

Capacity Building needs to foster Open Access

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Introduction and Objective

In May /June 2013, a desk review of Open Access (OA) training and education resources for researchers and librarians was undertaken on behalf of UNESCO. The purpose of the review was to identify existing training and education resources, highlight gaps, and to develop an outline of the key curriculum components for training and education in OA.

This report builds on two recent studies commissioned by UNESCO. The first, “Directory of Open Access Education and Training Opportunities” (2011), by Professor Shalini Urs, found that “training opportunities have remained one of the untapped terrains of (the) OA movement”. The second, a highly comprehensive “Policy Guidelines for the Development and Promotion of Open Access” (2012), by Dr. Alma Swan, points to the continual needs to provide infrastructure and capacity building in support of effective OA policy development and implementation.

These reports covered admirably the history of OA in the broader context of global change in scholarly communication and research trends, the key benefits of OA in terms of research uptake and impact, the major routes for achieving OA - namely through OA repositories and OA journals, and the key actors and organizations involved in OA from around the world. We will not repeat the background information outlined in these reports here. However, given the rapid pace of change in the OA landscape, there are already gaps since the above studies were completed and the current report will highlight new developments, particularly in the area of new metrics for OA publications, and the kinds of decisions researchers need to make in the face of increasing number of government funders and donor’s policies on OA.

The starting point of this report is that the OA movement has progressed well beyond whether OA is desirable, to pragmatic actions and decisions on how best to achieve OA to the entire corpus of scholarly literature for all (Suber 2012, Wolpert 2013). At the 10th anniversary of the Budapest Open Access Initiative in 2012, participants set the goal that “within the next ten years, OA will become the default method for distributing new peer-reviewed research in every field and country”¹. Our focus is therefore on researchers’ decision making with regard to their options for making their research output openly accessible, how to be in compliant with funders’

¹ See Ten years on from the Budapest Open Access Initiative: setting the default to open. <http://www.budapestopenaccessinitiative.org/boai-10-recommendations>

requirements for OA, and the kind of training and education that needs to be in place to support the transition to OA.

Despite the significant growth of OA publications across the disciplines and around the world (Bjork et. al 2010, Laakso et. al 2011, Gargouri 2012), a high percentage of researchers across institutions continue to show low awareness of the principles and benefits of OA. Some have serious misconceptions about the means and goals of OA (Pitney 2010, Taylor 2012), while others are not familiar with the support and resources available to them (Swan and Brown 2005, Watson 2007, Creaser et. al. 2010, Kim 2011). A recent large scale study (Fry et. al 2010) of author's attitudes towards OA further confirms that while authors show high levels of support for OA, they show low levels of familiarity with regard to the means of making their work OA. Thus awareness raising and basic education about the aims and ways to achieve OA remain a key priority for the OA movement.

At the recent Global Research Council Summit on May 27-29, 2013, heads of 70 global science and research councils affirmed Open Access will be the main paradigm of scientific communication for the coming decades. In an action plan released at the summit, "encouragement, awareness raising, and support for researchers that wish to provide their results in Open access" were three of the main items identified in the plan².

Why the focus on Researchers and Librarians?

Scholarly communication is dependent on a highly complex ecosystem of players, technologies, resources, services, knowledge base and funding. Publishers and funders of course play highly important roles in the system, however the scope of this report will not allow us to consider the diverse contributions of all the key players. This document focuses on the training needs of researchers and librarians and it is important to remember that these two allied groups were the key drivers of the OA movement from the start and their collaboration continues to drive important changes in scholarly communication (Willinsky 2006, Lorimer et. al 2011).

Commercial and scholarly publishers and funders joined in the discussion and processes often in reaction to the changes brought about by OA, instead of driving

² For details of the Global Research Summit Action Plan, see http://www.dfg.de/download/pdf/dfg_magazin/internationales/130528_grc_annual_meeting/grc_action_plan_open_access.pdf

them, though we are beginning to see important proactive policy initiatives by some funders (such as the White House Directive on Public Access to the Results of Publicly Funded Research³) and innovative experiments with new business models by some publishers (for example the PeerJ membership model⁴).

Research libraries have in particular been taking a leadership role in implementing new networking technologies in support of scholarly communication (Maron and Smith 2008), and in creating new services such as institutional repositories (Walters 2007) and hosting journal platforms (Ho and Thomson 2013), which are often open source community-based initiatives with broad local and global support networks (see for example the Confederation of Open Access Repositories⁵). These infrastructure and capacity building activities have been continuing apace, and it is timely to take stock of the key developments and how they can be more formally organized, so that researchers and librarians could further their collaborations while taking advantage of the substantial collective resources that have already been built.

Organization of the report

The next section of the report begins by identifying the key means by which scholars can make their work openly accessible, as well as the decision processes that researchers undergo when planning to make their work OA. A decision tree is provided as a means to map the various areas of expertise and support that researchers require, followed by an overview of recent significant developments in scholarly communications enabled by OA. The report then scopes out the subject area of OA and provides an outline of curriculum components for OA education. Existing training resources are documented and gaps are identified in library services and training. And finally, the report concludes with a discussion about where best to begin capacity building in this area.

Making your research output Open Access

Over the past decade, provision of OA has progressed along two complementary routes, commonly referred to as the Green route or open archiving in repositories and the Gold route or open access journals. With Green OA, authors or publishers deposit versions of articles accepted or published in traditional subscription journals

³ <http://www.whitehouse.gov/blog/2013/02/22/expanding-public-access-results-federally-funded-research>

⁴ PeerJ is an open access journal publisher that is using a author pay model based on an all you can publish membership scheme. For details see <https://peerj.com/pricing/>

⁵ <http://www.coar-repositories.org/>

into freely accessible repositories. The repository could be based at the author's institution or be a subject based repository. Authors may also choose to deposit their publications in one of the growing number of regional or community based repository services such as OpenDepot⁶, Zenodo⁷, or Figshare⁸.

Gold OA refers to publication in open access journals that are either born open access or journals that have been converted to an open access model.

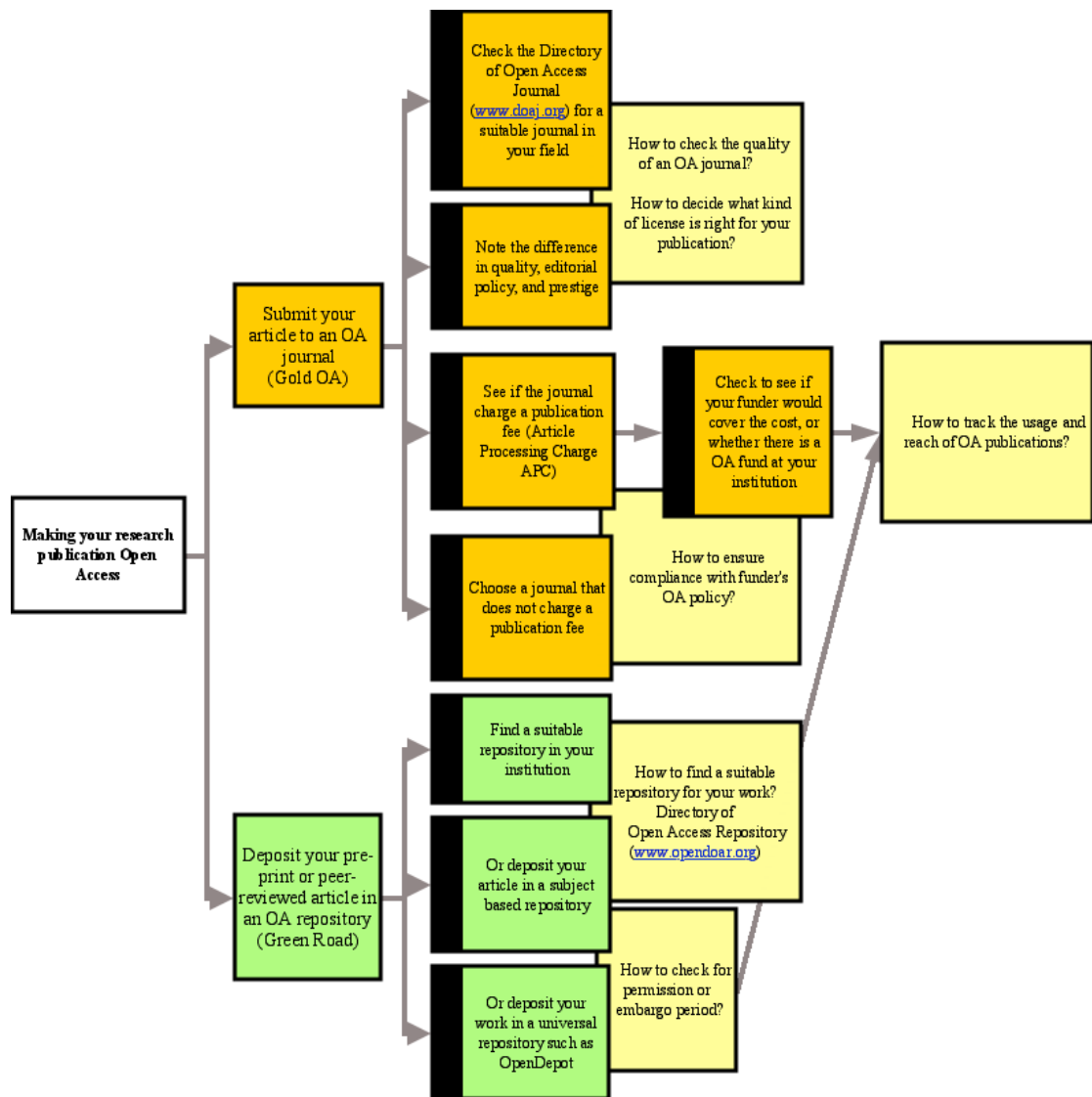
A decision tree showing the typical process an author must go through in order to make an article open access is outlined below. This is instructive because it highlights the areas of knowledge required for researchers to make their articles open access, and areas where libraries could provide the infrastructure and resources in support of this goal.

⁶ OpenDepot: <http://opendepot.org/>

⁷ Zenodo: <http://www.zenodo.org/>

⁸ Figshare: <http://figshare.com/>

Figure 1: A Decision Tree showing the OA pathways a researcher may choose and the Common Questions that may arise.



There are also a number of emerging issues in OA that will have an impact on the scholarly communication environment in the coming months and years and for which authors and other stakeholders should be aware.

Funding models for OA

A variety of funding models for OA publishing have emerged in recent years. These include different forms of volunteer contributions from academics, subsidies from various government agencies, universities, and private funding agencies (Laakso et.

al 2012). There are also “freemium” models⁹, where plain HTML versions of publication are free to read, but download of enhanced versions such as PDF and ePUB requires payment (Mounier 2011).

A prominent model of Gold OA is funding publication through article processing charges (APC), paid by the author, their institution or funder. The APC model has seen phenomenal growth in recent years, both in terms of total volume of publications, particularly in the biomedical sciences, as well as the growing number of publishers (both for-profit and non-profit) using this business model (Laakso et. al 2012).

The APC model has also received a great deal of attention and debate because of the highly variable fees charged by different publishers (Laakso and Bjork 2012), but also because of the emergence of a number of low-quality and questionable journal publishers set up to take advantage of unsuspecting authors and cash in on the growing number of funded mandates for OA publishing. However, these so-called “predatory” publishers (as coined by Jeffrey Beall¹⁰) that do not have any transparent editorial and quality control still only publish a very small number of articles overall (Solomon 2013), and their presence will likely be short-lived as the scholarly and publishing communities expose their shady practices.

In this regard, the Directory of Open Access Journal (DOAJ), which now indexes close to 10,000 OA journals from around the world, provides a highly important service as it offers detailed information about the editorial control of each journal, the richness of meta-data it provides, as well as the copyright and licensing terms of each journal¹¹. The DOAJ also provides a breakdown of journals that charge APC, and these are the number as of July 1, 2013¹².

No Article Processing Charge: 6495 journals

With Article Processing Charge: 2785 journals

Conditional Article Processing Charge: 400 journals

No information re Article Processing Charge: 211 journals

⁹ A good example is the The Journal of Medical Internet Research, <http://www.jmir.org/>. OpenEdition.org also publishes books and journals under a freemium model.

¹⁰ For Beall’s list of “predatory” publishers, see <http://scholarlyoa.com/2012/12/06/bealls-list-of-predatory-publishers-2013/>

¹¹ The journal inclusion criteria of DOAJ has recently been updated and expanded to ensure that good quality journals with clear editorial policies and quality markers are indexed. See the announcement here: <http://www.doaj.org/doaj?func=news&nId=303&uiLanguage=en>

¹² Data from <http://www.doaj.org/doaj?func=byPublicationFee&uiLanguage=en>, retrieved July 1, 2013

These numbers clearly indicate that the majority of OA journals do not rely on the APC model, while using a variety of funding mechanisms to meet the cost of publishing as indicated above. Indeed it is a common misconception to equate OA publishing (the Gold route) with OA itself and a further mistake to think of APC OA publishing as synonymous with Gold OA. Given the complex landscape, explaining the methods, funding models and the quality control criteria to researchers is clearly an important area where capacity building is needed.

Copyrights and Permissions

In addition to unknown quality and submission costs, another area that proves to be a barrier for authors is copyright and permission assignment. Most authors are not aware of their own rights and they often willingly sign away all rights to publishers, and are also often reluctant to adopt a Creative Commons license of any kind for their work for fear of misuse. Much needs to be done in terms of educating authors about the importance of liberal open license such as CC-BY because of the reuse rights it enable, such as text mining and other forms of semantic linking that makes scholarly articles far more dynamic and useful (Carroll 2011). Likewise, much remains for authors to learn about their rights, the embargo period for articles deposited in repositories, and the archiving rights they can retain through author addendum to traditional copyright transfer agreement. Resources on copyright and licensing issues are plentiful but ensuring that authors are properly informed remains a challenge that capacity building needs to address.

New OA metrics and new conceptions of impact

While the quality and reputation of the journal and the cost implications are key concerns for authors considering Gold OA, another related concern is the implications of the publishing outlet on career advancement and future funding opportunities. The Publish or Perish culture is still a dominant one in academia and the quantity, reputation, and the impact of publications as measured by the Journal Impact Factor (JIF) is still an extremely powerful control mechanism of author's publishing behavior. Researchers are generally unaware that they can still publish in many traditional subscription-based journals with high or known impact factor, while making a version of the publication freely available to all via an open repository (Green OA). Indeed a number of studies have shown that articles that are openly archived have higher citation rates than articles that are not (Swan 2010, Bjork and Solomon 2012, see also the extensive bibliography on this topic maintained by Steve

Hitchcock¹³), and institutional repositories now commonly provide detailed usage data for the publications held in the repository.

More important than “traditional” citation and impact measures, new technologies and OA are enabling important new avenues for assessing the real impact of publications. As the journal impact factor only provides the average number of citation of articles in a journal, this metric does not provide an indication of the actual usage and influence of any given article¹⁴.

In contrast, many new OA journals, led by publications such as the Public Library of Science (PLOS), are demonstrating the power of “article level metrics¹⁵”. In addition to traditional citation information (in e.g. Web of Science, Scopus, PubMedCentral), these metrics capture a broad range of usage and download statistics as well as citations by a much broader range of online readers, such as social media mentions in blogs, twitter, Facebook, and other increasingly important social discovery tools such as Mendeley (Henning and Reichelt 2008) and Academia.edu (Price 2012)..

New publishing approaches such as PLoSOne¹⁶ and the recently launched OA eLife sponsored by the Wellcome Trust, the Max Planck Society and the Howard Hughes Medical Institute¹⁷, which are often referred to as mega-journals, are also providing important alternatives to traditional blind peer-review process, which is often time consuming and non-transparent. Rather than relying on a very small number of selected reviewers to determine the potential significance and originality of a research article, these journals apply a light-weight pre-publication review, and rely instead on post-publication filtering, evaluation, and open commentary to determine the significance of the research.

New tools such as Altmetrics (Roemer and Borchart 2012) and ImpactStory (Priem et. al 2012, Priem and Piwowar 2013) are also attempting to capture different forms of significance and usage patterns of OA articles, looking not just at the end publication but also the wider process of research, collaboration and contact around the research publications. Importantly, these tools also provide open application programming interface (API) that allows repositories and OA journals to track individual publications, further enhancing the value of openly accessible research

¹³ <http://opcit.eprints.org/oacitation-biblio.html>

¹⁴ Despite its dominant usage, there has been long and sustained critiques of the Journal Impact Factor and the associated journal ranking. For the latest critique of the JIF and a comprehensive bibliography on the issue, see Brembs et. al. 2013.

¹⁵ For a full description of the dimensions and benefits of Article Level Metrics, see <http://article-level-metrics.plos.org/alm-info/>

¹⁶ <http://www.plosone.org/>

¹⁷ <http://www.elifesciences.org/>

outputs. Such developments also provide opportunities for librarians, who could incorporate these tools into the growing OA toolkit and services for researchers.

Open Access and the Role of Libraries

As seen from the previous section, the expansion of open access through author's demand and funder's mandates will require new skills and knowledge, by both researchers and within the library community. However, there is a strategic difference in the expertise required and methods of delivery for OA education in these two communities. Given that researchers are consumed with their research and teaching responsibilities, it follows that the library will be the focal point for OA education and support for the research community. This is not a new role for librarians, many of whom are already actively involved in OA advocacy and managing OA services. However, there is a need to augment existing knowledge of OA amongst librarians, and "mainstream" this expertise across the entire library operations.

Librarians are already perceived as the experts in OA on many campuses and it is clear that as OA continues to expand and becomes the status quo, librarians working in academic libraries across all functional areas will need to increase their level of knowledge. Although, the kind of OA expertise required by librarians will depend greatly on their role within the organization. At minimum, most academic librarians should have a general understanding of open access, its benefits, applicable OA policies, and be able to provide advice to researchers about how they can make their articles OA. Other specialist librarians, such as those involved in scholarly communications, managing digital repositories and journals, or collections and acquisitions, will need to have a more comprehensive knowledge of OA in their specific areas. Meanwhile, subject or liaison librarians will need to understand the disciplinary subtleties of OA in their subject areas. On top of all of this, OA and the scholarly communication environment are in times of unprecedented and rapid change making it challenging and time consuming just keeping up with the new developments.

Outlining the OA Subject Area

There are several ways in which the subject area of open access can be delineated and a number of reports and activities have attempted to outline the types of expertise required by librarians.

In 2012, Sage undertook a survey and held a workshop with librarians to discuss the impact of OA on the future of libraries¹⁸. The issues for librarians were categorized into three key areas:

- Advanced discovery services
- Communication, training and networking with own institutional community
- Repository building and curation

A 2012 session at the IFLA conference explored the challenges and opportunities for libraries in a scenario where open access might become the default mode of scholarly communication. The issues were also grouped into three areas¹⁹:

- Managing OA content
- Managing dual content
- Developing infrastructure

Alternatively, a 2012 survey undertaken by the Association of Research Libraries divided open access into two areas²⁰:

- Outreach and educational activities
- Those services related to hosting and managing digital content

A review of courses in the area of open access also documents various curriculum components for OA. For example, University of British Columbia course, *LIBR 559K: Topics In Computer-Based Information Systems: Open Access* has divided OA curriculum into the following topics:

- Overview and definitions of open access
- Open access publishing (full, hybrids, library as publisher)
- Open access archiving (institutional and disciplinary, library involvement)
- Open access policy and advocacy and library roles
- Futures for open access, and transformative potential of open access

For the purposes of this report, we have sought to align the OA curriculum components with standard operational functions of the library, matching the delivery

¹⁸ <http://www.swets.com/blog/the-impact-of-open-access-on-librarians#.UbdiS-ud5iW>

¹⁹ <http://sparceurope.org/speakers-announced-for-ifla-session-on-open-access/>

²⁰ <http://thescholarship.ecu.edu/bitstream/handle/10342/4120/StructureScholComm.pdf?sequence=3>

of expertise with the specific role of the librarian. To that end, the OA subject matter has been divided into three areas:

- I. Information and advocacy will deliver the foundational understanding of OA and build expertise in OA advocacy and education to the research community and other stakeholders;
- II. Managing OA infrastructure will build the skills required to plan, implement and manage OA repositories and journals; and,
- III. Collections and acquisitions will deliver support librarians in the selection, assessment, discovery, support services for providing access to OA content.

I. Information and advocacy

Libraries play a critical role in promoting open access on campus by initiating discussions around the issues of scholarly communication and demonstrating that Open Access is a viable solution to existing problems. The recent survey of UK librarians conducted by Sage found that, “communication skills are very important for librarians in an OA environment” (Harris 2012:11). As mentioned earlier, many researchers still have negative perceptions of OA, are misinformed, or lack sufficient information to know how to make their articles OA. To address this, many libraries have developed programs to better inform researchers on campus about open access. And as OA gains in prominence, librarians are being asked by researchers and administrators and others on campus to explain this trend and there area a range of issues to which librarians must be ready to address.

In August 2012, SWETs, a global information services company, undertook a number of interviews with librarians to find out more about the impact of OA on their work. Interviewees talked about the need to dedicate more staff time and resources to providing advice and support for academics navigating their way through OA, in particular on issues relating to intellectual property rights, publisher agreements, and so on.²¹

Librarians must also inform researcher about relevant OA policies, provide practical advice in terms of how to adhere to these policies; as well as educate students and university administration about OA.

A relatively new role designed to more directly engage with researchers and others about OA on campus is the Scholarly Communication Librarian. The term scholarly communications refers to “the system through which research and other scholarly

²¹ Hedges, June. <http://www.swets.com/blog/the-impact-of-open-access-on-librarians#.UbdYm-ud5iU>

writings are created, evaluated for quality, disseminated to the scholarly community, and preserved for future use”²². Typically, scholarly communication librarians will develop strategies for the library to promote OA and act as the locus of information about OA for other library staff and faculty members. They are not only required to have an understanding of the system, but also to actively advocate for changes, in particular by promoting the transition to OA.

The University of California and others in the US have developed a generic job description for the scholarly communication librarian²³. Key responsibilities include developing and implementing a program to increase awareness among faculty, researchers and students about scholarly communication issues in the digital environment and working closely with liaison librarians and preparing communication materials they can use with their constituencies. Knowledge of intellectual property issues are also seen as critical for this role. Three core areas of expertise of a scholarly communication librarian have been outlined as: open access, copyright and intellectual property, and research support (Thomas 2013)

Clearly, scholarly communications librarians must have a very in-depth knowledge of OA. However, as OA becomes more pervasive, it will be key that all library staff have a baseline knowledge of the subject area. The University of Minnesota, for example, makes the case that liaison librarians should also take on responsibility for educating and advocating with faculty (Malenfant 2010). Indeed, as OA becomes the default method of dissemination for scholarly works, knowledge of OA will become central to the library profession.

II. Open access infrastructure: managing repositories and journals

Managing infrastructure for local open access services is a huge area of growth for libraries. Institutional repositories, in particular, institutional repositories have become standard services for research libraries across the world. The skills associated with managing repositories are often separated into a number of distinct areas. A 2010 UK survey of repository managers identified three primary roles associated with repository services (Wickham 2010):

1. Repository management- involves strategic and financial management, advocacy and communication, staff and project management, expert advice to the institution.

²² ACRL. <http://scholcomm.acrl.ala.org/>

²³ As outlined in Jim Stemper's *Generic Template: Scholarly Communication Librarian Position Description*. <http://www.arl.org/storage/documents/publications/scprog-sc-librarian-position-description.pdf>

2. Technical– involves knowledge and experience of software platforms and the main repository software, deployment, testing, upgrading and development of software.
3. Administrative– involves adding records, checking metadata and copyright.

Another 2012 survey of repository managers in Italy listed the top competencies of IR managers as (Cassella and Morando 2012):

- Communication skills such as the ability to promote the repository and to communicate with academic leadership, faculty, research communities and administrative units; and the ability to manage copyright issues;
- Collection development and metadata expertise are also regarded as extremely important, but slightly less than the former, because these are abilities librarians are trained for traditionally;
- Project management, team work and planning repository activity workflow are also highly rated;
- Technical skills, but mainly in relation to interoperability standards and protocols.

In addition to repository services, libraries have also been expanding their role in the area of scholarly publishing, offering a greater range of pre-publication and editorial support services (Mullen et. al 2012, Furlong 2010). Library publishing programs tend to use open source software programs, such as the Public Knowledge Project's (PKP) Open Journal System, or develop their services on top of traditional repository platforms. In terms of associated skills, a 2012 survey conducted in the US reported that knowledge of copyright was the most crucial area of expertise for scholarly publishing in libraries, followed by computer programming and negotiation skills" (Mullen et. al 2012). Developing business plans and active marketing of services are also key (Co-Action Publishing, & Lund University Libraries 2010).

There is significant overlap in the skills required for managing OA repositories and publishing platforms. These include competencies in the areas of communications, administration, and technological expertise (Adema et.al 2010) and roles are usually spread across several positions within the library.

III. Collections and acquisitions

The third broad category of expertise for librarians in OA is related to collections and acquisitions, involving processes such as identifying, evaluating, selecting resources, and providing support for external OA services. As OA continues to expand, OA content should be integrated into library discovery systems and made available through the library website, OPAC, and indexing and abstracting services. Libraries that employ federated search tools, discovery layer products, integrated library systems must ensure that sources OA materials are included alongside more traditional subscription library materials (Mullen 2011). Currently, in many libraries this type of expertise is very distributed across the library²⁴ making it less useful than it might otherwise be.

Knowledge of IP will also be important in this area. Librarian respondents of a 2012 survey undertaken by Taylor & Francis reported that one of the key challenges in supporting OA environment will be the identifying access and reuse rights relating to free online content. “Metadata identifying OA resources is in its infancy, so identifying whether content is free to access or what the license terms for that content are can be difficult.”²⁵

Librarians have always evaluated and selected content for their users and will continue to do so with OA resources. One respondent in the Taylor & Francis survey asserted “Knowing whether it is valuable and whether it will still be there from one week to the next [is a challenge].”²⁶ As discussed earlier, identifying and avoiding the “predatory” publishers that have emerged with OA will also be necessary.²⁷ As discussed by Jeffrey Beall in his Scholarly Open Access Blog²⁸, libraries will increasingly function as recommender systems for users, filtering out works published by predatory publishers and pointing only to the highest quality research.

A further very important issue in this area includes knowledge of the evolving OA business models and methods for providing support for OA services. Given the nature of OA (it is not pay to use), libraries will need to find new and innovative ways to re-distribute their funds in support of OA services such as OA journals, as well as the range of other services that support discover and use of OA content (for example

²⁴ *Ibid* pg. 17

²⁵ *Facilitating Access to Free Online Resources: Challenges and Opportunities for the Library Community*. 2013 pg. 12. <http://www.tandf.co.uk/libsite/pdf/TF-whitepaper-free-resources.pdf>

²⁶ *Ibid* pg. 16

²⁷ *Ibid* pg. 16

²⁸ Jeffrey Beall. <http://scholarlyoa.com/2012/10/04/scholarly-open-access-publishing-and-the-future-of-academic-library-acquisition-departments/>

OA directories such as SHERPA ROMEO, Directory of Open Access Journals and Open DOAR, etc.).

Specific Curriculum Components for Open Access

The subject area of open access is expansive and cannot be worthily covered in a comprehensive within a single course or curriculum. There are a variety of technical, service and administrative elements that may be of particular relevance, depending on the role or position of the librarian. These areas of knowledge will span across the library, and require varying levels of expertise by librarians in different positions.

Based on the outline of the subject area of OA provided earlier, the broad-stroke components for open access education for librarians are listed below along with the general learning outcome in each of the three major areas:

I. Information and advocacy

Learning outcome:

- Participants will be able to define open access and provide information to researchers (and other stakeholders) about the benefits of OA
- Participants will have a knowledge of all relevant OA policies and be able to provide guidance to researchers about how to adhere to these policies and how to make their articles OA

1.1. History and evolution of scholarly communication

1.2. Why OA and what are the benefits

1.3. Major arguments against OA and responses

1.4. Economics of open access

1.5. Disciplinary perspectives

1.6. Relevant OA policies

1.7. Implementation of OA (how researchers can make their papers OA)

1.8. Other OA content: monographs, thesis, data

1.9. Copyright and licenses: CC, CC-BY, etc.

1.10. Promoting open access at the library and on campus

II. Open access infrastructure: managing repositories and journals

Learning outcome:

- Participants will be able implement and manage services and infrastructure that support OA on campus
-
- 1.11. Value proposition/business case for hosting repositories and journals
 - 1.12. Administration and planning for OA services
 - 1.13. Repository software implementation (technical development)
 - 1.14. Repository services (workflows, advocacy, metrics, integration)
 - 1.15. OA journal software implementation (technical development)
 - 1.16. OA journal services (workflows, distribution, marketing)
 - 1.17. Copyright and licenses
 - 1.18. Preservation

III. Collections and acquisitions

Learning outcome:

- Participants will be able to identify and assess OA resources and understand methods for facilitating the discoverability, visibility and use of OA resources on campus
-
- 1.19. Integrating OA content into library collections
 - 1.20. Information products in OA environment
 - 1.21. Content identification and assessment
 - 1.22. OA business models
 - 1.23. OA memberships and agreements
 - 1.24. Other forms of support for OA journals e.g. SCOAP
 - 1.25. OA clauses in existing content licences

Existing Training Resources

Librarians and researchers have been at the forefront of the open access movement since its inception and have been amongst the strongest advocates for OA over the years. Many campuses already have individuals that have expertise in OA. This expertise has mainly been acquired on the job, through self-learning using existing information resources and by attending conferences. However, as OA expands and is adopted by the scholarly community worldwide, librarians and researchers will be required to have a much greater understanding of OA.

Currently, there is an abundance of information resources, conference sessions and short-term workshops focusing on many of the different issues related to OA that are available to both researchers and librarians. Likely, the most comprehensive training currently available worldwide is in the area of repository software development, where there are active open source communities that provide support and offer technical advice for software implementers.

The desk review also identified a few courses within library graduate school programs that provide a whole semester course on open access. As well, OA is often discussed within the context of broader course curricula such as scholarly communications, digital libraries, or academic libraries.

Tables 1, 2, and 3 offers an overview of existing training opportunities in the area of open access.

Table 1: Examples of Information and Advocacy Training Resources

Organization	Type of Resource	Context
SPARC	Web-based information resources	Online. US centric, but can be adapted to other environments
OASIS	Web-based information resources	Online. International, mainly focused on developed countries
EIFL	Workshops and short-term training courses	Mainly Africa and Europe
ACRL Workshop "Scholarly Communication: From Understanding to Engagement"	In person workshop	North America

Various sessions in conjunction with OA Conferences and Open Access Week events	One-off sessions	Various location, numerous
National and regional initiatives	One-off workshops	Various locations, numerous
University Level Scholarly Communication Courses (Library and Information Studies Schools). See Appendix 1	3-credit courses that offer a more comprehensive overview of scholarly communication and the implications of open access.	Various locations, but not widespread

Table 2: Examples of OA Infrastructure Training Resources

Organization	Type of Resource	Regional Context
Open source Repository platforms (e.g. DSpace, EPrints, FEDORA, Islandora)	Hands on training for implementing repository software. Information resources and discussion lists	Worldwide
Repository hosting (e.g. BePress, Open Repositories)	Customer support for repository management	Worldwide
EIFL	One-off training workshops, webinars, information resources in repository management	Mainly Africa and Europe
Workshops and conference sessions	One-off training sessions in various areas: repository management, OA journal management, standards, business cases, etc.	Various locations
Public Knowledge Project	Assistance with software implementation for members	Various locations
Directory of Open Access Journals	Online Guide to Open Access Journal Publishing	Online
SPARC	Campus-based Publishing Resource Centre	Online. US centric, but can be adapted to other environments
National and	Various one-off workshops and sessions related to	Various locations (more widespread)

regional initiatives	repository and/or	for repositories than OA journals)
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Table 3: Example of Collections and Acquisitions Training Resources

Organization	Type of Resource	Regional Context
OASIS	Web-based information resources	International
Library Conferences	Sessions	Various locations, but not widespread
Library Graduate Programs	Course sections	Various locations, but not widespread

Gaps in Training and Education

Despite the range and number of training opportunities available for OA, there are large gaps in formalized education programs across all curriculum areas. The previous UNESCO review uncovered thousands of workshops on OA-related aspects that have been conducted over the years. There are also many comprehensive information resources covering numerous issues related to OA.

While helpful, these types of training resources have significant limitations. Information resources are distributed and require a high degree of self-direction by learners. In terms of one-off workshops and sessions, these are not sufficiently comprehensive to provide the theoretical foundations or enough detail to develop the necessary expertise. Both types of resources are used extensively by those already involved with OA, but may not be utilized by the majority of librarians and researchers. Given the rapid expansion of OA, a fundamental understanding of OA will be required by both librarians and researchers.

Further, there are large differences in terms of access to education across geographic regions and languages. Many of the existing training resources are offered in English and reflect the perspective of the developed world. There are unique jurisdictional issues that will require specialized knowledge (such as national policies), as well as additional challenges for implementing OA for those in less developed regions. These are areas that require continued attention to ensure that the diffusion of OA occurs in an equitable and inclusive manner (Chan et. al 2012).

Building Capacity in a Rapidly Changing Environment

This desk review confirmed that although there are numerous information resources available in the area of OA, there are few formal training programs to support the needs of librarians and researchers as OA continues to expand.

The existing OA resources do, however, provide a good foundation for further capacity building in the area of OA. Much of the knowledge required by librarians and researchers already exist, but must be transformed into formal education programs in order to build appropriate levels of knowledge within the library and researcher communities.

As discussed earlier in the report, we envision that majority of training for researchers in the area of OA will be delivered through the libraries. As noted by others, “achieving cultural change within institutions in relation to OA is a major challenge” (Pinfield 2008:17). Perhaps the most appropriate place to begin in terms of building capacity for education in OA is within the first curriculum area, information and advocacy. This will ensure that librarians have sufficient knowledge of OA for their work, as well as being able to deliver information and training to the research community.

A formal education program implies the delivery of the education through a recognized training environment. In terms of librarians, there are a number of ways in which OA-related subject matter could be delivered:

- Integrating OA curriculum into existing academic library courses (LIS)
- Developing and implementing an OA course(s) into existing LIS programs, or
- Creating stand alone course(s) external to LIS program and delivered through another means

For researchers, many libraries are already active in promoting open access on campus, often through scholarly communication librarians or departments.

Developing a curriculum that could be implemented and delivered in librarians through their outreach activities would support capacity building for OA education in the research community.

Online courses, such as MANTRA²⁹, have been shown to be successful in providing education for graduate students in the area research data and may be an appropriate option for providing education in some areas of OA. These types of online

²⁹ <http://datalib.edina.ac.uk/mantra/>

educational tools can use a Creative Commons license, which would enable institutions and regions to adapt the content for their specific environment.

This is also a rapidly evolving subject area, making the development of curriculum a challenging exercise. A key area that is witnessing rapid change, as noted in an earlier section of this report, is the development of new metrics and tools for research evaluation. Such developments are going on hand in hand with changing conceptions of what constitutes scholarly outputs in the open network scholarly environment (Bourne et. al 2012). While the original target of OA was the scholarly journal article, increasingly other forms of research outputs are being recognized as important contributions to the pool of global knowledge (Chan et. al 2012). These outputs not only include theses and dissertations, books and book chapters, but also data sets, software and analytic tools, as well as other forms of non-traditional scholarly outputs (Bourne et. al 2012).

Researchers from across the disciplines, from single laboratories to large scale digital humanities initiatives, are creating and sharing tools to document their workflow, sharing queries and methods, depositing their data in interoperable repositories, and refining their research questions and answers both prior to and after “formal” publication (Fitzpatrick 2011, Nelson 2012). As these activities are taking place in an open network environment, it is easy to track the breath and depth of a research’s intellectual contribution, and new tools, as noted earlier, are being developed to better capture the diverse forms of engagement during the research process and final publication.

Although acceptance of new forms of metrics for measuring research impact and adoption by the funding agencies and the research community will require a substantial cultural shift, they have great potential that the OA movement must embrace (Bjork 2013). Librarians and researchers have been the key drivers of change, and they will continue to lead and innovate, and with increasing support of the funders and adaptable publishers. And, as new practices become widespread, it is important that the research and library communities keep pace with training and capacity building in these areas.

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