

Recognizing and Overcoming Obstacles of OER

What It Will Take to Realize the Potential of OER

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Open Educational Resources

OER

Higher Education

Barriers

Despite the benefits of open educational resources, their adoption in higher education is hampered by real but solvable barriers.

Open educational resources (OER) are free, openly licensed materials that users can retain, reuse, revise, remix, and redistribute at any time. OER provide educators and students with significant, lasting benefits that far exceed what copyright-restricted materials can offer. Students who use OER save substantial amounts of money per term, savings that equate to greater financial security, and students can use the money they would have spent on expensive course materials to pay for food, health insurance, or tuition. Freeing up these funds helps eliminate some economic and access barriers, particularly for first-generation students, and can make community college attendance far less expensive. In a 2018 study, approximately half of surveyed two-year college students faced housing and food insecurity.¹ At many community colleges, "the cost of books per year exceeds the cost of tuition."² This means that steadily increasing textbook costs are unconscionable because they can prevent students from enrolling and completing their degrees while also making it difficult to provide for basic needs. In contrast, utilizing OER in more courses can alleviate some of the financial burden students face, decreasing the odds that they will withdraw from a course or not finish their degree.³

In addition to saving thousands of dollars on course materials by using OER, students can also experience greater freedom in their learning. OER allow students to access essential information on the first day of a course—without waiting for financial aid or books to arrive—and throughout their lifetimes. This unfettered access can increase performance in coursework and also promote lifelong learning and engagement in education.⁴ Additionally, because

these materials allow for continuous improvement and adaptability to students' needs, students can receive a more targeted, differentiated, and richer learning experience in courses where instructors use OER.⁵

Just as students benefit from the versatility OER provide, educators benefit from creating and utilizing these resources in their courses. One significant advantage for instructors is the ability to remix and edit content as needed to localize and adapt materials to individual and group needs, thereby promoting equity and differentiation for individuals and underserved learners. Instructors can also increase the impact and reach of their authored resources by releasing them openly, making content available to anyone, anywhere, at any time, thereby capitalizing on an open access bump.⁶ Furthermore, reducing barriers to publication and dissemination of materials can also empower the voices of traditionally marginalized educators, such as adjuncts, women, and BIPOC faculty, encouraging more democratized and open scholarship.⁷

Most educators believe that OER present benefits unmatched by traditional copyrighted resources, yet most faculty still don't use them and do not have any plans to use them in the future.⁸ Why this disparity? Failure to shift to OER cannot be interpreted simply through a lens of faculty deficiency—such as laziness, lack of interest, or greed—because faculty generally want to shift to OER. Rather, they are met by systemic and institutional barriers—including perceived lack of OER quality, issues surrounding accessibility and usability, and perceived lack of time—which prevent progress.⁹ For OER to proliferate, institutions need to address barriers that short-circuit positive motivations among faculty, giving them space to make these valuable shifts.

Perceptions of Quality

Faculty and students alike often view open textbooks as being poor in quality.¹⁰ Although this perception isn't entirely unfounded, it is resolvable. Traditional publishing models that rely on multiple rounds of editing and review by specialized personnel—such as graphic designers and editors—set a narrow standard for how faculty perceive quality, a standard that may be much more based on factors such as aesthetics and grammar than on learning design, content accuracy, or usefulness to students.¹¹ This means that without hiring specialized personnel for help, even someone who is an expert in a field generally can't publish an open textbook that, on its surface, will look as good as a commercial alternative.

To solve this issue, colleges and universities can provide faculty with editors and graphic designers who can be involved in the publication of open materials. Additionally, the tools used for creating OER should be designed to make quality a top priority. Whether institutions choose to hire students as editors and graphic designers, use freelance professionals, or provide publishing support in another form, faculty will benefit from the combined institutional support and the skills of others during the authoring process. This will make resulting OER more amenable to adoption. Furthermore, online platforms that host OER (e.g., EdTech Books, Equity Press, PressBooks, OpenStax, CK-12) can provide user guides that walk authors through the publication process and offer simple tools to enhance the finished work, such as automated accessibility and grammar checks. Those guides and the addition of editors and designers can mitigate the barriers of perceived quality, lack of skill, lack of institutional support, and even lack of time that some faculty face. Just as learning produces the best results when it is done collaboratively, OER are best produced with the help of diverse experts using tools specifically designed for the purpose of creating quality content.

OER can afford the opportunity to redefine the quality of textbooks (and other resources) by refocusing our perceptions of quality on how beneficial resources are for learners. When we as educators and leaders remove process-oriented parameters surrounding our understanding of what makes quality course material (e.g., peer review) and instead focus on the produced materials themselves, we open doors for OER to help us rethink the possibilities of what we can expect from our resources.

One way we can redefine our understanding of quality is by looking at student involvement with learning materials. Currently, curricula and course materials are predetermined by higher education institutions and faculty. Students receive book lists at the start of every term, purchase hundreds of dollars' worth of material they will likely only use

during that semester, and then face the challenge of trying to sell those materials at a fraction of their cost or else have sixty-dollar paperweights on their shelves. Nowhere in this process are students actively engaging with their learning, nor are they involved in creating course content that will facilitate lifelong learning for themselves and their peers.

In contrast, what if students were involved in the creation, improvement, or evaluation of their own textbooks? Christina Hendricks provides examples of students who have contributed invaluable research, writing, and revision to existing OER, fostering continuous improvement for curricula at many institutions.¹² Scott Woodward, Adam Lloyd, and Royce Kimmons articulated a path for how students' vetting of textbooks could itself be a valuable curricular activity.¹³ In addition, many faculty have experimented with approaches to having students develop OER as primary course learning activities.¹⁴ Combining OER with student-led learning can also eliminate disposable assignments—assignments that "add no value to the world" and are therefore unmotivating.¹⁵ When students provide input or direct their own learning in these ways, OER and coursework can be more effective by overcoming motivational and authenticity barriers to student learning.

Similarly, OER allow textbook quality to be redefined through the lens of continuous improvement.¹⁶ This lens ensures that the goal of producing textbooks is not just to publish a text but also to regularly review the content and update it according to students' needs and a changing world. Updating OER content may take into account new research findings or increased awareness of social, ethical, and cultural considerations. Continuous improvement also allows for remixability of text content at any time, which encourages dynamic learning experiences. Tools such as collaborative authorship, embedded learning checks in the text, and PDF availability provide opportunities for students and faculty to interact with OER in meaningful ways that will help improve the quality of the texts over time, and collaborative authorship can specifically ameliorate the lack of time and support some faculty face when trying to publish or improve existing resources.

Accessibility and Usability

Another barrier to the widespread use of OER is the lack of technological tools for sharing and adapting resources, which results in poor accessibility and usability of the OER. Because our goal as content creators, instructors, and faculty should be to provide quality learning opportunities to as many individuals as possible, we must consider the needs of our audience. Even though the content of a textbook may be well written, edited, and produced, it does no good if the book itself is inaccessible or unusable to parts of its intended audience. This discrepancy between consumable content and accessibility was shown in a study of K–12 websites across the United States. The study found that "95.5 percent of school home pages had a detectable [accessibility] error of some kind, with the average site having over 24 errors."¹⁷ That study also found that most errors were at the system level rather than the content level, and similar results have been found for college and university websites.¹⁸ Examples of potential accessibility issues that occur at the system level include the following:

- Lack of alternative text for images
- Inappropriate font sizes
- Lack of sufficient contrast between the text and background
- Incorrect order of the text (especially heading levels and layout of the information)
- Lack of compatibility with mobile devices
- Incorrect use of tables within the text
- Lack of transcripts available for videos

Such findings can be applied to OER in the sense that content creators need to work in lockstep with software developers who are familiar with these technologies to solve system-level accessibility and usability issues before OER are published on a website. Many of the accessibility and usability issues that exist in OER can be remedied with careful attention to system-level design by developers creating tools to seamlessly address them at the software (rather than content) level. Many OER publishing platforms such as EdTech Books are increasingly employing mobile-first design strategies, appropriate heading structures, high contrasts, sufficient font sizes, options for multiple formats (e.g., HTML,

PDF), search features, and various other design decisions promoting usability and accessibility that carry over to highly usable content. Each of these solutions is an example of how institutions can support educators by correcting common problems both before and after texts are published, and such attention to system-level solutions creates more accessible and higher-quality OER that can benefit students with various needs.

Usability can also be addressed at the content level by adapting content to appropriate reading levels. As content authors focus on the needs of their audience, they must consider their backgrounds. Some students may be learning English as a second language and require content that is more compatible to their reading level. Other students may be first-generation college students or come from homes where academic language is not commonly used. Each of these students will benefit from course materials that use language better targeted to their individual cases. One solution to this barrier that some platforms now provide is utilizing Flesch-Kincaid or other reading scores to continually evaluate the language used in OER and use this to signal to authors when content needs to be simplified. This solution transforms technology from a barrier into a support for educators who are publishing open content. For example, if an instructor primarily writes at a 12th-grade reading level, that instructor can use automated reading scores to reevaluate and adjust the writing style to be more appropriate for students at all levels, much as prominent publications such as *The New York Times* and *The Wall Street Journal* do with their content. When this barrier is solved, educators enhance students' learning flow and ability to interact with course content, and attention to all of these considerations reduces the time students would otherwise spend trying to troubleshoot technological or content problems.

Perceived Time Commitment

Finally, perhaps the greatest barrier to OER creation and adoption among higher education faculty stems from a perceived lack of time to devote to these activities, which is generally interpreted through a lens of the compatibility of these activities with the work expectations necessary for tenure, promotion, grant seeking, or simply keeping one's job. Interpreting OER efforts through the three-pronged lens of faculty work requirements—research, teaching, and citizenship—may uncover some obvious overlaps, such as between improving course content and teaching, but the major barrier seems to be that faculty and their evaluators do not consider OER work to be scholarly in nature. After all, who would spend time writing an open textbook when one's job security is almost wholly dependent upon publishing scientific articles or securing grants? This is perhaps the most difficult problem to solve in the diffusion of OER in higher education, but some solutions may be found by encouraging a rethinking of what we mean by scholarship and scholarly impact.

At the heart of scholarship is the notion of impact. Scientific journals and other professional outlets are typically ranked in terms of particular impact metrics, like impact factor or h-index, and scholars use these rankings as proxies for determining the reach that their work is having on their scientific communities and on society more broadly. However, just as OER may empower us to rethink what we mean by "quality," they may also empower us to rethink what we mean by "impact." In our case, Royce Kimmons has published broadly in scientific journals and highly regarded edited volumes but has also provided similar content as open textbook chapters. As an example, one of his chapters on copyright considerations for teachers that was published traditionally in an edited volume has been downloaded 1,300 times, while his open textbook chapter with similar content has been accessed or downloaded 10-times more frequently.¹⁹ Which of these venues is having the greater impact on the intended professional community and society broadly? Though expectations of tenure committees will not change instantly, OER may provide opportunities to reconsider the potential reach and impacts that scholars should be having on the world and their professional communities, and OER platforms can support this by providing detailed analytics and impact measurements to authors. In the case above, the open chapter hosted by EdTech Books gathers detailed evidence about impact, including page views, downloads, reads, backlinks, reading likelihood, and even predicted cost savings to readers. With such metrics in hand, faculty may find themselves in a better position to justify the time they spend with OER and thereby influence institutions to take a broader view of scholarly impact beyond a single, esoteric metric.

Closing the Gap to OER Adoption

Students and faculty agree that OER are clearly beneficial in education. However, due to some clear barriers, OER are largely untapped resources at many colleges and universities, and OER creation may be viewed as incompatible with how faculty members' job performance is evaluated. Lack of support, technological tools, quality, skill, and time prevents many educators from publishing or using OER, but with a little rethinking and innovation in the tools we use and the processes we follow, those barriers can be reduced or altogether eliminated. Doing so will provide benefits to students, by driving down costs and improving learning materials, and also to faculty, by improving teaching and scholarly impact. Rethinking our practices and tools in these ways can increase students' educational opportunities and quality of learning and allow faculty scholars to amplify their voices and increase their impact, both in their fields and in the world at large.

Notes

1. Katharine M. Broton and Sara Goldrick-Rab, ["Going Without: An Exploration of Food and Housing Insecurity Among Undergraduates,"](#) *Educational Researcher* 47, no. 2, (March 2018): 121–133. ↵
2. Richard Baraniuk, as cited in Emma Whitford, ["Textbook Trade-Offs,"](#) *Inside Higher Ed*, July 26, 2018. ↵
3. Virginia Clinton and Shafiq Khan, ["Efficacy of Open Textbook Adoption on Learning Performance and Course Withdrawal Rates: A Meta-Analysis,"](#) *AERA Open* 5, no. 3 (July–September 2019): 1–20. ↵
4. John Hilton III, ["Open Educational Resources and College Textbook Choices: A Review of Research on Efficacy and Perceptions,"](#) *Educational Technology Research and Development* 64, no. 4 (February 2016): 573–590. ↵
5. Royce Kimmons, ["Expansive Openness in Teacher Practice,"](#) *Teachers College Record* 118, no. 9 (2016). ↵
6. Yang Li, Chaojiang Wu, Erjia Yan, and Kai Li, ["Will Open Access Increase Journal CiteScores? An Empirical Investigation over Multiple Disciplines,"](#) *PloS One* 13, no. 8 (August 30, 2018). ↵
7. George Veletsianos and Royce Kimmons, ["Assumptions and Challenges of Open Scholarship,"](#) *The International Review of Research in Open and Distributed Learning* 13, no. 4 (2012): 166–189. ↵
8. Julia E. Seaman and Jeff Seaman, ["Freeing the Textbook: Educational Resources in U.S. Higher Education"](#) (Babson Survey Research Group, 2018); Michael Troy Martin, Olga Maria Belikov, John Hilton III, David Wiley, and Lane Fischer, ["Analysis of Student and Faculty Perceptions of Textbook Costs in Higher Education,"](#) *Open Praxis* 9, no. 1 (January–March 2017): 79–91. ↵
9. Seaman and Seaman, ["Freeing the Textbook,"](#) Kimmons, ["Expansive Openness in Teacher Practice,"](#) ↵
10. Troy Martin and Royce Kimmons, ["Faculty Members' Lived Experiences with Choosing Open Educational Resources,"](#) *Open Praxis* 12, no. 1 (January–March 2020): 131–144. ↵
11. Scott Woodward, Adam Lloyd, and Royce Kimmons, ["Student Voice in Textbook Evaluation: Comparing Open and Restricted Textbooks,"](#) *International Review of Research in Open and Distributed Learning* 18, no. 6 (September 2017): 150–163. ↵
12. Christina Hendricks, ["Students' Vital Role in OER,"](#) *Inside Higher Ed*, December 13, 2017. ↵
13. Woodward, Lloyd, and Kimmons, ["Student Voice in Textbook Evaluation,"](#) ↵
14. Royce Kimmons and Secil Caskurlu, ["The Students' Guide to Learning Design and Research"](#) (EdTech Books, 2020). ↵
15. David Wiley, ["What Is Open Pedagogy?"](#) Open Content, October 21, 2013. ↵
16. Royce Kimmons, ["A/B Testing on Open Textbooks: A Feasibility Study for Continuously Improving Open Educational Resources,"](#) *The Journal of Applied Instructional Design* 10, no. 2 (2021). ↵
17. Royce Kimmons and Jared Smith, ["Accessibility in Mind? A Nationwide Study of K–12 Websites in the United States,"](#) *First Monday* 24, no. 2 (February 2019). ↵
18. Royce Kimmons, ["Open to All? Nationwide Evaluation of High-Priority Web Accessibility Considerations among Higher Education Websites,"](#) *Journal of Computing in Higher Education* 24, no. 2 (2017). ↵
19. Olga Belikov and Royce Kimmons, ["Can I Use This? Developing Open Literacies or Understanding the Basics and Implications of Copyright, Fair Use, and Open Licensing for e-Learning,"](#) in *Leading and Managing e-Learning*, eds. Anthony A. Piña, Victoria L. Lowell, Bruce R. Harris (New York: Springer, 2018): 155–168; Royce Kimmons, ["Copyright and Open Licensing,"](#) in *The K–12 Educational Technology Handbook*. ↵

Previous Citation(s)

Irvine, J., Kimmons, R., Rogers, J., (2021). Recognizing and overcoming obstacles: what it will take to realize the potential of OER? educause review. <https://edtechbooks.org/-HQkY>



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