Research Article

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Institutional Measures for Supporting OER in Higher Education: An International Case-Based Study

Abstract: Open Educational Resources (OER) in higher education cannot be put into practice without considering institutional contexts, which differ not only globally but also within the same country. Each institutional context provides educators with opportunities or limitations where Open Educational Practices (OEP) and OER for teaching and learning are involved. As part of a broader research project, and as a follow-up to national perspectives, an international comparison was conducted, based on institutional cases of nine different higher education systems (Australia, Canada, China, Germany, Japan, South Africa, South Korea, Spain, Turkey). Aspects regarding the availability of infrastructure and institutional policies for OER, as well as the existence of measures directed at OER quality assurance and at the promotion of the development and use of OER were covered. The resulting theoretical contribution sheds light on an international comparative view of OER and points towards country-specific trends, as well as differences among institutions. These aspects could provide an impetus for the development of institutional guidelines and measures. In line with international literature on the topic, recommendations are derived to promote/enhance the use of OER in teaching and learning in higher education at the institutional level.

Keywords: Higher education institutions; institutional policies; faculty development; open educational resources (OER); international case-based study.

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1 Introduction

As part of a research project intending to develop conceptualisations of centralised repositories or hubs for digital educational resources, with a special focus on OER, an international comparative study across macro, meso and micro levels was carried out by the Centre for Open Education Research (COER). It focused on investigating factors that impact the development and use of digital educational resources, in particular open educational resources (OER). The study relating to the macro level research (national and province level) examined the state of digital transformation in higher education (HE) in ten countries, as well as the relevance of the political structure (degree of centralisation of the HE system) connected to

the development of OER structures (see results in Marín et al., 2020). The study's micro level research focused on the faculty members' perspectives and use of OER and their repositories across nine of those countries (see results in Marín et al., 2022). However, the middle level, the institutional one (meso level), is also key to understanding faculty members' perceptions and practices, as well as to embodying the concretion of macro level structures in an institution; this is the focus of this article.

A project that serves as background for the present article is the Open Educational Quality (OPAL) Initiative. Within that project, and to better understand practices around the creation and use of OER and address the lack of OER take-up, different OER initiatives were analysed (Conole, 2012). Within the OPAL Initiative, open educational practices (OEP) were defined as: practices which support the (re)use and production of OER through institutional policies, promote innovative pedagogical models, and respect and empower learners as co-producers on their lifelong learning path. OEP address the whole OER governance community: policy makers, managers/administrators of organisations, educational professionals and learners. (Andrade, Ehlers, Caine, Carneiro, Conole, & Kairamo, 2011, p. 12)

As this definition makes explicit, institutional contexts are key factors impacting OEP in HE. For example, a lack of trust, limited sharing in institutional cultures, as well as a low acceptance of OER by educators hinder OER use and access (Ehlers, 2011). Also, Cox and Trotter (2016) note that although institutional policies are important, institutional culture is key in mediating between those policies and academics' decision making. This view is shared by Cronin (2017), who argues that individual agency as educators, related to OEP, is influenced by structure and culture, in that an explicit strategy or policy concerning openness and disciplinary cultural norms and broader social norms is lacking. On the other hand, institutional variables such as the type of education the institution offers or the characterisation of the type of OER supply influence the frequency of OER use (Andrade et al., 2011). Conole (2012) included the factors related to the OER integration practices in four interrelated elements: social factors, policy and enabling environment, skills, and support and technical aspects.

Considering previous research and the scope of the broader COER study, this paper explores how meso level aspects (institutional issues) influence the development of OEP across different HE institutions in nine countries (Australia, Canada, China, Germany, Japan, South Africa, South Korea, Spain and Turkey), specifically: the aspects refer to the availability of institutional and regional infrastructures for OER, relevant institutional policies and guidelines, quality assurance (QA) measures, and strategies for promoting OEP. These issues relate to the institutional challenges recognised for a wider adoption of OER approaches, such as additional support (funding and dedicated human resources) or institutional leadership (institutional policies and strategic planning) (Murphy, 2013). In addition, some of these aspects were included within the dimensions for the analysis of OEP in the OPAL initiative (strategies and policies, barriers and enabling (success) factors, tools and tool practices, skills development and support) (Conole, 2012). In this study we emphasise the meso factors in different institutional cases.

Therefore, the research questions for this study are as follows:

– How does the development of regional and institutional infrastructures for the dissemination of OER in HE vary across countries?
– How does the development of institutional measures for the creation, dissemination and QA of OER in HE vary across countries?
– How does the development of institutional policies for OER digital infrastructures and their implementation in HE vary across countries?
– How does the promotion of change for using OER digital infrastructures in terms of institutional strategic planning in HE vary across countries?

2 Methodology

2.1 Research Method and Design

Following a qualitative comparative case study approach (Yin, 2009), we aimed to examine the research questions in different cases (HE systems and institutions (HEIs), in different countries) to better understand how varying institutional factors influence OEP worldwide, without intending to develop readily generalised conclusions. Such an approach allows researchers to work with large study groups and enables them to reach representative conclusions (Stake, 1995), shedding light on the issues under investigation (in this case, the state of OER institutional measures in HE in different countries), based on the analysis and synthesis of differences, similarities, and patterns across the cases.

2.2 Data Collection and Analysis Process

To represent nine countries accurately, it is important to be an insider to reflect experiences and observations and better interpret the cases (Djuraskovic, & Arthur, 2011; Douglass, & Moustakas, 1985). In this regard, the data source for this international case-based study was the reports from 13 COER experts commissioned for the nine countries. The experts reported using mostly desk research; however, some of them also conducted primary research at a small scale (e.g. (casual) interviews / inquiries, surveys and document analysis). The reports were completed in 2020, before the Covid-19 pandemic.

Based on the reports, this multi-case study presents the main insights of the comparison, regarding the four analysed (meso) factors related to the research questions (infrastructure, quality, policy assurance and change) in institutional cases for the nine countries. Using the expertise of different researchers across the world helps to triangulate the researchers' perspectives which increases the credibility (Denzin, 1978), reliability and validity of the study (Creswell, 2012; Foster, 1997) as well as ensuring the study is representative.

The data analysis was carried out through thematic analysis based on the four elements of the reports described in the research questions (Miles, Huberman & Saldaña, 2013). The draft of the whole report on the OER institutional measures in the different HE systems and institutions was shared with the commissioned COER experts, with whom the results of the comparative work were discussed, and the final version agreed upon.

3 Results and Discussion

The results are presented according to each of the research questions.

3.1 Infrastructure

In terms of regional and institutional infrastructure, we can identify various models that we have classified into three groups (A, B and C). A common model seems to be the existence of independent OER infrastructure per each HEI, especially institutional OER repositories. This happens in all nine countries, although not in all HEIs in each country.

In a *Group A*, we can identify some countries that have a higher number of OER regional networks that build upon a common infrastructure across HEIs than others. Prominently China and also South Korea (hereafter, Korea), are highlighted as having higher numbers of consortia (see Figure 1). Also, Germany has shared infrastructure for OER regional networks within federal states, as well as other OER consortia that go beyond the states.

On the other hand, countries such as Spain, Turkey, Canada and Japan have some OER consortia, but their focus is on individual institutional OER infrastructures (if any) (*Group B*). OER consortia in South Africa, and to a lesser extent in Australia too, are based on a few international networks rather than national inter-institutional infrastructure (*Group C*).

From high to low number of OER shared infrastructure, we will now describe the situation of the shared HE infrastructure in each country.

Looking at the countries in *Group A*, the case of China should be highlighted. In China, the Ministry of Education's *Action Plan for Educational Digitalisation 2.0* (2018) aims to establish an integrated mega-platform to incorporate public educational resource platforms and to build a public system of national digital educational resources. One of the proposed actions is the cooperation between HEIs and other social sectors in developing top quality massive open online courses (MOOCs). Two examples of Chinese shared OER infrastructure between HEIs and other institutions are CNMOOC (*Top Chinese University MOOC Alliance*, open, non-profit, cooperative educational platform, with 101 partner institutions,
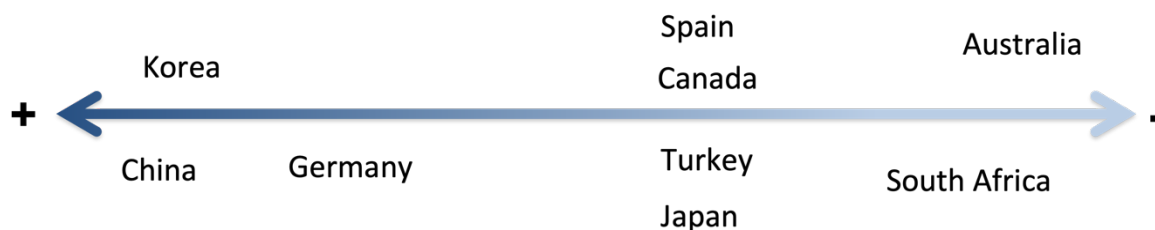
Figure 1: Spectrum High-Low number of OER regional networks. Note: *The location of the countries above or below the line is exclusively for practical reasons (space).*

including 92 HEIs and nine other institutions) and UOOC (*Alliance of Local Universities in China*, with 125 member institutions, open to their students).

In Korea, as in China, OER and open education are considered key strategies for national competitiveness in HE. Apart from the two government-funded organisations for OER described at the macro level, there are different partnerships and consortia involving HEIs in different regions. For instance, the e-Learning Cluster is a collaboration between e-Learning Support Centres of 50 HEIs, e-learning companies and research institutes in the Southeast region to develop online content related to Korean cultural studies; and *A Shared University* initiative is a shared platform where 57 HEIs in Seoul share courses, educational resources, and co-develop and provide MOOCs.

Second in line to the Asian countries, Germany has several OER consortia that include shared federal and inter-institutional infrastructures (Gilch et al., 2019). An example of an interinstitutional consortium is *North Rhine-Westphalia Digitale Hochschule*, a cooperation association of 42 HEIs and the Federal State Ministry of Culture and Science that aims to establish a shared federal OER repository. Another example is the *HE Network Digitisation of Teaching Baden-Württemberg* that aims to further develop digitally supported university teaching with a thematic group on OER (48 HEIs), including the development of a central OER repository for HE in the region.

In *Group B*, we find other countries that have less to no HE inter-institutional infrastructure. Shared infrastructure in the case of Japan is reduced to macro level initiatives (Japan OpenCourseWare [OCW] and JMOOC). It is the same case with Turkey (OCW Project), although a specific MOOC initiative launched by entrepreneurs in collaboration with three major universities exists (*UniversitePlus*).

In Canada, there are isolated OER consortia initiatives within the provinces (e.g., eCampusOntario in Ontario and BCCampus in British Columbia), even though not all HEIs in those provinces participate in all activities organised by these organisations. Interestingly, it is the consortium of university libraries that is more supportive of OER than are the HEIs themselves. In Spain, HE consortia related to sharing OER repositories are MDX (*Materials Docents en Xarxa*) and UniMOOC. MDX is an OER cooperative repository supported by the Consortia of University Services of Catalonia and shared by ten universities to increase the visibility and promotion of teaching and contribute to educational innovation. UniMOOC is a MOOC platform intended to offer online learning to entrepreneurs; it includes two universities and some public and private entities as partners.

In Australia, as one of the countries in *Group C*, several HEIs have partnerships with other international organisations or institutions on OER creation and storage. The only inter-institutional alliance found is the Open Textbook Initiative, a joint effort between six universities.

3.1.1 Individual infrastructure

In terms of individual institutional infrastructure for OER, examples can be found in many HEIs in each of the nine countries, as mentioned previously (see Table 1). For example, in South African HEIs, most repositories are individually university-based. In some cases, the individual institutional infrastructures mainly address open access research outputs; this situation is also common in many HEIs in Australia, Canada and South Africa. Others have a clear focus on OCW or MOOCs (see institutional cases for Japan and Turkey in Table 1), open textbooks (e.g., Queensland University of Technology in Australia) and a mix of different types of OER (see institutional cases for Germany or Spain in Table 1).

The countries with a high degree of centralisation for their HE system (e.g., China and Korea) rely mostly on their regional and national OER infrastructure in the HEIs. For instance, in Chinese HEIs, the use of third-party OER infrastructure seems to be more common.

Although many HEIs across the countries were witnessing digitalisation (see Contexts in Marín et al., 2020), the Covid-19 pandemic has accelerated and given impetus to their digital transformation, which is a much deeper and coordinated shift in terms of culture, workforce, and technology to transform the HEI's operations and enable new models (Brooks & McCormack, 2020). In terms of infrastructure, this has meant the intensive or extended use of existing institutional digital infrastructures (e.g., virtual or digital campuses as projections of physical campuses, see Bozkurt & Sharma, 2020), setting up learning management systems (e.g., the case of some Japanese universities), and/or a rapid investment in tools and online licenses for emergency remote teaching and learning (e.g. videoconference systems) (Bozkurt at al., 2020; Marinoni, van't Land & Jensen, 2020). In this context, OER and OEP were considered key to ensure the continuity of education during the Covid-19 pandemic (Bozkurt & Sharma, 2020; Pelletier et al., 2021) and an exemplary case of this has been China (Huang et al., 2020).

Table 1: Examples of institutional OER infrastructures per institution.

| Countries	Examples of institutional OER infrastructures per institution
Australia	- Queensland University of Technology's Open Textbook Platform (large public research university) (https://qut.pressbooks.pub/) - Swinburne Commons (Swinburne University of Technology, public research university) (https://commons.swinburne.edu.au/)
Canada	- VIURRSpace (concretely RRU) (Royal Roads University, public university) (https://viurrspace.ca/handle/10170/3278)
China	- The Open University of China (China's State Distance-Learning University) (http://www.5minutes.com.cn)
Germany	- OpenRUB (University of Bochum, public university) (https://open.ruhr-uni-bochum.de/) - DuEPublico 2 (University of Duisburg-Essen, large public university) (https://duepublico2.uni-due.de) - Offenen FernUni Hagen (Germany's State Distance-Learning University) (http://offene.fernuni-hagen.de)
Japan	- UTokyo OCW (University of Tokyo, top, public university) (https://ocw.u-tokyo.ac.jp/) - International Christian University OCW (small, private liberal arts college) (https://office.icu.ac.jp/ctl/ict_support/ocw.html)
South Africa	- OpenUCT (University of Cape Town, public research university) (https://open.uct.ac.za)
Spain	- UJI repository (Universitat Jaume I, public university) (http://repositori.uji.es) - PoliformaT (Universitat Politècnica de València, large public technical university) (https://poliformat.upv.es/) - UC3M Digital (Universidad Carlos III de Madrid, public university) (https://bit.ly/37gneKF)
Turkey	- METU OCW (Middle East Technical University, public technical university) (https://ocw.metu.edu.tr/) - AKADEMA (Anadolu University, top, large public open university) (http://akadema.anadolu.edu.tr/) - AtademiX (Ataturk University, public open university) (https://atademix.atauni.edu.tr/, private provider)

Note: The "open" or "distance-learning" universities work completely online.

3.2 Quality Assurance (QA)

As regards QA at the institutional level, we can distinguish between: a) institutional cases in countries with (binding) top-down institutional QA mechanisms for OER, derived from national regulations (China, Korea and Turkey); b) institutional cases with their own independent institutional guidelines for OER QA mechanisms (in Japan, Spain, Canada), and c) institutional cases with basically no institutional OER QA processes, which are left up to the individuals (in Germany, Australia, South Africa) (bottom-up approach) (see Figure 2). This analysis focuses on OER (inter-)institutional infrastructures, without considering general institutional accreditation processes that are common to all HEIs as top-down QA mechanisms.

As a country in *Group A*, all inter-institutional platforms in China have their QA mechanisms. These mechanisms derive from rules and regulations of the Ministry of Education, which supervises the QA of the "Top-quality Courses" projects by requiring HEIs to conduct an annual self-review and has a committee to review course proposals. Overall, individual institutions may vary slightly one way or another in terms of QA, but the core is basically the same. For example, at Tsinghua University (a major research university in Beijing), the project management for implementing the "Top-
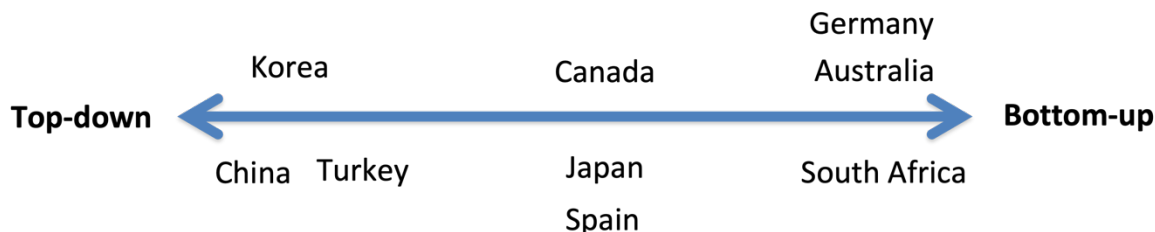
Figure 2: Spectrum Approaches in institutional QA mechanisms. Note: *The location of the countries above or below the line is exclusively for practical reasons (space).*

quality Courses" project takes place under a system of unified planning, carried out by the university's Office of Academic Affairs, focusing on designing instructor-led courses and supported by professional and technical staff at the university (Yang & Duan, 2008).

Similarly, Korea follows a top-down approach, where each university's Centre of Teaching and Learning is responsible for ensuring OER quality at the institutional level, following national guidelines. In addition, HEIs have faculty manuals to ensure that university teachers will create and publish quality OER. As an institutional example, Seoul National University's (a top public university) CLT developed internal evaluation criteria for OCW and MOOCs and formed the Content Quality Management Committee, which is responsible for QA of the university's OER. Turkey also adopted a top-down approach, in which the top management of the HEIs is responsible for institutional OER QA, according to national policies. "Accessibility" (to OER) forms an important criterion in the internal QA of individual HEIs in Turkey.

In *Group B*, there are cases in which own institutional quality mechanisms have been developed. For example, University H's (anonymised large public university in Japan) Centre for Open Education uses a set of key performance indicators related to well-established instructional design strategies for online courses for creating and implementing OCW and other OER. Another example is the International Christian University, which does not have institutional level QA guidelines or criteria for creating its OCW but offers a faculty development program that includes OER, and its Centre of Teaching and Learning contacts individual faculty members who are known to be good instructors across different disciplines to develop some of their class sessions as OCW. In Spain, HEIs supporting the development of OER have institutional QA mechanisms and guides to support faculty in this endeavour. For example, the Universidad Carlos III de Madrid has a Review Committee that developed the *Guide for the OCW Pedagogical Model* to help faculty members with the process of preparing materials and creating

courses that would meet quality requirements (Méndez & Webster, 2015). The guide also includes the rubric with evaluation criteria used by the Quality Group.

In contrast, countries in *Group C* tend to have more bottom-up institutional QA mechanisms. In Australia, there are no QA processes or frameworks related to OER in HEIs (Stagg et al., 2018). In the survey conducted by the COER expert, most of the participants stated either that QA is up to individual members of faculty (academic self-assurance) or that QA processes are non-existent; just a few indicated that some departments or faculties have QA processes for OER. Similarly, South Africa has no institutional QA processes for OER and, therefore, the responsibility lies with academic authors, following the "pride-of-authorship" model (Hodgkinson-Williams et al., 2013). In Germany, however, a province-based platform (Hamburg Open Online University) has QA in place for offerings under its auspices (top-down approach); this is an exception and QA most often does not rely on established and inter-institutional patterns (bottom-up approach).

3.3 Policy

As regards policy at the institutional level, we can distinguish between: a) institutional cases with top-down policies for OER deriving from national regulations (in China); b) institutional cases with policies mostly defined by university leadership (in Korea, Turkey, Australia); c) institutional cases with policies mostly defined by university leadership, but with the co-participation of the educational community in the design to some degree (in Germany, Spain, Canada) and d) institutional cases with basically no institutional OER policies (in Japan, South Africa) (see Figure 3). Although not common, some HEIs have even their own OER policies (in Germany, Spain and Australia).

In China (*Group A*), given that educational digitalisation is a national strategy, all HEIs are assumed to have their own digitalisation plans or measures
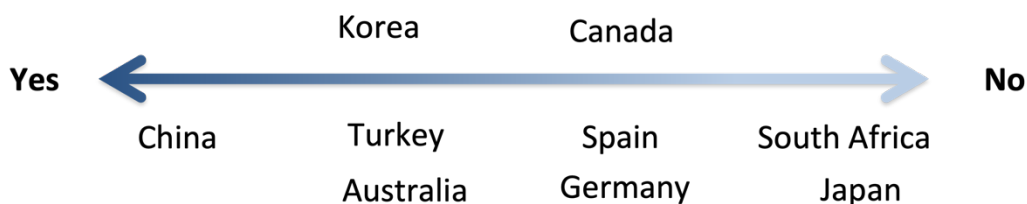
Figure 3: Spectrum Presence/Lack of institutional digitalisation plans (considering inclusion of reference to OER). Note: *The location of the countries above or below the line is exclusively for practical reasons (space).*

accordingly (Xiao, 2019). In the case of the 75 universities which are directly supervised by the Ministry of Education, innovation in instructional models and in modes of learning is specifically mentioned in the institutional digitalisation strategies of 18 universities, although as many as 74 universities specify their targets for instructional innovation elsewhere in their development plans (according to results of content analysis by the COER expert). Only seven universities' joint development efforts concern inter-institutional development of digital educational resources, and 26 universities mentioned inter-institutional sharing of digital educational resources in their *13th Five-Year (2016-2020) Development Plans*. For example, Renmin University of China's (state research university) digitalisation strategy includes the establishment of an agile, smart, open, and sharable digital environment that is intended, among others, to increasingly share library resources, courseware, and online courses among universities, and innovate inter-university online instruction models.

In *Group B*, we identify the important presence of university leadership. For instance, in Korea, each university develops its own policy on the creation and uses of OER and has its office of Academic Affairs & Information & Computer Centres. This office is involved in the development of the institutional strategy for digitalisation, and its Centre of Teaching and Learning at the operational level, supporting teachers and developing, sharing and evaluating OER. For instance, Seoul National University has three different policy frameworks for OER selection and management: a) for internal courses, b) for KMOOCs, and c) for global MOOCs (edX). Another case is Turkey, where individual HEIs are autonomous in developing their own digitalisation strategies and practice, according to HE Law. However, only a few HEIs have written policies for digital transformation. Ataturk University, for example, established an office that works directly with the rectorate to lead institutional digital transformation (the Digital Transformation and Software Office). In Australia, nine universities (21%) have current digitalisation or information technology strategy documents. One university is revising its digitalisation strategy, one has a Digital Literacy Framework, two have blended learning strategies, one university has a Library Strategic Plan relating to OER, and one includes digitalisation within its Learning and Teaching Plan (according to results of content analysis by the COER expert). 55% of the HEIs explicitly mention maximising engagement with OER in their digitalisation strategies. Stagg et al. (2018) found that a mere 25% of HEIs had an OER and/or OEP policy and 15% had OER/OEP

guidelines in 2016, despite 65% of HEIs using or making OER available. OER policy-making largely occurs through library staff and/or university executive committees. Two cases of HE policies for OER are highlighted in Australia: The University of Wollongong and the University of Technology Sydney. The first one has explicitly made open learning a priority in its digitalisation strategy, with a focus on MOOCs and the University YouTube channel (University of Wollongong, 2015). The latter does not have a specific digitalisation plan; however, it has a targeted strategy to openness along four domains, including open education. This refers to the promotion and support for integration of OER into learning design, but also to publishing and distributing OER.

When it comes to *Group C*, there are some institutional examples that combine university leadership (major importance) with educational community co-design. In Germany, only a few federal states have distinct strategies for digitalisation in HE, despite the adoption of a general digitalisation strategy in almost all states, which affects HEIs policies. According to Gilch et al. (2019), 13.6% of the German HEIs in their study (15 out of 110) had already designed a strategy or a concept for the digitalisation in their institution during 2016, 2017 and 2018, and 40.9% were working on it; however, only some of them addressed OER concretely. For instance, the University of Duisburg-Essen's OER repository platform is part of the university strategy for digitalisation in learning and teaching. Reutlingen University (2019) (small, public university of applied sciences) is a notable exception in Germany in that it publishes its own OER policy that encourages faculty members to use OER and to publish their own teaching materials as OER. Similarly, only a few universities have developed digital strategies and plans that will boost the digital transformation of the HEIs in Spain (e.g., Universitat Jaume I). However, many HEIs include strategic lines related to digitalisation and OER within their strategic plans (e.g., Universidad Carlos III de Madrid). Remarkably, the open education policies that exist in Spain have been developed in two large private open (online) universities: the Universitat Oberta de Catalunya Open Knowledge Plan (UOC, 2019), which shows a path to follow to reach a fully open institution, including open learning (teaching materials released as OER); and the Universidad Internacional de La Rioja's Open Education policy (UNIR, n.d.), which specifies the institution's vision towards open education (including OER).

As in Germany and Spain, few universities in Canada have a digital planning framework. Ontario's University of Windsor (public comprehensive university), for example,

enacted OER policies with a Senate motion in 2016 advocating the use of OER, as well as the establishment of an Office of Open Learning that supported the development and use of OER/P. Other Ontario institutions are involved in OER/P, though often without formal and governance-driven policies in place to guide their work (Skidmore & Provida, 2019, p. 18). Digitalisation efforts and policies in the province of British Columbia vary by HEI depending on institutions' aims and goals. For instance, University of British Columbia (top public research university) formed a partnership with edX and invested in providing institutional support for faculty members to enhance their courses with technology. Extensive institutional support for digitalisation in the province also exists at Thompson Rivers University (public teaching and research university), Royal Roads University, and Kwantlen Polytechnic University (public undergraduate polytechnic university).

Finally, we address cases in *Group D*. In Japan, only a few HEIs have developed their OER policies. For example, the most recent strategy report of University H includes the promotion of open education, with a great emphasis on large-scale introduction of education employing ICT. In South Africa, there is no institutional policy that mandates that educational materials produced with public funds be openly licensed (Hoosen & Butcher, 2019). However, some HEIs policies are supportive of academics who want to publish their work as OER. Additionally, academics are already sanctioned to reuse copyrighted materials for teaching purposes. An exceptional case is the University of Cape Town, which is the only public South African HEI that automatically assigns copyright to the author with regard to course materials and encourages academics to share their teaching and learning materials as OER, as is befitting in a collegial cultural environment (Cox & Trotter, 2016). On the other hand, the University of South Africa's (Unisa, the largest open distance education university) Intellectual Property Policy states that Unisa is the owner of all intellectual property created by members

of staff. Unisa Open is the only published (but not yet implemented) OER strategy, which was developed to guide the university in terms of its use of OER, licensing of teaching and learning materials, as well as the management of its own intellectual property (Goodwin-Davey, 2017).

Open education policies involve enabling technical and legal access to knowledge, but also instilling a culture of openness (Atenas, Havemann, Neumann & Stefanelli, 2020). In order to develop the latter, a prerequisite is that policies "are harmonised with national and institutional copyright and intellectual property regulations" (Atenas et al., 2020, p. 15). This is visible and discussed across HEIs, and in particular, in South Africa HEIs.

3.4 Change

Institutional change includes both top-down and bottom-up approaches, depending on the country, and sometimes even on the HEIs (see Figure 4), which we have classified in three groups (A, B and C) that are not completely divisible in specific cases. Clear institutional top-down approaches are followed in HEIs in China, Korea, Turkey and to some extent, Spain (*Group A*). In China and Korea, government policies directly impact university evaluations, and various OER funding calls derive from those policies. In Turkey, projects are usually initiated by HEI administrators, rather than by faculty members. Similar to Korea, most of the Spanish HEIs promote the use of OER infrastructures through institutional grants and prizes.

A mixture of top-down and bottom-up approaches can be seen in the case of HEIs in Germany, Japan, Australia and South Africa, to different extents (*Group B*).

Finally, bottom-up approaches (*Group C*) are common in HEIs in Canada, where OER are not mandated institutionally. Similarly, in South African HEIs, a bottom-up approach to institutional change is the norm.
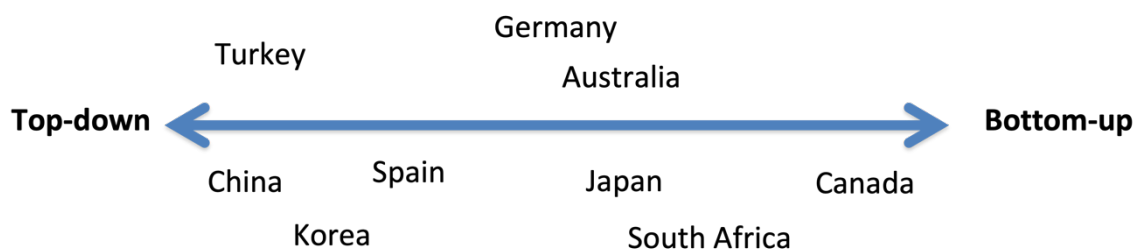

Figure 4: Spectrum Top-down to Bottom-up approaches to institutional change. Note: *The location of the countries above or below the line is exclusively for practical reasons (space)*.

Looking at cases in *Group A*, in China, the call for MOOC proposals from HEIs, which can be seen as a response to national policies and plans, offers an understanding of how HEIs recruit or encourage their faculty members to offer MOOCs. In the majority of HEIs, calls for MOOCs are officially announced by the Office of Educational Affairs in the name of the HEI, often with requirements clearly laid down, hence underlining the importance of the activity. Faculty members are often provided with training in developing MOOCs, which could count towards the mandatory annual professional development workload. However, cooperation in educational resource development and sharing requires institutionalisation related to policy support (e.g., recognition and transfer of credits acquired from OER, appraisal of the quality of OER, accreditation of the operation of their platforms, and protection of copyrights) (Hu et al., 2015). Similarly, in Korea, HEIs overall first analyse the national policies and university evaluation guidelines and then create institutional strategic plans accordingly at the top leadership level. Then, various committees and offices develop action strategies to realise the institutional plans in collaboration with the educational community. Key national policies affecting institutional strategic planning include the promotion of industry-university cooperation and the introduction of a flexible education system (KMOOCs). As an example, in the Seoul National University, based on the President's vision and the university's long- and short-term development plans, the Office of Information System and Technology developed and implemented the institutional strategic plan for digital transformation.

In Turkey, online master's degree programs delivered through distance education centres in HEIs first emerged as part of institutional strategic planning as a change agent. Individual HEIs, especially those that had historically long traditions of open and distance learning, and educational technology, have been voluntarily taking action to create and disseminate OERs and working on transferring their systems into a more digitised structure (e.g., Anadolu University). However, Turkish HEIs suffer from lack of OER awareness, and strategic planning is operated from top to bottom by HEI administrators, meaning that strategic plans are not welcomed with wide participation.

In Spain, institutional strategic planning connected to funding for OER (related to digital plans or the HEI strategy) is common. For example, the Universidad Carlos III de Madrid devised a system to provide teaching staff with the necessary resources for do-it-yourself course production, such as faculty development sessions, help desk, manuals and reference guides for the annual OCW

call. Formal recognition in the form of certificates or authorship acknowledgement is also a recurrent way of promoting change. In Germany, change within the states is initiated mainly through two top-down measures: federal state strategies for digitalisation and different funding schemes. However, the extent to which policy and funding translates into practice is thoroughly dependent on the individual HEIs (bottom-up approach). At the state level, all federal ministries of science and culture offer funding for institutional projects that propose innovative teaching and learning concepts, which might include OER approaches.

In *Group B*, using German HEIs as a case, a predominantly top-down approach derives from funding schemes and strategies of digitalisation of each federal state and HEIs. However, many bottom-up approaches are recognisable based on the involvement of local and federal organisations. In the case of HEIs in Japan, a top-down approach exists but a bottom-up approach to institutional change is the norm, since most OER initiatives are self-funded for a limited period and often led by individual faculty members, which is similar in Australia. In South African HEIs, a bottom-up approach is popular, albeit with some exceptions.

Change in Australia is shaped by government policy, but largely occurs through bottom-up approaches, including a strong push from library staff and through teaching and learning communities of practice. Institutional strategic planning is undertaken through digitalisation strategies only to a small extent. On the other hand, funding to support the development of OER at the institutional level is rare (Stagg et al., 2018), although there are a couple of notable exceptions. For instance, the University of Southern Queensland (medium-sized, public regional university) funded an Open Textbook Grant Scheme in 2015, later renamed the Open Educational Practice Staff Scholarship Scheme (Stagg & Partridge, 2019).

In Japan, in many cases, a HEI's strategic planning regarding digital transformation happens via the university's future plan, presented by its president or a reform committee (top-down approach). Two main OER policy directions are to create and deliver diverse and flexible education programs (JMOOCs) to broaden learning opportunities using advanced technologies and to share educational resources. However, these strategies are usually short of concretion in specific plans, including the allocation of resources. Other identified problems related to the Japanese traditional culture of teaching and learning, the lack of positioning OER as an integral part of HE, as well as a lack of skilled ICT personnel and support organisations (Funamori, 2017). While the

University of Tokyo and University H combine a top-down approach with a bottom-up approach to developing and implementing strategic plans concerning digital transformation, International Christian University often takes a bottom-up approach in making such decisions.

In South Africa (*Group C*), Hoosen and Butcher (2019, p. 33) found that HEI adoption of OER increased where either the institution or individual educators were able to attract funding from international donors and government to support OER initiatives. A case in point is the University of Cape Town's Centre for Innovation in Learning and Teaching, where OER initiatives are financially supported by funds in the office of the Vice-Chancellor and institutional seed funding.

In Canada, change in the area of digitalisation is individually initiated or, at best, program-initiated, usually led by an on-board faculty member. The majority of HEIs have an online learning strategy and most of them see online learning as a strategic priority (Bates, 2019). To support such efforts, faculty members are often provided with opportunities for professional development through centres of teaching, learning and innovation, and made possible with awards, grants, and on-demand resources for a variety of change-making activities.

Overall, however, OEP is not yet mainstream in HE and "more organisational approaches to incentivise teaching in the open" are needed (Nascimbeni & Ehlers, 2020, p. III) to go beyond the resources concept of OER.

4 Conclusions

This study contributes to the literature of OER and OEP at the institutional level in international HE systems and has implications for other institutions that would like to promote OEP. The results obtained in our comparative study support the findings from previous literature and reaffirm the importance of enablers and barriers in the institutional context in terms of infrastructure, policies, quality and change (Cox & Trotter, 2016; Murphy, 2013). Funding, cultural/institutional norms, and institutional policies seem to be the most important factors at this meso level worldwide (Cronin, 2017; Ehlers, 2011) and, therefore, are recommended to be analysed and clearly defined in each HEI. Using the OPAL OEP matrix could be a good way for HE administrators and leadership to start analysing OEP in their institutions and plan for future action in order to boost OEP and use, creation, sharing and repurposing of OER (Conole, 2012). For example, a vision of openness and a strategy for OEP in the organisation as top-bottom approach can provide a framework within which to

implement OEP, whereas future actions to implement and promote OEP – for instance, including incentives and support mechanisms - can entail an important push to change in educational practices.

Benefits and challenges can be derived from both top-down and bottom-up implementations in terms of OER policy, approaches to change, and QA mechanisms in HEIs. Whereas having top-down approaches ensures that OEP are mandatory and there is a vision/strategy, bottom-up approaches seem to also be necessary, in order to get an active involvement of faculty members in OEP at the institutional level. Our findings indicate that a mixture of both approaches, perhaps with strong (but not inflexible) leadership, may have potential in terms of promoting OEP at this meso level.

Limitations of this study include the diversity of methods used for data collection, which was not homogeneous among reporting countries and which, therefore, only enabled us to present data as a theoretical contribution, mainly based on desktop research.

Future research will consider the results of the macro, meso and micro levels in regard to identifying emerging barriers and enablers for OEP, which will enable further comparison with previous studies (e.g., Andrade et al., 2011). Furthermore, it would be equally worthwhile to examine the institutional context for OEP/R in the post-Covid-19 era.

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