to permit them to better understand how to use, modify or create OER & OCW and the implication thereof. Further awareness raising interventions are needed to help faculty and administrators locate appropriate support mechanisms in this regard. For example, a number of institutions and organizations have created useful training materials on copyright –related matters that are available openly and freely on the Internet. OER Foundation organizes free and open "Open Content Licensing Course for Educators"[18] twice a year. OER Africa provides ongoing guidance[19] related to licensing issues. Creative Commons (CC) has a large worldwide network of CC affiliates[20] in numerous countries (including South Africa) who can be approached for questions or guidance related to copyright. The School of Open[21], launched during the global 2013 Open Education Week[22], also offers a range of courses related to copyright.

Finally, lack of institutional support, such as existing IP policies or lack of support or reward mechanisms has been identified as one of the most significant barriers to using or producing

OER & OCW. Successful use or production of OER is dependent upon its integration into university processes through policies (Ngugi & Butcher 2011; Dhanarajan & Abeywardena, 2013) and through creation of related support or reward mechanisms.

The question related to institutional support interrogates why universities should support practices such as using OER & OCW in teaching, or producing and sharing teaching resources as OER or OCW? An important argument is that the use or production of OER & OCW contributes to improvements in the quality of teaching and learning and teaching resources. It can lead to new international collaborations, which has numerous benefits for students, academics as well as institutions. There is also the argument of knowledge as public good, meaning that research outputs and teaching resources developed through public funds (taxpayers money) should be made publicly (openly) available. However, these arguments alone might not be sufficient to get institutions "on board." The reality is that providing institutional support for such practices would require adoption of broader open content policies (in order to address copyright issues, for example), and also require the creation of related support structures and reward mechanisms. This would require allocation of additional resources (staff and financial). Often, many institutions do not have these resources. In this context, there is a need for a better understanding as to how HEIs are financed and incentivized, as well as how individual academics are incentivized.

There are significant financial subsidies for universities in South Africa for each academic article published by an academic in a recognized academic journal. For academics, publishing articles in academic journals is, in turn, tied to job roles and university promotion mechanisms. What this indicates is that publishing of research outputs in academic journals is required, valued and rewarded. Publishing of teaching resources as OER or OCW, at the moment, is not. This would also explain why there appears to be only one institution of higher learning in South Africa with an approved open content policy while there are numerous universities supporting open access practices, such as depositing copies of research outputs in university's repositories.

Governmental policies can play a significant role in encouraging or discouraging the use of OER or production of teaching resources as OER (Dhanarajan & Abeywardena, 2013; Bossu, Bull & Brown, 2012). At the Global level, UNESCO hosted a global OER congress in June 2012, during which the Paris Declaration[23] on OER was approved with the support of government representatives from around the world. In South Africa, the move towards opening up of education has been recorded in the new proposed HE policy. This aims to expand access to education through increasing distance teaching offerings and the production of OER. These developments indicate steps in the right direction; however, it remains to be seen how such initiatives translate into practice.

Recommendation 4: Address institutional challenges

Further research is needed with university authorities in South Africa to understand how they perceive the value of using OER or producing teaching resources as OER or OCW, what their concerns are in this regard and what kind of support they would need in order to support such practices at higher education institutions.

Provide support for university authorities to help them adopt broader open content policies, clarify any concerns that they might have in this regard or point them to relevant resources for assistance. For example, the recently launched "Open Policy Network"[24] aims to provide support to governments or institutions in developing and adopting open content policies.

Engagement is also needed with government representatives to help them realize the value of OER and OCW and to identify how they could support higher education institutions in this regard through policies and incentives.

Acknowledgements

Notes

1   The original press release (April 2011) announcing MIT's decision to make nearly all of its courses freely available on the internet can be access here: Retrieved from http://web.mit.edu/newsoffice/2001/ocw.html

2   More information about Creative Commons licensing framework is available here: Retrieved from http://creativecommons.org/

3   For a good overview of OER initiatives, please visit: Retrieved from http://en.wikipedia.org/wiki/Open_educational_resources

4   OER Commons is a search engine for OER: Retrieved from http://www.oercommons.org/.
     Furthermore, the OER InfoKit provides a useful list with search engines that can be used to locate OER: Retrieved from https://openeducationalresources.pbworks.com/w/page/27045418/Finding%20OERs
     It is also possible to search for Creative Commons (CC) licensed resources via CC Search: Retrieved from http://search.creativecommons.org/

5   More information about the OCW Consortium: Retrieved from www.ocwconsortium.org

6   You can learn about members of the OCW Consortium here: Retrieved from http://www.ocwconsortium.org/en/members/members

7   OCW Consortium search engine: Retrieved from http://www.ocwconsortium.org/en/courses

8   More information about OER Africa and various OER Africa partnerships is available here: Retrieved from http://www.oerafrica.org/

9   OER Health resources developed through this partnership can be found here: Retrieved from http://www.oerafrica.org/healthoer/Home/tabid/1858/Default.aspx

10   AVU's open courses are available here: Retrieved from http://oer.avu.org/about

11   The portal with free and open courses is available here: Retrieved from http://free.uwc.ac.za/

12   The portal with OER is available here: Retrieved from http://openuct.uct.ac.za/

13   Retrieved from http://www.unisa.ac.za/default.asp?Cmd=ViewContent&ContentID=27755

14   More information about OER University can be obtained here: Retrieved from http://wikieducator.org/OER_university/Home

15   The project is the first of its kind in South Africa and designed to find out about the use of emerging Information and Communication Technologies (ICTs) in teaching and learning across Higher Education Institutions. It is funded by the National Research Foundation. More information about the project is available here: Retrieved from http://www.emergingicts.blogspot.com/

16   Lime survey, a free open source survey application, was used to develop the survey instrument: Retrieved from http://www.limesurvey.org/

17   There are 23 public higher education institutions in South Africa: Retrieved from http://www.che.ac.za/heinsa/

18   More information about the courses is available here: Retrieved from http://wikieducator.org/Open_content_licensing_for_educators/Home

19   More information about available support through OER Africa is available here: Retrieved from http://www.oerafrica.org/aboutoer/OurOperationalApproach/tabid/250/Default.aspx

20   More information about CC Affiliates and the type of work they do is available here: Retrieved from http://wiki.creativecommons.org/CC_Affiliate_Network)

21   More information about the School of Open and the courses is available here: Retrieved from https://p2pu.org/en/schools/school-of-open/

22   The Open Education Week is a global event organized by the OCW Consortium. More information is available here: Retrieved from http://www.openeducationweek.org/

23   The Declaration is available here: Retrieved from http://oercongress.weebly.com/index.html

24   More information about Open Policy Network is available here: Retrieved from http://wiki.creativecommons.org/Open_Policy_Network

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