

An OER framework, heuristic and lens: Tools for understanding lecturers' adoption of OER

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Abstract

This paper examines three new tools – a framework, an heuristic and a lens – for analysing lecturers' adoption of OER in higher educational settings. Emerging from research conducted at the universities of Cape Town (UCT), Fort Hare (UFH) and South Africa (UNISA) on why lecturers adopt – or do not adopt – OER, these tools enable greater analytical insights at the institutional and cross-institutional level, and hold the potential for generic global application. The framework – the OER Adoption Pyramid – helps distinguish and compare the factors shaping lecturers' OER adoption which are both immediate (over which they have personal control) and remote (over which they have less or no control). The heuristic – the OER Readiness Tables – derives from the Pyramid and provides a visual representation of the institutions' obstacles and opportunities for OER engagement. The lens – of “institutional culture” – nuances these comparisons so that the analysis remains attentive to granular, idiosyncratic variables shaping OER decisions. We believe this research will have value for scholars interested in researching OER adoption, and institutions interested in promoting it.

Keywords: OER adoption; OER factors; motivation; OER readiness; institutional culture

Introduction

The potential benefits of open educational resources (OER) are advocated widely (West & Victor, 2011) and include increasing access to higher education, decreasing its costs, and improving the quality of materials that result from collaboration and peer scrutiny (Daniel, Kanwar & Uvalić-Trumbić, 2006). In the Global North, where higher education institutions (HEIs) are comparatively well-resourced, a number of universities, such as MIT, have launched expansive initiatives that share OER with the public.

However, despite the infrastructural and resource capacities of many Northern HEIs, OER adoption has yet to become a normative practice across all faculties and disciplines (Kortemeyer, 2013). The reasons most commonly cited for this revolve around a series of deficits, including a lack of: awareness, permission (to create and share), high-quality OER to use, interest, time, and institutional recognition (as shown in Table 1).

Nevertheless, many of the purported benefits inherent to OER would have their greatest impact and utility in the less well-resourced Global South (Bateman, 2008; Butcher, 2009; Kanwar, Balasubramanian & Umar, 2010). The fact that these materials are available online at no cost to the user would, at least theoretically, provide an incentive for resource-constrained institutions and lecturers to investigate the potential of OER use. And the fact that lecturers in the Global South can add locally relevant materials online for other lecturers in the region to use – and thereby move away from a dependence on Northern-based materials – would also, presumably, encourage them to engage in OER creation and sharing.

To explore and enhance this potential, a number of OER initiatives have been launched in the Global South (often in collaboration with, or funded by, a Northern partner). It is difficult to ascertain the importance or impact of many of these initiatives as current studies suggest that the level of engagement with OER remains relatively low not only in Africa (Cox, 2016; Lesko, 2013; Samzugi & Mwinyimbegu, 2013) – where this paper's study is located – but in the broader Global

South (Dhanarajan & Porter, 2013; Hatakka, 2009). Some of the reasons given for this overlap with those given in the Global North, but also include: infrastructural access deficits, technical capacity issues and socially and pedagogically related challenges (Table 1).

Table 1: Reasons given for lack of OER adoption in the Global North and South

Variables	Global North studies	Global South studies
Lack of OER awareness	Reed, 2012; Rolfe, 2012	Hatakka, 2009; Samzugi & Mwinyimbegu, 2013
Lack of legal permission to create and share OER	Fitzgerald & Hashim, 2012	Mtebe & Raisamo, 2014; Flor, 2013; Tynan & James, 2013
Lack of relevant, high-quality OER to use	Clements & Pawlowski, 2012; Willems & Bossu, 2012	Abeywardena, Dhanarajan & Chan, 2012
Lack of personal interest or motivation	McGill, Falconer, Dempster, Littlejohn & Beetham, 2013; Pegler, 2012; Reed, 2012; Rolfe, 2012	Cox, 2016; Gunness, 2012; He & Wei, 2009
Lack of time	Allen & Seaman, 2014	
Lack of institutional recognition for OER adoption	Jhangiani, Pitt, Hendricks, Key & Lalonde, 2016	
Infrastructural challenges, such as low levels of internet penetration, broadband availability, and electricity stability		CERI/OECD, 2007; Ngimwa, 2010
Technical capacity		Lesko, 2013; Wolfenden, Buckler & Keraro, 2012
Social and pedagogical norms		Cox, 2012; Wolfenden, Buckler & Keraro, 2012

To date, there has been little research conducted on South African lecturers' adoption of OER, though there has been growing interest in the field. Hodgkinson-Williams and Donnelly (2010) and Hodgkinson-Williams et al. (2013) provide a first glimpse of the development and push for OER activity at the University of Cape Town (UCT). Cox (2012; 2013; 2016) also examines the situation at UCT, focusing on lecturers' motivations for using and creating OER. Lesko (2013) provides a useful overview of some of the issues involved in academics' perceptions of OER adoption based on survey data from multiple South African universities. Additionally, de Hart, Chetty and Archer (2015) share the results of a survey conducted with staff from the University of South Africa (UNISA) at a time when it was developing an OER Strategy (UNISA, 2014).

These studies provide a good starting point for understanding some of the pertinent factors relating to OER adoption amongst HEI lecturers in South Africa. They helped shape the research that we conducted with the Research on Open Educational Resources for Development (ROER4D)¹ project in which we sought to understand:

- why lecturers adopt, or do not adopt, OER at three South African universities; and
- how such adoption decisions are shaped by a variety of pertinent factors and variables.

(‘Adoption’ here refers to the *use and/or creation* of OER.)

¹ <http://roer4d.org/>

The answers to these questions are fascinating and treated in more detail elsewhere (Cox & Trotter, in press), but in this paper we want to focus on the analytical frameworks, heuristics and lenses that we used to grapple with and extend the value of our data. These analytical devices emerged during the research and analysis process, allowing greater insight not only into the OER adoption activities at these specific research sites, but potentially – as we will argue – to other institutional sites that other OER scholars may engage.

Thus, while we discuss some of the findings that emerged from this research, we do so mainly as a way of assessing the value of the analytical tools that we developed during that research process. They are:

1. An analytical framework: The OER Adoption Pyramid
2. A comparative heuristic: OER Readiness Tables
3. A differentiating lens: The Institutional Culture approach

The purpose of this paper is to examine these analytical frameworks in order to illustrate their potential in other contexts. Our hope is that these tools may have analytical value for other researchers who study OER adoption, especially at the higher education level.

Methodology

For our ROER4D research, we conducted interviews with 18 lecturers at UCT, the University of Fort Hare (UFH) and UNISA, focusing on lecturers' teaching practices as they relate to (potential) open educational activity. In a national context of 26 public universities (and no private ones of similar size or mandate), these three universities possessed qualities that, in their different ways, mirrored a number of the qualities of the other 23, making them useful for comparative purposes.

UCT is a traditional,² urban, residential, medium-sized (26 000 students), research-intensive university with a predominantly face-to-face teaching model. It is comparatively well resourced, historically white (legally so during apartheid), and "privileged" (in South African parlance).

UFH is a traditional, rural, residential, small (13 000 students), teaching-intensive university with a face-to-face teaching model. It is comparatively poorly resourced, historically black "African" and "underprivileged".

UNISA is a comprehensive, dispersed, massive (over 400 000 students), teaching-intensive university with a distance (correspondence) teaching model. It is comparatively well resourced, historically multiracial and modestly privileged.

These three universities, in total, possess a broad spectrum of differentiating qualities shared amongst South African universities: traditional vs. comprehensive, urban vs. rural, residential vs. dispersed, small vs. medium vs. large, teaching vs. research intensive, poorly vs. modestly vs. well resourced, historically black/white/multi-racial, and various levels of historical privilege.

We initiated the research process by carrying out OER workshops at each university in March 2015. Each of the workshops included between 12–19 participants (43 in total at the three sites) and ran for a day-and-a-half, covering the Open movement, opportunities afforded by OER, how and where to find OER online, Creative Commons licensing, and a practical process of adapting or creating an OER.

During the workshops we also provided space for open conversation about teaching practices, disciplinary norms, institutional IP policies, financial resources, and so forth. These conversations were recorded and incorporated into our broader understanding of each university's OER context.

² In South Africa, "traditional" universities offer degrees based on theoretical knowledge, while "comprehensive" universities offer a combination of academic and vocational diplomas and degrees.

After completing the workshops, we conducted one-on-one, in-depth interviews with six selected lecturers at each university, chosen mainly from the field of workshop participants.

At each university we sought to select a diverse group of respondents based on age, gender, race, position and discipline that would, cumulatively, be broadly representative of the institutional teaching staff. The interviews – comprising 50–56 semi-structured questions, depending on the answers given – lasted between 30 minutes and one hour.³

Of the 18 respondents interviewed at the three universities, 11 (61%) were female and 7 (39%) were male. One was a professor, one was an associate professor, six were senior lecturers, six were lecturers, two were postgraduate students (who were also instructors), and two were education consultants connected to a university.

Upon completing the research, interviews were transcribed and the resulting transcripts were compiled for coding according to the concepts identified during the project proposal phase, literature review, and the transcript-processing phase. Data were then collated into themes informed by the literature review relating to the primary and subsidiary research questions (such as OER awareness, use, policies, technical skills, barriers, departmental norms, motivations, perceptions of quality, etc.), annotating them accordingly for analysis.

An Analytical Framework: The OER Adoption Pyramid

When we initially planned this research, we imagined that we would focus solely on the first research question concerning the motivations shaping lecturers' OER adoption activities, or lack thereof. Essentially we wanted to know why they were choosing to adopt OER, or choosing not to adopt OER. We started with this approach due to the circumstances of our own institutional context, UCT, where lecturers were allowed – and even encouraged and supported – to use and create OER. Thus, we assumed that a focus on individual motivations would be appropriate for understanding why they do so, or not.

However, we quickly learned that personal motivation was, for many of our research subjects (especially at UNISA and UFH), irrelevant to whether or not they adopted OER. This was because there were other institutional factors that pre-empted them from even thinking about OER adoption activities, such as a lack of OER awareness, or the lack of an IP policy that allows them to share their teaching materials openly. We realised that, not only was motivation just one of many factors determining OER activity, it was the last one in a chain of factors.

Most OER studies, of course, recognize that there are a multiplicity of factors shaping lecturers' OER choices, even if they ultimately focus on one or two of them as being the most pertinent – as we did by focusing initially with motivation. However, many of them present these factors as serialised lists (e.g. CER/IOECD, 2007; Hatakka, 2009; Pegler, 2012), as if there was a sort of equivalence between them. But our research suggested that many of the factors were actually qualitatively different from each other, and therefore required careful and consistent delineation between them.

Because some of the factors were within the realm of lecturers' personal control while others were less so, or were out of their control entirely, their responses to our questions made it clear that there were categorical differences between these factors that affected how they should be assessed. The varying degrees of control that lecturers had over the many factors shaping their OER adoption decisions had to be incorporated into any analysis of why they may, or may not, adopt OER.

In addition, as we learned, when it comes to OER adoption in most higher education contexts, there are two potential agents of OER activity: *lecturers* and the *institution* itself. While lecturers who

³ The research questionnaire and interview response data is openly available at: <http://www.datafirst.uct.ac.za/dataportal/index.php/catalog/555/download/7679>

develop their own teaching materials may be potential users of OER, they can only be considered potential OER creators if they hold copyright over their teaching materials. In many instances, they do not, as copyright is held by their employers, the institution (Trotter, 2016). When this is the case, the institution should be, analytically speaking, regarded as the potential OER creator because only it has the legal right to license and share the educational materials openly. While the lecturers may have developed the teaching materials used for instruction, if copyright belongs to the institution, then it is the agent responsible for deciding whether the materials can/will be made open or not. Because of this – and the fact that our research sites had varying intellectual property (IP) policies – we had to broaden the scope of our analysis beyond just lecturers as OER adoption decision-makers include, at times, the institution as well.

To address these challenges, we developed an analytical framework based on what we found in the data which can be best described as an “OER adoption pyramid” (Trotter & Cox, 2016). Inspired by Maslow’s hierarchy of needs (Maslow, 1943), it helped us analyse OER activity in the three university research sites and provide a way for assessing the relative importance of a particular factor on lecturers’ (or institutions’) OER adoption activities. The choice of the pyramid suggests a certain prioritisation of factors from the viewpoint of lecturers, in that the factors at the bottom – which are largely externally determined (by the state or the institution) – form a foundation upon which personal volition can be expressed. Without the factors at the bottom being positively provided for, it is difficult for the factors at the top to make much of a difference to eventual OER engagement.

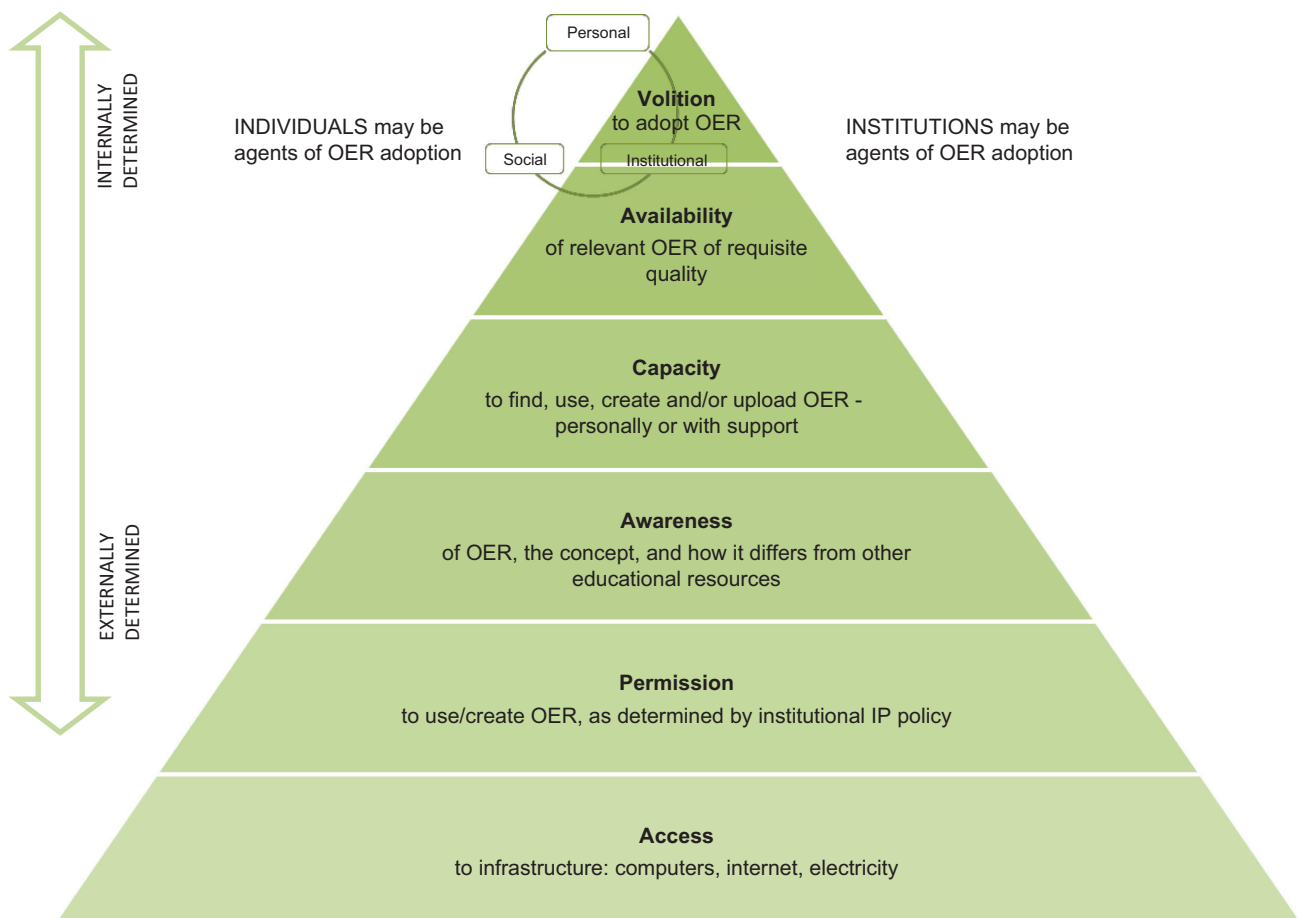


Figure 1: The OER adoption pyramid

The OER adoption pyramid framework (Figure 1) consolidates the essential OER adoption factors into six categories, layered according to the level of control that individual lecturers have over them. Moving from factors that are more externally determined (bottom) to those that are more internally determined (top), they are: infrastructure *access*, legal *permission*, intellectual *awareness*, technical *capacity*, educational resource *availability* and individual (or institutional) *volition*.

Access

The first factor determining lecturers' or institutions' engagement with OER is *access*. This refers to having access to the appropriate physical infrastructure and hardware – such as electricity, internet connectivity and computer devices – necessary for engaging with digitally-mediated OER. It is the factor that lecturers have the least control over, in that it tends to be determined by state resource capacity and provision (for electricity and connectivity) and institutional resource allocations (for computers).

Permission

The second factor is whether lecturers or institutions have *permission* to adopt OER. For OER use, it is the OER itself – via its licensing provisions – that determines the parameters of how it may be used (whether it can be used in part, or must be used in whole; whether it can be commercialised; etc.). For OER *creation*, it is typically the institution's Intellectual Property policy that determines whether the lecturers (the actual developers of the teaching materials) or the institution holds copyright over the teaching materials, and can therefore share them openly. (This legal sharing of educational materials openly is what we are calling OER "creation.")

Awareness

The third factor is lecturers' or institutions' *awareness* of OER. Essentially, the relevant agent must have been exposed to the concept of OER and grasped how it differs from other types of (usually copyright-restricted) educational materials (Hatakka, 2009; Samzugi & Mwinyimbegu, 2013).

Capacity

The fourth factor is lecturers' or institutions' *capacity*, or technical and semantic skills, for using and/or creating OER (Lesko, 2013; Wolfenden, Buckler & Keraro, 2012). This capacity can be manifest in the individual lecturer or found through institutional support services. This characteristic implies that a lecturer or institution enjoys the necessary technical fluency to search for, identify, use and/or create OER, or has access to support from people with those skills.

Availability

The fifth factor concerns the actual *availability* of OER for lecturers or institutions to use or share. For a potential user, this is determined not only by the absolute number of OER in circulation within one's discipline, but by the *relevance* of any particular OER – in terms of content, scope, tone, level, language, format, etc. – for a specific anticipated use (*utility*), and by the *quality* of that OER as judged by the user (Abeywardena, Dhanarajan & Chan, 2012). Given that the development of OER is a relatively new practice, constituting just a fraction of the total number of educational materials created and used globally, one can assume that there are still substantial gaps in the range of

subjects covered by OER. This challenge is exacerbated for those seeking to use materials in a language where OER materials are sparse (Cobo, 2013). For potential OER creators, availability refers to whether the agent has – on hand – educational materials that can be shared openly. In most cases, while they may have materials that were developed for a specific in-class or correspondence teaching context, they would need to make some alterations to the materials (to upgrade the quality, to broaden the relevance, to establish the open permissions) before sharing them openly.

Volition

The final factor in OER adoption relates to individual lecturers' or institutions' motivation or *volition*: their desire or will to adopt OER. If the relevant agent enjoys the access, permission, awareness, capacity and availability necessary to engage in OER activity, then volition becomes the key factor in whether or not they will use or create OER (He & Wei, 2009; Pegler, 2012; Reed, 2012; Rolfe, 2012).

The notion of a lecturer's or institution's volition is, however, complicated because – regardless of who holds copyright over the teaching materials – individual volition is potentially shaped by both social context (departmental and disciplinary norms) and institutional structures (policies, strategies and mechanisms), while institutional volition is often shaped by its lecturers' desires and the social context that abides across multiple sites at the university, as shown in Figure 2 (Cox, 2012; Cox & Trotter, 2016; Wolfenden, Buckler & Keraro, 2012).

Individual volition

At institutions where lecturers are the potential agents of OER activity, the elements shaping their volition are the personal, idiosyncratic, internal beliefs and practices that have bearing on whether they might adopt OER. These include their teaching style (i.e. interactive vs. lecture-based or materials-based), education philosophy, level of self-esteem about their own teaching materials (Beetham, et al., 2012; Davis et al., 2010; Kursun, Cagiltay & Can, 2014; Van Acker et al., 2013), level of concern about others misusing or misinterpreting their work, etc. These are interior variables – fears, concerns, desires, aspirations – arising from within the lecturers themselves.

Institutional volition

However, in many cases, the institution possesses copyright over lecturers' teaching materials (Trotter, 2016). This means that institutional management is in fact the unit of agential analysis regarding OER "creation". While lecturers have the agency to decide whether to use OER in their teaching, the institution would need to decide whether it wanted to openly license and share the teaching materials that it holds copyright over. This decision would be informed by the managerial leaders' educational philosophies (open vs closed), strategies for the institution's engagement with students and the public, and desires for enhancing the brand of the institution. It would also be informed by lecturers' prevailing desires and the social norms of the faculties.

Thus, the value of the OER adoption pyramid is that it enables a structured comparison of the factors involved in OER adoption at an institutional site, whether the focus is on the lecturer or the institution as the agent of analysis. It also shows that not all factors equally shape OER activity, and therefore should not be treated as such. But while the pyramid provides a generalised template for assessing OER activity (or potential activity) at a given institution, it focuses only on the six factors that – we argue – are absolutely necessary for OER engagement. That is, it purposefully keeps a narrow view on only those factors that *must* be in place for OER activity to proceed. This is a useful starting point, especially when analysing contexts where OER activity is either absent or nascent.

There are, of course, many other variables which influence *how* OER opportunities are approached, understood, embraced or ignored, even if they are not essential as to *whether* OER activity may occur or not. Table 2 shows which variables are associated with each factor, allowing us to see the role they play in the broader categorical distinctions provided here.

Table 2: Variables associated with six OER adoption factors (from bottom to top)

OER Adoption Factors	Associated variables for OER users	Associated variables for OER creators
Volition	<ul style="list-style-type: none"> • Teaching style • Education philosophy • Level of self-confidence in own teaching materials • Institutional incentives and recognition • Social context: departmental, disciplinary and collegial norms concerning using OER • Cost/convenience considerations • Temporal ramifications for use 	<ul style="list-style-type: none"> • Self-confidence in own teaching materials • Concern about others misusing or misinterpreting their work • Impact on public profile • Institutional commitment (policies, strategies) • Institutional support (technical, financial, administrative) • Institutional recognition (promotion, awards) • Social context: departmental, disciplinary and collegial norms concerning sharing one's own materials as OER, including implicit and formal recognition • Temporal ramifications for creation
Availability	Perception of an OER's: <ul style="list-style-type: none"> • quality (accuracy, completeness, rigour) • relevance (in terms of epistemic perspectives, scope, language, format, localisation, etc.) • utility (for a specific, anticipated teaching purpose) 	Perception of one's own teaching materials': <ul style="list-style-type: none"> • quality • relevance • utility (for other educators) • Brand concerns: institutions may embark on a formal quality assurance process before sharing OER so as to ensure they bolster the profile of the university
Capacity	<ul style="list-style-type: none"> • Legal knowledge concerning open licensing • Technical skills to search for, identify, download and use (reuse "as is", revise, remix) OER 	<ul style="list-style-type: none"> • Legal knowledge concerning open licensing • Technical skills to openly license one's work and upload (retain and distribute) it for public access
Awareness	<ul style="list-style-type: none"> • Conceptual understanding of difference between OER and other (usually copyrighted) educational materials – as well as the difference between OER use and "fair use/dealing" 	<ul style="list-style-type: none"> • Conceptual understanding of difference between OER and other (usually copyrighted) educational materials
Permission	<ul style="list-style-type: none"> • Parameters of the OER's open license 	<ul style="list-style-type: none"> • IP policies (institutional) • Copyright policies (national/institutional)
Access	<ul style="list-style-type: none"> • Internet access • Computer access • Electricity provision 	<ul style="list-style-type: none"> • Internet access • Computer access • Electricity provision

A Comparative Heuristic: OER Readiness Tables

While it was not our initial intention to assess the institutions' levels of OER readiness – as we were more concerned with lecturers' OER motivation – the analyses that emerged by assessing each one according to the OER Adoption Pyramid framework enabled us to compare how the factors shaped OER adoption potential at the three universities. Other scholars have performed similar analyses of “OER readiness” with lecturers at different institutions (Harishankar, 2013; Harishankar, Balaji & Ganapuram, 2013; McKerlich, Ives & McGreal, 2013; Ngimwa, 2010; Ngimwa & Wilson, 2012; Okonkwo, 2012; Tynan & James, 2013), though we found them less structurally and comparatively useful than that which emerged from our extension of the pyramid.

The pyramid framework prompted us to ask a series of questions – which are standardised here in Table 3 – to help assess the OER readiness at these institutions. The answers allowed us to generate OER Readiness Tables (Table 4) showing which factors acted as obstacles or opportunities to OER activity.

Table 3: Questions to ask OER users and creators – whether lecturers or institutions – to assess OER readiness at an institution (starting from the bottom factor)

Factors	Questions for potential OER users	Questions for potential OER creators
Volition	Do you have any desire to use OER?	Do you have any desire to create and share your teaching materials as OER?
Availability	Have you found OER online – of acceptable relevance, utility and quality – that you can use?	Do you hold copyright over teaching materials – of necessary relevance and quality – that you could license and share as OER?
Capacity	Do you know how and where to search for and identify OER? Do you know how the different CC licenses impact the ways in which you can use an OER?	Do you know how to license your teaching materials so that they can be shared as OER? Do you know where (on which platforms) you can upload your materials as OER?
Awareness	Do you have any knowledge of or experience with OER? Do you understand how Creative Commons (CC) licenses differentiate OER from traditionally copyrighted materials?	Do you have any knowledge of or experience with OER? Do you understand how Creative Commons (CC) licenses differentiate OER from traditionally copyrighted materials?
Permission	Do you have permission (from your curriculum committee, etc.) to use OER for teaching? Does the desired OER allow you use it in your specific context (e.g. no CC-ND licenses on items that will be sold as course material)?	Do you possess copyright over teaching materials that have been developed at your institution?
Access	Do you have (stable) electricity provision? Do you have (stable) internet connectivity? Do you have the necessary computer hardware for OER use?	Do you have (stable) electricity provision? Do you have (stable) internet connectivity? Do you have the necessary computer hardware for OER creation?

With the answers to the above questions in hand, we were able to create colour-coded OER readiness tables showing the universities' varying levels of OER readiness according to three key elements:

- the six factors of the OER Adoption Pyramid;
- the potential agent of OER activity (lecturer or institution); and
- the particular focus of OER adoption (use or creation).

Based on our interviews with the research respondents, our reading of relevant institutional policies, and our engagement with secondary literature and online news articles concerning these factors at each HEI, we differentiated between five levels of readiness per factor corresponding with a red-to-green colour gradation: **red** being very low, **orange** being low, **yellow** being medium, **dull green** being high and **bright green** being very high. This was a subjective determination on our part, involving deduction, comparison and verification (by institutional experts after the fact).

Table 4 shows an example of one of the OER readiness tables that was generated from our research. It reveals the institutions' readiness levels "if lecturers are the agents of OER creation". (As we will see in the findings, if we change the agent of analysis (individual or institution), or the adoption factor under assessment (OER use or creation), then different tables result, e.g. Table 5).

Table 4. Level of OER readiness per factor – if lecturers are the agents of OER creation

OER adoption factor	UCT	UFH	UNISA		
Volition					
Availability					
Capacity					
Awareness					
Permission					
Access					
Key: Level of OER readiness	very low	low	medium	high	very high

Table 4 reveals that, while UCT is "OER ready" for lecturers to create OER, because all of the factors are aligned to allow lecturers to create OER, UFH struggles with multiple challenges – especially permission (lecturers do not have copyright over their teaching materials) and awareness – and UNISA is relatively OER ready, except for the key issue that lecturers there also do not have copyright over their teaching materials (and thus would not be able to legally share them as OER).

Thus, at a glance, the table allows for a quick identification of where the opportunities and obstacles lie for whether lecturers at an institution can create OER. This heuristic is useful for comparative purposes, but also advocacy purposes, allowing institutional stakeholders to see where potential OER-related interventions should focus.

A Differentiating Lens: The Institutional Culture approach

As we engaged with respondents from the three institutions, we noticed that they described the values, ambitions, practices and histories of their institutions in quite different ways. These descriptions did not necessarily relate to OER, but provided glimpses into the social and cultural world in which the lecturers operated and would potentially deal with questions regarding OER. We therefore drew on the literature concerning institutional culture (Bergquist & Pawlak, 2008; McNay, 1995) to help us delineate between the various governance, policy and social traditions at play at these universities. We found that this literature provided a useful set of terms and concepts allowing us to describe and analyse the workings of these institutions as they relate to OER.

We employed "institutional culture" as a broad descriptive concept to help differentiate between these complex organisational entities that are constituted by their dynamic interplay between structural (policy, etc.), social (collegial norms, etc.) and agential (level of individual autonomy, etc.) elements. How these three variables combined at any institution helped us determine the kind of institutional culture that predominated there, allowing us to ask how OER-related activity might proceed.

It also allowed us to understand how these different institutional cultures shaped each university's relationship with the six OER adoption factors, suggesting potential approaches to address associated challenges. Based on this, three institutional culture types were identified as being relevant for the universities: *collegial*, *bureaucratic*, and *managerial* (Cox & Trotter, 2016).

We determined that UCT had a *collegial* institutional culture, defined by a decentralised power distribution and high levels of individual autonomy (Czerniewicz & Brown, 2009; Trotter et al., 2014), which empowers lecturers to act on their own volition regarding OER as they hold copyright over their teaching materials (UCT, 2011). The management promotes this activity through technical, financial and policy support for the lecturers, but does not seek to dictate engagement (UCT, 2014). This determination was based not only on personal experience and conversations at the university (where we are based), but also the readings cited above, an analysis of UCT's relevant policies and the opinions provided by our interviewees concerning the way that power, policy and implementation work at the institution.

Using a similar methodology at UFH (though lacking any corroborating secondary literature), we determined that UFH had a *bureaucratic* institutional culture, defined by a top down power structure where policies are abundant, but only loosely implemented (according to the interviewees). This rendered lecturers unclear about how to proceed with OER adoption, especially since they did not hold copyright over their teaching materials (UFH, 2010). In addition, the management had revealed no plans to share its intellectual property – the lecturers' teaching materials – openly as OER.

UNISA was designated as having a *managerial* institutional culture (Chetty & Louw, 2012), defined by a top down power structure where policies are carefully elaborated and tightly implemented. This privileges managers' agency regarding OER creation over lecturers'. The management had both the permission (UNISA, 2012) and volition to engage in OER adoption, though it had not yet become clear whether UNISA would actually implement its OER Strategy (UNISA, 2014) as key open advocates had moved into different roles at the university (where they might have less influence over OER decision-making) or moved to other institutions after the completion of our research.

While these various culture types did not predict any kind of preference for or hostility towards OER adoption, they did influence how lecturers thought about their own OER volition. Figure 2 shows the final volition factor of the OER Adoption Pyramid. It shows that lecturers (and managers/institutions) are influenced by the personal values of the individual educators, the institutional support mechanisms (financial, technical or policy-based) that may or not be present, and the social norms and expectations of the departments and disciplines they work in.

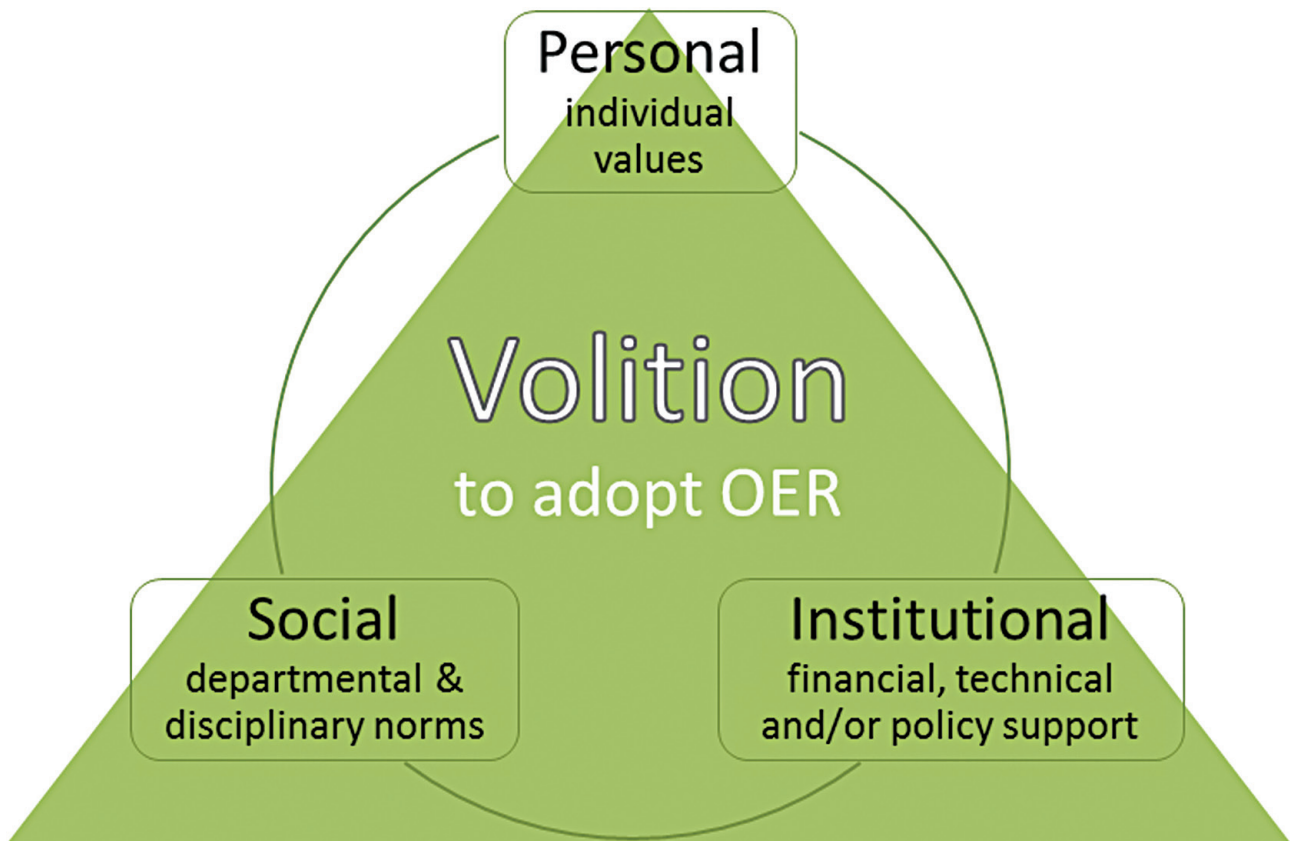


Figure 2: Variables shaping volition in the OER Adoption Pyramid

These three variables shape volition in a myriad of ways, often idiosyncratically, depending on the individual involved. However, the type of institutional culture that predominates at an HEI tends to privilege one of the three variables more than the other, due to the way that power, governance and policy operate there, as we will see in the Findings below.

Findings

We found that the OER Adoption Pyramid framework, the OER Readiness Tables heuristic and the Institutional Culture lens offered a useful way to approach the data that we were collecting on OER adoption at South African HEIs. They even changed the way that we went about collecting data, helping us refine our methodology as we went along.

Initially the OER Adoption Pyramid was used as an analytical framework by itself, but we quickly saw that we could extend the comparative potential of our analyses through the OER Readiness Tables, which emerged from the pyramid framework and is constituted by the data and analyses coming from the institutional investigations. Together, we believe that they offer a powerful mechanism for both analysing and visualising the results of a multi-sited OER adoption analysis.

Institutional OER Readiness

Table 5 shows how these two frameworks work together to create a clean, intuitive illustration of OER readiness at our three research sites. The table actually comprises three different tables that

compare OER readiness at the three HEIs based on whether lecturers are considered the agents of OER use, whether lecturers are considered the agents of OER creation, or whether the institution is considered the agent of OER creation. (There is no fourth table for whether an institution is considered the agent of OER use, as this is a rare possibility in general, and not applicable for the institutions we engaged.)

Table 5. OER Readiness Tables – with comparison based on different agents of analysis

Factor	lecturers as OER users			lecturers as OER creators			institution as OER creators		
	UCT	UFH	UNISA	UCT	UFH	UNISA	UCT	UFH	UNISA
Volition	medium	low	high	medium	low	high	very low	very low	very high
Availability	medium	high	medium	medium	high	medium	low	high	medium
Capacity	medium	low	high	medium	low	high	medium	low	medium
Awareness	medium	very low	high	medium	very low	high	medium	very low	medium
Permission	very high	medium	medium	very high	very low	very low	very low	very high	very high
Access	very high	high	very high	very high	high	very high	very high	high	very high

Key: Level of OER readiness	very low	low	medium	high	very high
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As is hopefully clear, the triptych of tables allows for a useful comparison between the institutions that clarifies their differences and opens up interesting points of engagement for OER researchers and advocates.

Thus, according to Table 5, UCT can be considered “OER ready” if lecturers are potential users or creators, but not if the institution is a creator. This is due to the fact that UCT has reverted copyright over lecturers’ teaching materials to the lecturers themselves, thus denying itself legal permission to share those materials, and revealing its lack of volition to do so. By contrast, UFH is almost OER ready if lecturers are users, but not if they are creators, and not if the institution is either. Lastly, UNISA is moderately OER ready if lecturers are users, not ready if they are creators, but quite ready if the institution is the creator. (This analysis here is just to illustrate the value of the OER Readiness Tables; the data and arguments are substantiated elsewhere (Cox & Trotter, in press).)

Institutional Culture and OER Sustainability

However, if we go further and incorporate the insights gained from the institutional culture lens that we applied during our research process, the resulting analysis becomes more nuanced, helping to understand current OER adoption realities at the HEIs, and allows for sharper speculation about future OER activities based on the dynamics inherent in these differing institutional culture paradigms.

Thus, with UCT's collegial institutional culture, individual lecturers are empowered to act on their own volition regarding OER. This means that the spirit of the culture aligns with the IP policy, suggesting that there will be greater sustainability for an innovation such as OER because adoption activities have been located in the space where they have the highest likelihood of success: with individual lecturers themselves. In other words, there is a crucial connection between permission (who holds copyright) and volition (who wants to act on that permission). If they are not the same agent, this creates a potential challenge for sustained adoption practices.

With its bureaucratic institutional culture, UFH lecturers do not know whether or how they might proceed with OER adoption. They themselves do not have permission to create and share OER, but the institution (the copyright holder of their materials) has no ambition to share them as OER. This is due, in part, to the fact that few lecturers or administrators have much awareness of OER. Thus, this contradiction – of an institution (the agent) holding copyright (permission) over a vast collection of educational materials without any ambition (volition) to leverage them – remains a secondary concern to that of the simple fact that not enough people are aware of OER at UFH. If that changes, then the contradiction could be reviewed from a fresh perspective and the two parties – lecturers and management – could discuss a way forward. Nevertheless, while lack of awareness is currently the primary obstacle to OER adoption, the bureaucratic institutional culture raises general concerns about the relationship between permission and volition.

At UNISA, with its managerial institutional culture, the management has both the permission and volition to engage in OER adoption activity. Thus, while lecturers may use OER in their course materials, they will not be responsible for turning them into OER. The institution will have to take responsibility for that, though it will likely harness the intellectual and labour resources present in the lecturers to ensure that the OER produced conform to the standards set by management. This means that, while lecturers are relieved of the opportunity to create OER themselves, they may still end up participating in a broader OER creation process. From an OER adoption perspective, this alignment promises the highest likelihood of success in a managerial institutional culture.

Institutional Culture and Volition

While institutional culture does not rate as a “factor” in our analytical framework (i.e. no particular type of culture is *essential* for some level of OER activity, in the way that access and permission are), it has a powerful effect on what type of IP permissions are likely in place at the institution and which variable – personal, institutional or social – shapes lecturers' volition to adopt OER. That is, our research (Cox & Trotter, in press) suggested that there was a relationship between the type of institutional culture that predominated at an HEI and the predominant source of volition that would motivate lecturers to engage with OER (Figure 3). (That being said, given the small sample size of research respondents, the following argument is offered tentatively, and it would benefit from further research.)

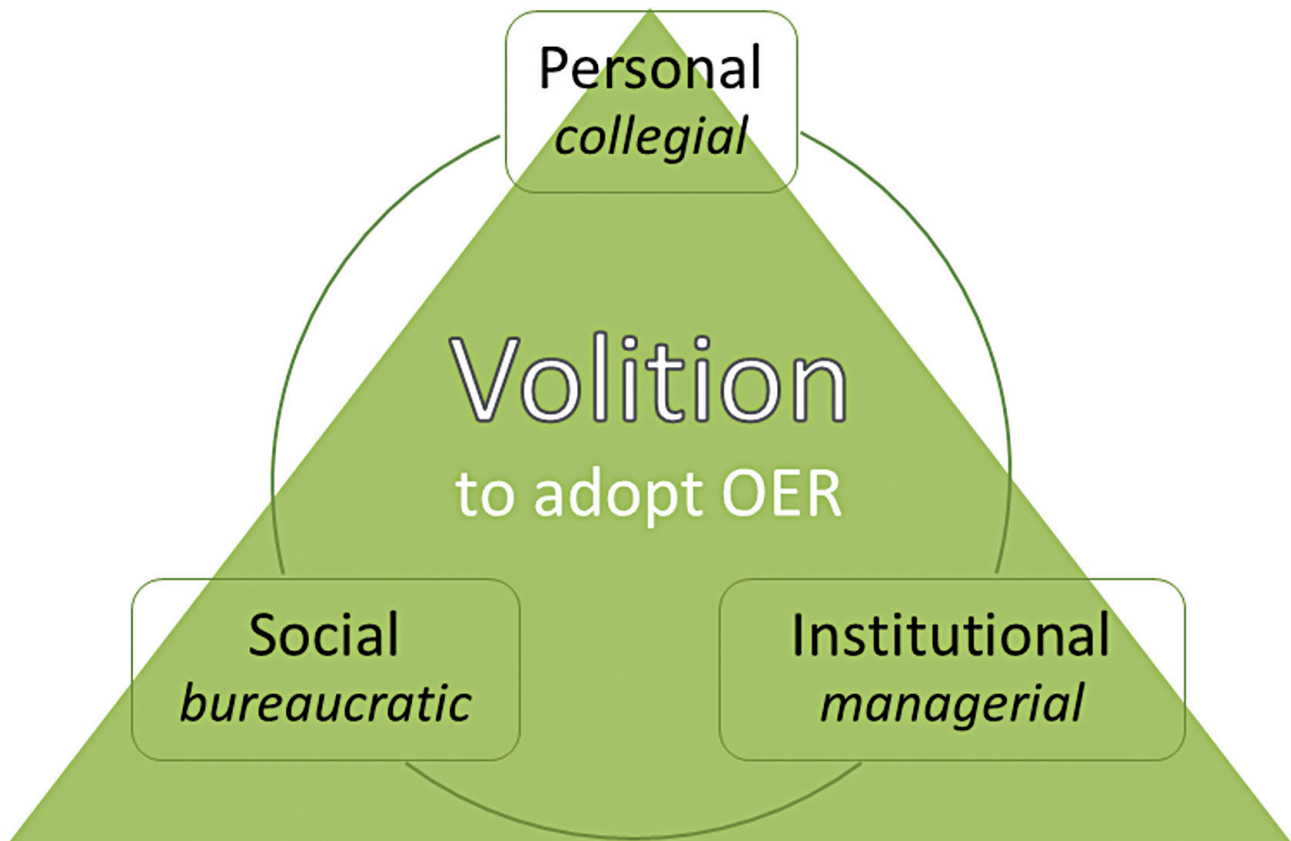


Figure 3: Relationship between volition variables and institutional culture type

Thus, at UCT with its collegial institutional culture, lecturers revealed that their personal values were the most important element driving their actual or potential engagement with OER. Their values, their teaching philosophies and their beliefs surrounding open education were the key to their behaviour regarding OER. They discounted the role that institutional policies played in motivating their OER-related behaviour and claimed that their personal desires were more important than social norms for understanding their decisions.

At UFH, with its bureaucratic institutional culture, lecturers revealed that they felt relatively disempowered at a personal level, a point reinforced by their lack of permission to create and share their teaching materials. Yet, due to the institution's relative lack of awareness concerning OER, and the fact that it had not developed any policy or strategy concerning OER, they did not find the institution to be a highly motivating force for OER-related activities. Indeed, the opposite was the case for our respondents. Thus they tended to claim that they looked to their academic peers in their departments and disciplines for guidance on what pedagogical innovations – such as OER – to incorporate into their teaching practices. They suggested that if there were a “critical mass” of adopters by their colleagues, they would feel more interested to join in. Essentially, due to the perceived lack of managerial guidance on these matters, they looked to their peers for signals on what was worthwhile to engage in pedagogically. Additionally, the critical mass of activity would also give them a form of cover in case the administration ever questioned why they were engaged in a type of activity that had not been officially sanctioned.

At UNISA, with its managerial institutional culture, lecturers stated that they relied on the management to craft clear, coherent policies to guide their actions regarding OER. If such a

policy were established, then they would know exactly what was permitted and how to proceed. Considering that the university had only drafted an OER “strategy” (UNISA, 2014) – of which none of our respondents had ever heard – and not a “policy” (which would have greater institutional force and backing), respondents did not feel that they could act on their personal desires regarding OER, nor could they draw on social norms to overcome or sidestep the institution’s desires. They wanted the management to drive this as they were worried about making mistakes with copyright and potentially embarrassing themselves or the institution – or even worse, bringing a lawsuit upon themselves or UNISA for copyright infringement. Thus the institution’s (i.e. the management’s) volition was the key for motivating OER adoption at this HEI.

Discussion

While the growing number of studies on OER adoption continue to add greater understanding to OER practices or potential in diverse environments, there is some utility in having a broad, analytical framework that allows for multi-site comparisons. We believe that the OER Adoption Pyramid fills this role well and would offer other researchers a useful framework for assessing OER activities in their particular research sites.

By focusing narrowly on only those factors that are absolutely necessary for OER adoption – access, permission, awareness, capacity, availability and volition – the pyramid provides for the type of comparability between institutions that is otherwise lost if simultaneously focusing on both factors (which determine *whether* OER adoption can proceed) and variables (which determine *how* OER adoption might proceed), as these are categorically different in their influence on OER activity. Other studies typically fail to make this distinction, combining them into lists of “barriers” or “enablers” which, analytically speaking, preclude opportunities for careful and consistent comparison with multiple sites, or even with other studies.

For instance, in our research, the OER Adoption Pyramid enabled the identification of the underlying factors that were preventing the adoption of OER at a structural level at UFH and UNISA. It also highlighted that at UCT, where all of the factors are in place for lecturers to act, it was the final factor – volition – that was key to whether lecturers would adopt OER or not.

The OER Readiness Tables, which emerged from the pyramid, can give greater analytical and comparative purchase to multi-sited OER studies. They can help clarify where the real issues are at different institutions, in part because the realities of one institution may reveal how unique or different it is from others. Using a simple five colour profile (based on gradations between red and green), the tables are not only of value for researchers, but for advocates hoping to promote some type of OER-related intervention at a given site. By presenting the information in this fashion, institutional stakeholders should have no difficulty understanding where the key issues reside for potential OER activity.

Refining this even further, the “institutional culture” lens provides greater nuance in institutional analyses. This approach calls for an appreciation for how a prevailing cultural system can shape the direction of OER-related decision-making, even if that system is technically agnostic as to OER itself. The three institutional culture types that we engaged – collegial at UCT, bureaucratic at UFH, and managerial at UNISA – did not possess any inherent preference for or hostility towards OER adoption. However, we did find that it had a powerful influence on how OER decisions were handled at an institution, especially with regards to the factors of permission (who possesses copyright of teaching materials) and volition (whether personal, institutional or social forces matter most for OER motivation).

Conclusion

We believe this research – and these analytical frameworks and concepts – will have value for OER scholars interested in researching OER adoption, as well as for institutions interested in promoting it. While these frameworks were developed and applied in a Global South setting, they may also be applied to institutional settings in the Global North as well. The assumption, until proven otherwise with further use, testing and analysis, is that these frameworks are generically useful and valid. It is hoped that, in the spirit of Openness, these frameworks will indeed be used, re-used, adapted to local contexts and distributed in order to increase our knowledge of the complex phenomenon of OER adoption.

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