OPEN EDUCATIONAL RESOURCES (OER): GUIDANCE FOR INSTITUTIONAL DECISION MAKERS IN DEVELOPING AN OER STRATEGY

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Summary

In the hope of reducing ever-rising educational costs, more universities are turning to open educational resources (OER) as a means of minimizing the financial burden on students. Although initially a transition to OER may seem like a quick economic fix for reducing costs and increasing resource accessibility, it brings with it a variety of multi-layered issues – e.g., copyright and intellectual property issues, OER quality, relevance and applicability, resistance from faculty and the publishing industry, and institutional degree of openness (D'Antoni & Savage, 2009; Wiley, 2010) – each of which need to be addressed before successfully implementing a full-scale OER solution. In addition, institutions need to weigh the degree of openness they choose to engage in, as well as consider the advantages and disadvantages of their approach. This paper will discuss definitions of openness and OER, the benefits and challenges of OER, and current OER implementation strategies, while presenting three case studies of distance education institutions that have adopted OER and a summary of best practices.

Literature Review

Lane (2009) identifies two defining factors of openness: free accessibility using the Internet and limited restriction in using resources, which includes free access to source code, no subscription or licensing fees, and little or no restrictions to copyright and licensing. Openness in education can exist in many forms: open access textbooks and publishing, open courseware, open source software (OSS), massive open online courses, open course design, open delivery, open research, open evaluation, reflection, and scholarship, and open policy (Weller, 2014; Conole & Weller, 2010). OER occupy "a middle ground, intersecting with open access, through open textbooks, and MOOCs, which can be seen as a subset of OERs" (Weller, 2014; p.85). The first definition of OER emerged from a UNESCO conference in 2002, which defined OER as "The open provision of educational resources, enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes" (Hylén, 2009; para.6). In 2002, UNESCO further broadened that definition, stating that OER are "digitalized materials offered freely and openly to educators, students and independent learners to use and reuse for teaching, learning and research" (OECD, 2007; p.10). Hylén (2009) expanded on this definition further, categorizing

materials as: learning content, tools, and implementation resources (para.7). Openness does not automatically equate to "free" or "no cost", and certain restrictions can apply to openness, e.g., in terms of content licensing (Hylén, 2009; para.10; Lane, 2009). The most common license is the Creative Commons license (n.d), which defines the level of openness that can be attached to a work; a simple description of types of OER permissions is Wiley's (2016) five R's of retain, reuse, revise, remix, and redistribute.

Motivating Factors for Pursuing an OER Strategy

De Langen (2013) classifies institutional motives for participating in OER into three categories: the public good motive, the efficiency motive, and the marketing motive. Other categories are innovation and pedagogy motives.

The Public Good Motive: Altruism and Policy. Due to its potential to provide free access to knowledge and to bridge significant digital, societal, and cultural divides, OER is well aligned with academic traditions of altruism (D'Antoni & Savage, 2009; Hylén, 2009; OECD, 2007). In addition, the use of OER can help reap social benefits such as "altruistic public service", boosting human capital through the sharing of knowledge and educational resources (Stacey, 2011). A decision to engage with OER for the public good can also be externally influenced by emerging governmental policies, such as recent decisions by the U.S. Department of Education and the EU requiring open licensing of tools/content using federal funds ("Dept. of Ed", 2015; European Commission, 2015).

The Efficiency Motive: Costs, ROI, Quality, and Student Retention. One of the most commonly cited reasons for moving to OER is the desire to reduce costs, namely textbook cost – although these costs can vary depending on national context (Hylén, 2009; Weller, 2014). Within the U.S., e.g., textbook costs are estimated to be up to 26% of the cost of a four-year degree (GAO, 2005, as cited in Weller, 2014). Senack (2015) suggests that implementing OER could save U.S. students more than a billion dollars annually, as well as generate a return on investment that is six times the initial investment. These cost savings could translate to more tuition income (Fischer et al., 2015), improved student retention (De los Arcos et al., 2014), lower content development costs, improved development and quality processes, and increased innovation (OECD, 2007; pp.11-12; D'Antoni, 2009; Pawlyshyn et al., 2013; Stacey, 2011).

The Marketing Motive: Branding and New Sales Channels. Adoption of OER can be a selling point for many institutions, and by showcasing their use of OER, institutions can better market and improve their brand and public image, as well as attract new students (D'Antoni, 2009; Stacey, 2011; Hylén, 2009; Weller, 2014, OECD, 2007). OER can also support generation of new revenue by giving institutions an opportunity to recruit and channel students into formal education (D'Antoni, 2009, Stacey, 2011; Weller, 2014). The OER Research Hub reports that 31.5% of informal learners see OER as an opportunity to test courses before paying; 24.2% state that they would pay for a course after using OER (De los Arcos et al., 2014).

The Pedagogy Motive: Student-Centered Learning and Faculty Collaboration. Adopting OER can also lead to better teaching and learning practice; improved learning outcomes through more student-centred learning; fewer student failures; better retention; and higher course completion and pass rates (Pawlyshyn et al., 2013, Weller, 2014; Green, 2015; Fischer et al., 2015). Educators can also benefit from producing OER, e.g., through quicker distribution of research results to a wider audience, thus opening up opportunities for including others in quality assurance, idea development, and problem-solving (Hylén, 2009; Stacey, 2011; Pawlyshyn et al., 2013), and furthering boosting reflection on teaching practice (De los Arcos et al., 2014).

The Innovation Motive: The Fear of Being Left Behind. Although not yet mainstream in its adoption (Weller, 2014), OER adoption is a rising trend, and institutions that do not engage with OER run the risk of becoming "increasingly marginalised by market forces" (Hylén, 2009; para.28; OECD, 2007). According to Weller (2014), a move to OER can also support experimentation and innovation within the institution.

Strategies for Engaging in OER

In considering OER strategy, institutions need to decide upon the level to which they will engage with OERs. Weller (2014) describes these levels of OER engagement as: *primary OER usage* (extensive use of OER by educators, who are active proponents); *secondary OER usage* (used practically to support innovative educational approaches, with general awareness of OER licensing); and *tertiary OER usage* (little awareness of OER, which are primarily used for consumption). Another way of viewing level of engagement with OER is proposed by Wiley (2007), who describes these different types of OER reuse: as-is reuse; technical adaptations for reuse; linguistic adaptions for reuse; cultural adaptations for reuse; and pedagogical adaptations for reuse. The level to which institutions choose to engage with OER will strongly influence the type of funding model chosen, so a basic understanding of funding models for OER projects can be beneficial (see Hylén, 2009 for more information).

Challenges of implementing an OER initiative include limited sustainability of the business model; large start-up costs; reluctance of academics to use OER; difficulties in finding and embedding appropriate OER, e.g., due to non-interoperability of technology formats/platforms; poor OER quality; lack of awareness regarding copyright; inadequate institutional support and support infrastructure; absence of incentive; desire of publishers to retain control of the publishing sales channel; and difficulties in sustaining an OER strategy (Kortemeyer, 2013; Weller, 2014; Allen & Seaman, 2014; Green, 2015; D'Antoni & Savage, 2009; OECD, 2007; Wiley, 2007, 2016; Pawlyshyn et al., 2013; Downes, 2007; Hylén, 2009; Straumsheim, 2016; Jacobs, 2014; Senack, 2015).

Methodology

The goal of this research was to identify potential issues and gather current strategic approaches from the field in managing and implementing an OER solution. Research questions addressed within this research were: (a) *What factors need to be considered when planning an OER strategy?* and (b) *What are best practices and critical success factors when implementing an OER strategy?* The primary research methodology used was a mix of standardized open-ended interviews, thus supporting comparisons across institutions and in-depth exploration of issues, strategies, and best practices (Cohen, Manion, & Morrison, 2008; Morgan, 2014; Willis, 2008). Interviews were with individuals responsible for developing and implementing strategies for OER at three distance education universities: Director of Multi-Platform Broadcasting at the Open University United Kingdom; Dean of the University of Maryland University College Undergraduate School (USA); and the UNESCO and Commonwealth of Learning OER Chair at Athabasca University, Canada. Interviews were fully transcribed; emerging themes and strategies were clustered, contextualized, and summarized (Gordon, 1992; Saldana, 2009; King & Horrocks, 2010).

Results

Three interviews from 30-60 minutes each were held from January to February 2016. Over-arching themes were identified: implementation strategies, reasons for and benefits of OER, challenges, and critical success factors. The Implementation Strategies theme includes approaches used by institutional leaders for developing and realizing strategies for implementing OER within their organizations. Reasons for Choosing OER and Benefits of OER were the next themes and are closely related, but with important differences, as a benefit sometimes emerged after the choice was made and did not contribute to the decision-making process. Challenges were those events that have made adaptation of OER difficult for the institution and key stakeholders. Critical Success Factors were the elements identified as those contributing to the overall success of the OER initiative. The following sections summarize the results of each interview surrounding these themes.

Athabasca University (Canada): http://www.athabascau.ca

Founded in 1972, Athabasca University (AU) is a leading online and open university located in Canada and since 2010 has been the host of UNESCO's OECD and Commonwealth of Learning Chair in OER (UNESCO, 1995-2010). AU's early involvement in OER dates back to the 1990s, when a decision was made to use openly licensed course materials for its mobile learning course offerings, in order to avoid potential legal issues due to copyright infringement of commercial content. The AU engaged more deeply with the OER movement after ACCESS Copyright, a Canadian copyright collective, increased its fees for students using its resources from $3.38 per student to $45.00 (Ives & Pringle, 2013). Open education and OER align closely with the AU's open admissions policy and its institutional mission (Ives & Pringle, 2013), and AU has traditionally been a proponent of OER, e.g., through its open access Athabasca University Press (http://www.aupress.ca), its use of open source software

(Moodle), and more recently the establishment of its Open Library at AU (Stewart & Associates, 2006; Elliott & Fabbro, 2015). In adopting OER, the institution saw an opportunity to lower costs and develop and deliver courses more quickly, as well as to increase student motivation and retention rates (Ives & Pringle, 2013). AU has not made an official decision to apply a specific strategy for transitioning to OER; however, executive decision-making about open access and OER use indicates committed support of OER at AU, demonstrated through support of the OER Chair, the Open Library, and open access publishing.

The institution produces OER using "teams of learning designers, subject matter experts, visual designers, and programmers", who produce OERs such as "podcasts, interactive tutorials, crosswords, videos, visualization exercises, and multimedia learning objects", most of which have CC-BY licenses (Ives & Pringle, 2013; p.7). To help instructors prepare to OER, the institution provides OER examples and demonstrations as well as holds "a series of workshops and community conversations" both online and face-to-face (Ives & Pringle, 2013; p.8). OER that have been developed – from individual learning objects to complete courses – are stored in an open repository and given an open license. Success of the strategy is based on the number of OER that are used and prepared by faculty members, and awareness and promotion of OER success stories have been critical to AU's success in using OER (AU Interviewee, 2016). This awareness is also carried out by champions from a variety of disciplines within the institution, from the interviewee to course developers and executive management. As a next step toward realizing OER, the AU will be offering an online, first year program – completely OER – for students; at year-end, students can decide whether to apply for certification of learning (fee-based).

The AU Interviewee's advice for institutions contemplating a transition to OER is threefold: first, institutions need to create awareness for OER; second, provide incentives for faculty to adopt OER; and finally, install and support champions of OER within the organization. The AU has realized numerous benefits from using OER such as: reduced time for developing and producing courses; lowered costs of using commercial content; increased faculty collaboration (both within and outside of the institution); ability to easily adapt content to local needs; reduced dependency on the publishing industry and costs related to using commercial textbooks and sources; and student development and adaptation of own OER. Challenges in adopting OER at AU have included sustainability and funding of an OER approach; difficulties in adapting resources to the Canadian context; a lack of open courses (i.e., availability of the complete course package); and issues surrounding student fees and copyright. According to Ives and Pringle (2013), faculty reluctance to adopt OER has also been a challenge, as has a deficit in skills for incorporating OER into the curriculum. Also, Canadian copyright laws (specifically Fair Dealing rights) are quite open, allowing for extensive reuse of commercial content. As a result, faculty do not always see the value in using OER, since commercial content is readily available.

University of Maryland University College (UMUC) Undergraduate School (USA): http://www.umuc.edu

In 2013, the decision was made by UMUC leadership to move to OER in an attempt to reduce student textbook costs. The movement to OER strongly aligns with UMUC's mission as an open admissions institution, one that focuses on student-centred learning and achieving specific learning outcomes that are aligned with industry need. As of fall 2015, all (over 700) of UMUC's undergraduate courses use embedded no-cost textbooks, and in fall 2016, all UMUC graduate courses also use 100% OER (Klein, 2015). The resulting savings is estimated "to be in the millions for the more than 80,000 students taking classes at UMUC annually" (Klein, 2015; para.3). Cini, UMUC Provost, estimates the savings in the "tens of millions of dollars" (Ludwig, 2015). A shift to OER ultimately reduced textbook costs for students, but also caused a rethinking of the educational approach to be more learner centered and has helped improve learning and performance (Klein, 2015; UMUC Interviewee, 2016). Other benefits of the transition were more flexibility in "switching out" resources, more sharing of resources, and a stronger focus on practical, competency-based learning outcomes that better align with workforce needs. As a result of its OER effort, UMUC was recently recognized by the Open Education Consortium (OEC) in realizing open-source education, receiving the 2015 OEC President's Award (Ludwig, 2015).

In transitioning to OER, UMUC built teams that consisted of: "a program chair, a faculty member or two, a librarian, and a member of the Design Solutions office" (Klein, 2015; para.14). The team-based approach helped ensure that responsibility of finding OER was not placed solely on individual faculty. Librarians and faculty searched for OER – often Creative Commons resources (Klein, 2015) – which would in turn be approved by the program chair. Working together with faculty and the program chair, a gap analysis would be performed, where missing content would be identified. Once suitable OER were found, content would be stored in an internal database (called Equella), and an instructional designer would prepare and incorporate these into courses, aligning the OER and content with learning outcomes. Program Chairs would then approve the redesign.

Factors in measuring success of the strategy include student satisfaction, student performance in terms of grades, and completion rates; OER were not found to have a negative impact on these factors. The next phase in the project will be a focus on improving measurement of student achievement of specific competencies and content effectiveness in supporting learning objectives. Factors contributing to project success were strong institutional leadership and support from management and stakeholders at all institutional levels. The UMUC Interviewee's (2016) advice for institutions considering OER is to involve faculty in the process, and to align the initiative with improvement of the student learning experience. One of the major challenges was in finding appropriate materials (Klein, 2015; para.20). Another challenge was that UMUC had no existing model to follow in making the transition. Initially, teams focused on searching for open textbooks, but soon found that this limited them in their ability to provide course content focused on learning outcomes and the focus quickly shifted

to smaller chunks of OER; also, a large portion of the student population required offline/downloadable access to the resources, which was not an option with many of the open textbook offerings. It was faculty, particularly veteran teaching staff, who needed to readjust thinking about using free resources; newer staff did not have as many difficulties adjusting to the idea of OER (Klein, 2015). Issues around copyright and accessibility also arose, which were handled first by the library, then as needed by UMUC's legal department. This required that UMUC develop a feedback loop in resolving issues as they emerged. Project costs, mostly operational related to searching for and developing OER, also landed squarely on the institution.

The Open University United Kingdom (OUUK) (UK): http://www.open.ac.uk

The Open University (OUUK) is one of the largest providers of online education in the world and the foremost model of open learning institutions within distance education, prominently positioned as a leader within open education and OER. Shortly after MIT introduced its Open CourseWare project, the OUUK was approached by the Hewlett Foundation with an intriguing proposition: would they like to produce OER? Openness and access to education have always been critical to the OUUK mission from both a social and business standpoint, so providing OER was seen as contributing to the overall charter of the institution. Leadership also saw an opportunity to achieve scale by expanding OUUK market reach, as well as to participate in a potentially disruptive innovation. Having received substantial funding from Hewlett for the OER project, the institution made a strategic decision to set out on a journey to expand OER production and distribution and to more prominently position OER both within the institution and the field of online learning.

The Open Media Unit at the OUUK oversees a number of initiatives in support of open learning. Two of these are OpenLearn, which is the OUUK web portal to OER, and FutureLearn, which is the OUUK's open platform for delivering open online courses and supporting MOOC development and delivery. Content is provided using open source software (such as Moodle and Drupal) and platforms (such as Google Play, AudioBoom, Bibblio, and FutureLearn, an OU MOOC host). In implementing its OER strategy, the most senior support have been involved, as well as academics, production, IT, the strategy development unit, business development units (BDU), marketing, and the technology enhanced learning (TEL) unit. Stakeholder groups have played a critical role in contributing to the development of and evaluation of the program, e.g., in considering new pedagogical approaches, business models, market strategies, and uses of technology. As the OER project evolved, management saw the need for a policy that would define how OER would be positioned and used. The current policy (http://www.open.ac.uk/about/open-educational-resources/what-we-do/open-educational-media-operating-policy) defines purpose and types of open educational media within the context of the OU; guidelines for channels and for licensing; key performance indicators (KPIs); operating guidelines (content licensing); and guidelines for partnership and research projects. KPIs play a central role in measuring the success of the OUUK strategy, and a focus on aligning KPIs with institutional mission and

strategy and measuring these meticulously has largely contributed to the project's success (OUUK Interviewee, 2016). Through its OER initiative, the OUUK has strongly positioned itself as a leader within the OER playing field: the MoocLab recently placed OpenLearn in first place in its international open courseware provider league table (2016). In realizing an OER project, the OUUK Interviewee identifies critical success factors such as strategically aligning the project with overall institutional strategy, building on institutional strengths and capacity, incorporating levers for motivation at all organizational levels, identifying clear values for measurement that are aligned with strategy, and engage senior-level and faculty support.

A variety of benefits of the OER project have emerged such as: improvement of the OUUK brand and reputation; expanded reach to new audiences; increased access; growing use of media assets through re-use of content and new technology enhancements; more partnerships; new business and process models; and growth of academic and business research opportunities. More informal learners are also being channelled into formal learning programs at an estimated 1,000 learners annually, thus increasing OUUK revenue. Revenues have also been achieved through the resale of courses to businesses who then repurpose them for individual use, as well as through a Google grant that "complements a commercial marketing budget" (OUUK Interviewee, 2016). Development of new, synergistic partnerships (such as training programs in Africa) and revaluation of established partnerships (such as delivery over the BBC) have also been realized, giving the OUUK competitive advantage through expanded brand awareness and recognition. Competitive advantage has also been realized by monetizing on the OER content by offering MOOCs through FutureLearn. In addition, the move to OER has caused a rethinking of business models, away from content and toward business processes, and has also led to a reimaging of the institutional brand as digitally savvy (OUUK Interviewee, 2016). A major challenge for the project has been in the provision of free OER and in licensing content, although the OUUK benefited from its existing institutional structure for addressing intellectual property and licensing issues. To limit commercial use of content, OER are offered under a Creative Commons CC-BY-NC-SA 4.0. Another initial challenges was the lack of an operational policy, which had the possibility of endangering sustainability of the project. This policy emerged as the project developed.

Discussion

Each institution in this research chose a different strategic approach, although all have a focus on growth. The AU strategy is an emergent, ad-hoc approach that is strongly influenced by external market forces, such as Canada's ACCESS Copyright and the Fair Dealing act. The strategy, albeit unofficial, is based on cooperation and collaborations (e.g., with the OERu), which are realized through the OECD/COL OER Chair based at the AU. AU also places a strong focus on improving processes and performance and on evolving with developments within the industry, as demonstrated through its ongoing adoption of open education practice. UMUC has also adopted a growth strategy, with a focus on achieving competitive advantage by further strengthening its position in the U.S. education market as one of the only institutions in higher education offering programs entirely based in OER. Its process in

defining strategy has been emergent and influenced by customer needs, such as rising student costs and demand for low cost textbook solutions, and the strategy has evolved in alignment with educational industry developments in the U.S. The OUUK strategy can also be viewed as a growth strategy with a strong competitive dimension, as it explores new market opportunities through its OpenLearn and FutureLearn initiatives (market-based positioning). As with the AU and UMUC cases, the OUUK approach has emerged and evolved over time (e.g., in its development of an OER policy) and is based on its core competency as an open university. Institutional financial models also differ. While AU and UMUC rely entirely on institutional funds, the OUUK initiative is primarily funded through endowments and sponsorships (in addition to institutional funding). In all of the case studies presented, a combination of a bottom-up and top-down management approach was prevalent, which could be seen as a major contributing factor to the success of the OER initiatives and is also recommended in OER literature (Pawlyshyn et al., 2013; Stacey, 2013).

Key Elements/Best Practices in an OER Strategy

Before embarking on an OER strategy, an institution should assess its capacity for adopting OER, as well as decide upon its level of OER engagement and openness and its measurements of project success (Pawlyshyn et al., 2013; Weller, 2014). In the case of AU, the success of the initiative was based on the number of OER that were used and prepared by faculty members, while UMUC placed a stronger emphasis on student satisfaction, student performance in terms of grades, and completion rates, and is moving toward measuring the role of OER in supporting student achievement of competencies and learning outcomes. Measurements implemented by the OUUK centred on the conversion of informal learners to formal learners, brand impact, use and value of assets, and revenue income. As demonstrated in the research studies, the choice of measurement can differ based on the institutional approach to adopting OER, as well as on individual context. From the case studies and literature also emerged factors that contributed to OER success, such as executive management leadership and support; alignment of OER strategy with institutional mission and strategy; support and promotion of OER awareness and champions at all institutional levels; establishment of policies for OER management and measurement; incentives and motivational measures, e.g., by incorporating OER development into the tenure process and giving faculty control of intellectual property (Wiley, 2007; Weller, 2014; Jacobs, 2014; Stacey, 2011; D'Antoni, 2009; Friesen, 2009; Yuan et al., 2007; Downes, 2007; D'Antoni, 2009).

The following best practices emerged from the research, supported by the literature (De Langen, 2013; Pawlyshyn et al., 2013; Jung et al., 2016; Friesen 2009; D'Antoni, 2009; Weller, 2014):

- Promoting awareness for OER within the organization, e.g., through testimonials;
- Providing faculty incentives for adopting OER, e.g., by supporting attendance at OER conferences;
- Installing and supporting champions of OER within the organization;

- Using design teams for identifying and incorporating OER and involving faculty in the process;
- Linking the OER initiative to improving the student learning experience;
- Aligning the project with overall institutional mission and strategy;
- Identifying institutional strengths that can contribute to the transition;
- Utilizing available resources such as existing frameworks and the library for evaluating OER content.

Conclusion

From the research presented here, it is clear that there are multiple and diverse benefits for institutions that choose to transition to OER, such as reduced costs, improved teaching and learning practices, greater accessibility to education, and improved learner outcomes. At the same time, the research also reveals real challenges faced by institutions embarking on an OER project, e.g., ability to locate appropriate OER, time and resource investments in adapting and embedding OER, and the costs of maintaining OER. A decision for or against using OER is highly contextual and influenced by a number of factors such as the overall institutional mission, values, and strategy, capacity of the institution to transition to OER (core strengths), external and internal forces, and the institutional motivation for choosing to adopt OER. Whether an OER initiative is successful and sustainable can be influenced by these factors, as well as by the degree of executive commitment and support, existence of institutional policy on OER, and the support infrastructure available for adopting OER. Each of these case studies, however, is a manifestation of how an OER venture can provide unique opportunities for optimizing business models, processes, and content according to individual institutional context and result in measurable benefits and value for the organization.

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