Strategies for Supporting OER Adoption through Faculty and Instructor Use of a Federated Search Tool

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INTRODUCTION Open educational resources (OER) are gaining traction in higher education and becoming accepted by academics as a viable means for delivering course content. However, these resources can be difficult to find and use, both due to low visibility and confusion about licensing. This article describes one university's work with faculty members to identify barriers in their search process when they are looking to adopt OER. **DESCRIPTION OF PROGRAM** A scholarly communication librarian and science librarian partnered to collect faculty and instructor reactions to a particular OER search tool, with the intention of better understanding the difficulties encountered during the search process. Eight interviews were conducted as participants were asked about their preferences when it comes to locating OER, understanding licensing information, and adopting materials for class. **NEXT STEPS** From these interviews, the librarians identified practical recommendations for instruction/liaison librarians and technical services/systems librarians as they continue working to support faculty and instructors through the OER discovery and selection process. These recommendations relate to four themes uncovered in interviews with faculty and instructors: the need for increased transparency in search tools, the importance of intuitive narrowing and broadening features in search tools, the need for detailed and consistent metadata in OER records, and the need for clarity in intellectual property statements. The librarians note that these recommendations might best be pursued through wide-scale collaboration across library units and, more generally, between libraries, consortia, and institutions.

INTRODUCTION

In response to an initiative introduced by its associated student body and a task force organized by the Provost's Office, Washington State University (WSU) began working in 2015 to reduce course material costs with one of the focuses being on increased use of open educational resources (OER). Open education has been a rising trend since the beginning of the twenty-first century when "OER" was coined by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) as "teaching, learning or research materials in any medium that reside in the public domain and have been released under an open license that permits access, repurposing, reuse, and redistribution by others" (UNESCO, 2002, pg. v). While many faculty and instructors are interested in OER, studies have shown that many find the search and adoption process overwhelming in part because they are "exceptionally busy" and "suffer from extreme information overload" (Harley, Lawrence, Accord, & Dixson, 2009). Faculty and instructors at WSU have likewise noted that they may be interested in low-cost solutions but find it both difficult and time consuming to sort through the plethora of resources found online.

At WSU, a partnership between the libraries and the distance learning program, Global Campus, was developed to promote outreach, assist in locating OER, and develop resources as needed for faculty and instructors. The two units together have pursued a variety of strategies since 2015 to increase awareness of OER. The scholarly communication librarian at WSU organized presentations about OER at various faculty meetings and curriculum selection committees. She also worked with Global Campus and liaison librarians to identify faculty and instructors teaching large, entry-level courses with strong OER options. These faculty were contacted and offered a complimentary print copy of one or more OER relevant to their courses. In addition, a sampling of print OER were added to the libraries' circulating stacks and advertised through the regular correspondence sent out by liaison librarians to departments. The university also joined Open Textbook Network, and the scholarly communication librarian began to lead workshops inviting faculty reviews of existing OER. Global Campus also added a faculty-led workshop to an existing continuing education series in which previous OER adopters described their strategies for locating relevant resources and responses they had received from students. In addition, an OER Visioning Group was established with support from the Office of the Provost and membership drawn from the associated student body, instructional design unit, university administration, campus bookstore, and libraries. This group helped oversee a small-grants program that provided faculty members with $1,000 to $5,000 to develop or adopt OER for use in upcoming courses.

While these projects have proved effective in raising awareness about OER, the members of the OER Visioning Group frequently provided feedback to the libraries indicating that

faculty and instructors were struggling with the discovery process when it came to OER. Questions were raised about how faculty could efficiently locate quality resources and determine their potential use in courses. Although librarians attempted to answer some of these questions through online guides and workshops, they continued looking for tools that could allow faculty and instructors to intuitively navigate an admittedly complex landscape. Through conversations with the regional academic library consortium, the libraries ultimately became aware of efforts to incorporate OER into federated search tools, or search engines that draw from various data sources. Library consortia like LOUIS, OhioLINK, and Florida Academic Library Services Cooperative had indicated an interest in integrating OER into their existing search tools (e-mail correspondence, February 2018). In addition, SUNY Geneseo and George Mason University had developed and announced two new federated search tools devoted to discovery of OER (SUNY Geneseo, n.d.; Mason Publishing Group, n.d.). Seeing these developments, the scholarly communication librarian and science librarian at WSU decided to collect more information from their own faculty and instructors about their searching and discovery needs and, in order to do so, focused on large-scale searching through a federated search tool.

The librarians at WSU, therefore, conducted interviews with faculty and instructors and developed local recommendations for better supporting faculty who were looking to adopt OER. They focused on improvements that could be made in metadata and search tool design as well as further instruction that could be provided to faculty and instructors about OER and the licenses applied to them. In their concluding remarks, the librarians observed that scholarly communications and OER units at other institutions might replicate the work done at WSU and likewise act as liaisons between technical services/systems and instructional units to better coordinate how these areas support faculty and instructors in the OER search process. These large-scale changes might result in better federated search tools for everybody, as units, libraries, and consortia further coordinate their efforts.

LITERATURE REVIEW

The Problem of OER Discovery

Well-established in the literature about open educational resources is the persistent problem of discovery. In a 2017 survey by the Babson Survey Research Group, 50% of over 2,700 faculty respondents identified the difficulty of finding OER as a key barrier to their use (Seaman and Seaman, 2017, pg. 2). This percentage has varied little over the three years that Babson has distributed surveys about OER, even as awareness of OER has risen over time. An additional finding from the survey—limited awareness of open licensing—likely also plays a role in the discovery issue. Only 71% of faculty reported any level of awareness

of Creative Commons licenses—the intellectual property statements frequently applied to OER indicating how creators would like their work to be shared and used. Creative Commons is a key aspect of OER and their reuse in various settings and, therefore, a crucial concept for OER adopters to consider when searching (Creative Commons, 2018; Seaman & Seaman, 2017).

The difficulty of discovering OER can certainly impact reuse of these materials. Wiley (1999) and Calverley and Shephard (2003) pointed to connections between low reuse and missing information connecting learning objects to instructor pedagogies—ultimately, a metadata and discovery issue. Similarly, in their study of OER storage, Santos-Hermosa, Ferran-Ferrer, and Abadal (2017) concluded that reuse may be limited due to poor incorporation of educational standards and learning outcomes into metadata to help faculty locate materials. Clements, Pawlowski, and Manouselis (2015) also suggested that contextualizing information should be included with OER to help faculty and instructors find them and assess their quality, including peer review specifications, curriculum compatibility, and intellectual property considerations. Petrides, Nguyen, Kargliani, and Jimes (2008) likewise concluded that reuse might be positively impacted if OER creators were to cultivate a greater sense of community—some of which could be achieved through delineating context more clearly for materials. Finally, some studies have pointed to ways that user understanding of open licenses specifically impacts reuse. For instance, Wild (2012) defined levels of engagement with OER in terms of knowledge and use of open licenses.

OER Repositories and Search Tools

Indeed, numerous projects have arisen to address OER discovery—notably, the use of dedicated OER repositories to index and store available content. Repositories currently play a central role in OER discovery, with groups as diverse as NASA, the Smithsonian, community and technical colleges, and companies like Microsoft acting as publishers of open content. The variety of strategies for storing OER has inspired studies to better define factors for making the repository a success as a tool for connecting users with appropriate content (McGreal, 2011; Ochoa & Duval, 2009; Sicilia, Garcia-Barriocanal, Sanchez-Alonso, & Cechinel, 2010; Zervas, Alifragkis, & Sampson, 2014). However, with the proliferation of OER repositories, a persistent concern has been the added complexity for users who are compelled to search widely for relevant OER stored in various silos (Drabkin, 2016).

Projects attempting to address the siloed OER issue have included MERLOT and Open Textbook Library, which index large number of existing OER and incorporate critical reviews into the metadata (Center for Open Education, n.d.; California State University, n.d.). Expanding on these projects, some have focused on federated search tools as a means

of improving the accuracy and efficiency of the OER search process. For instance, Massart (2009) described use of the Learning Resource Exchange (LRE) to federate search in learning object repositories. Dichev and Dicheva (2012) confirmed the need for federated searching by reporting in 2012 that users use search engines more often than repositories to uncover OER. The authors recommended that repositories, at minimum, incorporate granular annotations and full-text search capabilities to facilitate discovery via search engine. Following a survey of repositories, Pavanai (2016) similarly concluded that learning objects should be accessible through a shared union catalog—especially for a niche discipline like engineering. All of these studies point to problems in discovery that ultimately impact use and reuse of OER by faculty and students.

Concerns about discovery and reuse of OER have led to the development and release of at least two recently announced federated search tools: OASIS by SUNY Geneseo and the Mason OER Metafinder by George Mason University. Both tools index OER and other openly licensed materials and provide users with options for filtering results by title, author, subject, source, and date. OASIS currently pulls metadata from 73 sources, with an apparent emphasis on collections of OER created by universities but also incorporating sources such as TedTalks, Project Muse, and Saylor.org (SUNY Geneseo, 2018). George Mason Publishing Group developed their tool with a tighter focus on 18 sources including repositories with public domain content like the American Memory Project, the Digital Public Library of America, and HathiTrust (Mason Publishing Group, 2018). Much of this source material is openly licensed; however, some of these collections include copyrighted material as well. The OER Metafinder incorporates Explorit Everywhere software from Deep Web Technologies and provides users with the ability to search by keyword, title, author, material type, topic, date, and source. Links lead to source material, and the tool incorporates a brief explanation to users titled "What's an OER?"

FACULTY AND INSTRUCTOR INTERVIEWS

Seeking Participants

Because tools like OASIS and the Mason OER Metafinder are still relatively new, the librarians at WSU wanted to evaluate their potential use in the campus OER initiative. OASIS was released after the OER Metafinder and thus fell outside the scope of the project, though additional study on its use would be warranted. For this project, faculty and instructors with varying levels of experience with open education were asked to use the Metafinder to search for course materials in a specific discipline. Their interactions with the search tool were observed during interview sessions in an attempt to better understand challenges faced by faculty and instructors when working to locate OER.

Eight faculty members and instructors participated in the interview project after being invited to do so by either the scholarly communication librarian or the science librarian, who described the project in email correspondence with potential participants. No incentives were provided, but the project was suggested to faculty and instructors as a way of assisting the libraries while increasing their knowledge of existing search tools. The eight participants represented four colleges at WSU: the College of Arts and Sciences, the College of Education, the College of Business, and the College of Engineering and Architecture. Three faculty members described themselves as "very familiar" with OER, having previously participated in the university's Affordable Learning or small-grants program in summer 2017. The remaining five interview participants came from engineering and mathematics—the science librarian's liaison areas. Two of these faculty described themselves as "a little familiar" with OER while three indicated "no familiarity."

Once faculty had been contacted, they were invited to meet with the scholarly communication and science librarian after clearance had been received from the university's institutional review board. Participants were asked to spend a half hour interacting with the OER Metafinder and discussing their reactions with the two observing librarians. Sessions were also recorded using Camtasia, with permission from participants. At each session, the participants responded to reflection questions and also completed set search tasks using the OER Metafinder. The following questions and tasks were asked/performed:

1. Faculty and instructors were asked to read the definition of OER supplied by George Mason University and explain their understanding of how OER can be used in courses.

2. Participants navigated to the Mason OER Metafinder and conducted a sample search for "American history." All participants used the same search in order to provide comparable responses to the search tool. Once the search was initiated, participants were asked to consider the narrowing options in the search tool and explain which of these criteria were most important to them in locating OER.

3. Participants were asked to peruse the list of results retrieved by the OER Metafinder and talk about whether they could use the information provided to assess the quality and appropriateness of the OER retrieved by the tool.

4. Participants were asked to view a single search result and describe their perceptions of how that item could be used in a course.

5. Finally, participants were asked to reflect on how they would like to be able to use OER in courses generally and which factors and criteria are most important to them in searching for course materials.

Interview Responses

After completing interviews, the scholarly communication and science librarian transcribed responses and examined them, looking for themes. They identified themes independently, then compared notes and categorized responses under four broad themes that appeared throughout tasks and reflections. These overarching themes were (1) the need for increased transparency in search tools, (2) the importance of intuitive facets, (3) the need for detailed metadata in individual records, and (4) the need for clarity in intellectual property statements.

The Need for Increased Transparency in Search Tools

The librarians noted during the interview process that faculty and instructors wanted more information explaining OER and describing how the Metafinder itself works. Specifically, the Mason OER Metafinder points to items marked with a variety of open licenses but in some cases, it also points to copyrighted material with no explanation for the inclusion of these materials. Interview participants were often confused by these distinctions and had difficulty explaining how they might be permitted to use materials when prompted by the librarians to talk about the meaning of various rights statements. They expected the OER Metafinder to filter out items that could not be modified or freely used and failed to note that copyrighted and restricted-use materials were also included from, for instance, the Digital Public Library of America.

Participants also wanted more transparency in interpreting the quality indicators provided by the OER Metafinder. The tool supplies a star rating to each resource with no clear indication of how these ratings were calculated. One participant remarked that peer reviews would be more useful than the anonymous star ratings, and another commented that it seemed "suspect," having so many five-star ratings on the search page. Both of these comments speak to a desire for transparency when using search tools and understanding how results are ranked behind the scenes.

The Importance of Intuitive Facets in Searching

Participants noted repeatedly that they would like to see more intuitive focusing options or facets in the Mason OER Metafinder. Three remarked that they had had similar difficulties while using tools like Google to search for OER. In particular, they noted their preference for having topic facets structured hierarchically with broader and narrower categories rather than loosely according to popular keywords.

Faculty also noted confusion about the distinction between the "source" and "publisher" facets, indicating that these labels were essentially indistinguishable. They questioned this apparent redundancy, leading the librarians to explain how "source" is often used in archival circles to refer to physical repositories with holdings. The term is a logical addition in archival searching, but interview participants found it less comprehensible in the context of searching for textbooks and multimedia.

Similar concerns arose over material types in the Metafinder. More than one participant commented on nebulous terms such as *readings* and *curriculum*. All eight remarked that the material type should better serve them as they search for very specific items like research articles, multimedia, and primary texts. Participants expected facets to match their needs for material type or, at least, to employ terms that they found understandable in their disciplines.

The Need for Improved Metadata

Interview participants underlined the need for detailed information in each OER record to include license information as well as short summaries of each item. This problem is admittedly complex, since the OER Metafinder relies on metadata created in a variety of contexts—archives, digital library units, and miscellaneous other departments and institution types. However, participants noted overall that consistent presentation of descriptive information would help them in selecting materials. A participant from a humanities discipline noted in particular that thorough metadata would be helpful for federated search tools given that items are presented out of their original context. This faculty member commented that, among his preferred uses for OER, he would like to have students locate them and understand their context as a means of teaching digital literacy. Clear information in the federated search tool would make this exercise more viable.

The Need for Clarity in Intellectual Property Statements

Faculty and instructors noted that the search tool could do more to clarify licensing statements and assist them in searching according to specific use cases. One participant in the interviews specifically requested a search option that would retrieve items by licensing information, while others described the ways they would like to use OER—several of which could be supported by a license search. For instance, one faculty member wanted to invite students to modify course materials rather than passively consuming them. A "modifications allowed" search facet would, therefore, be helpful to this faculty member. Another wanted to collect multiple OER and combine them into a single resource to simplify students' reading experience. Another wanted to quickly transfer the OER from its source to a

learning management system or platform such as Pressbooks in order to permit students to annotate the text. One also remarked that she would like to save the materials she located in order to ensure their permanence, and further that she trusted her home institution to do this work rather than the source institution. Few faculty participants linked these use cases to an understanding of the intellectual property statements included in each record, but the ability to clearly search according to desired terms of use was highly requested by everyone who participated in the interviews.

As noted previously, faculty were also apt to assume that the OER Metafinder automatically presented items that could be modified and retained. Several participants made it clear that they were looking for mechanisms that would allow copying and pasting of materials as the first stage in modifying them for class. When viewing the historical texts supplied by sources such as the Digital Public Library of America, one noted that free use must be permitted for these materials because "they didn't have copyright back then, did they?" Finally, interview participants were confused by phrases such as "no copyright." One interpreted this phrase to mean that faculty were free to include materials in course slides, while another assumed that the item could only be linked to at its source and a third assumed unlimited use of the material. These conversations highlighted the need for greater clarity in the presentation of intellectual property statements or, alternatively, more instruction for faculty and instructors in licensing and intellectual property concerns.

LESSONS LEARNED

The scholarly communication librarian and science librarian derived lessons from faculty interviews that fall under two headings—lessons for instruction/liaison librarians and lessons for technical services/systems librarians.

Instruction/Liaison Lessons

For instruction/liaison librarians, the need clearly still exists to define OER to faculty and instructors and explain the licensing implications of Creative Commons and open licenses. This work has already been attempted to some extent at WSU by providing Open Textbook Library and Creative Commons workshops. However, poor attendance suggests that this work might best be done in tandem with the small-grants program. Specifically, faculty and instructors might benefit from targeted, practical demonstrations of how to search for OER and how to interpret licenses. Targeted, incentivized workshops have drawn the greatest numbers to date and may be the best way of passing along complex information about intellectual property and OER. It is hoped that as the OER initiative continues to grow at WSU, faculty will also reach out with questions and create natural opportunities for discussion.

Some faculty may, admittedly, be uninterested in understanding OER licensing and search tools. They may request that this work be mediated by the library and instructional design units. In preparation, the libraries intend to provide continuing education opportunities for liaison librarians to brush up on their knowledge of OER and OER licenses. The scholarly communication librarian will also work with the instructional designers and student assistants who help locate OER and provide them to faculty for adaptation and use.

Technical Services/Systems Lessons

Faculty and instructors with greater and less interest in OER would all benefit from improved search tools. As a result, the librarians who conducted these interviews would recommend increased collaboration with technical services and systems librarians to improve metadata and search capabilities in tools like the OER Metafinder. The faculty who participated in interviews clearly liked the idea of a federated search tool—a one-stop destination for OER—but they wanted to see clearer intellectual property designations, more granular narrowing options, more precise subject searches, and less convoluted options for copying and saving OER for adaptation and reuse. Some of these problems can be helped by having the open education community adopt shared, agreed-upon standards for describing the OER they create. Others can be helped by drawing on the expertise in technical service units to attach more detailed descriptive information to OER. In addition, if instruction, systems, and technical services units can work collaboratively, search tools like the OER Metafinder could integrate instructional information about open licenses alongside metadata and navigational improvements. At WSU, it has proved helpful to have some of this work coordinated by the scholarly communication librarian.

NEXT STEPS

Following these interviews with faculty and instructors, the librarians at WSU look forward to facilitating conversations within the central library system regarding OER work with faculty and instructors. Internal conversations will focus on strategies for identifying and locating OER and for understanding and working with materials licensing. Additionally, the librarians hope to engage outside groups like instructional design and university administration in these conversations, as well as inviting systems and technical services units to consider how search tools can better assist faculty and instructors in locating openly licensed course materials. Beyond the home institution, the librarians hope to communicate some of these findings to other libraries and groups that are ambitiously invested in improving OER search tools. The librarians are also involved in conversations in their regional consortium about how to better standardize the cataloging and description of OER in order to improve the search experience for students and faculty using a shared integrated library

system. Overall, these interviews are a starting point for understanding the perspective of faculty and instructors locating and finding course materials, and will hopefully lead to better support from librarians and the university community.

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