Open and Editable:

Exploring Library Engagement in Open Educational Resource Adoption, Adaptation and Authoring

by Anita R. Walz

Introduction

Open Educational Resources (OER) have saved students millions of dollars in textbook costs and greatly expanded access to a wide variety of educational materials for countless numbers of students and life-long learners. OER have also saved teachers time and effort by allowing them to reuse, modify, and build on materials developed by other teachers. After a brief discussion of OER and foundations of open licensing, this article presents a number of opportunities for libraries, particularly those situated at research universities.

Origins & Definition of Open Educational Resources

Open Educational Resources (OER) are built on two convictions: that "knowledge is a public good" and that "the internet is a good way of sharing knowledge."[1] Since 2001, the James & Flora Hewlett Foundation has granted tens of millions of dollars in support of these convictions. While there is no standard accepted definition, OER are generally freely available and openly licensed educational resources which may be modified and redistributed with attribution, without permission, and which may in some cases be commercialized. The Hewlett Foundation definition reads: "OER are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others."[2] OER also include materials found in the public domain.

Types of OER include "...full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge."[3] OER are typically thought of as digital resources although non-digital items may also be openly licensed. Within higher education, syllabi, lab notebooks, study guides, images, illustrations, case studies, lessons formatted for a learning management system, interactive exercises, practice problem sets, recorded lectures/events, assessment tools, multimedia/interactive tutorials are popular types of OER.

The OER movement borrows aspects of three other movements: The Open Access movement, which provides digital, online and no-cost access to literature and increasingly to repositories, data and other resources; the Distance Education movement, which adopts communications technology and instructional design for learning; and the Open Source movement in which computer code developers share, modify, and redistribute software code under an open license.[4] While OER may be disseminated in print or digital formats, the OER movement may be better understood as a response to U.S. Copyright law and the desire for legal options to enable remix and reuse of original works.

Options for use of existing third-party materials

In its most simplified form, U.S. Copyright Law protects a creator's "original works of authorship" exclusive right to reproduce, adapt, distribute, perform, and display the work for the creator's lifetime plus 70 years.[5] Copyright is automatic when an original work of authorship is fixed in a form of expression and does not require registration or addition of a © symbol. Copyrightable items include literary works, musical or dramatic works (words and music), pantomimes, choreographical, pictoral, graphic and sculptural works, motion pictures and other audiovisual works, sound recordings, and

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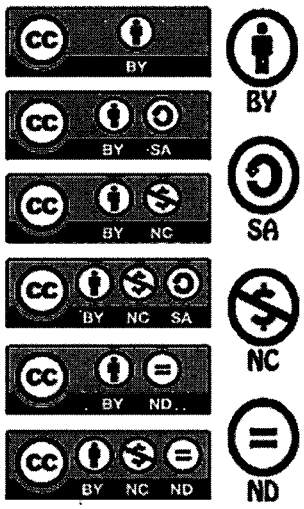
architectural works. Case law documents decades of efforts to balance author and user rights, and a longer historical view shows varying sways between natural law and utilitarian philosophies of copyright[6]. Although U.S. Copyright laws are in force, compliance (especially in the digital sharing culture) by individuals and groups who are not legal experts is complex, requires effort, and is often overlooked.[7] Currently, four legal options allow further display, reproduction, performance, adaptation etc. of third-party materials, including: 1) using public domain materials; 2) obtaining permission/license rights for use of copyrighted materials, 3) identifying an exempt/fair use under U.S. Copyright law, or 4) using openly licensed materials. Hence, using openly licensed works may be a solution for enabling non-infringing remix, reuse, and redistribution. [Note: While the purpose of this paper is not to examine U.S. Copyright Law exemptions (and should not be construed as legal advice), how to obtain permission, or where to find public domain materials, each of these options for reuse are valid, and should be further reviewed. U.S. Copyright law exemptions and permissions/licensing are the only routes to explore when the proposed display/reproduction/performance etc. is of a non-openly licensed work. U.S Copyright law exemptions to potential display/distribution/reproduction/performance/derivation of others' works include Fair Use (17 US Code 106), Reproduction by libraries & Archives (17 US Code 108), or on the basis of 17 US Code 110 also known as the TEACH Act. Case law provides additional information regarding court decisions.]



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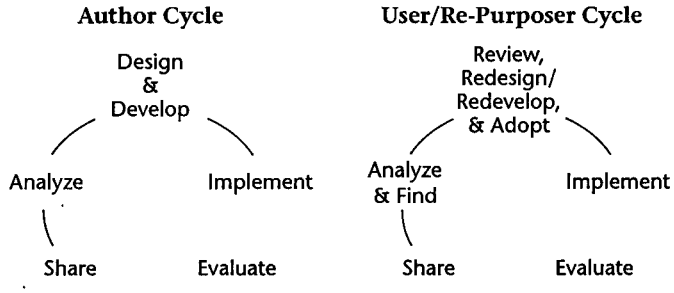
The concept of open licensing was first popularized by Richard Stallman via the GNU General Public License (GNU PL).[8] GNU PL freely allows using, study, modification and sharing of computer software code as a licensed public good. OER are essentially educational resources to which their creators have applied an open license. Thus, one cannot fully explore possibilities of OER Initiatives without first discussing the concept of open licensing.

Released in 2002, the Creative Commons license is "by far the best-known and most-used [open] license for content."[9] CC licenses allow reuse and in best cases, modification, redistribution, and/or commercialization. The most permissive or "open" of the six licenses, "CC BY" (pronounced see see bye), sets basic terms by requiring author attribution, a link to the license, and indication of any changes. Less open licenses build on the basic CC BY license by requiring derivatives to use the same license terms "share alike" (SA), and or restrict commercial use (NC).[10] A Public Domain identifier (PD) and CC0 indicator showing that an item is given to the public domain are also available. Items with an "ND" (no derivative works) are not considered to be OER because they cannot be modified and redistributed.

Affixing open licenses and using openly licensed materials can save time, effort, and money for users.[11] A user may easily reuse, modify, and redistribute CC licensed works within their own works. In economic terms, using openly licensed materials reduce Copyright clearance transaction costs to zero or near zero. The user must only follow the requirements of the CC license applied to the item, or select an item that matches the particular type of use they seek. For CC licensed items, copyright exemptions do not need to be found; permission or distribution licenses do not need to be secured; no fees are required. Users also save a great deal of time by reusing or revising exist materials rather than reinventing the wheel.

OER lifecycles could be described as both author and user/re-purposer cycles as seen in the illustrations below:



While users benefit, authors appear to invest a great deal in creating usable resources. An author who expended effort creating and applies an open license is choosing to forgo possible future royalties. Why? The following examples illustrate rationale applicable to open licensing of content:

- A faculty member or teacher employed in an educational institution may choose to openly license and disseminate works for original created works via various repositories or websites. Students and teachers benefit by increased access and ease of making derivatives.
- Tesla Motors indicated that they would not enforce their patents for electric car technology in order to spur dissemination and development of electric car technology and production.[12]
- The Hewlett Foundation funded the 2001 startup of the MIT OpenCourseWare project, a courseware sharing initiative in line with MIT's mission "to advance knowledge and educate students."[13]
- Harvard cancer researchers, led by Jay Brandner, discovered a small-molecule inhibitor, which appears able to interrupt aggressive growth of cancer cells. They shared molecule samples with 70 labs, and encouraged the labs to use it, build upon it, and share their findings.[14] By spreading tasks among many groups, work was accomplished more quickly and may result in faster creation of (possibly cheaper) cancer fighting drugs.
- Four U.S. universities and a software organization collaborated in creating a collection of integrated, open source learning tools now known as Sakai.[15] The Sakai learning management system became freely available in March 2005.
- Rice University created a non-profit textbook publishing entity OpenStaxCollege to create high quality, openly licensed, free online, and low-cost in print textbooks for 10 million students.[16]
- Colombian vocal artist SylviaO donated an a cappella track to ccMixter, a music site run by Creative Commons. The resulting remix of her track changed how and for whom she creates.[17]

Author rationale for open licensing varies from altruism to competitive advantage by being first to shape the future market, to potential rewards for promotion and tenure, to expediting a project and more quickly benefiting society. Others are motivated by a desire to promote student access and achievement by reducing student costs. Perhaps a project is too large for one entity and open licensing sparks collaboration. Perhaps sharing resources compels others to do so. Perhaps the author or sponsor's philosophy or approach strongly weighs in favor of open licensing.

Many faculty are involved in course design, which includes creation of original educational resources or the selection, adoption, and use of third-party (commercial or open) educational resources. Some faculty already share syllabi, assignments, visualizations, simulations or instructional modules, or materials for entire courses on university sites, third party sites such as iTunes University, with colleagues in their department or academic discipline. Others submit these to the University's institutional repository or to an OER repository such as MERLOT, OER Commons, Jorum, or through discipline-specific channels.[18]

Aside from a zero initial cost, an ability to modify resources, and free universal access, the review and adoption processes for OER from K–12 and Higher Education are assumed to mirror many of the same criteria used to measure potential adoption of equivalent formats of commercial educational resources, if OER are indeed considered. Regarding textbook adoptions, a 2012 Florida study higher education faculty reviewers judged open textbooks on the basis of how well they addressed course objectives, accuracy, currency and consistency.[19] Quality indicators from the same study were identical, with the addition of "peer review and recommendation" and "reputation of author(s)" ranked slightly lower in importance as indicators of quality.[20] Detailed data regarding commercial (print or electronic) textbook adoption was not readily available for this study.[21] A 2012 Babson Survey Research Group report indicated that adoption of commercial digital resources on the college level is tied to "cost," "ease of use," "ability to quickly search [find] and review the material."[22] These factors may be generalizable to potential adoption of digital OER.

Tesla Motors indicated that they would not enforce their patents....

Faculty usage of OER is also an interesting topic. The Florida study that highlighted the value of faculty and administrators also reported use of portions of textbooks or other types of OER, including videos, images, quizzes, lesson plans, rather than complete open textbooks or an entire sequence of an open course.[23] Non-profit OER producers such as OpenStaxCollege have partnered with producers of commercial education software providers including WebAssign, Sapling-Learning, and WileyPlus to enable students to purchase textbook-customized access to these often required homework systems.[24]

Assuming similarities in the adoption review process for commercial and open textbooks and similarities in

quality one might expect high adoption levels for open resources. The following are identified as issues with OER adoption:

- Disbelief and skepticism that freely available resources could be of excellent quality.
- Differing levels of faculty awareness regarding costs of assigned commercial textbooks and their openly licensed equivalents.[25]
- Low levels of faculty awareness of OER options and lack of first hand examinations of OER quality and in the Florida survey, 26.9% had never heard of open textbooks, and 40.2% of respondents had heard of open textbooks but never looked for any. Only 22.3% of respondents had looked at some open textbooks, and 6.0% used part or whole of an open textbook in their course.[26]
- Faculty uncertainty regarding OER peer review processes, leading to questions about quality.[27]
- Different expectations between those who want a completed product requiring little to no modification, and those expecting to modify, adapt and remix.
- Difficulty locating OER. While many excellent OER repositories exist, some skill is required to locate appropriate open materials.[28] A 2013 report by the Software & Information Industry Association describes the problem of OER discovery as "disconnected silos and without the necessary mechanisms for making it easy to adopt and use" versus an alternative future of OER content being "as easy to discover and use as commercial learning content."[29]
- Lack of availability and difficulty finding educational resources in disciplines where content goes out of date quickly or in highly specialized subjects.[30]
- Faculty concerns regarding potentially negative responses from colleagues regarding OER adoption, and impact on faculty promotion and tenure.[31]
- Course redesign, especially replacement of textbooks with non-textbook OER, takes a lot of faculty time.

Opportunities for Libraries

Many opportunities exist for libraries to lead OER use and production initiatives. Since anyone can access and use openly licensed materials, unique opportunities likely exist especially for public facing and publicly funded institutions, including public libraries and state funded public educational institutions which seem to be asked to do more with less. Furthermore, teachers, students, and library patrons of these institutions are perhaps the most obvious initial beneficiaries and end-users of open educational resources. Locally, the Virginia Community College System has been very active incentivizing development of free and openly licensed materials for nearly 70 courses.[32] A notable example is Tidewater Community College's "Z Degree," which replaces textbooks with OER, resulting in a zero textbook cost degree.[33] While project organizers did not initially partner with the library in development of the Z Degree, this author is pleased to see that the library is now involved, per their detailed OER Research Guide.[34]

Given their focus on research, OER textbook authoring/publishing initiatives tend to reside at four-year colleges and universities. Several non-library entities in the U.S. and Canada are involved in open textbook authoring and production including:

- British Columbia Campus' Open Textbook Project focuses on creation, review, and adaptation of college intro-level open textbooks.[35]
- OpenStax College at Rice University focuses on creation of commissioned and peer-reviewed intro-level open textbooks, collaboration with mainstream commercial educational technology providers (i.e. WileyPlus, SaplingLearning, etc.), and development and free access to a Cognitive Science informed personalized learning e-tutor referred to as OpenStaxTutor.[36]

Library initiatives often go beyond open textbook publishing to also include open textbook adoption, and textbook replacement or OER course redesign initiatives:

- Open SUNY Textbooks is a State University of New York wide-open textbook publishing initiative.[37]
- Temple University Library's Alternative Textbook Project assists faculty in developing and adopting alternatives to textbooks.[38]
- Kansas State Libraries allocates funds from the Kansas State Student Governing Association for development of Open/Alternative Textbooks.[39]
- Emory University's Emory Open Education Initiative trains faculty to create and use OER and library materials in lieu textbooks in support of student learning.[40]
- The UCLA Library Affordable Course Materials Initiative incentivizes "instructors to use low-cost or free alternatives to expensive course materials."[41]

Other library-oriented OER initiatives work to ease barriers to finding open or lower cost educational materials, such as San Jose State University's Affordable Learning Solutions guide by college, or in the case of the University of Minnesota's Open Textbook Library to create infrastructure to more easily find peer reviews and open textbooks.[42] Still other libraries are involved in large University-wide initiatives, such as Open.Michigan.[43] Many libraries wishing to reduce barriers and student costs have implemented textbooks-on-reserve programs or programs purchasing multi-user licenses for e-textbooks as a way to increase student access to textbooks.[44]

In their 2010 Open Education conference presentation entitled "Reaching the Heart of the University: Libraries and the Future of OER," Kleymeer, Kleinman, and Hans make multiple compelling arguments for university library involvement in OER production and publication operations. These include philosophical convergence: "Academic OER initiatives and university libraries share a determination to improve access to all kinds of scholarly and educational materials, both on their campuses and throughout the world"; infrastructure: libraries already have search and discovery systems, copyright expertise, data storage, metadata and indexing, institutional repositories and preservation expertise; and relationships: libraries have trusted relationships enabling outreach and education, curriculum development expertise, instructional support.[45]

Existing library values, relationships, capacities, and infrastructure are extremely complementary to OER initiatives within libraries. Many existing library competencies may be leveraged in support of OER adoption and/or authoring initiatives.

Applying these library strengths and competencies to the OER lifecycle stages in the User/Repurposer OER lifecycle reveal the following opportunities libraries have to lead, support and collaborate in OER initiatives, making it easier for OER adopters and potential OER authors:

1. Assess your potential audiences and build awareness
- Every institution's (and probably every department's) faculty, student body, and policies are different. Build your and your library's understanding of your potential audiences, particularly educational resources they already use, author, or assign. Identify their decision-making processes, what they value, what they say they need, what you can learn from them, and how you could engage. For example:
  - An audience of faculty experimenting with flipping their courses may be very interested in types of resources to consider, using library reserves, relevant library-subscribed resources, and finding items in the public domain or licensed with Creative Commons.
  - Faculty, Graduate Teaching Assistants, and textbook selection committees may not have seriously considered looking at openly licensed textbooks.
  - Instructional designers may know much more about what faculty need.
- Identify problems and treat them as opportunities. These could be institutional policies that prohibit sharing, awareness issues, a lack of relationship with the university Bookstore, needs for further professional development, etc.
- Assess and further develop your audience's understanding of open vs. free online.[46] Free online access does not equate open licensing nor release one from Copyright compliance. Building awareness of open licensing into copyright instruction, emphasizing understanding of various Creative Commons licenses, and training teachers and students to find and cite openly licensed works can be a major victory in encouraging OER use, adoption, and open licensing. Raise awareness regarding potential contributions of open licensing.[47]
- Share the work. Build communities of practice among OER authors, OER adopters, and those exploring OER options. Encourage critical discussion regarding possibilities, drawbacks, and potential opportunities for participation in the OER ecosystem by faculty from a wide range of disciplines.
- Innovate: Engage others in envisioning new uses for openly licensed works.

2. Analyze & Find:
- Understand your audience's needs. Your audience may include both users and authors. Some may already be authoring or using OER.
- Educate, assist, and enable potential re-users with strategies for finding OER. Of particular interest are:
  - Providing reference and research services for users seeking OER
  - Creating OER finding, instructional design, and pedagogy guides
  - Curating, providing access and stable hosting for, and leveraging library-selected OER collections
  - The Open Professionals Education Network[48] which provides a finding guide listing many major repositories and referratories of open educational resources, including: images, video, music, courseware (syllabi, lectures & transcripts, readings, problem sets, textbooks), and online simulations and tutorials.
  - John Shank's *Interactive Open Educational Resources: A Guide to Finding, Choosing, and Using What's Out There to Transform College Teaching* (Jossey-Bass/ ACRL 2014)
  - Several library-produced OER finding Guides from the University of Oklahoma, University of Massachusetts – Amherst, and UMN Open Textbook Library.[49]

3. Review, Redesign/Redevelop & Adopt
- Provide authoritative assistance and OER development and review resources with rubrics such as those from Achieve, Inc., temoa, BCOER or from OER repositories.[50]
- Consider incentivizing faculty development/redevelopment of courses and resources for teaching and learning.[51] Most of the OER initiatives listed on earlier pages incentivize faculty reviews and authoring.

- Assist faculty with copyright, intellectual policy and, University Policy concerns.
- Promote quality in content, instructional/pedagogical design, technological standards, and accessibility.[52]
- Provide or liaise with others who provide course design assistance, funding, or course-release.
- Seek to understand faculty/teacher choice in formally adopting (or abandoning) open resources as a way to better understand your users' needs and OER uses and limitations.

4. Implement (and share)
- Assist faculty in providing long-term stable access via information repository services; leverage metadata and classification skills to enhance future access
- Make on-demand printing services or other methods of access easy for authors and users

5. Evaluate (and share)
- Encourage, incentivize, or automate sharing authors' works in trusted networks, local, subject, and/or national repositories
- Encourage (or incentivize) faculty participation in critical reviews. Especially metadata includes how they OER was used, what worked, and what didn't work. UMN Open Textbook Library, MERLOT II, and OERCommons all promote open peer review.[53]

Many faculty members author original works for commercial, non-profit, association, or other publishers. Publication of teaching-related materials is not always weighed the same as research publications in the eyes of tenure and promotion committees. While all faculty would benefit from departmental support, course-release time, and OER creation stipends, tenure track faculty may benefit more than tenured faculty in receiving these types of support. Tenure track may face and perceive a higher level of peer scrutiny based on their tenure track status and related expectations. While departmental support for authoring openly licensed works for teaching varies from one department to another, some departments reportedly hold an explicitly negative view toward adoption of openly licensed works. This results in dis-incentivizing not-yet-tenured faculty from adopting or authoring open works.

Textbook authoring is labor intensive. While faculty typically don't author textbooks for the financial gains involved, financial incentives are generally not turned away.[54] For a small number of authors these gains can be significant; for most they are relatively modest. In the case of Virginia Tech, revenues generated from "traditional works of scholarship" (i.e., books and articles) are not subject to the University's profit sharing agreement; the faculty member retains 100% of contractually agreed upon royalties.[55] According to David Harris, a veteran of the publishing industry and Editor in Chief of OpenStaxCollege at Rice University, commercial textbook authors typically receive between 10–15% of a textbook's net price. Thus, authors of bestselling textbooks, the top five to ten textbooks per discipline do very well financially; other authors' revenues are not nearly as significant.[56] OpenStaxCollege, funded through a variety of grants and through partnerships with commercial software vendors, has developed a professional content development process, and pays authors and peer reviewers for their work.

Other groups and associations are exploring OER and other publishing initiatives through libraries, including:
- The Library Publishing Coalition (LPC). This group, which began in 2012, is now a collaboration of over 50 libraries. An independent and a community-led membership association, "the purpose of the LPC is to support an evolving, distributed range of library publishing practices and to further the interests of libraries involved in publishing activities on their campuses."[57]
- SPARC Libraries & OER Forum. The forum, an email discussion list with occasional teleconferences, was started in March 2014 and is a "forum for librarians... to share ideas, resources, and best practices pertaining to OER; a channel of communication...; and a source of important updates about policy, research, projects and other news from the broader OER movement."[58]

Many course redesign programs offer faculty incentives for completion, assessment, and launch of redesigned OER courses. This is an area where a number of libraries are involved in identifying OER or subscribed library materials, consulting regarding application of instructional design principles, pedagogies, and providing stipends or incentives for faculty.

Libraries may also wish to survey faculty regarding gaps in content for their courses. Faculty from various disciplines report a deficiency of high quality, commercially available materials.[59] As existing Open Educational Resources (OER) are available only in subject areas where authors have chosen to apply open licenses, perhaps these areas are potential places for authoring of new open educational resources, including resources that go beyond flat PDF textbooks and incorporate interactive and multimedia elements. Libraries may want to also assist faculty who are creating materials in understanding their options as copyright holders. For faculty who wish to share their resources, understanding the intent of the various Creative Commons licenses is important, as is applying them, and sharing materials

in the most appropriate local, national, international, or subject-specific repository.

Finding high quality, current, and relevant resources, ensuring their stability, and educating for copyright compliance are difficult tasks. Each of these areas is a potential teaching and service opportunity for academic libraries.

One final note: while this paper has mostly discussed faculty as the main audience for information, awareness and support from OER initiatives, many opportunities exist to engage students' interests in the open licensing, remix culture, Creative Commons, their choices as authors, responsibilities as users of licensed materials, and their experiences as buyers and users of learning resources.

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