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Open Practices in Public Higher Education in Portugal: faculty perspectives

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Abstract

In recent years, the Open Educational Resources (OER) and Open Access (OA) movements have been essential in creating opportunities in all scholarly activities, within the context of higher education. The main purpose of this research was to understand how perceptions and practices of faculty towards OER are related to their perceptions and practices towards OA. It is an exploratory and descriptive study, with a mixed methods approach, undertaken in Portugal. Results indicate that, although faculty already show some degree of knowledge and use of OER and OA in their teaching and research practices, there is still a general lack of knowledge in both fields. However, the convergence of perceptions regarding both fields provide evidence on the possibility of a common approach to both fields in faculty's educational practices, with the purpose of opening up their educational and scientific resources, thus reinforcing the principles of transparency, collaboration and openness to knowledge.

Keywords: Open Educational Resources; Open Access; Open Education; Open Educational Practices; Scholarship

Introduction

As with all spheres of society, Higher Education Institutions (HEIs) have been facing a number of challenges that question not only their practices but also the very role of higher education in the 21st century. HEIs no longer have an exclusive role, although they remain an important space for knowledge building (Hargreaves, 2003). The increase of virtual learning communities also has an effect on the role of HEIs as privileged communities of knowledge development and discussion. Also, their traditional learning certification function has recently been questioned by the emergence of initiatives in the field of Open Education, particularly Open Educational Resources and Open Educational Practices.

When we look at the 21st century institutions, we identify their multiple functions: teaching, research, public involvement and incubators of new ideas and business. Thus, we revisit Ernest Boyer's (1990) model of academic identity analysis and consider the concept of scholarship, to converge the perspectives on faculty's teaching and research activities, in the broader spectrum of the movement of openness to knowledge.

Theoretical Framework

Open Educational Resources and the teaching function

The movement of Open Educational Resources (OER) has greatly developed over the last decade and research on the topic has evolved into numerous perspectives, such as the usefulness and impact of resources, their quality and the quality of their repositories (McAndrew et al., 2008; McGreal, 2013; Atenas & Havemann, 2014), metadata and alignment of standards (Achieve, 2011;

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Atenas, Havemann & Priego, 2014) and the formal recognition, among institutions, of learning with OER (Hilton, Murphy & Ritter, 2014).

Previous studies have focused on trying to understand faculty's attitudes towards OER, namely the main barriers and incentives regarding the sharing of educational resources. For Alevizou (2012), there is a lack of professional incentives and also cultural issues regarding the open sharing of materials. Similarly, barriers also include uncertainties about the origin and context where the resources have been produced (Campbell, Barker, Currier & Syrotiuk, 2013), the lack of confidence, ability or willingness to contribute with revised and remixed resources (Petrides & Nguyen, 2008), the general lack of knowledge on OER (de los Arcos, Cannell & McIlwhan, 2016; Allen & Seaman, 2016), as well as the perception of the time and effort necessary to research and assess OER (OECD, 2007; OPAL, 2011; McGill, Falconer, Littlejohn & Beetham, 2013; Allen & Seaman, 2014; Corrall & Pinfield, 2014). On the other hand, there is also a lack of support, incentives and rewards (Hylén, 2006; Charlesworth, Ferguson, Schmoller, Smith & Tice, 2007; Yuan, MacNeill & Kraan, 2008) and the fact that the authorship of OER is not taken into account for career progression, together with the absence of an institutional space to openly share resources (Friesen, 2009; Reed, 2012). There are also studies that address copyright barriers, particularly the absence of clear institutional policies on intellectual property over the resources produced (Charlesworth et al., 2007; Reed, 2012). This does not help clarify the confusion that characterizes teachers' knowledge of their copyright (Hylén, 2006; Charlesworth et al., 2007; Yuan et al., 2008; Friesen, 2009; Reed, 2012; Rolfe, 2012), and thus, attention should be paid to clarifying intellectual property issues and the existence of open licenses (Reed, 2012). Regardless of whether they reveal some anxiety about an appropriate authorship of resources, the studies conducted by Reed (2012) and Rolfe (2012) conclude that faculty have a positive perception towards OER sharing.

On the other hand, the incentives identified in literature are the altruistic motivation of sharing, reputation and visibility, both of the teaching work and of the institution (OECD, 2007; Sclater, 2010). According to Sclater (2010), altruistic motivation is linked to the premise that everyone has the right to education, so learning must be made available and made available to all. Similarly, Rolfe (2012) and Davis et al. (2010) support the belief in open education as a fundamental motivation for those who share their resources openly as a way of demonstrating an open culture (Brown & Adler, 2008). Opposite to this belief in open education is resistance to the reuse and sharing of Open Educational Resources related to status and identity aspects (Weller, 2010).

Open Access and the research function

With regard to Open Access (OA), several researchers have studied the importance of mandates in promoting open access publishing practices. Already in 2005, Pinfield argued that mandatory self-archiving would be a faster way to overcome cultural and management obstacles. A research conducted by Swan (2006) asked researchers how they would react if self-archiving in an open access repository was required by the research or funding institution; the vast majority (81%) said they would willingly do it, while about 14% of researchers mentioned they would do it reluctantly and 5% would not do it at all. This study is in line with authors like Gargouri et al. (2010) and Smith, Yates and Chudasama (2010), who conclude that policies based on recommendations are not sufficient for a significant increase in self-archiving by researchers.

The OA movement is well defined and in rapid expansion, both internationally and in Portugal, with a growing involvement of the scientific and academic community. However, a number of recent studies have concluded that there is still lack of knowledge by researchers regarding key concepts

in the openness movement, such as copyright and licensing issues. In fact, a survey conducted with Portuguese researchers in 2012, concluded that there is a significant difference between researchers' opinions and their practices, regarding the principles of open access (Rodrigues et al., 2013). That is, although the vast majority (92%) of researchers agree with the principle of open access to publicly funded research, only 70% reported to publish in OA. A second conclusion of the study is that there is a significant lack of knowledge by researchers about open access policies. In short, there is a significant difference between the opinion and the knowledge and practice of researchers.

Scholarship and the movement of openness to knowledge

The current research supports the perspective that the open knowledge movements play a fundamental role in the 21st century education, namely in higher education, since they make knowledge and access to services available to society, which, in turn, gives institutions a unique social potential, in the multidimensionality of their functions.

There are different perspectives on the influence of these movements in current academic practices, but they all highlight the concepts of sharing, collaboration and openness to knowledge. As noted by Conole & Alevizou (2010), openness is a trend, both in terms of the production and sharing of educational resources, and of increasingly open scientific research. This is also the perspective of Veletsianos & Kimmons (2012, p. 167), when they refer that "open scholarship refers to teaching and research practices that espouse openness".

There is a growing concern to bring theoretical and empirical convergence between research and education. Corrall & Pinfield (2014) suggest that promoting the convergence of "different open domains" and recognizing the common advantages, while taking into consideration their particularities, may bring additional benefits for both institutions and faculty. There are obstacles, usually associated with issues such as intellectual property, business models and sustainability. However, the potential advantages of approaching the movement of openness to knowledge as a whole are increasingly recognized: (i) visibility and impact; (ii) reuse; (iii) innovation and agility; (iv) cost reduction; (v) quality improvement; (vi) reputation and trust. These potential advantages, shared between the different domains, can serve as a reference base to define a single policy agenda and to simultaneously monitor activity and progress in each of the domains.

By analyzing the different perspectives and respective terminologies, we find that the debate around the changes in academic practices by digital environments continues to be largely influenced by Boyer's model (1990) and its multidimensional perspective. For instance, Pearce, Weller, Scanlon and Kinsley (2010) retrieve the model proposed by Boyer (1990) and, focusing on the potential of technologies - albeit from a very technological perspective - to promote more transparent and more open practices, explore the changes driven by openness in each of the academic functions (figure 1).

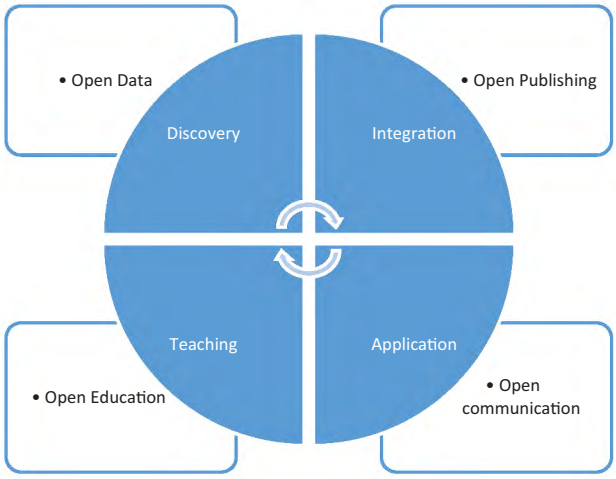

Figure 1. Boyer's multidimensional model in the context of digital scholarship
Source: adapted from Pearce *et al.*, 2010

In the first dimension, related to the discovery of new knowledge in a given scientific area, Pearce et al. (2010) point out that computer tools allow the generation and analysis of large amounts of data, which can easily be shared with the academic community, becoming open data.

In the dimension of integration, where new knowledge is contextualized and applied to more comprehensive problems, the authors focus on traditional mechanisms through which researchers communicate their findings, including publication mechanisms in scientific journals, modified by more open peer review processes and open access publication.

The dimension of application is influenced by how new communication forms are used to participate in more global debates, in which faculty have access to larger audiences, due to "communication disintermediation" (Pearce et al., 2010).

Finally, the greatest impact of digital technologies and more open approaches occurred in the dimension of teaching, where the digitization of educational resources made them easily reproducible and shareable on a global scale, which in turn allowed the development of the OER movement.

Thus, the concept of scholarship in the digital age is influenced by different aspects, such as collaborative and networked work, the sharing of digital data and a greater emphasis on openness to knowledge, providing more informal, collaborative and more open teaching and research practices, in all their dimensions. But how exactly is this portrayed in faculty's perceptions and, more importantly, in their practices?

Methodology

The main question that guided the current research was: How are the perceptions and practices of faculty at public higher education institutions in Portugal concerning Open Educational Resources related to their perceptions and practices regarding Open Access?

The research design selected for this study was exploratory and descriptive in nature, which, according to Hernández Sampieri, Fernández Collado and Baptista (2013), is suitable for cases when there isn't much information available on the research subject, making it possible to obtain greater knowledge on a given phenomenon.

In order to identify faculty's knowledge, practices and perceptions regarding Open Educational Resources and Open Access in the context of their teaching and research practices, a questionnaire survey was sent to the faculty of all public higher education institutions (HEIs) in Portugal and data were then subject to a descriptive analysis. The instrument was adapted from a questionnaire (Rodrigues, Boavida, Carvalho, Saraiva & Príncipe, 2013), previously applied to the same target population that enquired about the perception, opinion and practices of Portuguese researchers regarding Open Access to scientific research. After validation by experts and a pretest, the final survey was administered online, through the *LimeSurvey* platform, between July and December 2015. The final survey had a total of 30 closed questions, which allowed participants to select from a Likert scale, as shown in the next section and a final open question, asking for comments and suggestions.

Results and Findings

Of the 348 participants in the survey, 58% represent the female gender, with around 71% in the age group between 40 and 59 years of age and 73.5% of respondents have 11 or more years of service. The most represented subsystem of education is polytechnic higher education, with 62.9% of respondents. Data on the professional situation portray professional stability, with regard to contract situation (approximately 73.3% have exclusive contracts) and to the most represented categories, which are career categories (18.7% of all respondents), with our sample being representative of the population. All scientific areas are represented in the sample and Social Sciences are the most represented scientific area (36.2% in education and 40.2% % in research), followed by Engineering and Technology Sciences (19.8% in education and 17.8% in research).

Open Educational Resources

Data show (Table 1) that the majority of respondents are aware of the existence of OER repositories. However, similarly to other studies (de los Arcos et al., 2016; Allen & Seaman, 2014) it is not a generalized **knowledge**, because when asked about more specific aspects of OER, such as institutional policies or initiatives, the lack of knowledge increases.

Table 1: Knowledge on OER

Knowledge on OER	Mean	SD	Insufficient	Sufficient	Good	Very Good
OER concept	2.32	0.98	89 (25.6%)	99 (28.4%)	**121 (34.8%)**	39 (11.2%)
OER repositories	2.20	0.98	102 (29.3%)	**110 (31.6%)**	99 (28.4%)	37 (10.6%)
Open licenses	1.85	0.96	**162 (46.6%)**	102 (29.3%)	57 (16.4%)	27 (7.8%)
Institutional policies on OER	1.61	0.84	**203 (58.3%)**	87 (25.0%)	47 (13.5%)	11 (3.2%)
International initiatives on OER	1.53	0.82	**224 (64.4%)**	73 (21.0%)	40 (11.5%)	11 (3.2%)
Copyright	2.12	0.96	**109 (31.3%)**	119 (34.2%)	88 (25.3%)	32 (9.2%)

SD – Standard deviation; Mode in bold.

When asked about their knowledge on **Copyright**, most respondents self-rated their knowledge as positive. However, almost half of the respondents indicated they were not sure about who owns the copyright of teaching materials they produced at their institution (Figure 2). These results are in line with the results of similar studies, which conclude that there is some confusion regarding copyright (Jameela, 2014; Rolfe, 2012; Reed, 2012; and Charlesworth et al., 2007).

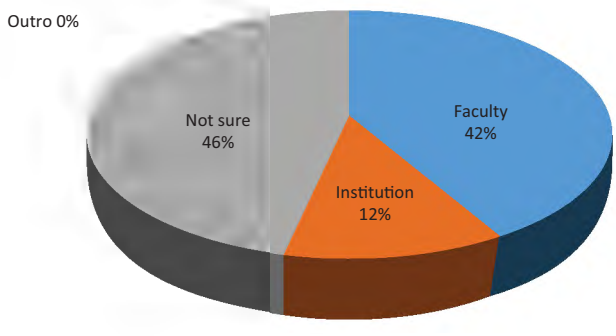

Figure 2: Who owns copyright of teaching materials

With regard to **OER-related activities**, the average of responses is below the option "Often" for frequency, in all items, yet the most used activities are the adaptation of OER to the context of needs and research in OER repositories (Table 2).

Table 2: Frequency of use: OER-related activities

Frequency of use: OER-related activities	Mean	SD	Never	Rarely	Often	Always
I reuse existing OER in original form	1.98	0.86	**123 (35.3%)**	118 (33.9%)	98 (28.2%)	9 (2.6%)
I adapt existing OER to the context of my needs	2.21	0.90	97 (27.9%)	96 (27.6%)	**141 (40.5%)**	14 (4.0%)
I share OER adapted by me	1.86	0.86	**150 (43.1%)**	106 (30.5%)	84 (24.1%)	8 (2.3%)
I share OER produced by me	2.01	0.92	**129 (37.1%)**	100 (28.7%)	104 (29.9%)	15 (4.3%)
I research OER repositories	2.18	0.93	106 (30.5%)	89 (25.6%)	**136 (39.1%)**	17 (4.9%)
I publish in OER repositories	1.75	0.79	**159 (45.7%)**	119 (34.2%)	67 (19.3%)	3 (0.9%)

SD – Standard deviation; Mode in bold.

Data seem to reveal that there is already some **use of OER**, as nearly half of the respondents say that they "Often" or "Always" adapt OER and search OER repositories, although most respondents do not know, as discussed above, formal policies or initiatives. These data corroborate the conclusion of Rolfe (2012), who concludes that some OER-related activities occur more frequently in local and individual terms than with more formal approaches and also with Hylén's (2006) perspective on the

fact that OER represent a bottom-up phenomenon, in which the management level of institutions is not involved nor is often aware of the activities carried out.

Barriers to the use of OER (Table 3) were divided into personal and political barriers, OER quality and adequacy barriers and institutional barriers. Furthermore, all the barriers had their modal value in the "Important" option, with very little discrimination among the different types of barriers. It is possible that not positioning themselves strongly regarding the importance given to potential barriers to the use of OER may also reveal lack of more in-depth knowledge.

Table 3: Importance of barriers to the use of OER

Importance of Barriers to the use of OER	Mean	SD	Not important	Slightly important	No opinion	Important	Very important
Insufficient technical support at institution	3.65	1.08	11 (3.2%)	54 (15.5%)	55 (15.8%)	**154 (44.3%)**	74 (21.3%)
Insufficient legal support at institution	3.55	1.12	17 (4.9%)	57 (16.4%)	60 (17.2%)	**147 (42.2%)**	67 (19.3%)
Lack of reward system to créate OER	3.54	1.22	23 (6.6%)	62 (17.8%)	54 (15.5%)	**123 (35.3%)**	86 (24.7%)
Lack of time to créate or adapt OER	3.96	1.05	9 (2.6%)	34 (9.8%)	42 (12.1%)	**141 (40.5%)**	122 (35.1%)
Lack of quality in existing OER	3.34	1.07	23 (6.6%)	52 (14.9%)	96 (27.6%)	**137 (39.4%)**	40 (11.5%)
Lack of hardware/software to créate or adapt OER	3.15	1.18	29 (8.3%)	92 (26.4%)	67 (19.3%)	**118 (33.9%)**	42 (12.1%)
Lack of skills to créate or adapt OER	3.61	1.27	29 (8.3%)	48 (13.8%)	53 (15.2%)	**116 (33.3%)**	102 (29.3%)
Lack of culturally relevant OER	3.17	1.05	17 (4.9%)	83 (23.9%)	104 (29.9%)	**111 (31.9%)**	33 (9.5%)
Lack of OER in user's native language	3.00	1.23	43 (12.4%)	92 (26.4%)	77 (22.1%)	**95 (27.3%)**	41 (11.8%)
Lack of interest in pedagogical innovation	3.34	1.33	51 (14.7%)	48 (13.8%)	47 (13.5%)	**134 (38.5%)**	68 (19.5%)
Lack of national/regional support policies	3.56	1.14	23 (6.6%)	43 (12.4%)	68 (19.5%)	**143 (41.1%)**	71 (20.4%)
Lack of institutional support strategies/policies	3.82	1.16	17 (4.9%)	38 (10.9%)	55 (15.8%)	**120 (34.5%)**	118 (33.9%)
Lack of interest in creating and adapting OER	3.41	1.31	44 (12.6%)	47 (13.5%)	54 (15.5%)	**127 (36.5%)**	76 (21.8%)

SD – Standard deviation; Mode in bold.

Still, the barriers to which the respondents have assigned a greater degree of importance are the lack of time to create or adapt OER, followed by the lack of institutional support policies and strategies and insufficient technical support from institutions. Thus, similar to other studies (Allen & Seaman, 2014; McGill et al., 2013; Reed, 2012; Yuan et al., 2008; OECD, 2007; Charlesworth et al., 2007; and Hylén, 2006), we find that the main barriers are essentially institutional and

personal. On the one hand, faculty consider that there are time constraints which, in turn, are reinforced by the lack of recognition and support from the institutions. On the other hand, the barriers that have been attributed less importance to are curiously barriers in the quality and adequacy of OER. The fact that these options stand out as the ones with the highest number of responses in the category "No opinion" also reveals some lack of knowledge regarding specific issues of Open Educational Resources, more precisely in linguistic, technical and quality issues of the resources themselves.

Similarly to what happened with the barriers, almost all **incentives to the use of Open Educational Resources** (Table 4) had their mode in the "Important" option, except for the item "Training / workshops for teachers", whose modal value was in the "Very important" category. The existence of an institutional platform and an OER sharing community were also two of the incentives considered as most important by respondents, which is, in a way, in line with other studies (Seonghee & Boryung, 2008; Friesen, 2009), that conclude that the introduction of an institutional repository would be an important factor in promoting a formal culture of sharing and that, within institutional policies and strategies, it would be important for faculty to feel supported, to develop more open practices in the context of their institution. Although the use of OER can be done informally, faculty who already do it do not have the opportunity to do so in a more formal context, which was considered desirable in previous studies (Atkins, Brown & Hammond, 2007; Conole, 2010; Hylén, 2006).

Table 4: Importance of incentives to the use of OER

Importance of incentives to the use of OER	Mean	SD	Not important	Slightly important	No opinion	Important	Very important
Technical support to the use of OER	4.05	0.98	7 (2.0%)	29 (8.3%)	30 (8.6%)	**157 (45.1%)**	125 (35.9%)
Legal support to the use of OER (copyright issues)	3.98	0.99	6 (1.7%)	35 (10.1%)	33 (9.5%)	**161 (46.3%)**	113 (32.5%)
Use of OER as specific criterion in faculty evaluation	3.68	1.21	24 (6.9%)	49 (14.1%)	37 (10.6%)	**143 (41.1%)**	95 (27.3%)
Allocation of hours to créate and adapt OER	3.78	1.14	13 (3.7%)	54 (15.5%)	32 (9.2%)	**148 (42.5%)**	101 (29.0%)
System of OER quality assurance	3.99	0.89	7 (2.0%)	19 (5.5%)	40 (11.5%)	**186 (53.4%)**	96 (27.6%)
Training/workshops for faculty	4.24	0.99	7 (2.0%)	23 (6.6%)	27 (7.8%)	112 (32.2%)	**179 (51.4%)**
Existence of OER sharing community	4.05	0.99	4 (1.1%)	34 (9.8%)	35 (10.1%)	**142 (40.8%)**	133 (38.2%)
Existence of institutional platform for OER sharing	4.15	0.92	3 (0.9%)	25 (7.2%)	32 (9.2%)	**145 (41.7%)**	143 (41.1%)
Existence of regional/ national platform for OER sharing	3.77	1.00	7 (2.0%)	48 (13.8%)	35 (10.1%)	**186 (53.4%)**	72 (20.7%)
Existence of funded projects to créate OER	3.91	1.08	7 (2.0%)	47 (13.5%)	38 (10.9%)	**134 (38.5%)**	122 (35.1%)
Mandatory to share teaching materials	3.08	1.31	50 (14.4%)	85 (24.4%)	50 (14.4%)	**112 (32.2%)**	51 (14.7%)

SD – Standard deviation; Mode in bold.

In turn, the items that would least encourage respondents to use Open Educational Resources are the use of OER as a specific criterion in faculty evaluation and the obligation to share the teaching materials produced. We may assume that faculty then reject the idea of compulsory use of OER in their practices. Moreover, when comparing the importance attributed to the barriers with the one given to incentives, since the lack of time was the barrier with the highest response rate, it would be expected that the allocation of hours to create and adapt OER would also stand out as one of the most important incentives, which was not the case. If, on the one hand, respondents value training and institutional support, on the other hand it is also clear that, according to them, institutional strategies should not be mandatory.

Regarding **perceptions** towards creating and sharing OER, data show that most respondents perceive OER as an added value for the impact of their work as faculty and also for the institution, insofar as it promotes practices of sharing and collaboration, which, in turn, give visibility and value the institution's reputation. However, it is interesting that the item with the highest degree of agreement, with the modal value in the "I totally agree" option, is the item "I would like to be recognized as an author of the resources I share". While acknowledging the benefits and expressing a positive attitude towards OER, the issue of authorship and recognition is important. This was also concluded in the OECD study (2007), where, despite the low response rate, this was one of the factors considered most important in the perspective of those who produced open resources.

Open Access

Regarding the **Open Access (OA)** domain, in terms of **knowledge** (Table 5), we found that more than 85% of the respondents self-reported a positive knowledge of the Open Access concept (86.5%), as well as repositories (85.4%) and open access journals (89%). In general, the degree of knowledge in the OA domain is slightly higher than the degree of knowledge in the field of OER. The lowest knowledge is reported in international open access initiatives, similarly to what happened with OER.

Table 5. Knowledge on Open Access

Knowledge on Open Access	Mean	SD	Insufficient	Sufficient	Good	Very Good
Open Access concept	2.60	0.92	47 (13.5%)	102 (29.3%)	**141 (40.5%)**	58 (16.7%)
Open Access repositories	2.55	0.92	51 (14.7%)	106 (30.5%)	**138 (39.7%)**	53 (15.2%)
Open Access journals	2.68	0.94	38 (10.9%)	111 (31.9%)	**123 (35.3%)**	76 (21.8%)
Open Access policies/mandates	1.85	0.92	**153 (44.0%)**	119 (34.2%)	52 (14.9%)	24 (6.9%)
Copyright on scientific production	2.07	0.93	110 (31.6%)	**131 (37.6%)**	78 (22.4%)	29 (8.3%)
International initiatives on OA	1.66	0.88	**198 (56.9%)**	86 (24.7%)	49 (14.1%)	15 (4.3%)

SD – Standard deviation; Mode in bold.

When asked about their knowledge of **copyright** (Figure 3), more than half of the respondents rated their knowledge as positive, but when asked about who owns the copyright of their scientific

production at the institution, more than half of the respondents did not know. As in the OER domain, and similar to other studies (Saraiva & Rodrigues, 2010; Creaser et al., 2010; Amante, 2012), there is still some confusion in the area of copyright and intellectual property, which in this area is also related to the fact that publishers do not clarify their copyright and open access policies, as abovementioned.

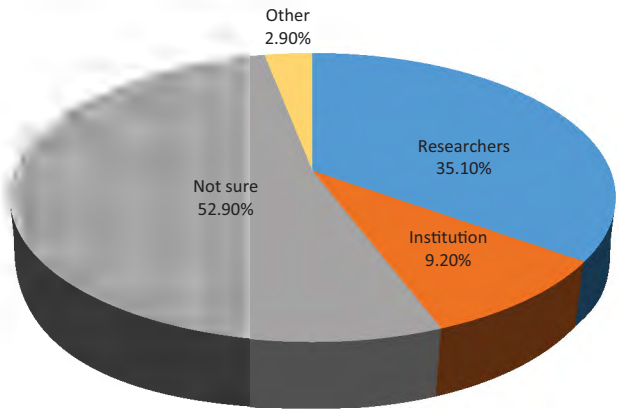

Figure 3. Who owns copyright of scientific production

Concerning the practice of **publishing** scientific production, the most frequently used space is, as in the case of teaching materials, the institutional LMS Platform, but closely followed by Open Access Repositories and open access scientific journals. The frequency of publication is less than the frequency of searches, but still almost half of faculty *Often* or *Always* publishes in open access repositories and journals.

Table 6: Frequency of publication – scientific production

Frequency of publication	Mean	SD	Never	Rarely	Often	Always
"Paid" journals	2.20	0.90	81 (23.3%)	**147 (42.2%)**	89 (25.6%)	31 (8.9%)
Open Access journals	2.29	0.77	54 (15.5%)	**151 (43.4%)**	130 (37.4%)	13 (3.7%)
LMS (Moodle, Blackboard, etc.)	2.34	1.01	93 (26.7%)	90 (25.9%)	**119 (34.2%)**	46 (13.2%)
Personal website	1.57	0.81	**207 (59.5%)**	95 (27.3%)	33 (9.5%)	13 (3.7%)
Open Access institutional repository	2.31	0.93	79 (22.7%)	116 (33.3%)	**118 (33.9%)**	35 (10.1%)
Social networks (Facebook, Twitter, Google+, etc.)	1.58	0.77	**197 (56.6%)**	109 (31.3%)	33 (9.5%)	9 (2.6%)
Academic social networks (ResearchGate, Academia.edu, Mendeley, etc.)	2.18	0.96	104 (29.9%)	106 (30.5%)	**109 (31.3%)**	29 (8.3%)

SD – Standard deviation; Mode in bold.

With regard to **barriers** (Table 7), we found that, as in the case of Open Educational Resources, all the barriers presented also obtained their mode in the category "Important". However, when analyzing the average of responses, it was possible to understand that respondents attributed a greater degree of importance to the lack of institutional support policies/strategies, lack of time and insufficient institutional support.

Table 7: Importance of barriers to Open Access

Importance of barriers to Open Access	Mean	SD	Not important	Slightly important	No opinion	Important	Very important
Insufficient technical support at institution	3.67	1.06	12 (3.4%)	53 (15.2%)	38 (10.9%)	**179 (51.4%)**	66 (19.0%)
Insufficient legal support at institution	3.64	1.08	11 (3.2%)	60 (17.2%)	42 (12.1%)	**167 (48.0%)**	68 (19.5%)
Lack of reward system to publish in OA	3.64	1.26	23 (6.6%)	62 (17.8%)	39 (11.2%)	**119 (34.2%)**	105 (30.2%)
Lack of time to publish in OA	3.70	1.25	24 (6.9%)	55 (15.8%)	29 (8.3%)	**132 (37.9%)**	108 (31.0%)
Lack of quality of OA publications	3.39	1.09	21 (6.0%)	67 (19.3%)	51 (14.7%)	**174 (50.0%)**	35 (10.1%)
Lack of hardware/software to use repositories	2.97	1.20	44 (12.6%)	97 (27.9%)	57 (16.4%)	**125 (35.9%)**	25 (7.2%)
Lack of skills to publish in OA	3.30	1.28	33 (9.5%)	85 (24.4%)	41 (11.8%)	**123 (35.3%)**	66 (19.0%)
Lack of interest in scientific innovation	3.12	1.36	57 (16.4%)	76 (21.8%)	40 (11.5%)	**118 (33.9%)**	57 (16.4%)
Lack of national/regional support policies	3.50	1.12	22 (6.3%)	56 (16.1%)	49 (14.1%)	**168 (48.3%)**	53 (15.2%)
Lack of institutional support strategies/policies	3.79	1.19	20 (5.7%)	41 (11.8%)	47 (13.5%)	**123 (35.3%)**	117 (33.6%)
Lack of knowledge on the mandatory carácter of institutional policies	3.57	1.11	18 (5.2%)	47 (13.5%)	70 (20.1%)	**143 (41.1%)**	70 (20.1%)
Lack of knowledge on publishers' deposit policies	3.58	1.10	15 (4.3%)	52 (14.9%)	68 (19.5%)	**143 (41.1%)**	70 (20.1%)
Lack of interest in publishing in OA	3.44	1.29	40 (11.5%)	51 (14.7%)	48 (13.8%)	**134 (38.5%)**	75 (21.6%)

SD – Standard deviation; Mode in bold.

Data show there are still several important aspects to be clarified with regard to open access. The fact that the most valued barrier is linked to the lack of institutional support strategies, considering that most Portuguese institutions already have a policy or mandate related to open access, makes us conclude that there is some work to be done by the institutions in order to enforce compliance with these policies or mandates. Whether it is due to lack of knowledge of the existence of institutional

policy by faculty or by lack of monitoring of this policy at institutional level, the truth is that these institutional strategies for publishing open access research results must be promoted by institutions and properly understood and followed by faculty.

As in the case of barriers, almost all **incentives** (Table 8) obtained their mode in the "Important" category, with the exception of training/workshops items for researchers and projects funded to publish openly. The incentives considered by the respondents as more important were training/workshops, the existence of a quality assurance system for publications and, thirdly, three incentives: the existence of funded projects, legal support for publication and technical support for publication.

Table 8: Importance of incentives to Open Access

Importance of incentives to Open Access	Mean	SD	Not important	Slightly important	No opinion	Important	Very important
Technical support to open Access publication/ deposit	4.00	1.05	23 (6.6%)	10 (2.9%)	25 (7.2%)	**177 (50.9%)**	113 (32.5%)
Legal support to open Access publication/ deposit (copyright issues)	4.00	1.06	23 (6.6%)	8 (2.3%)	33 (9.5%)	**165 (47.4%)**	119 (34.2%)
System of quality assurance of Open Access publications	4.02	1.12	30 (8.6%)	4 (1.1%)	21 (6.0%)	**168 (48.3%)**	125 (35.9%)
Existence of institutional OA repository	3.85	1.12	31 (8.9%)	4 (1.1%)	50 (14.4%)	**164 (47.1%)**	99 (28.4%)
Existence of national OA repository	3.80	1.13	31 (8.9%)	5 (1.4%)	62 (17.8%)	**155 (44.5%)**	95 (27.3%)
Existence of OA sharing community	3.74	1.11	30 (8.6%)	6 (1.7%)	71 (20.4%)	**158 (45.4%)**	83 (23.9%)
Training/workshops for researchers	4.07	1.17	26 (7.5%)	14 (4.0%)	28 (8.0%)	120 (34.5%)	**160 (46.0%)**
OA as mandatory requirement of research institutions	3.67	1.22	35 (10.1%)	19 (5.5%)	66 (19.0%)	**134 (38.5%)**	94 (27.0%)
Existence of funded projects to publish in OA	4.00	1.20	30 (8.6%)	12 (3.4%)	32 (9.2%)	128 (36.8%)	**146 (42.0%)**
Allocation of hours to publish in OA	3.73	1.16	27 (7.8%)	22 (6.3%)	66 (19.0%)	**135 (38.8%)**	98 (28.2%)
OA publishing as specific criterion in researchers' evaluation	3.76	1.24	29 (8.3%)	35 (10.1%)	41 (11.8%)	**128 (36.8%)**	115 (33.0%)
Permission by publishers to deposit in institutional repositories	3.64	1.45	66 (19.0%)	9 (2.6%)	26 (7.5%)	**132 (37.9%)**	115 (33.0%)
Mandatory requirement by funders of research projects	3.55	1.41	65 (18.7%)	10 (2.9%)	37 (10.6%)	**141 (40.5%)**	95 (27.3%)

SD – Standard deviation; Mode in bold.

Concerning the **perceptions** towards making scientific production openly available, the perceptions that revealed the highest degree of agreement were clearly favorable perceptions, and the respondents valued more the aspects related to the visibility and impact of the research, the reputation of the institution and believing in the concept of Open access to scientific production.

We find that the respondents have a positive perception of Open Access, clearly identifying the advantages associated with it, and considering it, just as in Open Educational Resources, not only an added value for their research work, but also for the institution, thus corroborating the conclusions of previous studies (Saraiva & Rodrigues, 2010; Amante, 2012; Creaser et al., 2010). The results reveal a tendency of those who have favorable perceptions to creating and sharing OER to be also favorable to making scientific production openly available. This is very important for the current research, since not only does it allow us to conclude that both domains are significantly correlated, but also that there is a predisposition on the part of the teachers and researchers favorable to the movement of openness to knowledge, both in teaching and research activities.

Final reflections, conclusions and recommendations

Although there is an expected and necessary difference between Open Educational Resources and Open Access, results have shown that: (i) there is a general lack of knowledge in both fields; (ii) the types of barriers and incentives considered as most important are also convergent in both fields; and (iii) the perceptions are also similar for the two domains. Therefore, we believe the differences derive essentially from two aspects: first, they are two domains that have originated from two different movements, carried out by different stakeholders, until now not always with convergent objectives. And second, the recognition and consequent investment, at institutional level, of the research activity, to the detriment of the teaching activity, makes faculty themselves invest more time and effort in the research component.

Although we do not traditionally have a culture of sharing and the movements of Open Educational Resources and Open Access are at different levels of maturity, there is room for convergence. The perceptions and predisposition of faculty towards the values of collaboration, sharing and openness suggest that if there is an effort to clarify the aspects we have indicated as essential and to overcome the challenges also mentioned, it will be possible to move towards open educational practices, which benefit not only faculty themselves, but also their institutions and the global community.

One of the great arguments in favor of open access to scientific production has been the fact that, when research is funded with public resources, the results of such research must also be made public. Although this argument is not often found in literature, with regard to OER, the truth is that it can be applied to the resources that teachers produce in the scope of their functions when working at a public educational institution. This brings us back to Willinsky's (2005) perspective, when he argues for the convergence between the different domains, stating that they all have a shared commitment to the principles of transparency, collaboration and greater openness to knowledge.

If there are signs of convergence between both domains, and considering that the Open Access movement is in a more advanced degree of maturity in Portugal, we suggest that institutions update their Open Access policies, in order to include clear indications regarding the teaching resources produced by their faculty.

Awareness-raising and clarification activities on copyright, open licenses, workshops and training for faculty should be promoted to encourage open teaching and research practices.

Finally, we reiterate the perspective of Conole and Alevizou (2010) and Veletsianos and Kimmons (2012), that openness is a trend, both in terms of producing and sharing educational resources, as well as increasingly open scientific publications.

It is now up to decision-makers to define a single policy agenda to monitor activity and follow up the progress in both domains simultaneously, aware that the movement of openness to knowledge promotes a more democratic and more competitive education system. In its essence, to educate is to share knowledge.

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