

Learning from the innovative open practices of three international health projects: IACAPAP, VCPH and Physiopedia

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Abstract

Open educational resources and open educational practices are being increasingly used around the globe to train and support professionals in areas where funding and resources are scarce. This paper evaluates the open educational practices (OEP) of three global health projects operating outside academia—the International Association for Child and Adolescent Psychiatry and Allied Professions (IACAPAP), the Virtual Campus of Public Health (VCPH), and Physiopedia. Each project aims to pool and share professional expertise, to the particular benefit of practitioners in low-income countries. This form of online knowledge-sharing appears to offer huge advantages to the health/public health sector, especially when conducted in the open, at a time when there is a huge global shortfall of healthcare workers and a need for cost-effective, high quality training.

We evaluated the three projects using two frameworks—the OPAL open educational practices maturity matrix, and Vrieling's OEP social configuration framework. We identified numerous innovative OEP from which academia, and indeed public health professionals around the world could learn, for example IACAPAP's open textbook, VCPH's trilingual OER repository, and Physiopedia's wiki and use of open badges. However, some OEP—for example localisation of resources—are not accommodated by either of the frameworks we used. We argue that an extended OEP evaluation and impact framework is needed in order to better encompass OEP outside formal education.

Keywords: Open educational practices; open educational resources; public health; public open scholar; professional bodies

Introduction

The World Health Organization (WHO) estimates that the world will be short of 12.9 million health-care workers by 2035; in 2013 the shortfall was already 7.2 million (World Health Organisation, 2013). This “crisis in human resources” (Aluttis, Bishaw & Frank, 2014) in the health sector has been described as “one of the most pressing global health issues of our time”. The shortage of health workers has the greatest impact in low-income countries where insufficient public investment results in too few people being trained. In addition, vacancies in high-income countries are attracting health-care workers from low- and middle-income countries, further exacerbating the problem. Aluttis *et al.* (2014, p. 1) warn that “a global undersupply. . . threatens the quality and sustainability of health systems worldwide”.

Open educational resources (OER) and open educational practices (OEP) are being increasingly used around the globe to train and support professionals in areas where funding and resources are scarce. The 2013 report by the Hewlett Foundation (The William and Flora Hewlett Foundation, 2013) touches upon the massive potential for OER use and production beyond higher (and formal) education when stating that “by enabling virtually anyone to tap into, translate and tailor educational materials previously reserved only for students at elite universities, OER has the potential to jump start careers and economic development in communities that lag behind” (p. 4). Additionally, the UK-based OER4Adults report (Falconer, McGill, Littlejohn & Boursinou, 2013, p. 46) recommended that the OER movement should “encourage OER development by organisations and communities

outside mainstream education”. However the open education movement, with its research expertise, has tended not to research open practices outside academia, instead concentrating on looking inwards and researching OER and OEP within formal education.

Since 2011, we have been seeking to address the apparent marginalisation of OER and OEP from outside academia by developing and piloting a new role for open academics, which we have named “the public open scholar” (Perryman & Coughlan, 2013). The role involves open academics working with online communities outside formal education who might benefit from OER, identifying members’ expressed needs and then sourcing OER to meet those needs (see Figure 1).

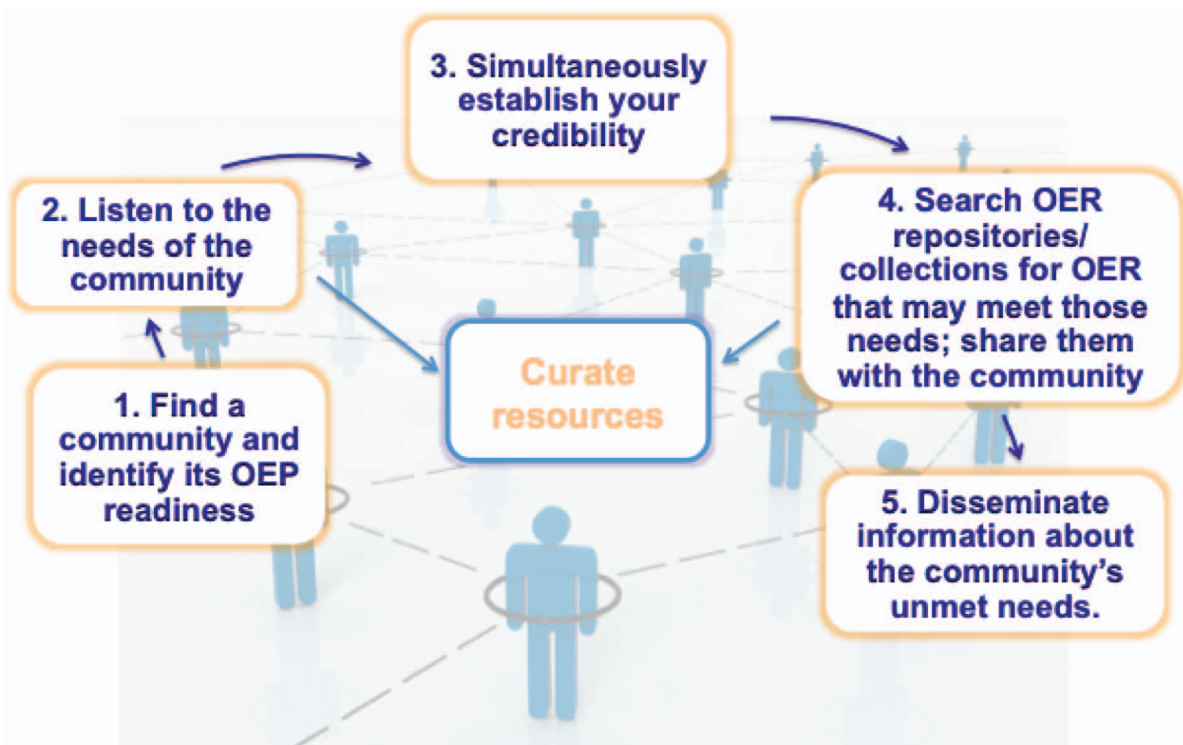


Figure 1: The public open scholar role

We conceptualised and developed the public open scholar role when working with volunteers, parents and carers in health and wellbeing-focused online communities, aiming to increase awareness of open educational resources within these communities, and to share with academia information about the resource needs of people beyond the academy who could really benefit from OER. While the public open scholar role demonstrates how OER and open practices can be deployed on an individual scale for the benefit of health communities we are now looking at the mass use of OER and OEP by organisations, drawing on insights into those practices we gained when developing and performing the role. For example, we learned about a wealth of open resources and large-scale collaborative open educational practices emanating from outside formal education, including voluntary sector organisations, government departments and professional bodies. Learning about these resources and practices inspired us to evaluate them in order to (1) identify what the open education movement might learn from them, and (2) extend understanding of how OER and OER

can be used globally to help increase social and economic equality. We have based our evaluation on three case studies that we encountered during our public open scholar research and which, on first glance, appear to feature innovative OEP. These case studies, discussed in detail below, all operate in the global health sector.

This paper reports the findings of our evaluation and is structured as follows:

- **Literature review:** Review of literature related to OER and OEP outside academia, online knowledge sharing, and the potential of OER in the context of global health.
- **Methods:** Discussion of the case studies and rationale for the case study approach; outline of methodology and methods.
- **Findings:** Results of our evaluating the three case study projects against our chosen frameworks.
- **Implications:** Limitations of existing OEP analysis frameworks for capturing OER localisation and the impact of openness.
- **Conclusion**

Literature review

Despite the massive potential benefits of studying open educational practices related to global health our study is located in a research-poor field. While research into OER and OEP within formal education is ever-growing (e.g. the work of the OER Research Hub - www.oerresearchhub.org), research into OEP in professional communities outside academia is scarce. However, a related body of literature examining the role of online communities in professional knowledge sharing has informed the current study, even though this literature does not focus on open practices. For example, Evans (2015, p. 32) gives an insight into the ways in which online communities are changing the nature of professional knowledge from “stable “bodies” of knowledge to more contingent and fluid forms of professional knowledge-in-practice that is mirrored in the informal complexities of learning communities and networks”. Evans explains that in online communities knowledge is generated through “social sharing and refining ideas in a network or community with a common domain of interest”, rather than being transmitted by institutions. Mairs, McNeil, McLeod, Prorok, and Stolee (2013, p. 269) cover similar ground, but focus specifically on online knowledge transfer in health/public-health-related professional contexts. They observe that online knowledge transfer amongst health professionals is “most often targeted at the sharing of literature or other practice-based information to and between researchers and/or clinicians”—a strategy that is “especially advantageous as it facilitates collaboration of individuals who are often geographically dispersed”. Mairs *et al.* (2013) are clear about the benefits of online knowledge management strategies, giving evidence that they can “support the development of clinical practice and... enhance care when used by clinicians”. In addition, such strategies can be particularly cost-effective, they argue, explaining that “cost, as a barrier to attending distant conferences or meetings... was eliminated through the use of an online knowledge transfer strategy”. Service users also benefit from such strategies, they propose, in that these strategies provide “a mechanism to connect patients not only to health-related information but also to health services and educational resources to support disease prevention, treatment, and management” (p. 270).

Each of the case studies featured in our own research shares an aim to increase health professionals’ access to high quality resources in low-income countries. In locating our own research in the health sector we are building on existing work on the impact of OER in this field, particularly

in relation to public health. Angell, Hartwell & Hemingway (2011, p. 549) speculate that “there would appear to be an inherent link between OER and public health in terms of their philanthropic aims and contribution toward reducing learning and health inequalities”, proposing that public health OER may be seen as an affordable and credible means to “reduce the growing disparity in health between developing and developed countries” and, as such, “may offer a means of extending public health education in deprived areas and developing countries, where access to public health education is limited by lack of teaching facilities and resources” (p. 552). Angell *et al.* (2011, p. 552) suggest that “quality and updating of resources [are of] particular significance, due to the risks involved in health professionals learning from incorrect or out-of-date resources”. Our research builds on the literature on (public) health OER, extending it to include exploration of open educational practices (rather than just resources).

Methods

Our research is case study-based. Our decision to adopt a case study-based research approach was driven by our research questions. Yin (2009, p. 9) states that “. . .”how” and “why” questions are. . .likely to lead to the use of case studies. . .because such questions deal with operational links needing to be traced over time, rather than mere frequencies or incidence”, adding that case studies are “preferred in examining contemporary events” (p. 11). Our study of how three global health projects are using open practices to benefit global health/public health practitioners, and their motivations for doing so, aligns well with a case study approach. We have used three data collection methods which Yin (2009, p. 11) identifies as being central to case study research—“interviews of the persons involved in. . .events”, document analysis and “direct observation of the events being studied”.

The case studies

The selected case studies are the International Association for Child and Adolescent Psychiatry and Allied Professions (<http://iacapap.org>), the Virtual Campus of Public Health (<http://www.campusvirtualsp.org>), and Physiopedia (www.physio-pedia.com). They share four characteristics:

- They are embedded within a specific health profession, and have links with other professional bodies;
- They use volunteers, are not-for-profit, and aim to collaboratively pool and share professional expertise;
- They play an international role and are based outside higher education, although all have links with universities;
- They use Creative Commons licences and social media.

The International Association for Child and Adolescent Psychiatry and Allied Professions (IACAPAP) was established in Europe 75 years ago, although its membership now comprises 63 Latin and North American, European, and Pacific Rim-based organisations. IACAPAP advocates for the promotion of mental health and development of children and adolescents through policy, practice and research. Campus Virtual de Salud Pública—The Virtual Campus of Public Health (VCPH) was launched in 2003 and is now a network of more than 140 partner institutions and organizations across Central and South America that share courses, resources, and other education services with the common purpose of improving public health practices and workforce skills. Physiopedia is a non-profit company established in the UK in 2009. Physiopedia is building an evidence-based

knowledge resource for physiotherapy and physical therapy professionals throughout the world, and aims to be a place where all physiotherapists and physical therapists can participate by contributing, sharing and building knowledge to develop a united profession and a global understanding.

The interviews

We conducted Skype interviews with key personnel in each project in order to get an understanding of the ways in which the projects work, the impact of openness on both professional practitioners and end-users, and the challenges of meeting the diverse needs of a global audience, especially practitioners in low-income countries. We used semi-structured interviews in order to capture the full breadth of three quite different projects, and to capture the individual perspectives of the interviewees. Appendix 1 lists the main questions asked, mapped against the analytical frameworks discussed below.

For IACAPAP, we interviewed Professor Joseph M Rey—a Professor and Head of Psychiatry at Sydney Medical School, Notre Dame University, Australia, and founder of the IACAPAP Textbook of Child and Adolescent Mental Health, discussed further below. For VCPH, we interviewed Republic of Panama-based Edgardo de Gracia, the National consultant at VCPH in charge of technology development and a system analyst and designer at the Ministry of Health of Panama. Finally, for Physiopedia we interviewed physiotherapist and Physiopedia Co-Founder and Executive Director Rachael Lowe. The evaluation of the three projects, including the Skype interviews, was conducted during December 2014 and January 2015.

Observation, and document analysis

To complement the data collected through interviews we analysed resources produced by the three projects in addition to observing online activity taking place in online spaces connected with each project (for example, the Physiopedia wiki). Appendix 1 maps the observation and document analysis process against the analytical frameworks discussed below.

Analytical frameworks

Our evaluation of IACAPAP, VCPH and Physiopedia draws on two OEP analysis frameworks. The comprehensive and influential OPAL “open educational practice maturity matrix” (Andrade *et al.*, 2011) was our starting point (see Table 1), and has been the dominant OEP analysis framework since its development in 2011 in connection with the Open Education Quality Initiative. The horizontal axis of the OPAL matrix represents levels of OER use, with ‘high’ indicating extensive OER re-use and creation. The vertical axis represents levels of openness in learning architecture, with ‘high’ indicating open pedagogy whereby autonomous learners govern learning methods and pathways.

During our analysis it became apparent that the pedagogy and object-focused OPAL framework is not sufficiently comprehensive to cover the open collaboration featuring in our case studies. We therefore extended our evaluation to include the four dimensions identified in the OEP social configuration framework developed by Vrieling, Van den Beemt and De Laat (in press; but see also Schreurs *et al.*, 2014): practice, domain, collective identity and organization. Schreurs *et al.* (2014) explain each dimension:

- *Practice*: “The extent to which the group knowledge is integrated into day-to-day activities”
- *Domain*: “The shared area that inspires the participants to share, broaden, or deepen their knowledge and skills within the group”

Table 1: The OPAL open educational practice maturity matrix

		OER Usage		
		Low No OER (re-)usage	Medium OER (re-)usage or creation	High OER (re-)usage and creation
Learning Architecture	High Social practices, Co-Creation, Sharing (Reflection in action) • 'open' objectives • 'open' methods	A	B	C
	Medium Dialog, Procedures, Rules (Know-how) • 'closed' objectives • 'open' methods	D	E	F
	Low Knowledge transmission (Know that) • 'closed' objectives • 'closed' methods	G	H	I

Source: Andrade *et al.* (2011, p. 4)

- *Collective identity*: "The mutual engagement that binds the members together in a social entity, shown for instance by strong ties and the perception of group members as knowledge workers"
- *Organization*: "The extent to which the group members have a shared interactional repertoire, a focus on local or global activities, and equal or hierarchical power relations [and] the extent to which the group is self-organized and has influence over its own goals, tasks, and methods"

Appendix 1 maps the elements of the two analytical frameworks against the data collection methods.

Findings

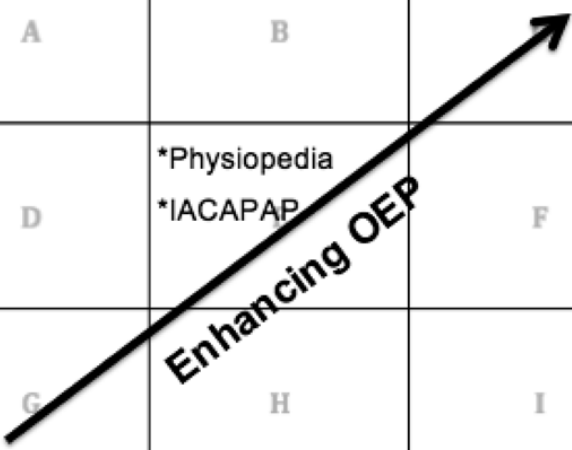
Mapping the projects onto the OPAL matrix

IACAPAP, Physiopedia and VCPH all use both OER and open learning architecture to various extents. Table 2 shows the three projects mapped onto the OPAL matrix. We rated IACAPAP and Physiopedia as 'medium' users of OER and OEP, so they appear in the central box in the grid. We did not rate them higher as neither are entirely open; for example they both keep some business objectives private, and also use non-OER. We rated VCPH highly on both use of OER and on open learning architecture, for having open objectives embedded within its policies, and for its high use of OER: 14 OER courses plus 5800 OER library items.

Looking at the case studies and their practices in more detail reveals areas of distinct open innovation from which academia might learn.

Table 2: IACAPAP, Physiopedia and VCPH mapped onto the OPAL matrix

		OER Usage		
		Low No OER (re-)usage	Medium OER (re-)usage or creation	High OER (re-)usage and creation
Learning Architecture	High Social practices, Co-Creation, Sharing (Reflection in action) • 'open' objectives • 'open' methods	A	B	*VCPH
	Medium Dialog, Procedures, Rules (Know-how) • 'closed' objectives • 'open' methods	D	*Physiopedia *IACAPAP	F
	Low Knowledge transmission (Know that) • 'closed' objectives • 'closed' methods	G	H	I



IACAPAP

IACAPAP is a traditional professional body that began adopting open practices in 2011 after a distinguished 70-year history. It is now well-known for its open access (CC-BY) online journal Child and Adolescent Psychiatry and Mental Health, and its open access (CC-BY-NC) online Textbook of Child and Adolescent Mental Health. The 49-chapter textbook is a remarkable collaborative achievement by over 100 contributors from 24 countries spanning 5 continents, with five chapters now being offered in French alongside English. The textbook is fully interactive, featuring video-clip links and hyperlinks to freely available measuring instruments, websites and publications. In the first 32 months after publication the textbook was visited 59,118 times, an average of 60 visits per day (Joseph Rey & Omigbodun, 2015, p. 6). Everyone involved in the IACAPAP textbook project has contributed their work for free. The textbook has a Facebook page to enable readers to make comments and suggestions to the editor and contributors. IACAPAP are also developing more self-directed learning activities, self-assessment exercises and teaching materials, including a MOOC (Massive Open Online Course) entitled *Essentials of child and adolescent mental health across the world*.

While the use of OER in IACAPAP was easy to map onto the OPAL matrix, the open textbook development process maps less easily, as the OPAL matrix focuses on teachers and teaching rather than professional collaboration. In interview, Joseph Rey explains that the textbook is developed through global collaboration operating on a model similar to that featuring in open access journals:

“I am the nerve centre of the whole process. Everything comes to me. However, different organisations or individuals will recommend specific persons who take responsibility for a particular topic. That content is then circulated to a board of experts for review and then it is put together. This is very much a cottage industry but one that has global reach”.

Joseph Rey points out that relationships with contributors do not tend to end once they have produced content for the IACAPAP textbook:

“We are now asking contributors for more materials, particularly self-assessment exercises, to add to the interactivity of the textbook. Also, we are preparing powerpoint slides so that experts in low-income countries can use them in their lectures. The chapter authors stay in touch with us and will contact us if they think a particular chapter looks out of date. We get suggestions about new chapters too. For example, this year we are going to have several new chapters on the history of child psychiatry”.

VCPH

VCPH maps fairly well onto the OPAL matrix, due to its extensive use of OER, its provision of MOOCS and self-directed open courses and its open policies. VCPH is a collaboration between over 100 institutions and organizations and since 2003 has assembled a multilingual online library of 190,000 items in total, with 5800 identified as OER (see Figure 2).



Figure 2: The VCPH virtual health library

VCPH’s Edgardo de Gracia explains that openness is embedded within VCPH:

“We use open practices to promote equity in health, to combat disease and improve the quality of lives of people of the Americas. While openness is not all-pervasive in public-health institutions in Central and Southern America VCPH hopes to change the culture and while some institutions do not share resources, every year we have new institutions joining VCPH so every year more and more resources are shared”.

VCPH have also developed 14 OER courses delivered free through a Moodle platform, again in three languages, whilst also providing links to nine courses hosted elsewhere. VCPH also runs a successful Facebook page in Spanish with 5200 likes (subscribers). Edgardo de Gracia explains how the open courses work:

“We have self-learning courses and some courses with tutors; 1 tutor to 15 participants. 60% to 75% of applicants successfully complete the tutored courses. On the self-learning courses, the numbers are different; sometimes 1000 start, but less than 50% complete. Participants of our courses are carefully selected from a long list of applicants. The PAH office in each country chooses individuals from those who apply for courses, selecting those who will benefit most. Students demonstrate that they have achieved the learning objectives by making a project in their workplace”.

Physiopedia

Several elements of Physiopedia map onto the OPAL matrix—namely its wiki, open courses and badging. Physiopedia is the most recent project amongst our case studies and has used web 2.0 tools from the outset. Physiopedia currently offer a small number of open courses, including a MOOC: *Physiotherapy Management of Spinal Cord Injuries* which runs annually and last attracted 3,500 registrants from over 120 countries. However, above all Physiopedia is characterised by the wiki that is at the heart of the project, currently containing over 1400 articles and attracting more than 150,000 users from over 200 countries each month. The Physiopedia wiki is offered under a GNU Free Documentation License (GFDL) coupled with a Creative Commons CC-BY-NC-SA license (the same pairing as Wikipedia), and users are encouraged to discover new ways of using it.

Mairs *et al.* (2013) observe that

several wikis currently exist within the health field, including the ‘Flu Wiki’ which was created to help local public health communities prepare for avian influenza pandemics, ‘Wiki Surgery’ which is a free surgical encyclopaedia for surgeons and their patients, and RadiologyWiki.org which is used as an online radiology educational resource (p. 273).

Rachael Lowe discusses the background to Physiopedia: *“As a physiotherapist, I was newly introduced to wikis at an e-learning conference; we followed the wikipedia model. A benefit of the web is making things open so that’s why we did it that way”.* Mairs *et al.* (2013, p. 273) add that “one unfortunate downfall of wikis and blogs is that with virtually anybody able to alter, edit or contribute to these collaborative ‘webpages’, it can be problematic to gauge the reliability and accuracy of such resources”. Addressing this point, Rachel Lowe explains that while the Physiopedia wiki is completely open, editing is restricted to professional physiotherapists who also act as an accuracy check for their peers:

“People are both using the content ‘as-is’ and modifying the content. Without that, the site wouldn’t evolve. They may correct content that is outdated or inaccurate or add new content. Either way, everyone can see when we have something that’s not quite right on there; there’s quality control issues and things need to be updated regularly. But that’s a learning point. Clinicians need to be aware and educated in how to critically assess anything they find on the web”.

Physiopedia’s ‘medium’ rating for open learning architecture on the OPAL matrix is in part due to its pioneering use of Mozilla Open Badges to reward volunteer contributors and course participants (see Figure 3).



Figure 3: Physiopedia's open badges

Open badges are “digital tokens that appear as icons or logos on a web page or other online venue which are awarded by institutions, organizations, groups, or individuals, to signify accomplishments” (Casilli & Knight, 2012, n.p.). Law, Perryman and Law (2014, p. 6) suggest that “badging offers a way of reconciling informal learning and the demands of employers”, and that “the provision of a public-facing profile that acknowledges both formal and informal learning and can be shared through social media networks, is both achievable and desirable”. Physiopedia's Rachael Lowe explains that:

“We decided to use open badging for Physiopedia because we wanted to certify peoples' involvement in the project, and their learning and professional development. It has worked really well, especially for our volunteer programme; it's very motivating for them. Everyone has a profile page where they can add their CVs and their contribution to the wiki is detailed. We've had experience of people who've got jobs as a result of including their Physiopedia involvement in their CV”.

Extending the analysis using Vrieling's framework

Structured courses, teaching and publications such as those described above fit in well with the OPAL matrix and inform our placement of the three case studies in Table 2. However, the OPAL matrix does not give the full picture of the OEP taking place in the three case studies. For example, it tells us little about the behaviour of the participants, for example their collaborative practices. We therefore applied to the three case studies the OEP social configuration framework developed by

Vrieling *et al.* (in press) in order to extend our evaluation. As detailed in the Methods section above, the four dimensions of the OEP social configuration framework are:

- * Practice
- * Domain
- * Collective identity
- * Organization

Practice

All three projects rate equally highly on this dimension, as would be expected from occupational bodies. Discussing VCPH Edgardo de Gracia comments:

“We have achieved rapid growth through openness, allowing us to reach more people and make a positive impact on professional practice. The self-learning courses attract massive numbers, so we are reaching health workers across the region and they are improving the quality of health for the people they serve. Many participants are quite senior, key people in the health institutions in the different countries; for example one became health minister in his country and he applied the final project of his course in the ministry, making a huge impact”.

The IACAPAP textbook is very much the product of the group’s shared knowledge, is a continuous endeavour and has extensive impact on practice. Joseph Rey comments on its scope and impact:

“In Yale University it is being used for training child psychiatrists as reference materials. I also know that it is being used in Brazil, Nigeria, Ethiopia, Lithuania. . .they are just a few examples. . .In Nigeria, the medical profession are achieving, in two or three years, things that has taken the rest of the world 30 years to achieve and our textbook is part of this; it is helping to achieve changes in professional practice at a very fast rate, faster than ever before”.

Domain

An online shared area for participants is not a big feature of IACAPAP, whose members tend to communicate through email, journals and face-to-face conferences, so IACAPAP rates low on this dimension. VCPH achieves a medium rating for its repository, and Physiopedia rates highly for its collaborative wiki.

Collective identity

Again, Physiopedia rates highly for its collaborative wiki-building and maintenance, with collective identity being closely linked to participants’ professional identity as physiotherapists. This dimension is reinforced through the open badging, which explicitly recognises people’s roles in the community. Rachael Lowe explains that:

“The content is created by physiotherapists all around the world. There are small groups of people who develop specific aspects of the content, such as a special interest group from one of the professional associations. They’ll be tasked with creating content within a specific area”.

IACAPAP rates lower for collective identity as although its members collaborate when producing content for the textbook, this collaboration tends to be conducted through topic specialists, rather than as a community-based knowledge sharing. VCPH does not prioritise Collective Identity for its individual users, as its structures and practices reflect the needs of their largely institutional membership. However, individuals are enthusiastic about their involvement, as described by Edgardo de Gracia:

“People are really proud to be part of VCPH. They are proud of their certificates, and some government institutions give money incentives to participants. VCPH is a brand known in the different health disciplines throughout the region. The experience of sharing and collaborating through VCPH is changing the culture of professional health workers, and mostly this is the first time they have studied a virtual course, with synchronous online tools such as Blackboard collaborate. They are really happy to be part of our project”.

Organisation

The pattern of dimension 3 (collective identity) is repeated here. Physiopedia rates highly for its wiki, which is clear evidence of a ‘shared interactional repertoire’ while IACAPAP and VCPH rate low on this dimension for individuals but would rate more highly if this were applied to institutional members.

Applying Vrieling *et al.*’s (in press) framework did not draw out many differences between the three case studies, so did not significantly add to our insight or evaluation. We did note that Vrieling *et al.*’s category 2 -domain- is similar to OPAL’s learning architecture axis.

Implications

Our evaluation of IACAPAP, VCPH and Physiopedia highlights both innovative practices and the fact that current OEP evaluation frameworks are not sufficiently comprehensive nor nuanced to capture all of these practices; indeed, the models reduce the three case studies to appearing very similar. Physiopedia is pioneering in successfully engaging professional practitioners in contributing to an open wiki. The Vrieling framework captures this type of activity particularly well and, of the three case studies, Physiopedia -due to its emphasis on Web 2.0 practices- is the best fit with both evaluation frameworks. However, neither evaluation framework captures the institutional collaboration that is such a feature of both IACAPAP and VCPH, or the localisation that VCPH successfully achieves and IACAPAP is working towards. A more detailed examination of these aspects of the two case studies shows their importance as OEP and the problem of their not being accommodated in the models.

Localisation and translation

The 49 chapter open IACAPAP textbook has been collaboratively developed by over 100 contributors, from 5 continents, and is used extensively around the globe and especially in the developing world. Discussing the localisation of the IACAPAP textbook for different global contexts Joseph Rey explains that to date most requests for localisation of the textbook have focused on its scope, rather than the detail of its content:

“Here’s one example. In western countries epilepsy is not considered a part of child psychiatry, but is part of neurology. However, in low-income countries epilepsy is an important part of child psychiatry. So we have people developing those chapters that would otherwise not be in the textbook. AIDS, also, is a children’s problem in low-income countries while for the rest of the world it is not such an issue in child psychiatry”.

IACAPAP members’ commitment to IACAPAP, and their willingness to give their time freely for the greater good, are central to the localisation of the textbook, says Joseph Rey:

“We couldn’t have such impact in low-income countries without the generosity of members. For example, a trained psychiatrist colleague is currently in Ethiopia spending a year’s sabbatical there teaching. She is going to try to see how our textbook can be used in that context, in a place where there are very few professionals to teach and to extend knowledge. Hopefully that will help us in learning from her experience and supporting adoption of the textbook elsewhere in Africa”.

Of the three case studies, localisation and translation is perhaps the most central to VCPH. The VCPH collaboratively developed library of 190,000 items, including 5800 OER, is offered in three languages, Spanish, English & Portuguese, and has been localised to meet the needs of culturally and linguistically diverse users. Edgardo de Gracia explains:

“Most of the OER allow changes and improvements to the content. Some countries take an entire course and change it to the context of their country. Countries also have their own tutors, who adapt the resources for their own country. Most of the courses were originally in Spanish, but there are increasing demands for English to meet the need of Caribbean countries, and Portuguese for Brazil. The courses have rooms that operate alongside one another in the different languages”.

Joseph Rey acknowledges that language barriers are present for users of the IACAPAP textbook, particularly in low-income countries in Africa and South America. He reports that some users are translating the textbook into other languages on an ad hoc basis, though not to the extent of VCPH.

Measuring impact (and the impact of openness)

Another weakness of the OPAL and Vrieling Frameworks is that they do not allow for the evaluation of a project’s impact on practitioners or end-users, nor indeed the specific impact of openness, again missing an important aspect of understanding the open educational practices that are taking place outside academia and from which academia could learn. Discussing the impact of openness for VCPH, Edgardo de Gracia identifies “a multiplier effect of using OER” whereby “educational resources reach more people. People improve their skills, and consequently the quality and equity in health is improved”.

Addressing the impact of openness in IACAPAP, Joseph Rey and Omigbodun (2015, p. 5) explain that “the rationale for providing open terms of both access and use is that free access offers the literature to students, clinicians, researchers, patients and their families whether they can afford to pay or not”. Additionally, “granting readers full reuse rights unleashes the full range of human creativity for translating, combining, analysing, adapting, and preserving the scientific record; thus, hopefully, multiplying the book’s impact”. In interview, Joseph Rey expands on these points, noting that the impact of the open IACAPAP textbook is particularly great in low-income countries:

“The main thing is that it facilitates access. In many countries, if child psychiatrists don’t have access to open resources like our textbook they don’t have access to any resources at all. It’s not merely a case of saving money. It’s having nothing, or having something. In any case, IACAPAP didn’t think that content restrictions would be helpful. IACAPAP is an NGO with very few financial resources. It did not make sense to put barriers that we could not enforce or monitor anyway”.

Rachael Lowe makes a similar point about the impact of openness for Physiopedia:

“Without openness Physiopedia wouldn’t exist. if we put it behind a closed paywall the people who we’re trying to reach wouldn’t be able to access the knowledge. A lot of people who use our content don’t otherwise have any access to this kind of information—they’re in low-income countries and don’t have access to physiotherapy textbooks or courses. Being open enables these people to use up-to-date resources and achieve impact on clinical practice. And it’s more than just access to content. The format of Physiopedia allows people in low-resource countries and high-resource countries who otherwise wouldn’t connect, to network with each other through the discussion forums that we run”.

Relationships or learning objects?

Our research has also identified a commonality between the three case studies that sets them apart from many open projects—the fact collaboration in each project is largely focused around an object (a textbook, wiki or open resource) rather than around developing relationships between members.

For example, discussion forums are not prominent in any of the case studies, which are more like repositories than online communities. Physiopedia does have a discussion forum for fee-paying members but this is not open. This actually maps quite well with the OPAL matrix, which is also object focused. Arguably, though, the online world for these projects is mirroring the offline world. For example, the offline world of physiotherapy features skeletons, pictures of muscle groups and techniques, and these are arguably more important than relationships (in comparison with a discipline such as psychology, where relationships are central). Interestingly though, the discipline of psychiatry does have a relationship-focused open presence, evidenced in the many Facebook groups of psychiatrists. Physiopedia also have a strong Facebook presence, apart from their wiki. The social layer is thus separated from the object layer. Extending our own research could perhaps involved looking beyond objects to evaluate open professional projects focusing on relationships. Relevantly Bitz (2013, p. i), discussing education, observes that “the literature finds that teachers who collaborate online are engaged with the group, develop a sense of community, improve their knowledge of subject and pedagogical content, and intend to modify their instructional practices accordingly”, adding that “the online environment enables teachers to access and share knowledge in a timely and comprehensive manner”.

Conclusion

It is apparent that for the health/public health sector online knowledge-sharing offers huge advantages, especially when conducted in the open. Mairs *et al.* (2013) conclude that:

Knowledge translation is becoming a critical component of the healthcare field, and online technologies are emerging as a key facilitator of efficient and timely knowledge exchange. Through online technologies, it is possible for stakeholders to share health knowledge regardless of geographical constraints, thus encouraging the advancement of knowledge in health and other fields (p. 274).

Clearly, there is much to learn from studying OEP outside formal education, especially in terms of collaborative approaches to knowledge creation, resource sharing and the ways in which a sense of collective identity can traverse geographical borders. OER and OEP could have huge implications for the global shortage of well-trained healthcare professionals in terms of the provision of professional development, peer-support, up-to-date learning materials and resources localised to meet the needs of diverse contexts.

However, our study indicates that the open education community does not currently have suitably flexible and comprehensive mechanisms for capturing and learning from innovative open practices and therefore may be missing opportunities to do so. For example, influential frameworks such as the OPAL matrix, with its language of teachers, courses and educational institutions, are overly narrow and do not map easily outside academia. Additionally, while the Vrieling framework works well for the activities of individuals it does not easily accommodate the practices of professional consortia, which are common in the vocational world. We argue that an extended framework is needed in order to:

- (1) Better encompass vocational and lifelong learning;
- (2) Better evaluate the ultimate application and impact of knowledge and OEP outside the formal classroom (for example in clinics or community centres);
- (3) Allow for consideration of localisation practices;
- (4) Better integrate social learning, open collaboration, localisation, object use and re-use, and open learning architecture in a single set of evaluation criteria.

Our own research is limited in that we have only looked at one sector -health- and we strongly encourage other open academics to identify, evaluate and share open practices outside academia in their specialist fields, especially those which unite globally dispersed participants and which operate on a social justice agenda.

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APPENDIX 1: Mapping the data collection methods to the analysis frameworks

		OPAL - OER use			OPAL Social Practices			Vrieling			
		OER creation	OER use	OER re-use	Co-creation	Sharing	Open pedagogy	Practice	Domain	Collective identity	Organisation
INTERVIEWS	What is the background to your using open practices (incl CC licence) in the project?	x	x	x							
	Are there any more dimensions of * other than that which is publicly viewable on the website?				x	x	x	x	x	x	x
	Could you say something about the relationship between institutional members and individuals in your project...E.g. who is your main audience... Who is prioritised...				x	x		x	x	x	x
	In what ways do people collaborate in your project?	x	x	x	x	x		x		x	
	In what ways do people involved in your project display a sense of collective identity?					x				x	
	Could you tell us how people use your content? e.g. do they share, reversion, print, use in teaching, translate, localise in some other way, discuss etc...	x	x	x	x	x	x				
	It's clear your project has a global reach. Will you describe how you localise content for diverse users around the world.	x	x	x	x	x	x	x			
	What do you see as the advantages and disadvantages of open educational resources for projects such as yours (for institution, practitioners and end-users)?	x	x	x	x	x	x				
	What is the impact of your project on professional practice?							x		x	
	Could you give any examples of the impact of your project on end-users? Could you direct us to any case studies?							x		x	
	Why did you decide to use open badging for Physiopedia? Have you any evidence of its impact on practitioners/participants?						x	x		x	
Overall, what is the impact of openness on the project? (for example, the advantages & disadvantages)	x	x	x	x	x	x					
What would you suggest to anyone who follows the same journey											
Other methods	Website observation and analysis	x	x	x	x	x	x	x	x	x	x
	Document/ object analysis	x	x	x	x		x	x		x	