

365 Days of Openness: The Emergence of OER at the University of Cape Town

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Introduction

Historically, resources such as books, journals, newspapers, audio and video recordings have been fairly well curated in university libraries. However, the same cannot be said for teaching and learning materials, unless they have been included in a textbook or study guide. With the growth in digital media, libraries have been extending their curation of scholarly resources to include electronic journals, digital books and reference guides, broadening access to these beyond the physical walls of the library.

While the growth in digital technology has prompted academics to create their own customised and contextually specific digital media for use in their teaching in the form of PowerPoint presentations, manuals, handbooks, guides, media resources and websites, these resources are most often stored on personal hard drives, on departmental servers or within password-protected institutional learning management systems. Access to these digital materials is usually limited to registered students undertaking specific courses within specific institutions and usually only disseminated by individual academics or departments.

In the early 2000s, institutions such as MIT (Massachusetts Institute of Technology) and Rice University challenged this convention of locking down teaching and learning resources, within institutions or departments or by individuals, by opening access to many of their resources to the rest of the world as Open Educational Resources (OER) (Abelson and Long 2008; Baraniuk 2008). While the move to opening education resources globally was inspiring, UCT had specific local drivers. Not only are university textbooks in South Africa extremely expensive — one study shows that they can cost as much as a third of a student's tuition (Prabhala 2005) — but they usually lack local content, context and case studies. The imperative to make relevant teaching resources available has also

extended beyond the country, given the broader African continental need for appropriate and available teaching resources. In April 2008, UCT joined the open movement by signing the Cape Town Open Education Declaration (www.capetowndeclaration.org/), thereby committing itself to making a selection of its teaching and learning materials available as OER.

In this chapter, we review the first year of UCT's OER initiative, detailing how it came into existence through the financial support of the South African based Shuttleworth Foundation for a university-wide research project, which helped identify existing materials that could be shared as OER. We then recount how the Centre for Educational Technology (CET) developed an institutional directory using a customised version of the open source software Drupal, after conducting an analysis of potentially suitable software. We describe the metadata standard selection process and endeavour to position the UCT OpenContent directory within the OER landscape. We explain the current policy environment at UCT that influences the sharing of OER and how the OER team from CET went about soliciting content from academics to populate the UCT OpenContent directory; and elaborate on how the project developed with sustainability principles in mind and how it has been sustained beyond the original Shuttleworth Foundation grant. Finally, we highlight the signs of change in the UCT landscape and explain how UCT is extending its open footprint through a more encompassing Open UCT initiative, which includes open research (e.g., journal articles and e-books) and "grey" materials (e.g., research project reports, briefing papers for government, conference presentations, posters).

The Emergence of OER at UCT

In 2007, the Shuttleworth Foundation funded an 18-month-long research project, called Opening Scholarship, to explore the opportunities that digital media and open dissemination models could offer for enhanced communication and more effective knowledge sharing at UCT. A part of this project was a review of the current status of OER in South Africa and at UCT, as well as of policy, organisational, technological, legal and financial issues that would need to be addressed to maximise the fragmented approach to sharing teaching and learning resources by individual academics at UCT (Hodgkinson-Williams 2009).

Subsequent to this research project, the Shuttleworth Foundation funded a year-long project in 2009 to implement OER at UCT. The project undertook to:

- develop a central UCT-branded searchable directory of OER created by UCT staff and senior students;
- provide process and infrastructure support to UCT staff to facilitate the sharing of open and potentially open teaching resources as OER, published under appropriate licences (such as Creative Commons); and
- promote the visibility of UCT-published OER on appropriate search engines, on OER aggregators and amongst appropriate target communities.

For the equivalent of about USD 100,000, the OER UCT Project (hosted in the Centre for Educational Technology) agreed to, and delivered on, producing:

- an audit of existing OER at UCT
- a central UCT-branded directory of OER

- a set of online support resources for UCT staff on publishing OER
- five exemplar OER publications
- the transfer of skills from OER specialists contracted during the project period to institutional support staff
- a launch event for the UCT OER directory with follow-up workshops and seminars
- a documented case study of an institutional OER process.

Also in 2009, the Faculty of Health Sciences at UCT was one of eight institutions involved in the formation of the African Health OER Network (www.oerafrica.org/healthoer/Home/tabid/1858/Default.aspx). It was co-facilitated by OER Africa (an initiative of the South African Institute for Distance Education) and the University of Michigan, and funded by the William and Flora Hewlett Foundation. The Network provided support and funding for the conversion of materials to OER in the Health Faculty at UCT and contributed some of the initial materials to the UCT OpenContent directory.

Many invaluable lessons were learned along the way. These are highlighted in this chapter for those considering launching an OER initiative at their institution or who are grappling with how to institutionalise OER initiatives embryonically.

The OER Project Experience at UCT

Bringing Resources from “Below the Radar” and Into View at UCT

The OER team consisted of: a Project Director from CET who spent about 20 per cent of her time on the project; a part-time Project Manager paid by the OER project; a Technical Director from CET who spent about 10 per cent of his time on the project; and two part-time graduate assistants also paid by the OER project.

The initial task for the team was to locate potential OER from existing materials and then to encourage the creation of OER. The former process was quite challenging, as many of the resources that were already being shared in some way were often difficult to find because they were buried deep within departmental websites, within the institutional learning management systems or on public social media sites. However, this process revealed many resources already being shared on the Internet by academics at UCT. The problem of lack of visibility was due to the absence of metadata — a necessary component that attaches descriptive information to a resource. It could be said that these resources were being “shared below the radar,” as it was the intent of the creators that they be shared, but the lack of metadata meant materials were not easily discoverable. In addition to the lack of metadata, the presence of copyrighted images embedded in some materials limited their re-use. Many academics were under the impression that referencing of graphics such as photographs, illustrations and cartoons in their materials meant they could be used and distributed for teaching and learning purposes. Furthermore, most of the materials did not stipulate any usage conditions, making it unclear as to what the author was prepared to share and under what conditions.

What was needed was awareness-raising to shed light on options that would enable the inclusion of legally shareable images, the required metadata that would

make them more discoverable, and the Creative Commons licence that explained the conditions under which these materials could be shared.

Developing the OER Directory: UCT OpenContent

Having explored the range of resources already being shared at UCT, the OER team was aware of the wide variety of resources and associated formats that would need to be accommodated in the planned directory. Many of the educational resources ranged from individual images, audio podcasts, videos and PowerPoint presentations to sets of interconnected Web pages. In order to provide the layer of discovery for these materials, the OER team explored a number of strategies that could provide the functionality of an OER directory.

Deciding on a Directory

Starting with the key issues of discoverability, the team gradually built up a list of specifications including a series of “use-cases” — scenarios of potential contributors and potential users. The key decision emerging out of this process was to create a directory that allowed academics the functionality to add materials to the directory independently. Unlike institutions such as MIT, where they had a group of educational technologists and instructional designers to help academics rework material and upload it to MIT OpenCourseWare, UCT did not have that infrastructure or capacity in place.

Hosting Resources

The OER team decided that the type of resource should dictate the most suitable hosting space. For instance, images could be best hosted on websites in the cloud such as Flickr to take advantage of tagging, linking and geo-tagging facilities. It was decided from the outset that the planned directory should operate as a portal for accessing content rather than hosting content, as initial investigations showed that most teaching materials at UCT were already online. Many were being hosted in the local open source Sakai learning management systems, “Vula” (which means “open” in a number of South African languages), on departmental websites, or on public social media sites. All of these could be easily linked to the directory.

Choosing a Platform

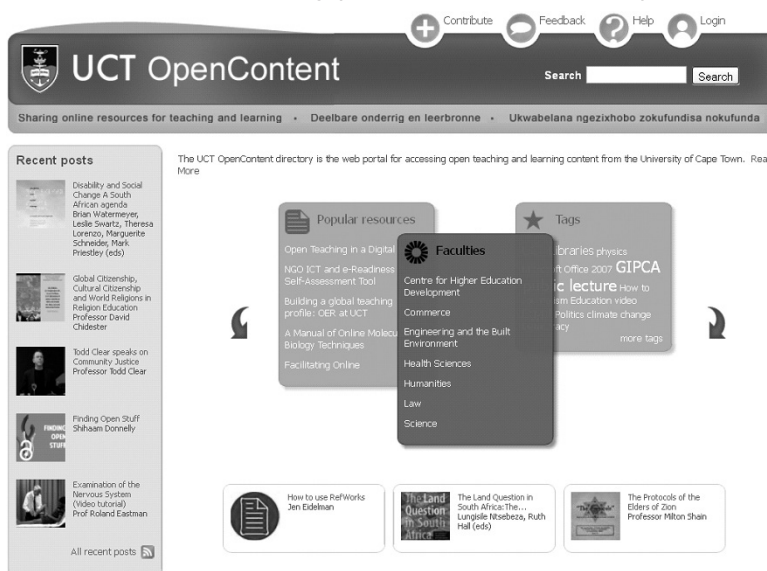
A scan of the OER projects located at other institutions in mid-2009 indicated the use of the popular EduCommons platform, a customisation of the Plone content management system. The OER team tested Plone (Version 3.3) quite thoroughly and found it slightly rigid for the needs of the OER project. Many of the advanced content protection tools were unnecessary for the planned UCT OER directory, as the OER team intended the directory to be open and accessible to encourage willing academics to upload and later revise their materials themselves.

The popular blogging platform WordPress (Version 2.9) was also tested for use as an OER directory. WordPress is recognised as a powerful blogging platform that may also be used to set up a quick standard website. However, the team found WordPress unsuitable for the OER project despite its extensive functionalities.

While WordPress is a powerful system for creating websites and blogs, our analysis showed it was less dynamic when dealing with custom content types and associated metadata.

Finally, the OER team tested Drupal (Version 6.15), a popular content management system which the team found to be highly adaptable and customisable through the various modules that could be added on to the core package. Modules are customisable packages which alter and extend Drupal’s core capabilities, adding new features or customising Drupal’s behaviour and appearance. The OER team was also able to obtain excellent support from the Drupal user community, and in many instances was able to pose questions directly to the programmers who had written the source code for the modules. The immediacy and specificity of the support proved to be essential as the OER team customised the Drupal software to create the UCT OpenContent directory (Figure 3.1). Apart from employing a Drupal consulting company to undertake the specialist programming of key features of the UCT OpenContent design, all the functional customisation was undertaken by the technical team in CET.

Figure 3.1: UCT OpenContent directory (www.opencontent.uct.ac.za).



Choosing Metadata Standards

In order to make the materials on UCT OpenContent globally discoverable, it was essential to choose an internationally acceptable metadata standard used in the OER landscape. In mid-2009, OER Commons was a widely used international OER portal and the team decided to adopt that metadata framework to ensure that OER Commons could easily harvest data from the UCT OpenContent site. The OER Commons metadata framework was based on the Dublin Core standard and included a few additional fields particular to OER.

The OER team added a field called “teaching and learning context” to the OER Commons framework to enable contributors to specify how the resource may be used in an educational context. A further field to credit a funder, if applicable, was also added to the metadata (Table 3.1). The metadata attached to resources added on the UCT OpenContent site are therefore more comprehensive and more

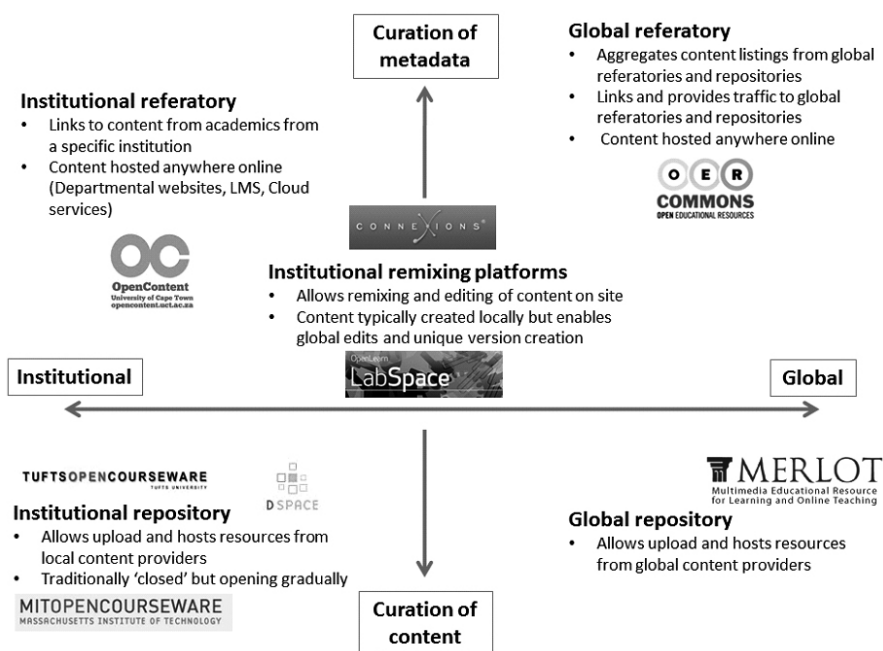
specific to OER than the metadata added to individual items hosted elsewhere (e.g., Flickr). So, in addition to providing basic metadata about the digital media, the OpenContent metadata schema aims to contextualise how the resource may be useful in teaching and learning.

Table 3.1: Metadata terms selected for the OER Commons metadata framework

Field	Required	Description
Title	Yes	Give your resource a descriptive title.
Authors	Yes	Enter the author(s)/creator(s) of the resource.
URL	Yes	Provide the Web address where your resource is stored (e.g., Vula, departmental server). Note: This page does not allow you to upload your resource. The URL you provide gives the direct link to where the resource is located.
Abstract	Yes	Describe the content of the resource in as much detail as possible.
Teaching and Learning Context	No	Describe the recommended learning context or prerequisites for the appropriate use of the teaching and learning tool. This can be as simple as sharing a story of how the material has been used in your own teaching.
Funded by	No	In the case of a resource being an outcome of a funded project, please specify the funding institution.
OER Image	No	You are encouraged to attach an image which represents the resource. This may be an image from within the material, a screenshot of the cover, or a relevant graphic which represents the contents. If you do not provide an image, a suitable one will be selected for you on moderation.
Creative Commons Licence	Yes	Submitting a resource to the UCT OpenContent directory implies the desire to share your educational resource with the world. OER UCT recommends the Creative Commons licence because it protects the attribution rights of the creator while allowing others to make free use of the material.
Faculty	Yes	Select the faculty in which the material was created or the faculty the material most cohesively represents.
Department	Yes	Select the department in which the material was created or the department the material most cohesively represents.
Media Types	Yes	Select the item which best describes the document type of your resource.
Material Type	Yes	Select the item which best describes the material type of your resource.
Language	Yes	Select the language in your resource is written.
Level	Yes	Select the recommended student level for which your resource is intended.
Tags	Yes	Please add tags which describe your resource in more detail. For instance, if you selected the Faculty of Science and the Department of Physics, you might want to tag this resource with something like “Newton’s Laws” if the material is specifically about that topic.

Another specification that emerged from this process was to include Google Analytics within the planned directory so that the OER team could track users, what they were searching for and which resources were accessed most frequently. Figure 3.2 illustrates the type of directory (sometimes also called a “referatory”) that the UCT OER team created in relation to those created by other institutional or global OER entities curating OER content and metadata.

Figure 3.2: The OER curating landscape in the UCT project.



Working Without a Formal Policy

Although the OER team had, in principle, the support of UCT’s senior management to undertake the project, there was no formal policy, mandate or set of procedures in place obliging academics to share their teaching and learning materials outside their classroom. There is no regulation forbidding academics to publish a selection of their materials as OER at UCT. Fortunately, the OER team found many cases where academics were already sharing materials. The team referred to these academics as “institutional champions of openness.”

For example, academics in the Physics Department had been publicly sharing their teaching materials and laboratory practicals via their departmental website for years before the term “Open Educational Resources” was coined by UNESCO in 2002 (UNESCO 2002) or the alternative intellectual property licensing system, Creative Commons, was developed. Likewise academics in the faculties of Health Science had been sharing complete modules in Occupational Health on a fairly limited basis, but wanted to extend the reach of these materials. An academic in Microbiology had already been sharing materials on Molecular Virology on the Internet, while another academic from Information Systems had been producing online textbooks to offer his students more locally relevant and less costly textbooks.

For these academics, “open” was their default strategy for most of their scholarly activities. However, for the OER team, the concept of “open” includes the specification of a Creative Commons licence chosen by the academic to suit the type of materials being shared. For example, many of the Physics materials are now being reworked and include a Share-Alike licence, while some of the materials from Health Science are more restrictive and include a No-Derivatives licence.

Working without a set institutional Creative Commons policy allows creators to select the licence they feel comfortable with. The OER team recommends the Creative Commons Attribution Share-Alike licence (CC BY-SA), as it allows for attribution but also ensures the continued openness of the resource due to the share-alike provision. This provision requires users of a resource to apply the same licence provisions to their newly created resource. In advising academics on which licence to choose, the team would ask about the purpose of sharing their resource, whether the users envisaged at any point making money from the publication of the resource, and how they felt about others changing any aspect of their materials. Furthermore, the team would assess the resources used within the academics' materials to ensure licence compatibility, which would affect the choice of licence.

Soliciting Content from Academics and Populating the Directory

While the directory was being developed, the first challenge of the OER team was to encourage academics to create materials that were planned to be open from the inception. Although it is taking some time for these “Born Open” materials to be developed, the OER team has been able to encourage development through awarding small development grants from both the Shuttleworth Foundation and through the African Health OER Network. With relatively small grants of about USD 1,000, academics adapted existing materials or created new materials as OER. The process of adapting existing materials was usually undertaken by senior students within the same department as the lecturers or by graduate assistants employed by CET or the Faculty of Health Science. Some graphic-intensive materials required the services of the CET graphic artist or a CET intern to create illustrations to replace copyrighted images, particularly cartoons, which had been used without permission in some materials. In many cases, problematic images or diagrams within resources were replaced with images licensed under Creative Commons, sourced via sites such as Flickr.

The next challenges were: getting the academics to ensure that they either held the copyright of the materials or were given permission to use and distribute the materials; identifying a Creative Commons licence that matched the conditions under which they wanted to share their materials; and adding the relevant metadata, along with the materials, on UCT OpenContent in order to make their materials easily discoverable.

The UCT OpenContent directory was launched on 12 February 2010 with 21 learning resources — 16 more than originally agreed on. Eighteen months later, the success of the project is manifest in the growth of UCT OpenContent to 148 learning resources consisting of over 1,000 individually accessible resources. Learning resources consist of comprehensive units, teaching modules, e-books and sets of lectures where a number of materials are combined to meet an educational outcome. The individual resources are the total number of separate individual materials or chunks of content (e.g., graphics) that can be re-used in different contexts.

Sustaining the OER Initiative

The challenge for UCT OpenContent and other institutions actively supporting OER is that “OER initiatives are in danger of running aground” as they suffer from

“incompatibilities with existing institutional cultures and priorities” (Friesen 2009, p. 1). Like other institutions, research outputs are often deemed more “valuable” than teaching materials at UCT and the sharing of teaching materials not part of the institutional culture. As the UCT OpenContent project only had one year of donor funding and no direct institutional funding, thoughts about sustaining the project were considered from the inception of the project.

Although the OER project formed part of permanent CET staff portfolios, the majority of the costs of the project were covered by the grant from the Shuttleworth Foundation that supported the UCT OER project, and from the William and Flora Hewlett Foundation that supported the African Health OER Network. When UCT decided to embark on an OER initiative in 2009, these plans were informed: by the sustainability strategies mentioned in the literature (Downes 2007; Wiley 2007); through reflection on the recommendations from the OpeningScholarship project undertaken at UCT in 2007/2008; through personal communication with members of other OER initiatives (such as the University of Michigan’s Open.Michigan project); and through an in-house workshop at UCT to deliberate the future strategy for the sustainability of OER at UCT (Hodgkinson-Williams and Donnelly 2010, p. 2).

Through iterations of deliberation, the OER team settled on the following key principles for ensuring the sustainability of the UCT OpenContent initiative:

- The OER initiative would be resource-based and not course-based (i.e., based on individual learning resources such as e-books, manuals, lectures captured on podcasts or webcasts, lecture notes or presentations), so that materials from the current collection held by academics could be made available after undergoing a moderation process where potential third-party copyright issues are investigated. This moderation process might range from the quite simple to quite complex, depending on the nature of the materials.
- A “moderation” process by the OER team would only include checking for copyright compliance and not include an institutional quality assurance process, so the responsibility of the accuracy of the resource was taken by the academic author, following the “pride-of-authorship” model.
- UCT OpenContent would generally not host resources, but rather act as a directory, referring to where the resources are already hosted (on the institutional learning management system, on departmental websites, on the Cloud, etc.) in order to reduce duplication and to maximise the use of existing infrastructure.
- The software selection would favour open source software to reduce costs, and would need to be integrated with the UCT login system. A single sign-on service would be provided so that there was no additional username and login required for academics to contribute their resources.
- The software would need to allow individual academics to upload and maintain their resources directly so that the process of making materials available would not need intermediary technical personnel.
- The management of the OER initiative would be built into the portfolio of the Curriculum Development Officer in CET, as this person already deals with supporting the development of digital resources for teaching and learning.

- The maintenance of the UCT OpenContent directory would be included in the portfolio of the CET's Learning Technologies team.
- The OER initiative would be seen as part of a more ambitious OpenUCT project that included making research and community engagement resources available to the general public, and would need to work collaboratively with these “open” initiatives and any other OER initiative such as the Health OER project in the Faculty of Health Sciences (Hodgkinson-Williams and Donnelly 2010, pp. 3–4).

To date, UCT OpenContent has been sustained through the operationalising of these principles and through optimising synergies with other departments and other institutions. Emerging activities have enabled the OER team to extend their “open footprint,” especially in terms of advocacy for OER. Examples included:

- convening a cross-institutional short course on using ICTs [information and communication technologies] in Education for a group of academics from all four of the higher education institutions in the Western Cape (University of Cape Town, University of the Western Cape, University of Stellenbosch and Cape Peninsula University of Technology) as part of the Cape Higher Education Consortium (CHEC); and
- combining forces with another department in the university to co-host a Teaching and Learning Conference, during which OER issues were discussed and OER materials distributed to about 170 UCT academics.

Signs of a Change in the UCT Landscape

In addition to the presence of the UCT OpenContent directory, there have been simultaneous positive changes in the UCT landscape that bode well for the continued development of openness.

The first is the recently revised university intellectual property policy which supports open licensing such as Creative Commons, and has adopted open source as the default for teaching and research related to software development. Also, the premise of access to knowledge that underpins the OER activities is echoed in another new institution-wide project, the Knowledge Co-op (www.knowledgeco-op.uct.ac.za/). This gives external constituencies access to the knowledge, skills, resources and professional expertise within the university around problems they experience. It also provides a framework for research and student training and learning that is grounded in an engagement with society.

At the same time discussions have been taking place about managing participation, contributing local knowledge into global conversations, broadening notions of impact, increasing visibility and harnessing the Internet to further enable UCT's scholarship for innovation and for development. In an unusual approach, UCT is planning to expand the UCT OpenContent directory beyond the resources of teaching and learning to include all scholarly resources. The OpenUCT initiative will optimise the benefits of making a selection of UCT's scholarly resources in the widest sense — teaching, learning *and* research — more readily available to the broader university community as well as to the public.

The greatest long-term sustainability vision is a culture change at UCT, as at other universities, where “open” becomes the default for teaching and learning

materials, for research outputs in all forms, and possibly also for research data. Pressure for this change will come from the call for publicly funded higher education to benefit the public at large — a point especially germane in a society as divided as South Africa. Also relevant is the broader social shift to life lived increasingly online, with the mechanism of access to the Internet often being mobile based.

It is our contention that OER alone will not change the entrenched culture of limiting access to scholarly materials, even while it is an important wedge in the door. We believe that the value of sharing teaching and learning resources will need to be monitored and proved. Some of this will happen through the pedagogical value provided to students within the specific courses for whom the materials were originally created. In a context where throughput rates are a matter of serious concern, access to appropriate resources is critical. Some of the value will result from the access to resources beyond the course to the broader institutional community, with application both for generic competencies as well as contributions to cross-disciplinary understandings. Some of the value will be through cost savings: the availability materials that might otherwise have been too expensive to print and distribute by the usual channels finding a ready platform. And some value may accrue from recruitment of students and cross-institutional collaborative course development, but the UCT OpenContent initiative is still too new to have sufficient evidence of these potential OER benefits, so ongoing institutional research is essential.

The danger is that without some evidence of the benefit of making a selection of teaching and research materials available publicly, the OER initiative will be short-lived, as philanthropic as it may be.

Open Questions and Directions for Further Research

Through our experience of establishing UCT OpenContent, a number of unanswered questions still remain. Key among these:

- Why do academics choose to share a selection of their teaching and learning materials as OER when there is no institutional requirement or incentive to do so?
- Is their choice to share materials on UCT OpenContent or any other platform linked to their “digital identity”?
- What are the key constraints that inhibit academics from sharing a selection of their teaching and learning materials as OER on UCT OpenContent or any other platform?
- How exactly are students, self-learners, other academics and members of the public using the resources on UCT OpenContent?
- Who are the unexpected readers and what are the unanticipated uses of UCT OpenContent resources?
- Which resources would students, self-learners, other academics and members of the public like to have available on UCT OpenContent?
- How does an institutional “directory” compare with a repository model?

- How can educational analytics help to map the OER terrain more accurately and immediately and identify direct or indirect return on investment?
- How does the existence of OER change the ecology of learning resources access, availability and adequacy?
- How does OER challenge, extend or improve the status quo of dissemination of scholarly materials at universities?
- How can OER be made more “discoverable” and most appropriately targeted?
- How can the creation and use of OERs improve teaching, learning and pedagogy?

Conclusion

Although a number of universities around the world, including UCT, have joined the open movement and made a selection of their materials available as OER, this process remains “counter-culture” and disruptive. The UCT OER initiative, like other such initiatives around the world, was launched with funding from donor agencies and has subsequently had to find ways of institutionalising the management of OER.

Some of the key strategies included: using the customisable open source software, Drupal, to create the UCT OpenContent directory; soliciting content from willing academics; capitalising on the fact that academics could host their resources on a range of institutional and public sites; encouraging academics to add resources to the directory themselves; absorbing the UCT OpenContent directory management into an existing portfolio; and extending the open footprint through the more encompassing OpenUCT initiative that includes open scholarly resources.

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