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Institutional mapping of open educational practices beyond use of Open Educational Resources

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ABSTRACT

Many initiatives exist to increase the adoption of open educational practices (OEP) within universities, but few initiatives start by exploring the capacity of educators to adopt open approaches. This paper addresses this challenge, suggesting that in order to build OEP capacity, universities should build on the existing skills of local champions who are familiar with open approaches. The paper builds on the Open Educators’ Factory methodology to map the capacities of university teachers across four areas: open design, open content, open teaching and open assessment and presents the results of its application to a case study within an Italian university. The pilot demonstrates that by using this approach, it is possible to map universities’ existing OEP and connect them with the capability of local educators. This enables university managers to build on the expertise of open education practitioners to raise the overall capacity of their staff to adopt open approaches.

The problem of mapping the capacity to work with open education approaches within universities

Open educational practices (OEP) are “practices which support the (re)use and production of Open Educational Resources through institutional policies, promote innovative pedagogical models, and respect and empower learners as co-producers on their lifelong learning paths” (Ehlers, 2011, p. 4). These practices are generally recognised as potential enablers of quality, access and effectiveness within universities (Weller, 2014). Governments are stressing the importance of openness in education worldwide, as demonstrated by a recent series of international events on the topic, including the 2nd UNESCO International Forum on ICT and Education 2030 held in China (https://es.unesco.org/node/273232), the 2nd World Congress on OER in Slovenia (http://www.oercongress.org/) and the XXVII ICDE World Conference on Online Learning in Canada (http://onlinelearning2017.ca/en/). Concurrently, an increasing number of universities are striving to mainstream the adoption of open approaches across their educational programmes (Allen & Seaman, 2017; Young, Daly, & Stone, 2017). However, those universities that are investing time and resources in open

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education are typically focused on the creation of open educational resources (OER) or the development of massive open online courses (Agbu, Mulder, de Vries, Tenebe, & Caine, 2016; Grodecka & Śliwowski, 2014). Universities that support openness through formal open education policies are still limited (Souto-Otero et al., 2016). In addition, few higher education institutions are focusing on one of the main enablers for mainstreaming the adoption of OEP, that is, the development of educators’ awareness, motivation and capacity to work in the open education space (Nascimbeni, 2015).

Some national initiatives exist that aim to build OEP capacities among university teachers, such as the OEPS Programme in Scotland and the OER Info initiative in Germany; these usually focus on awareness raising and practical training (IMulder, 2013; Namorato Dos Santos et al., 2017). While these top-down programmes are useful, we believe that they should be complemented by bottom-up capacity building initiatives, planned and designed within universities, which aim to transform teaching staff into open educators (Nascimbeni & Burgos, 2016). In order to do this, university leaders first need to understand the capacity of their educators to work with open approaches across the main areas of their academic practice, and second, they need to identify the best open practitioners within their institutions and use their experience to help build capacity across the university. By having a picture of the OEP capabilities of staff across the whole university, academic leaders can understand who is in need of training and support, and how to provide this capacity within the institution.

The problem is that the OEP capacity of the teaching population of a university (faculty members) is difficult to quantify, because openness is a social construct that evolves over time, where educators both shape and are shaped by their open practices (Veletsianos, 2015), and because it is connected with educators’ individual attitudes and cultural behaviours (Cronin, 2017). Consequently, while there may be general consensus among policymakers, researchers, academic leaders, teachers and managers about the potential benefits of open education, they may not have an overview of the level of OEP adoption among individual educators (Veletsianos, 2015).

Academic literature on open education is abundant in conceptualisations, definitions and frameworks, especially as far as OER are concerned (Paskevicius, 2017), and much has been written about the potential benefits of OEP and the barriers to adopting open approaches (Weller, de Los Arcos, Farrow, Pitt, & McAndrew, 2015). Still, only a few studies have managed to provide empirical data to demonstrate what proportion of teaching staff at a given university have actually adopted open practices (Veletsianos, 2015). Jhangiani, Pitt, Hendricks, Key, and Lalón (2016) describe the patterns emerging from a survey of all British Columbia universities on the use of open content, stressing the importance of educators’ personal values and noting that faculty with more open personalities tend to be more likely to use OER. Pete, Mulder, and Dutra Oliveira Neto (2017) shed some light on the perceived value of OER by students and faculty in four Kenyan universities, concluding that despite the low awareness of OER and open licencing, some capacity for openness does exist in the universities studied. Hilton, Fischer, Wiley, and Williams (2017) analysed the impact of OER on students’ performance in a United States university and suggested that the use of OER has a positive impact on students’ performance in both face-to-face and online contexts. Cox and Trotter (2017) analysed OER adoption by lecturers in three South African universities, connecting this to the institutions’ capacity for open education and stressing the importance of institutional culture to leverage OER adoption. All these studies provide important insights on how to increase the adoption of OER within universities, but they are limited to some degree as they...
do not extend their analysis beyond open content. A number of authors have called for research on open education to shift its focus away from open content and towards a more holistic understanding of openness that can demonstrate the impact of open practices in supporting innovative education (Ferguson et al., 2017; Kimmons, 2016; Weller et al., 2015).

Through our literature review, we identified two studies that have gone beyond the adoption of OER and attempted to map the capacity for OEP within specific universities. Analysing the adoption of open practices at Tall Mountain University (pseudonym), Veletsianos (2015) found that open practices were not mainstreamed within the institution; he discussed this finding in relation to enabling factors and collaborative practices, concluding that OEP adoption is based on individual motivation rather than institutional drivers and that teachers’ attitudes to sharing are a key enabling factor for OEP adoption. By analysing the situation at the National University of Ireland, Cronin (2017) notes a relationship between the use of OEP and the priority given to learners being actively involved in the learning process, in the sense that all participants in her study who use OEP value social learning. Cronin also explores the multidimensionality of the decision-making process with regard to being open or not, concluding that “a complex picture emerges of a broad range of educators: some open (in one or more ways), some not; some moving towards openness (in one or more ways), some not; but all thinking deeply about their digital and pedagogical decisions” (p. 7). These two studies shed light on the way educators work in the open and on the dynamics connected with a rounded vision of OEP within universities.

This paper aims to contribute to filling the gap in the current literature, by providing a case study of an exercise to map a university’s capacity to adopt OEP. We build on a comprehensive approach that stems from individual educators’ attitudes to openness and their willingness to adopt open practices, thus providing university leaders with the potential to build on the expertise of leading open practitioners to raise the overall capacity of their teaching staff.

The Open Educators Factory framework: mapping open education capacity in an integrated way

The present research is grounded on the Open Educators’ Factory (OEF) framework, an approach that aims to facilitate an understanding of the different interrelated dimensions of university educators’ capacity to adopt OEP. The framework was designed in 2016 following an extensive literature review that identified definitions, conceptual frameworks and guidelines aimed at improving university teachers’ ability to adopt open education approaches, and on subsequent discussions with a number of experts in the domain of open education (Nascimbeni & Burgos, 2016). As an open research project, the framework is constantly under development, with improvements based on feedback received by peer researchers and the validation of the tool by users. The framework identifies four areas of educators’ practice that can be influenced by open approaches – design, content, teaching and assessment – and grades the ability of educators to adopt open approaches in these areas (Table 1). The intention is to communicate that being an open educator means more than producing and using OER, and that OEP should not be understood as a binary concept, where an educator is either open or not, but rather as a continuum along which educators may position themselves in each of the four areas or practice. It should be noted that the framework does not accommodate open research practices, such as open access publication or open peer review, as the aim of the study is limited to academics’ teaching practice.
Starting with the first area of practice, design, three types of educators have been identified: individual designer, who designs their courses individually based on prior knowledge and experience, collaborative designer, who co-designs their courses with close colleagues either from their own university or from the broader subject domain, and open designer, who shares their course ideas and curriculum openly through the web, for colleagues and students to engage with and enrich the course design.

In terms of content, the framework identifies the new to OER educator, who might use digital resources found on the web to enhance teaching and learning – usually without considering whether they are openly licensed, and who does not release their content under open licence. The familiar with OER user produces and shares their resources under open licences and reuses resources recommended by trusted colleagues, and the OER expert re-shares resources they have reused through social media and OER repositories, searches for OER through social media and repositories and shares resources beyond the classroom.

With regard to teaching, the traditional teacher adopts conventional lecture-based pedagogy, the engaging teacher opts for collaborative seminars-like strategies, either offline or through restricted online spaces, and uses innovative teaching methods such as the flipped classroom approach. On the top of the column, the open teacher implements methods that foster students’ co-creation of knowledge, nurtures students to contribute to public knowledge resources and shares examples of teaching practice in open subject-related communities. Importantly, this classification is not related to the use of ICT per se. For example, traditional teachers may extensively use the university learning management system to share resources; however, if these resources are shared only with the students on their courses, they are not necessarily adopting open approaches, despite their intensive use of technology.

In terms of assessment, the traditional evaluator assesses students through conventional methods such as tests or classwork; the innovative evaluator experiments with new assessment methods adding some elements of collaboration, and finally the open evaluator implements practices such as open peer assessment or open e-portfolios, engaging communities of practice to assess students’ work.

By covering diverse levels of OEP awareness and adoption in different areas of practice, the framework shows that openness is not a binary concept where educators are either open or not, but is instead a multidimensional continuum where open can mean different things to different educators in different contexts. Indeed, the results of our case study demonstrate that teachers are generally more open in some aspects of their work than in others, depending on contextual factors such as national legislation and institutions’ receptiveness to open approaches, but also on their personal approach to balancing attitudes to privacy and sharing (Cronin, 2017).

Table 1. The OEF framework.

| Areas of activity | Design          | Content            | Teaching         | Assessment       |
|-------------------|-----------------|--------------------|------------------|------------------|
| Educators categories | Open designer | Expert OER user | Open teacher | Open evaluator |
|                   | Collaborative designer | Familiar with OER | Engaging teacher | Innovative evaluator |
|                   | Individual designer | New to OER | Traditional teacher | Traditional evaluator |

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Methodology

The main aim of this research was to map the overall capacity of a university to adopt open education approaches, starting from the level of OEP adopted by individual educators within the institution and integrating those in an overall institutional view. In addition, the secondary aims were to demonstrate that this mapping can provide university leaders with important information that they can use to increase the adoption of OEP across their institutions, and to validate the OEF framework and inquiry tools in a real-life case study.

We investigated the adoption of OEP within an institution through an online multiple-choice questionnaire. The questionnaire (see the Appendix) was delivered in English through an online platform and aimed at investigating the existing level of OEP adoption along the four dimensions of the OEF framework presented above. The questionnaire was first validated in terms of usability and relevance within the research group, and then in collaboration with senior managers of the university being studied. Nine multiple-choice answers were designed to connect each response to one level of the OEF framework, enabling respondents to be placed automatically at the appropriate level. Finally, in order to allow some qualitative validation of results, responses that diverged from expected patterns were checked with participants to ensure that they understood the questions correctly; in most cases this resulted in appropriate corrections being made.

It should be noted that the online questionnaire did not refer to concepts such as OER or OEP, in order to avoid being perceived as an exercise for e-learning or open licensing specialists. Once respondents had completed the questionnaire, they were provided with real-time feedback, illustrated in Figure 1, showing their position in each column of the framework, along with a set of guidelines tailored to their experience and capacity, in the form of links, readings and courses. This feedback mechanism has been extremely useful in helping to motivate respondents to participate in the survey.

This case study is based on analysis undertaken at the Polytechnic University of Turin (Politecnico di Torino, or PoliTo), a public technical university in Turin, Italy. PoliTo is Italy’s oldest technical university, offering courses in the fields of engineering, architecture and

![Figure 1. Example of the feedback received by teachers once they fill the online questionnaire.](image-url)
industrial design. It enrolls 35,000 students (academic year 2016/2017) with an academic catalogue of 22 bachelor programmes, 29 Master of Science programmes and 16 PhD programmes. PoliTo currently (in 2018) has 890 teaching faculty, 307 researchers, 371 associate professors and 212 full professors.

This institution was chosen for the case study as it is typical of many higher education institutions, in that it does not have an internal policy mandating the use of OEP, although it does support a number of open education initiatives, including the release of a large number of freely available online resources. Although policy guidelines on the implementation of OER do not exist within the Italian higher education sector (Tammaro, Ciancio, De Rosa, Pantò, & Nascimbeni, 2017), PoliTo has engaged with OER and educational technology since the late 1990s, when it began recording lessons and disseminating them using different platforms. This university is a typical example of an institution where educators are free to adopt open practices and produce open-licenced resources, despite the absence of an official policy on OER and open education.

A sample of 181 teachers from PoliTo completed the online questionnaire: 19% of respondents were full professors, 49% associate professors and 31% researchers with some time dedicated to teaching. In terms of academic discipline, 63% were from engineering, 19% from physics, sciences and mathematics, 10% from architecture, 8% from other fields, including economics and business, social sciences and education. In terms of age, the majority (60%) were between 35 and 50 years, 6% were between 25 and 35 years, while the remaining 34% were over 50. Of the respondents, 32% were female and 68% male. This sample of respondents is broadly representative, as it is proportional to the overall teaching staff population of the university as a whole.

The data has been analysed by cross-referencing the results with respondents’ gender, age, role within the university, and use of social media for personal and professional purposes. The preliminary results have also been compared with the studies discussed earlier in the paper, seeking confirmation that some forms of OEP are more common than others (Veletsianos, 2015), that resources are often shared without the use of appropriate open licenses (Veletsianos, 2015), and that a correlation exists between respondents’ adoption of OEP and their use of social media for personal and professional purposes (Cronin, 2017).

Three limitations of this study must be highlighted. Firstly, the results are based on the responses of 181 out of a total of 890 teaching staff at PoliTo. Even if the respondents are broadly representative of the teaching population as a whole, it must be remembered that the data represents only a proportion of the teaching staff. Secondly, participation in the survey was voluntary, so teachers who were more motivated and familiar with the use of ICT were more likely to respond. Thirdly, given the complexity of quantifying openness, we are aware that quantitative self-reported data may not be sufficient to draw sound conclusions about educators’ attitudes to openness and adoption of open approaches (Cronin, 2017). Despite these limitations, the findings of this structured survey provide a useful indication of the overall capacity of individuals within the university to adopt OEP and it therefore represents a good starting point to build capacity from within the institution.

**Results: an overall picture of OEP within the university**

The online questionnaire has generated abundant data: this paper presents only a fraction of the results, focusing primarily on the overall level of openness within the
university, discussing aspects of particular interest, and looking for emerging patterns between educators’ characteristics and level of openness.

In the first instance, the collected data presents a comprehensive picture of educators’ capability to adopt OEP and of the adoption gaps within the institution, as illustrated in Table 2.

Table 2. Overall positioning of PoliTo staff with respect to OEP.

| Areas of activity | Design | Content | Teaching | Assessment |
|------------------|--------|---------|----------|------------|
| Educators’ categories | Open designer  7 (4%) | Expert OER user  23 (13%) | Open teacher  9 (5%) | Open evaluator  13 (7%) |
| Collaborative designer | 118 (65%) | Familiar with OER  98 (54%) | Engaging teacher  81 (45%) | Innovative evaluator  9 (5%) |
| Individual designer | 56 (31%) | New to OER  60 (33%) | Traditional teacher  91 (50%) | Traditional evaluator  159 (88%) |

The results demonstrate that a degree of capacity is present in all four areas, and that in all areas except assessment, close to 50% of educators fall into the middle tier, meaning that collaboration and experimentation are strongly embedded in the institution’s educational practices. As might be expected, content is the area where open practices are most widely adopted among educators at PoliTo, with more than 65% of respondents being familiar or proficient with the use of OER, while assessment is the area where traditional methods are still the norm for the majority of respondents.

In the following sections, we will explore in detail how the teaching population is performing with respect to openness in the four areas of the OEF framework. By cross-referencing the survey results with the profiles of the respondents, we will try to connect the use of open approaches with key characteristics of teaching staff and to provide grounded indications of how to improve the level of openness of all educators across the institution.

**Open learning design**

As shown in Figure 2, most respondents (65%) design their courses in collaboration with colleagues and peers, either from the same university or from other institutions, while 31% of participants stated that they plan and design their courses on their own, based on previous knowledge and experience. Interestingly, 7 teachers, corresponding to 4% of the total, stated that they design their teaching activities in an open and collaborative way, by sharing ideas and curriculum openly through social media with colleagues and students before their courses start, in order to get ideas, feedback, and criticism. Opening the way educators think about and design their courses, is not only “a creative way to breathe new life and fresh ideas into course design” (Cochrane & Antonczak, 2015, p. 3), but also a fundamental component of open education culture and practice, as it reveals the existence of an open attitude from the very beginning of the teaching cycle (Conole, 2013). Knowing the identity of these seven open educators would be beneficial to university management as they could inspire and encourage other colleagues; however, it is important to consider their privacy and identity before starting any capacity building activities that might require their input.
By cross-referencing these results with key characteristics of respondents, no correlation was seen between the tendency to design courses in the open with age, gender or academic discipline. However, it seems that the individual’s role within the institution does influence the use of open design practices: full professors and, to a limited extent, associated professors tend to be more active in opening up their design processes in comparison to researchers. One explanation for this might be that implementing open design practices takes time and confidence, and researchers, especially in their early careers, might not be in the position to experiment with these innovations.

![How do you design your lectures/courses? (role)](image)

**Figure 2.** Relationship between open design and use of social media for teaching.

**Open content**

When it comes to the use of open teaching resources, the evidence from PoliTo is rather encouraging: although 33% of participants stated that they were not aware of the benefits of using openly licenced materials, the majority of respondents, 54%, were aware of and already using OER, applied open licenses to their materials, used resources recommended by colleagues, and/or shared resources among their peers. Note that we say “and/or” because in order to qualify as familiar with OER, respondents had to respond positively to at least one question regarding the use of open content. This distinction is important because, in contrast to design, where a single question was put to educators regarding the way they designed their courses, in the case of content a number of questions was posed, so the position of each educator depends on more than one variable. This means, for example, that teachers who use content created by
others but do not apply open licenses to their resources will fall in this category, as well as teachers who use open licences but do not reuse existing materials. Interestingly, if we look at OER expert users, we find 23 respondents (13%) who are confident and familiar with open teaching resources, meaning that they search for, adapt, reuse and share resources not only in collaboration with colleagues they know, but openly through OER repositories and social media. Knowing that a pool of experienced OER users exists within the university can represent an important starting point to further spread the “openness virus” (Weller, 2014, p. 200) across the institution and to kick-start a process of institutional implementation of OER production and use.

![Figure 3](image)

**Figure 3.** Level of openness in resource dissemination.

An interesting indicator of openness is the degree to which teachers share their own teaching resources. As we can see from Figure 3, a large majority of teachers do not disseminate their resources beyond the university (74% only make their content available to students enrolled in their courses and 13% to all students enrolled in the university), while just 13% of respondents make their materials openly available to anyone, and of these, 2% disseminate their resources through social media.

Another indication of open practice is the degree to which educators use resources produced by others (Figure 4).

Of the respondents, 43% do not use resources produced by others, while 57% do. Furthermore, 16% of those respondents who do use resources produced by others indicated that they only use openly licensed resources, demonstrating both awareness of licensing issues and the capacity to understand and use resources with different open licenses.
**Open teaching**

During the investigation of *open teaching* practices, respondents were asked about their most common modality of teaching: 86% used traditional teaching methods, 13% engaged students through offline and online collaborative methods, while only 1% of respondents tried to foster co-creation of knowledge by students, working with wikis, blogs, and communities of practice (Figure 5).

![Figure 4. Level of reuse of resources.](image)

![Figure 5. Open practices and teaching styles.](image)
This metric is important to understand how OEP relates to different teaching styles. When asked whether they encouraged students to search for resources on the web and to co-produce their own knowledge, a number of respondents from all teaching styles replied positively. Consequently, the percentage of open teachers within the university is higher than those who declared that they use innovative teaching methods. If we look back at Table 2, we can see that 50% of respondents are identified as traditional teachers, 45% as engaging teachers and 5% as open teachers. If we look in detail at the responses of this last group, we see that in addition to encouraging students to co-create content and to access freely available content online, this group (comprising nine teachers) also shared their teaching practice in open communities. These nine educators can potentially act as mentors to both engaging and traditional teachers, as they are familiar with sharing their teaching strategies and methodologies openly. Furthermore, being open practitioners, they should be willing, in principle, to share their experiences with colleagues.

**Open assessment**

As might be expected, assessment is the one area where more work needs to be done in terms of capacity building, as demonstrated by the fact that the great majority of respondents (88%) use only traditional assessment methods. Interestingly, open evaluators (7%) are slightly more numerous than innovative evaluators (5%).

This can be explained with the fact that, since assessment tends to be strictly controlled within universities, innovation is typically a matter of individual initiative. As a result, approaches such as engaging communities of practice to assess students, open blogging or cross-commenting among learners are adopted more commonly than institutionally supported practices such as e-portfolios. In addition, open assessment appears to be strongly connected with open teaching practices. This suggests that open assessment can have a positive impact on educators overall teaching practice, as Paskevicius (2017) notes: “when
designing assessment and evaluation activities, faculty may enact OEP by exploring ways in which they can engage students as producers of content, find ways to integrate peer-review and assessment, promote student collaboration, and develop digital literacies” (p. 9).

As we have seen for the other areas, open assessment is also strongly related to the general collaborative attitudes of teachers. The results in Figure 6 suggest that a direct relationship exists between using innovative open assessment methods, including e-portfolios, peer assessment and community-based assessment, and using social media for professional practice.

**Discussion**

As Figure 7 shows, in each of the four areas of the OEF framework a cohort of skilled open education practitioners exists, and it is these individuals who could be motivated to inspire and build capacity among their colleagues.

![A snapshot on open practices at PoliTo](image)

*Figure 7. Overall openness level of PoliTo staff.*

However, our research also shows that it is rare for a single educator to be skilled across all four areas of the framework. This finding corroborates the hypothesis that open practice looks different for each individual and that educators will typically be more open in some areas of work than in others. For example, some lecturers who release their content under open licence, and also foster collaboration among students through flipped-classroom methods, have never experimented with open design or open assessment. Similarly, some teachers who adopt peer-based assessment practices do not release their content as OER for whatever reason. This is why, in order to plan capacity building interventions in such a multifaceted field as open education, it is important to consider educators as individuals, regardless of whether we identify them as champions or whether we want to increase their capability in a certain field. The strength of the proposed methodology is that it can highlight different levels of
openness in diverse areas of practice and can therefore motivate teachers to explore areas where they have the opportunity to adopt more open approaches.

It is also important to consider the relationship between educators’ level of openness and their key characteristics. What we have seen across all the areas of this analysis is that there is no direct correlation between openness and age. When awareness of OER is examined by age group, it is the oldest faculty, aged 55+, who have the greatest degree of awareness, while the youngest, those under 35, trail behind. The largest proportion of younger faculty claim to be very aware of OER, with lower proportions reporting that they are aware or somewhat aware.

Openness does not show a strong correlation with academic discipline, although educators from some disciplines do seem to be more open to sharing. Even if reuse of resources seems to be more common in scientific domains such as physics than in social sciences, it would be an oversimplification to identify bounded academic fields with specific cultural features as teaching is increasing becoming more specialised and interdisciplinary (Becher & Trowler, 2001).

The research does show some correlation between certain characteristics of respondents and their propensity to adopt open practices. Firstly, openness seems to flourish within small collaborative groups and to stem from the sharing culture that naturally exists among close colleagues, particularly with regard to the use of resources produced by others. This observation is in line with the findings of Lopukhova and Makeeva (2017) and Veletsianos (2015), who claim that both individual and systemic barriers exist to the adoption of open approaches and that close collaboration can strongly influence individual agency in the practice of openness. Secondly, openness is closely connected to collaboration; across all four areas of practice the data confirms that a strong relationship exists between the use of open approaches and collaborative attitudes of university teachers, where open online identities and networks seem to be a key to developing open teaching strategies (Nascimbeni & Burgos, 2016). As noted by Weller (2012) and Cronin (2017), educators’ positive attitude towards openness and their collaboration practice are related, confirming that the use of OEP can have an impact on educators’ personal networks, and vice versa. It is interesting to compare these findings with Cronin’s conclusions in her recent article on a study run within an Irish university:

> Overall, for the participants in this study, using OEP (Open Educational Practices) was primarily characterized by having a well-developed open digital identity; using social media for personal and professional use, including teaching; using both a VLE (Virtual Learning Environment) and open tools; using and reusing OER; valuing both privacy and openness; and accepting some porosity across personal-professional and staff-student boundaries. (Cronin, 2017, p. 7)

**Conclusions**

The aim of this research was to map the overall OEP capacity of a university, by examining individual educators’ existing adoption of open practices, beyond the use of OER. As stated earlier, to our knowledge no previous research has been able to provide such a comprehensive overview of the OEP capacity of teaching staff within a university. This has been achieved by focusing on four different areas of academic practice: learning design, content, teaching and assessment.

The case study results presented in this paper show that OEP capacity is scattered across the university, and across the individual teachers’ competences, in the sense that very few educators are highly practiced in all four areas the study explored. OEP is a multifaceted
concept, and this approach encourages the identification and further analysis of educators’ individual capacities and preferences. In addition, the case study confirms that some forms of OEP are more common than others, as noted by Veletsianos (2015); for example, the use of OER and collaborative design practices are much more widespread than the use of open assessment methods. Furthermore, the motivation and capacity to adopt OEP is only marginally connected to age and discipline, but rather stems from small collaborative group working where a culture of sharing already exists among colleagues. Teachers’ personality and attitudes are the key to openness: our research extends the findings of Jhangiani et al. (2016), who suggested that faculty who score highly in terms of open personality traits are more likely to both create and reuse OER and to adopt OEP. This is confirmed by the connection between respondents’ adoption of OEP and their attitudes to sharing more generally, as noted by Cronin (2017), and as indicated in this case study by the connection between adoption of OEP and use of social media for personal and professional purposes.

With respect to the secondary objectives of the study, our research provides PoliTo leaders with important information that they can use to increase the adoption of OEP across the institution. By undertaking self-assessment of OEP capacity, teachers with little or no experience of open approaches can be encouraged to learn from their peers and colleagues. This research has also helped to validate the OEF framework and inquiry tools through a real-world case study, confirming that evaluating openness through multiple and complementary routes (learning design, content, pedagogy, evaluation) can enable educators to validate their existing practices and to improve their skills in other areas.

The next step in this research will be to run a qualitative analysis of the most experienced open practitioners, selected from the survey cohort, and to search for common patterns that will help us to understand how faculty can be motivated to explore areas of openness where they are not proficient, building on areas where they have already adopted open practice. This next phase will also facilitate the validation of the results presented in this paper through quantitative analysis. This will help understand the relevance of contextual variables, such as national legislation or institutions readiness to adopt OEP and further explore enablers for building open education capacity across universities.

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References

Agbu, J.-F. O., Mulder, F., de Vries, F., Tenebe, V., & Caine, A. (2016). The best of two open worlds at the national open university of Nigeria. *Open Praxis*, 8, 111–121. doi:10.5944/openpraxis.8.2.279
Allen, I. E., & Seaman, J. (2017). *Opening the textbook: Educational resources in U.S. higher education, 2015-16*. Babson Park, MA: Babson Survey Research Group.
Becher, T., & Trowler, P. (2001). *Academic tribes and territories: Intellectual enquiry and the culture of disciplines*. London: McGraw-Hill Education.
Cochrane, T., & Antonczak, L. (2015, March). Developing students’ professional digital identity. Paper presented at the International Association for Development of the Information Society (IADIS) International Conference on Mobile Learning. Retrieved from ERIC database. (ED562441)
Conole, G. (2013). *Designing for learning in an open world*. New York, NY: Springer.
Cox, G., & Trotter, H. (2017). An OER framework, heuristic and lens: Tools for understanding lecturers’ adoption of OER. *Open Praxis*, 9, 151–171. doi:10.5944/openpraxis.9.2.571
Cronin, C. (2017). Openness and praxis: Exploring the use of open educational practices in higher education. *The International Review of Research in Open and Distributed Learning*, 18(5). doi:10.19173/irrodl.v18i5.3096
Ehlers, U.-D. (2011). Extending the territory: From open educational resources to open educational practices. *The Journal of Open, Flexible, and Distance Learning*, 15(2), 1–10. Retrieved from https://www.learntechlib.org/p/147891/
Ferguson, R., Barzilai, S., Ben-Zvi, D., Chinn, C. A., Herodotou, C., Hod, Y., … Whitelock, D. (2017). *Innovating pedagogy 2017* (Open University Innovation Report 6). Milton Keynes, UK: The Open University.
Groddecka, K., & Śliwowski, K. (2014). OER mythbusting! Retrieved from https://mythbusting.oerpolicy.eu/wp-content/uploads/2014/11/OER_Mythbusting.pdf
Hilton, J., Ill, Fischer, L., Wiley, D., & Williams, L. (2017). Maintaining momentum toward graduation: OER and the course throughput rate. *The International Review of Research in Open and Distributed Learning*, 17(6). doi:10.19173/irrodl.v17i6.2686
Jhangiani, R. S., Pitt, R., Hendricks, C., Key, J., & Lalonde, C. (2016). Exploring faculty use of open educational resources at British Columbia post-secondary institutions (BCcampus Research Report). Victoria, BC: BCcampus. Retrieved from bccampus.ca/files/2016/01/BCFacultyUseOfOER_final.pdf
Kimmons, R. (2016). Expansive openness in teacher practice. *Teachers College Record*, 118(9), 1–34. Retrieved from [http://www.tcrecord.org/Home.asp](http://www.tcrecord.org/Home.asp)

Lopukhova, J., & Makeeva, E. (2017). Creating virtual learning environment: Shared online learning in university education. *International Journal for Cross-Disciplinary Subjects in Education (IJCDSE)*, 8, 3046–3054. doi:10.20533/ijcdse.2042.6364.2017.0412

Mulder, F. (2013). The logic of national policies and strategies for open educational resources. *The International Review of Research in Open and Distributed Learning*, 14(2), 96–105. doi:10.19173/irrodl.v14i2.1536

Namorato Dos Santos, A., Nascimbeni, F., Bacsich, P., Atenas, J., Aceto, S., Burgos, D., & Punie, Y. (2017). Policy approaches to open education: Case studies from 28 EU Member States (OpenEdu Policies). Luxembourg: European Union. doi:10.2760/283135,JRC107713

Nascimbeni, F. (2015). The contribution of openness to transforming education. *European Journal of Education*, 50, 400–403. doi:10.1111/ejed.12152

Nascimbeni, F., & Burgos, D. (2016). In search for the open educator: Proposal of a definition and a framework to increase openness adoption among university educators. *The International Review of Research in Open and Distributed Learning*, 17(6). doi:10.19173/irrodl.v17i6.2736

Paskevicius, M. (2017). Conceptualizing open educational practices through the lens of constructive alignment. *Open Praxis*, 9, 125–140. doi:10.5944/openpraxis.9.2.519

Pete, J., Mulder, F., & Dutra Oliveira Neto, J. (2017). Differentiation in access to, and the use and sharing of (open) educational resources among students and lecturers at Kenyan universities. *Open Praxis*, 9, 173–194. doi:10.5944/openpraxis.9.2.574

Souto-Otero, M., Namorato Dos Santos, A., Shields, R., Lažetić, P., Castaño-Muñoz, J., Devaux, A.,…Punie, Y. (2016). *OpenCases: Case studies on openness in education*. Belgium: European Union. doi:10.2791/039825

Tammaro, A. M., Ciancio, L., De Rosa, R., Pantò, E., & Nascimbeni, F. (2017). Digital libraries in open education: The Italy case. In C. Grana & L. Baraldi (Eds.), *Communications in computer and information science: Vol. 733. Digital libraries and archives* (pp. 32–41). Cham: Springer.

Veletsianos, G. (2015). A case study of scholars’ open and sharing practices. *Open Praxis*, 7, 199–209. doi:10.5944/openpraxis.7.3.206

Weller, M. (2012). *The digital scholar*. London: Bloomsbury Academic. doi:10.1080/03069885.2013.778013

Weller, M. (2014). *The battle for open*. London: Ubiquity Press. Retrieved from [http://www.ubiquitypress.com/site/books/detail/11/battle-for-open/](http://www.ubiquitypress.com/site/books/detail/11/battle-for-open/)

Weller, M., de Los Arcos, B., Farrow, R., Pitt, B., & McAndrew, P. (2015). The impact of OER on teaching and learning practice. *Open Praxis*, 7, 351–361. doi:10.5944/openpraxis.7.4.227

Young, L., Daly, U., & Stone, J. (2017, August 28). OER: The future of education is open. *EDUCAUSE Review*. Retrieved from [https://er.educause.edu/articles/2017/8/oer-the-future-of-education-is-open](https://er.educause.edu/articles/2017/8/oer-the-future-of-education-is-open)

**Appendix**

**Questionnaire**

1. **How do you design your lectures/courses?**
   (a) On my own, based on my experience and knowledge, as I have always done.
   (b) In collaboration with colleagues from my institution.
   (c) In collaboration with colleagues from other institutions, through bilateral contacts.
   (d) I share ideas and drafts about my course through restricted social media (such as subject-related discussion groups) to allow colleagues from other institutions to contribute.
   (e) I share ideas and drafts about my course through open social media (such as Twitter, academia.edu, cloudworks), to allow anyone (including students) to contribute.

2. **To whom do you make available your teaching resources (PPTs, documents)?**
   (a) To students enrolled in my course, through the university website.
   (b) To all students of my university, through the university website.
(c) I make it openly available to anyone, through the university website.
(d) I make it openly available to anyone, through sharing platforms (Slideshare, repositories, etc).
(e) I also promote the content I produce through social media (such as Twitter, Slideshare, Facebook, Wikipedia...).

(3) Under which license do you release the teaching resources you produce?
   (a) I do not apply any licence, I just make it available to through the university website.
   (b) Through a restricted license (all rights reserved).
   (c) Through a licence that makes it openly available (such as Creative Commons).

(4) Have you ever been using online resources (PPTs, videos, documents, articles) produced by others in your teaching? If so, under which license was this content released?
   (a) No, do not use online content produced by others in my teaching.
   (b) Yes. I am not worried about the license of these resources, since I used it for educational purposes.
   (c) Yes. I only use resources released under an open licence, such as Creative Commons.

(5) How did you get to know about these resources?
   (a) I have been searching for them on Google or other search engines.
   (b) Through a colleague from my university.
   (c) Through social media (such as Twitter, Slideshare, Facebook).
   (d) Through OER repositories.

(6) Have you ever re-shared resources produced by others after using/adapting them?
   (a) No, never.
   (b) Yes, among colleagues from my university.
   (c) Yes, openly through social media (such as Twitter, Slideshare, Facebook).
   (d) Yes, openly through OER repositories.

(7) How do you teach?
   (a) I use classic, frontal classroom teaching.
   (b) I use the university Learning Management System (LMS) in support to classroom teaching, to share links and documents.
   (c) I use seminars-like strategies, either offline or through restricted online spaces (Chats, forums).
   (d) I use “flipped-classroom” methodologies (using classroom time to discuss content that students have studies at home before the lesson).
   (e) I encourage my students to search for additional resources on the web and to produce their own knowledge.
   (f) I try to foster co-creation of knowledge by students by working with wikis, blogs, communities of practices.

(8) Do you encourage participation from non-enrolled students in your course?
   (a) Yes
   (b) No

(9) How do you assess your students?
   (a) I assess them through tests and classwork.
   (b) I am introducing peers-assessment, either offline or through online means.
   (c) My students have a digital portfolio and are assessed through that.
   (d) My students are assessed by online communities of practices.