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Letter from the Editors

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Kristina Clement²

Samantha Peter³

We are pleased to present the inaugural issue of the Journal of Open Educational Resources in Higher Education (JOERHE). As academic librarians, the three of us intersect with Open Educational Resources, open access, and open publishing in a variety of ways. Drawing on our past experiences with both traditional and open publishing models, we saw a need to create a dedicated, open scholarly space for those who wish to engage in community and scholarly conversation about all things open. It is exciting to see this idea come to fruition. JOERHE's vision is to reduce the barriers to publication and create a space where authors, reviewers, and readers can build a community that supports and encourages the growth of the profession through kindness to one another as scholars. We also seek to provide transparency in our publishing practices through clear and frequent communication with our authors, reviewers, and readers.

One of our primary goals with this journal was to implement an open peer review process that is as rigorous and validating as a traditional peer review, while also encouraging reviewers to provide constructive criticism and thoughtful suggestions for improvement. Additionally, we wanted to ensure that our reviewers are acknowledged for the work that we have asked them to do. Each reviewer has their review published alongside the article that they reviewed and is encouraged to cite their work. We know that recognition alone doesn't take the place of compensation for peer review, and we acknowledge that peer review is traditionally undervalued in academia. The call for open peer reviewers was met with enthusiasm from educators across the open community and we currently have a pool of more than 80 individuals who are willing to engage in the open peer review process. As this journal progresses, develops, and grows, we hope to continue to refine our open peer review process and create pathways for authors and reviewers to converse more directly as articles work their way through their reviews. Conversation is an important facet of community, and that is what we want to bring to JOERHE in the future.

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A sincere and heartfelt thank you to all who have been not only willing to support this journal as it finds its voice, but also to enthusiastically embrace the process of exploring an open publishing and peer review model. Particular thanks to the authors who entrusted their work with us, an unknown journal, and their kindness as we worked together to build this first issue.

This issue features two columns, eight articles, and one review and rubric of [*Power, Profit, and Privilege: Problematizing Scholarly Publishing*](#). We wanted to briefly recap our issue.

Columns:

- “Tilling Rows and Early Harvests” by Dr. Megan Lowe describes their journey into the open access movement and the world of Open Educational Resources through their dissertation work at the University of Mississippi. The author notes that the work of advocating for OER in higher education is never really done and that we are continually challenging the assumptions we have about the resources we use.
- “How We Learned to Relax and Encouraged Others to Embrace OER” by Janet Baltes, Travis Mann, Emily Moran, and Stephanie Warden details the formation and efforts of the OER committee at the University of Wisconsin-Superior over the last two years. The committee developed an OER mini-grant program and a virtual training program for those who wished to adopt, adapt, or create OER.

Articles:

- Mihoko Hosoi, Bryan McGeary, and Lana Munip in “Doctoral Students’ Perspectives on Textbooks and Open Educational Resources: Needs, Impact, and Future Directions” conducted interviews of 12 doctoral students in Education. They highlight impactful findings related to doctoral use of textbooks including the finding that course selection was not impacted by textbook cost, but the textbook did influence opinions of the faculty member.
- Natasha Lindsey, Jennifer Pate, and Lisa Ann Blankinship in “Case Study Exploring the Development of a Quality Open Education Clinical Microbiology Lab Manual and Online Experiential Lab Course” expanded upon the need for online materials to have a team of support and careful planning. This article explores how a microbiology professor, OER librarian, and an instructional designer worked to create an open Microbiology Lab Manual.
- Yang Wu in “Do OER Textbooks Have Value Beyond Cost Savings? An Analysis of Student Attitudes and Faculty Teaching Strategies in an American University” works to better understand

the effectiveness of OER as compared to traditional publishing models. Wu surveyed students in nine courses and identified an alarming trend: OER impact might be limited due to the fact that students are not necessarily even reading assigned textbooks. The study identifies how instructors teaching with OER play an important role in assessing the effectiveness of OER.

- “OER State Policy Discourse: Adding Equity to the Cost Savings Conversation” by Casey McCoy-Simmons provides a policy analysis of state policies that incentivize OER. The author analyzes the discourse of state policy makers and provides research-based policy recommendations for states looking to create or expand their OER policy.
- “Understanding Mathematics Instructors’ Perceptions of OER: A Mixed Methods Study” by Amie Freeman, Hengtao Tang, and Jade Geary looks at a limited adoption of OER in a mathematics department through a mixed method survey. The authors identified the barriers keeping mathematics faculty from incorporating OER included content quality, time concerns, and customization issues.
- Jonathan Bull and Michele Gibney, in “Programmatic Characteristics of Open Education Initiatives at U.S. Post-Secondary Institutions” take an innovative approach at evaluating the student success metrics through a quantitative study of 149 survey responses of program managers for OER initiatives at higher education institutions in the United States. The authors found that OER programs are often overlooked by committees, offer incentive payments for faculty, and have some assessment of the programs.
- Accessibility is always an important conversation in the scholarly community, and authors Teresa Schultz and Elena Azadbakht in “Conversations with Open Textbook Authors: The Factors That Help and Hinder Accessibility” report on the themes that emerged from conversations with eight open textbook authors. The themes that they identify clearly indicate the need for academic institutions to better support faculty with making OER accessible.
- The article “Just One Textbook? Student Perceptions of and Preferences for Open and Affordable Educational Resources” by Elizabeth Nelson and Christina Riehman-Murphy presents a survey of students in which an OER that was funded by a library grant program was utilized. The results showed that students appreciated the lack of cost and found the quality better or the same as commercial textbooks. But, students had concerns related to how they accessed these resources. The authors provide an analysis of the factors regarding access providing resources for faculty to consider when incorporating OER materials.

Review:

- Chelsee Dickson provides a detailed and thorough review of “Power, Profit, and Privilege: Problematizing Scholarly Publishing” by Amanda Makula. In addition to the review of the text, readers can view the JOERHE OER Textbook Rubric which allows our readers to quickly assess whether or not the OER may be right for their classroom or other scholarly purposes.

Acknowledgments

Peer Reviewers

There are many people that we would like to thank as we present this inaugural issue of JOERHE. Our peer reviewers did an amazing job providing supportive and constructive feedback to authors sharing their own expertise and knowledge. We want to thank all of our peer reviewers who helped us to finalize decisions on our papers. We could not do this without you.

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Note: 'Letters from the Editors' are not peer-reviewed and reflect the individual opinions of the editor(s).

Finding Joy in OER Outreach

Letter from the Columns Editor, Elizabeth Batte

Elizabeth Beaver Batte¹

Keywords: OER, Outreach, Burnout, Pedagogy, Community

Introducing Columns Editor, Elizabeth Batte

Elizabeth Batte has been working within the OER community as an academic librarian since 2018. They began their career at Nicholls State University where they served as Library Director and OER Coordinator. They are now the Outreach and Strategic Initiatives Librarian at the University of Mississippi. Elizabeth is currently a doctoral student at the University of Louisiana Lafayette studying higher education leadership. They have a bachelor's degree in journalism from the University of Mississippi and a master's in library and information science from Louisiana State University. Elizabeth's research has focused on OER usage and best practices in outreach, burnout among academic library leadership, and impacts of policies in higher education on employees.

Letter From the Columns Editor

A column section in an academic journal is not the most common practice. However, given the ever-evolving nature of higher education and open educational resources, the column section is a place to bring forth more conversational topics in a

peer-reviewed format. The tone for the columns will most often be less technical and not full of jargon that what will be found in the articles. The goal is to keep the columns conversational in nature, but also to help ensure that the conversations happening in the columns are accessible and understood by those even outside of the higher education or open educational resources communities.

As editor for this section, my desire for the content for the columns are for the topics to remain varied, widespread across higher education, and from diverse voices in the open educational community. This section can be a place for contributors to introduce new pedagogical uses for OER; critique current practices in the open access community within higher education; highlight personal, institutional, or regional accomplishments; and so much more. In general, no topic is off-limits, however, it is not intended for case studies or original research.

For the first issue of JOERHE, I chose two columns that both reflect on outreach between academic libraries and faculty focused on increasing OER usage and creation on their campus. I am an academic librarian, but this is not why I chose these two for the first issue. One focuses on how a group of academic librarians teamed up together to share the load of their

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outreach efforts to faculty. Given the past couple of years and the widespread burnout in higher education, I thought this was a good column to serve as a reminder to create joy in our work but also to not always feel like we must take on everything by ourselves. The other column is an overview of the author's dissertation research into faculty perceptions of open and affordable educational resources, as well as their personal experiences as a librarian working with OER. When doing any form of outreach, it is important to understand perceptions within the community you are working with.

I look forward to the conversations that are sparked within the columns section. If you have questions or want to pitch ideas, please feel free to reach out to me.

Note: 'Letters from the Editors' are not peer-reviewed and reflect the individual opinions of the editor(s).

Tilling Rows and Early Harvests

Dr. Megan Lowe¹

Keywords: Open Educational Resources, affordable education resources, dissertation, open access, faculty perceptions

Introduction

Somewhere in early 2019, my best friend from high school – with whom I have been friends since we were 14 years old – talked me into joining them on a doctoral journey. Together, we applied for and were accepted into the University of Mississippi’s (Ole Miss) Doctor of Education in Higher Education Administration program, which is part of the Carnegie Project on the Education Doctorate. There are six principles which compose the Project’s framework, which I will not outline here, but the primary principle is of relevance to both the substance of this column and to the open educational resources (OER) effort in higher education. This principle states that the professional doctorate in education “is framed around questions of equity, ethics, and social justice to bring about solutions to complex problems of practice” (Carnegie Project on the Education Doctorate [CPED], 2021).

This principle forms the foundation of the curriculum at Ole Miss and serves as the driving force behind the program’s dissertation in practice (DiP) model. When faced with this principle, I was motivated to select a problem of practice (PoP) having to do with student welfare, which led me to the topic of food insecurity. I initially thought to study the impact of food insecurity on faculty’s perceptions of open educational resources (OER) as a solution to the problem, but was subsequently directed away from this topic. I was determined to

study OER nonetheless. So, that, and the faculty perceptions part of my initial idea, survived for the final dissertation topic: faculty perceptions of affordable and open educational resources (AOER) at the institution where I worked at the time (Lowe, 2022). While there are many facets of the experience I could and want to write about, it seems appropriate for this column to focus on a particular element of the research: how faculty perceptions have shifted since OER and affordable education resources (AER), often known together as affordable and open education resources (AOER or OAER), took hold in the collective consciousness of higher education as suggested by the findings of my dissertation.

How It Started

My own journey into OER began with my entrance into the open access (OA) movement, sometime around 2009. I was subsequently motivated to begin my own peer-reviewed OA journal, *Codex: The Journal of the Louisiana Chapter of the ACRL*. When I encountered Open Educational Resources about five years later, OER seemed like a natural part of my OA values. I dug into the literature to understand the phenomenon and to identify solutions, practices, challenges/barriers, and other details which would serve me in my pursuit of promoting OER.

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The impression that this casual review of the literature available at the time gave me was that faculty found OER variable in quality, time-consuming and difficult to create and/or implement, and difficult to find/identify (Browne, Holding, Howell, & Rodway-Dyer, 2010; Rolfe, 2012; Sclater, 2010). Faculty struggled with the role and applications of copyright and institutional support, where that notion meant fiscal support, time, and/or the ever-crucial tenure/promotion acknowledgement (Browne et al., 2010). Faculty acknowledged that OER gave them greater control of the material they taught, and they supported the idea of open education, altruism, and the ability to share resources (Rolfe, 2012; Sclater, 2010). Unfortunately, many OER did not have crucial ancillary materials like test banks or study guides that supported or enhanced student learning (Kani, 2015). The emphasis, however, in the literature at that time seemed to be on barriers and challenges, though there was a substantial amount of support and solutions to be found.

Anecdotally, the story at my institution in the early years of OER in Louisiana carried echoes of the literature. Many faculty did not understand the concept of OER. When the notion of affordable education resources emerged, the waters were further muddied. Affordable education resources (AER) are “any required course material that students purchase for less than \$50” (Penn State, 2022), though the notion of affordable can vary from state to state. AER can “include low-cost or no-cost options and library materials that do not have an open license” (Penn State, 2022). The “no-cost” option seemed to imply that they should be OER, but the copyright and licensing contexts which accompany AER seemed to confuse faculty.

Several who understood the concept of OER still rejected it outright, commenting that they could not find viable or quality resources for their disciplines (many of them from the sciences,

unsurprisingly). Many struggled with copyright and fair use apart from the OER question, so trying to explain OER in terms of copyright, fair use, and/or Creative Commons licensing (CCL) was asking for trouble. Of course, these elements also confused the AER aspect for faculty, as noted above. Many questioned the use of OER from within the academic freedom framework and expressed concerns that OER meant having that freedom diminished in some way. Most had not attempted at that time to create their own OER, but those that were experimenting with implementing OER did relate how time-consuming it could be. The lack of support from the administration, regardless of whether that meant financial support, course release time, or acknowledgement in the tenure/promotion process. The lack of articulated support from the administration also seemed to deter faculty as well, since faculty seemed to regard the lack of support as no support (or, arguably, a rejection of the notion). In short, the ground was not exactly fertile at the study institution in OER’s early years.

Making the Shift

Fortunately, the soil could be amended, and one of the ways in which the ground at the study institution was prepared was through a co-facilitated faculty learning community (FLC) run with the then-director of online programs, the director of the office of extended learning and quality enhancement, and myself, the director of the library. The purpose of the FLC was to introduce faculty to OER and related concepts (like copyright/fair use/CCL), and help them, over the course of a year, convert one of their courses to OER.

We received funding for incentives through the university’s Foundation, but when we solicited the faculty for applications for the FLC, we did not let them know that incentives were being offered. We received more applications than anticipated, which

is a problem we were glad to have! Once we selected the participants, we proceeded with a very simple purpose and outline: help faculty understand what OER are; help faculty develop an OER-based assignment for a course they were currently teaching with a view toward converting that course into an OER course; and then actually convert that course into an OER course.

This process ran through three cycles. In the first year, we three directors facilitated the FLC. In the second year, two participants from the first year facilitated the next crop of newcomers while the original facilitators worked with a group of faculty on more advanced topics. In the third year, a new set of facilitators worked with the next crop of newcomers while I was meant to work with a group to work on funding opportunities related to AOER. During cycle two, however, COVID-19 hit, and one of the original directors left the university. Ultimately, the funding opportunities group was disbanded, as several participants dropped out owing to COVID pressures and changes in roles and priorities.

That last cycle was perhaps less fruitful than the earlier cycles, but it allowed me to sow seeds. Overall, the FLC allowed me as the library director and an OER advocate to make connections with faculty who believed in the purpose and benefits of OER and who in turn became advocates as well. In addition to the courses that were converted and the faculty minds that were changed in favor of OER, the FLC also created awareness and connections that would serve me during my dissertation research.

Starting the Harvest

As I noted in the introduction, faculty perceptions of AOER was not my original topic, but both the original topic and the final topic both focused on how faculty perceive AOER. I went the convenience sampling route and used

state-mandated course markings related to AOER to identify potential participants for my research (Lowe, 2022). I sent emails to over 70 faculty members who had or were at the time of the study's start teaching courses that employed AOER in some way. At the end of the recruitment period, 14 faculty agreed to participate (Lowe, 2022). Many of them, but not all, had participated in the FLC, and I attribute their willingness to participate in my study as an outgrowth of the connections built during the FLC. That in and of itself was part of the harvest from the amended soil: that faculty were willing to talk about OER and their experiences. They were, of course, afforded anonymity and confidentiality as part of their participation, but their willingness to sit down and talk about their experiences frankly was extremely beneficial across multiple domains.

The barriers the participants identified were familiar from my earlier peregrinations through the literature. Faculty reported that the front-end time investment was substantial, though they all indicated that it was worth it (Lowe, 2022). They all expressed concerns about the application of that labor, time and otherwise, towards tenure and promotion (T/P) documentation. At this time in the state in which I work, OER efforts – e.g., creating or adapting OER resources or converting courses to OER – are encouraged, and sometimes even incentivized monetarily, but they do not count towards T/P. While several of the faculty members who were interviewed were already tenured and not as worried about this facet of the process, several others were not, and they expressed understandable concerns in that direction (Lowe, 2022).

The quality and discipline-specific concerns also made an appearance in my research, concerns which persist from the earliest years of OER research. The study institution has several healthcare-related programs including nursing and pharmacy and grants doctorates in several

disciplines, from pharmacy to education to marriage and family therapy. A few of the faculty from those allied health disciplines discussed their concerns with highly specialized topics. The sample for my research also contained several psychology professors who commented on the lack of quality OER in several sub-disciplines of psychology, such as adolescent psychology. A political science professor who teaches in the Master of Public Administration program also complained about a lack of resources on specialized topics. All agreed that for more general, introductory, and/or lower-level undergraduate courses, there is a sufficient number of quality OER available. However, for upper-level undergraduate and graduate courses, there was a marked dearth of titles (Lowe, 2022).

Another concern or barrier, which persisted from the early literature, is the availability of ancillary materials. Several of the faculty commented on the benefits of traditional commercial texts and platforms (e.g., Pearson MyLabs) that can interface with existing learning management systems (LMS) and provide students with bells and whistles that seem to enhance their learning experience. At least one professor in the physics department, who had converted from anti-OER to pro-OER early on, talked about the benefits of commercial test banks and how he did not have time to create new tests or problem sets for his students. Since that time, such resources have been built, but they are largely (and look) homegrown and are not always as “slick” and aesthetically pleasing as the commercial resources to which students have grown accustomed (Lowe, 2022). At least one professor commented on how students get used to seamless, robust experiences between platforms; when that experience becomes less seamless, engagement can be lost (Lowe, 2022).

Much like the earlier literature, not all of the faculty experiences with OER were bad. Many commented on how they liked how OER allowed

them to tailor or customize courses. They enjoyed how much control OER gives them over course content. Faculty can introduce and explore topics that interest them in more depth and in ways that they believe make better sense for their teaching styles and preferences. Some regard OER as a means to greater academic freedom. Admittedly, some faculty regard the implementation of OER titles within core courses (such as introductory math or science courses) as a violation of academic freedom (Lowe, 2022). It is worth noting this tension between the views of OER through the lens of academic freedom.

Though the earlier literature merely touched upon notions of saving students money, increased access, and equity, these topics permeated my dissertation. Even those faculty who expressed concerns about certain facets of OER – namely quality, availability, lack of ancillary materials, and lack of robust platforms – acknowledged that they appreciated how OER saved students money and increased access and equity. Without exception, all of the faculty talked about the benefit of improving student access to materials, particularly in terms of timeliness (Lowe, 2022). The sooner students have access to course materials, the sooner they can begin to engage with them. Faculty and instructors do not have to delay getting into the heart of their courses just to ensure that all students have access to the course materials. Faculty and instructors do not have to worry about providing copies or access to the course materials for their students. Students do not have to worry about falling behind, as they have timely access to materials, which supports persistence and retention. None of the faculty in my study denied the benefits of such access (Lowe, 2022). This improved access provided by OER enhances equity, leveling the playing field, and ensures that students are better able to start off equipped to manage their course work.

Beyond the Harvest – To Market

I realize that much of the previous paragraph is preaching to the choir, as it were. If you are reading this journal, you are probably (1) a practitioner who is familiar with OER, (2) a nascent user invested in learning more about OER, or (3) someone who has heard about OER and is open to learning more about its applications. In all these cases, I would argue that there is a receptiveness to – perhaps even a hopefulness for – OER as a way to improve student learning and outcomes in higher education, to increase equity and access to learning materials, and/or to enhance one's teaching.

It is, admittedly, a little disheartening to realize that those of us who advocate for and employ OER are still facing the same challenges we were a decade ago. However, in reviewing my dissertation and following the defense of the thing, one of my committee members pointed out how often I said during the defense that I was surprised by certain things that faculty participants said. The committee member indicated that I had certain expectations or assumptions that had clearly been challenged. I thought I had addressed all my assumptions in the earlier writing, but I could not deny that my committee member was right. I was surprised by how positive the faculty were about their experiences.

The earlier literature had predisposed me to expect that faculty would be largely negative about their experiences and the prospects of OER in higher education. However, many participants indicated that they felt that OER was the right direction in which higher education should head and represented a shift in how we support students. Many indicated that even when they were unable to fully implement OER in certain courses, they still supported the philosophy and principles of OER in little ways. Many participants felt strongly that advocating for and promoting those principles,

that philosophy, was as important as practicing them (Lowe, 2022).

Turning Over the Soil

The work is never really done. As soon as we equip a faculty member or instructor with the information, skills, and access they need, we encounter a new faculty member who needs that same support and education. We encounter new administrators and program directors and department heads who do not quite understand OER or how it can be implemented. We question ourselves and our work – how, with all our efforts, can people still be unfamiliar or unaware of OER? The fact of the matter is that being immersed in the thing, we do not always see the edges. We must continue to evangelize for OER, advocate for our students and faculty, seek resources and incentives – do the arduous work of amending barren soil, fertilizing it, tending to it carefully until we see the green shoots coming up, and the fields full and green.

And when we reap what we sow, we do our due diligence and turn the soil over again. We do the work to nourish and cultivate those same fields again and again so they continue to flourish. New methods for engagement, innovative technologies for improved access and platforms, novel resources and repositories are always emerging. We must pursue experimentation, testing these new opportunities to see if and how they contribute to the health and fecundity of our fields. We must share our failures and our successes, so our colleagues and compatriots also learn and thrive. This also allows us to cross-pollinate and produce new cultivars of existing resources, methods, and practices.

I am excited for this new journal! And I am excited to be a part of the inaugural issue. I believe strongly in open access and open educational resources. I am glad that this resource has emerged

to help spread the seeds of OER and foster their germination! Though the work never ends, though we must be vigilant against pests (the naysayers) and disease (budget shortfalls), though the work is laborious and intense, the harvest is always worth it.

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How We Learned to Relax and Encouraged Others to Embrace OER

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Stephanie Warden⁴

Keywords: Open Educational Resources, Academic Library, Event Programming, Faculty Professional Development

Introduction

The University of Wisconsin – Superior has roughly 2,500 students, 46% of whom are first-generation students. A large portion of our student population is from economically-disadvantaged backgrounds, and, based on results from a survey regarding the affordability of textbooks, most respondents purchase their course materials from their own funds. These reasons, as well as many others, have caused our library, the Jim Dan Hill Library, to encourage the use of Open Educational Resources (OER) on our campus.

In the spring of 2020, the Jim Dan Hill Library within the Markwood Center for Learning, Innovation and Collaboration (CLIC) created a committee to work with OER on campus. The OER committee was comprised of two librarians, one instructional designer, and one student. The committee first investigated OER programs from other colleges and universities of similar size and

solicited advice from such programs. This involved cold-contacting roughly thirty campuses and asking them a few questions by email. Some of those campuses offered to speak further over the phone or video calls about their past programming. In addition, members of the committee performed literature reviews regarding the benefits of OER usage. We began planning how to take what we learned from the other campuses and tailored it to our campus. This included an OER Mini-Grant program, OER workshops, and programming for Open Education Week.

By the spring of 2021, the makeup of the committee changed and is now comprised of four librarians. Janet Baltes has worked at the University for thirty-eight years and is currently the library's Cataloger. Prior to serving on the committee, Janet had little experience with OER. Travis Mann, the Systems Librarian, has worked at the University for three years and previously

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worked in secondary education and volunteered at the Wauwatosa Historical Society. Serving on this committee is Travis' first foray into the realm of OER, and he has earned both the Creative Commons Certificate and the Certificate in OER Librarianship. Emily Moran is the Instructional Design Librarian and has worked at the University for two years. She had some experience promoting OER at her previous employer and had earned the Creative Commons Certificate by the time she started working on this committee. Finally, Stephanie Warden is the Associate Director and Information Literacy Librarian and has been working at the University for seven years. She has previous experience in a medical library, an agricultural information center, and libraries in for-profit schools. Prior to serving on this committee, she served on other textbook affordability committees and has also earned the Creative Commons Certificate.

OER Mini-Grants

In the spring of 2021, the OER committee took it upon itself to create, from scratch, an OER grant program for our campus. We began accepting proposals from campus faculty and staff in September of 2021 for a round of grant funding for OER creation and adoption. This project, supported by a windfall from cost savings from supplies during COVID, allowed us to award two \$1,000 OER creation grants and two \$600 OER adoption grants.

This was the first time, to our knowledge, this kind of support for OER had been offered on our campus. We wanted to promote OER as well as give the impression that this is a serious undertaking and acknowledge the amount of effort the instructors would expend, and, as such, compensation would be part of a larger support system. To reinforce OER as legitimate course materials which are comparable to traditional textbooks, as well as maintain quality control, we

created a program requiring participants to meet with us and discuss the creation/adoption process. Instructors were required to submit proposals describing their project in detail and outline when and how it would be deployed in classes for us to score based on a rubric designed by our committee.

The rubric, which was included in the call for proposals, was created specifically to foster concepts such as equity, diversity, inclusion, and accessibility. We prioritized projects which would impact the largest number of students, specifically general education courses, though we did accept some upper-level courses from the pool of applications. Once accepted, they were required to sign a nine-month-long stipend contract that stipulated they would meet with the committee three times during the work period, participate in an event in which they share their experiences with the community, and provide us with a copy of their syllabus showing the use of the new material.

After the awards were given, the committee's workload regarding the mini-grants decreased significantly for a time. While we made it clear that each of us was available to speak about open materials or answer any questions they may have, few people reached out for that kind of guidance. This was, at first, somewhat concerning as we had not had our first meeting post-contract at that point. However, our fears were unfounded, as we soon saw marvelous things coming from the participants. One of the participants coordinated with an instructor at another institution who they met through a previous OER program, our Virtual Intensive, to use Pressbooks to create a new textbook for her upper-level social work students. Another began creating a music textbook using openly licensed materials from YouTube which included a diverse array of styles, composers, and artists. This instructor also made use of non-open materials with explicit permission from the creators. Yet another instructor adopted a new

OER for use in an introductory English as a Second Language (ESL) course which will be used not only by them, but also by others hired to teach the course.

As a result of this program, we anticipate material costs will be decreased by between \$55.00 and \$160.00 per student per course, totaling roughly \$7,560.00 between all four instructors. In addition to creating equity through cost savings, several of the instructors have also made concentrated efforts to actively seek images and artifacts which are representative of a wider range of students and student experiences. For example, one recipient has been very mindful of including musical compositions by composers from underrepresented populations throughout musical history.

During our debrief sessions with faculty, many noted that the project was transformative for their teaching. Some noted they felt more confident that the material suited the class, and others stated they were able to actively engage students with the material more easily as content reviewers. While the experiences reported were very positive overall, participants also had some ideas for improvements, including proofreading services and technology mentors. This is not a service we currently offer; however, we are investigating creating a student position which may aid with this portion of the work.

While we found this to be a worthy project, and the benefits exceeded our meager expectations, we admit it was a large undertaking. Indeed, the committee was comprised of volunteers from the library staff, including our cataloger, instructional design librarian, systems librarian, and information literacy librarian, all of whom have duties and responsibilities that do not include OER. In addition to planning and executing the program, the committee took full responsibility for the marketing and promotion of the project to constituents, as well as the contract and payment

logistics. To this end, we learned a great deal about how the UW-Superior campus works in terms of getting and distributing funding. We also gained experience with multiple publishing tools, including OER Commons and Pressbooks.

OER Virtual Intensive

Additionally, in the fall of 2021, our library joined the Open Education Network (OEN) in a bid to increase awareness of and access to educational resources for faculty and staff. Our membership included access to slides which greatly aided us in our development of a curriculum for a one-day intensive workshop that culminated in participants submitting their review of an OER in their discipline to the Open Textbook Library. Participants were awarded small stipends to incentivize participation.

The lecture portion of the program consisted of six sessions held virtually over the course of one day. Topics included Why OER?; Library Resources; The Five Rs/Creative Commons Licenses; Finding and Evaluating OER; Adopting and Adapting OER; and Creation, Accessibility, and Sharing. We also covered the standards and rubric for reviews to be submitted to the Open Textbook Library. Participants were expected to attend the full day of workshops prior to submitting their review and also attend a closing session after submitting their work.

Participants largely agreed that the experience was beneficial. All enjoyed seeing their work acknowledged with payment. Some went on to contact the authors of the books they reviewed and forged new and lasting relationships with those authors, resulting in at least one collaboration. Some indicated interacting with OER gave them a better idea of what OER were and increased their confidence working with them. In addition, it gave them an opportunity to interact with a peer-reviewed text and become a peer-reviewer

themselves. Many reported better relationships with the library and an increased awareness of who to contact if they have questions about OER.

It was noted that some of the information contained in the presentations was repetitive for those who had participated in other OER related programming. This is something we will address when we host the program again this year by allowing participants to choose the sessions they wish to attend. We also gained a great deal of experience working with the OEN, which was entirely new to us. While we were developing the program, the workload of taking the information from the OEN and tailoring it to our campus's needs was quite large. Now, we have a better grasp of what we are doing and have the materials developed, and we are confident the next iteration will go smoothly and will not take as much of our time to implement and prepare.

Superior Learning Experience

Over the course of summer of 2021, we had five instructors participate in a five-week cohort-based learning experience to identify relevant OER and adopt it in a course. This program was co-facilitated by a librarian and an instructor who had experience adopting an open textbook. During the program, participants learned about Creative Commons Licenses, where to find OER, and how to integrate open resources into their courses. Participants regularly checked in with the facilitators and received one-on-one support and advice. The program culminated in a peer-review of their courses in our learning management system, and participants were paid via contract for their work.

Instructors who participated indicated they learned what OER were and how to find them. Instructors once more indicated they appreciated being compensated for their time and work above and beyond what they would be able to commit to during the school year. Many instructors who

participated in the program also elected to participate in our other OER-centered programs, such as the mini-grant and virtual intensive.

While most participants discovered truly open resources, some did not take all the lessons to heart. A particularly frustrating example came from an instructor who found a resource via the Multimedia Educational Resource for Learning and Online Teaching (MERLOT) that did not have an appropriate CC License, though they elected to use the resource anyway. As a result, we decided to change the way we discuss open resource aggregators and be more careful emphasizing personal responsibility to find appropriate licensing.

As a result, we gained more experience teaching OER discovery and evaluation skills. We also identified a group of instructors who are eager to learn more about and work with OER. These instructors in turn have created a community, frequently attending and supporting our OER events at the library. Additionally, this program was particularly impactful for students. We estimate three percent of our student population benefited from the participants' use of OER during the 2021-2022 academic year.

Open Education Week 2022

We hosted several events during Open Education Week in March of 2022, including tabling sessions in the student union, where we gathered information from students about the cost of their textbooks; an OER trivia game for students hosted on Kahoot; and an OER panel directed at instructors, where we invited three instructors to discuss their use of OER.

In collaboration with our Student Involvement Office, we incentivized students to attend our OER Kahoot trivia event by offering gift cards for participants. The event was geared toward students looking to learn more about OER. The questions

we asked were primarily based upon campus-specific information from the Financial Aid Office's data about textbook costs, the vocabulary and acronyms associated with open resources, and statistics involving textbook costs. Since the questions were all multiple choice, we tried to make the incorrect answers obvious so we could use it as an educational opportunity for students. Most participants indicated they learned something new about open resources. Even with the incentives, the event was sparsely attended, probably due in no small part to the lack of knowledge surrounding the subject on campus and perhaps also due to challenges marketing the event.

Another event that week was a lunch at the student union. We invited students to write how much money they spent on textbooks for the Spring 2022 semester on a whiteboard, briefly mentioned the benefits of their instructors using OER in their courses, and offered educational materials about OER, as well as bribed them with candy. With over 40 students participating, we consider the event a success. Beyond the members of the committee participating, we also had a student from the CLIC Advisory Committee volunteer their time and support. This event served as an opportunity to inform students about open resources, while collecting useful data about how much money students spend on textbooks each semester. Many students were enthusiastic about the idea of reducing the price of textbooks, and some indicated they would talk to their instructors about OER.

The OER panel hosted later in the week seemed to be particularly impactful to the instructors who attended. The panelists consisted of three instructors who were actively using OER in their courses. In-person attendees consisted primarily of instructors across multiple departments. We recorded 33 viewers who watched the event via livestream on our library's YouTube channel,

although we could not determine their demographics. Audience members asked several thoughtful questions and voiced some of their fears and misconceptions about OER, which resulted in a meaningful conversation between the panelists and the audience. This included a question regarding vetting of information in OER compared to traditional textbooks, in which the panelist pointed out that mistakes occur in traditionally published textbooks in part due to a limited number of people proofreading and editing the materials, whereas in an OER, particularly a widely adopted OER, a mistake will likely be quickly corrected due to the number of people viewing the material with a critical eye.

These events were, for lack of a better term, invigorating for us. We considered all three to be successes. They generated buzz, created new partnerships, and connected us with students in a way we simply had not been before. We were also able to see how the events connected to and fed off each other. For example, one of the questions we were asked at our tabling event was about the OER panel at which a student's instructor was speaking. It illustrated for us the important nature of sustainable and consistent programming in promoting OER. Yet the workload to create, coordinate, and execute these events was substantial. The time commitment from each person on the committee cut into time which would have normally been spent executing regular duties.

Conclusion

Since the conclusion of the 2021-2022 school year, there has been more talk about OER on our campus, which we believe is due in no small part to our ongoing efforts. Through our programming, we have created various OER allies and, in the future, are planning on continuing the same programs. Participation on campus has already assured us that our efforts have been, and will

continue to be, successful. It is evident that since we have already undertaken these programs, the underlying workload involved with them will decrease while awareness and use of OER on campus will increase. Though it was a massive investment of our time and effort up-front, it does appear our efforts have largely been worthwhile.

Some of our next goals are to expand the mini-grants to include a departmental grant in addition to the individual adoption and creation grants, modify the OER Intensive based on feedback from previous participants, and better insert OER into the campus consciousness.

OER Panel Recording:

<https://youtu.be/3RW6q6X-5i8>

OER Virtual Intensive Slide Decks:

<https://drive.google.com/drive/folders/1wEWy0LBzZ0N88cTn0UURTT4AImkjchDy?usp=sharing>

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Appendix

Mini-Grant Application:

https://docs.google.com/document/d/1iBt6SuawG7yPl-2s6fZNRcV_jE0-_7p3/edit?usp=sharing&oid=117325636369572229274&rtpof=true&sd=true

Mini-Grant Rubric:

<https://docs.google.com/document/d/1MQqL9UkW8DrVkkciyfaqbu9ZPJErMUb/edit?usp=sharing&oid=117325636369572229274&rtpof=true&sd=true>

Doctoral Students' Perspectives on Textbooks and Open Educational Resources

Needs, Impact, and Future Directions

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Keywords: Open Educational Resources, open textbooks, doctoral students, academic libraries

Abstract

While discussions of textbook needs have typically focused on undergraduate students, doctoral students face some unique challenges related to course materials. Their positionality as students and also potentially future faculty, researchers, or instructors can provide useful insight as academic libraries seek opportunities to promote open textbooks. This article reports on the results of semi-structured in-depth interviews with 12 doctoral students in the College of Education at the Pennsylvania State University. Findings suggest that they obtain access to required textbooks in different ways and tend to purchase a personal copy of a textbook if they expect to use it in the future for their research. Their course selection was not impacted by the cost of the required textbook, although textbook requirements influenced their perception of the teaching faculty. Some already had experience publishing OER. Some others expressed interest in promoting OER or open access materials, while others expressed skepticism of these initiatives. Many articulated the importance of accessibility. Materials related to older seminal texts, ethnographic works, and methods textbooks were suggested as potential open textbook targets. Implications for academic libraries are discussed.

Introduction

Textbook costs have risen 36% in the past decade (Bureau of Labor Statistics, U.S. Department of Labor, 2021). At the Pennsylvania State University (Penn State), the average textbook cost for all students was

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\$1,840 in the fiscal year 2020-2021 (National Center for Education Statistics, 2022). Given this challenge, the Penn State Libraries have been supporting students' textbook needs in different ways, including open educational resources (OER), open access (OA) resources, and licensed or purchased content. While OER provide the most flexibility among these options, with immediate, free, and open access to materials and the ability to retain, revise, remix, reuse, and redistribute them (Wiley, 2014), this multi-pronged approach is necessary because licensed and purchased materials and OA investments scale faster to reduce costs for more students across more disciplines than OER. The Libraries have had endowments for course-related materials as well as additional support from the administration.

In February 2017, a university-wide working group, consisting of faculty, students, bookstore representatives and others, was charged with developing new initiatives related to open and affordable educational resources. For example, Penn State now offers several grant initiatives to advance OER, supports the World Campus e-book program, affordable content platforms (e.g., Top Hat, Unizin Engage), and a textbook and educational resource fund (Riehman-Murphy et al., 2020). Additionally, it created an institutional OER repository and a textbook web aggregator to help automate the process of identifying courses that rely on open and affordable content.

OER adoption could accelerate in the future as instruction returns to "normal" after the pandemic and instructional faculty's interest in OER increases. While open textbook discussions tend to focus on undergraduate students' needs, graduate students can also benefit from open textbooks because they too experience financial and other challenges. Doctoral research may also require long-term access to specialized and expensive textbooks. Some doctoral students teach while in doctoral programs or plan to teach in the future. Their unique positionality as students, graduate assistants, future faculty, researchers, or instructors might provide helpful insight as academic libraries seek opportunities to promote open textbooks.

Literature Review

While academic libraries historically avoided investing heavily on textbooks, some pivoted to purchase more textbooks in recent years (Diaz, 2017; Eighmy-Brown et al., 2017; Filion & Wallace, 2018; Greiner, 2012; Raish et al., 2018). However, even if libraries intend to purchase required textbooks, many major textbook publishers do not sell electronic versions of their textbooks to libraries (Bell, 2021; University of Guelph Library, 2020), and those that are available are largely limited to the humanities and social sciences and often provide a poor user experience (Filion & Wallace, 2018). Publishers also frequently impose limits on the number of users that can simultaneously access these materials, negating their utility for classroom use. Such limitations have necessitated that textbook purchasing efforts be coupled with other measures, e.g., OER. Some libraries have incentivized OER adoption for faculty and attempted to increase visibility of these programs (Todorinova & Wilkinson, 2019, 2020). The following sections describe literature on student and instructor perspectives on textbooks and OER and disciplinary differences.

Student Perspectives on Textbooks and OER

Studies on student perceptions related to required textbooks and OER have focused largely on those of undergraduate students. These studies have suggested that undergraduates prefer using online open textbooks (Petrides et al., 2011) and that they have positive perceptions of OER quality (Bliss, Hilton III, et al., 2013; Bliss, Robinson, et al., 2013; Delimont et al., 2016; Gil et al., 2013; Ikahihifo et al., 2017; Jhangiani & Jhangiani, 2017; Lin, 2019; Lindshield & Adhikari, 2013; Pitt et al., 2013; Wynants, 2022). Students have typically attributed their positive perceptions of OER to factors such as cost savings, access, technological advantages, and elements that support their learning (Brandle et al., 2019; Pfannenstiel et al., 2020). Relatively little research has been conducted on how required textbooks impact course selections or student perceptions of faculty. Vojtech and Grissett (2017) found that undergraduate students rated a hypothetical faculty member who used an open textbook as more kind, encouraging, and creative than a faculty member using a commercial textbook.

Few studies have been aimed at graduate students. Nipa and Kermanshachi (2020) found that graduate students in their risk management course performed better academically when using OER materials. Furthermore, they found that perceptions of OER materials were more positive among engineering graduate students than non-engineering graduate students and graduate students with student loans than those without loans. Hare et al. (2020) argued that open pedagogy experiments, in collaboration with librarians and faculty, can be used to teach doctoral students about OER and principles of open pedagogy.

Instructor Perspectives on Textbooks and OER

Graduate student perspectives have also been absent in scholarship focused on instructor perspectives. Discussions related to instructors have mostly focused on faculty. Studies have indicated that faculty are aware of textbook costs and would be willing to use OER (Martin et al., 2017) and that reducing cost for students is the most influential factor in making a transition to OER (Petrides et al., 2011). Faculty who adopt OER rate them as similar or better in quality to other materials (Bliss, Robinson, et al., 2013; Hilton III et al., 2013) and students using OER were equally or more prepared than students using other resources (Bliss, Hilton III, et al., 2013). In one notable exception to this tendency to focus on faculty as instructors, Hardin et al. (2019) studied student learning outcomes in multiple sections of an undergraduate general psychology course using an open textbook taught by graduate students and found that content knowledge improved and that instructor experience level had no impact on student learning outcomes. However, this study concentrated on measures of student performance, rather than addressing graduate student instructor perspectives. Studies of instructor perceptions have, therefore, been confined to those of faculty.

Disciplinary Studies on Textbooks and OER

In addition to the absence of graduate student perspectives, existing studies have generally targeted fields other than education. Among these discipline-specific investigations are ones in the fields of American history (Beile et al., 2020), engineering (Anderson et al., 2017; Moore & Reinsfelder, 2020; Reinsfelder & Moore, 2020), film studies (Georgiadou & Kolaxizis, 2019), human factors (Choi & Carpenter, 2017), mathematics (Delgado et al., 2019; Hilton III et al., 2013; Muggli & Westermann,

2019), nutrition (Fialkowski et al., 2020; Lindshield & Adhikari, 2013; Tillinghast et al., 2020), physics (Hendricks et al., 2017), psychology (Cooney, 2017; Griggs & Jackson, 2017; Hardin et al., 2019; Jhangiani et al., 2019; Magro & Tabaei, 2019; Nusbaum, 2020; Nusbaum et al., 2020; Vojtech & Grissett, 2017), and sociology (Ross et al., 2018). The lack of research on the role of OER specifically within the education field, particularly at the graduate level, is striking, given that these students are somewhat uniquely situated to understand the educational context.

Distinct Challenges Facing Graduate Students

In light of the gaps in existing scholarship, this study focuses on the needs and perspectives of doctoral students in the field of education. Studies have shown that graduate students are more likely to be enrolled part time than undergraduates and that part-time graduate students are typically older and face more demands on their time and finances than full-time students, in part because of being married and/or having children (How America Pays for College, 2017. Sallie Mae's 10th National Study of College Students and Parents, 2017; How America Pays for Graduate School, 2018). Studies have also shown that a majority of doctoral students feel stressed about financial concerns (Kovacs, 2016), including uncertainty about the availability of departmental funding and being compelled to take on substantial debt due to inadequate funding (Cho & Hayter, 2020). From an access perspective, doctoral students, particularly those pursuing academic careers, may have a greater need to retain textbooks for long-term use than undergraduates. From a pedagogical perspective, many doctoral students occupy a space where they are simultaneously students and instructors, giving them an insight unlike that of undergraduates or faculty.

This study seeks to identify doctoral students' textbook needs, their perceptions of required textbooks and their impact, and future opportunities for open textbooks, promoted through university libraries. Specifically, the study team attempted to find answers to the following research questions: (1) how are doctoral students meeting their textbook needs?, (2) how do textbook requirements affect their course selection and perception of the instructional faculty?, and (3) where can libraries find future opportunities for marketing and supporting the use and creation of open textbooks? This study primarily focuses on required textbooks assigned to doctoral-level courses.

Methods

In Fall 2021, the research team conducted semi-structured in-depth interviews with 12 doctoral students in the College of Education at Penn State. College of Education students were purposefully sought due to their fields of study being aligned with or related to learning and pedagogy. The researchers posited that education students would be of particular interest as they may have perspectives related to textbooks and OER that went beyond their experiences as students. Furthermore, the researchers decided to work with students at Penn State because they wanted to follow up on the findings to support these students and promote open textbooks at the institution. The study was submitted to the university's institutional review board and was determined to be exempt from human subjects research regulations.

Participants were recruited through an initial email on a College of Education graduate student-only listserv, which invited students to participate in a 30- to 45-minute recorded online interview via Zoom. The email described the study and explained how students may benefit from the findings. This

recruitment drive resulted in a diverse pool of 14 potential interviewees who met the criteria for the study. The 12 participants selected for interviews, based on a first-come first-serve basis, included a mix of full-time, part-time, fully funded, and self-funded students. Due to the nature of this qualitative study, the research team decided to interview 12 participants first, with the intention of interviewing more students if additional perspectives were needed (See Table 1).

Table 1

Program of study of interview participants

Program	Number of participants
Counselor Education	1
Curriculum and Instruction	3
Education Theory and Policy	1
Educational Leadership	2
Higher Education	3
Lifelong and Adult Education	1
Special Education	1
Total	12

Participants were asked about courses that required textbooks, how they acquired the textbooks, their perceptions of teaching faculty who assigned them, and the future of textbooks (see Appendix A). Each of the research team members conducted four interviews. During this phase, the researchers met twice to discuss emergent findings from the interviews. After the last round of interviews, as no new findings had emerged, the team determined that data saturation had been reached and decided not to interview additional participants. Each interview was transcribed by the researcher who conducted the interview and cross-checked by another researcher for accuracy. The original recordings were deleted once the transcription work was complete and each participant was assigned a number to maintain confidentiality. Two of the 12 transcripts were then selected for the initial coding process.

Each researcher individually open coded the two transcripts using NVivo qualitative data analysis software. Open coding involves inductively developing codes from the data without advancing the authors' interpretations (Corbin & Strauss, 2008). After this process of ordering and categorizing codes was completed, the team met and, through discussion and consensus, arrived at interpretive convergence (Saldaña, 2021). Guided by the research questions and memos taken throughout the coding process, the researchers collectively developed themes under the three areas of investigation—textbook needs and usage, impact of required textbooks, and reflections on the future of textbooks. From this process, the researchers developed a common coding scheme to be used across all transcripts. Each researcher then focused on one specific area of investigation and coded and analyzed all 12 transcripts using this common coding scheme. To ensure trustworthiness, the researchers used the common coding scheme developed through group discussions and reviewed each other's work for accuracy (See Appendix B).

Results and Discussion

Textbook Needs and Usage

Almost all the participants said that textbooks were required for one or more of their courses. Some students stated that almost two-thirds of their courses required textbooks, while others said that about half did so. Only one participant described never or rarely having to buy textbooks. For most students, required materials ranged from expensive research methodology books, which could cost up to \$250, to less expensive titles, which might cost about \$30.

Participants described a variety of strategies for obtaining access to required textbooks. Most stated that they had purchased textbooks, either from an online seller—most frequently Amazon—or a physical bookstore. For several students, the default strategy was to search online to find the cheapest options for buying new or used books, before searching on the Libraries' website. Participant 2 noted, "...for the first three classes I bought the textbook. For the third class, I bought it but also had access to it via online copy from the library. So I actually bought the textbook before I realized that there was an online copy."

Several students described accessing "free" books online from links provided by their instructors, although not all were aware that they were accessing materials provided by the Libraries. At the same time, several participants described obtaining textbooks from the Libraries, including one student who said she had borrowed five of her six required books that semester from the Libraries. Participant 8, however, commented on the challenges of trying to access textbooks from the Libraries when there were typically too few copies available:

Let's say that my classes, 15 students, there wouldn't be enough for everyone. So, there was a bit of hesitation, because it wasn't necessarily equitable...It seems like some people would try to get the text list earlier in the semester before it even started to try to search out and see if they can get a library [copy] or through Interlibrary Loan. (Participant 8)

Sharing copies of books was one strategy that several students mentioned. A few described borrowing textbooks from their peers rather than purchasing them, particularly if these were books that they did not

plan to use in the future, and one participant described sharing a downloaded copy of a book via email with other students. Participant 3 described how a group of classmates pooled their resources to share the cost of a particularly expensive text:

My classmates and I ended up going in on one together with a small cohort. So that kind of worked. It was six of us buying a book together and passing it around different days of the week...And then we ended up donating it to our program's library at the end rather than fighting over who got it. (Participant 3)

She further added that her peers had started an informal library of previously purchased foundational texts that were housed on bookshelves in the College's lounge area, with the intention that future first-year students would have those resources available if needed. This idea of sharing textbooks with peers reflected a sensitivity among some participants to the needs of other students who might find the costs of books prohibitive.

When asked why they chose to access textbooks in a particular way, one of the most frequently cited reasons for purchasing physical books was the desire to have a personal copy of a book if they expected to use it as a resource in the future or to share with others. Participant 6 commented, "I've kept them with the intention that if there's someone in, like, the year below me, or that takes the class, I'll be able to like, lend them out to folks."

Often, students said that if they were unlikely to use the textbook in the future, they would rent it. However, Participant 10 said that if the difference between renting and buying a copy was minimal, she would buy it outright. Participant 1 stated that while she purchased almost all her books, she decided to rent one that was particularly expensive: "...it was like 250 bucks, and I was told that we really didn't use it that much, but that there were certain things in it, and I couldn't find it anywhere."

Financial reasons were most frequently cited by students who said that they borrowed textbooks, whether from the Libraries or a peer. Participant 8 noted, "If there was a textbook available in the library, I tried to get it. And that's been my primary strategy. I tried to keep my costs low through rentals [or] using the library and using World Campus free resources."

A preference for reading print over online texts was a common refrain. Several participants described it as physically hard to read books on a screen for a sustained length of time, while others said they liked to be able to write in the margins and make notes on a physical copy. Participant 12 felt that this functionality was hard to replicate satisfactorily in the online environment: "I've tried Adobe; I've tried other annotation software or free annotation software. They just don't work like I can with my writing. So, I prefer to have the print for that reason as well."

Participant 8 offered a similar view, noting that it was harder to navigate and "flip the page" in the digital environment. Although in the minority, there were a few students who described a preference for accessing textbooks online, such as Participant 2, who described using an Apple Pencil to annotate texts on her iPad.

Impact of Required Textbooks on Course Selection

The participants generally indicated that textbook requirements did not affect their course selections. Instead, the need or desire to take certain courses typically took priority over concerns about textbook costs. When costs were significant, they often attempted to find alternatives to purchasing new copies of textbooks. Participant 4 noted, “I think that my career goals and my degree goals far outweigh any kind of complication. I think that there’s always a way around obtaining a textbook. There’s not always a way around obtaining a degree. So, I don’t really prioritize that as an obstacle.”

While textbook requirements did not deter the participants from taking certain courses, they provided several caveats. First, certain core courses are required to complete their degrees, leaving them with no alternatives to taking those courses. Second, participants noted that it is not always possible to ascertain the textbook requirements for courses far enough in advance to make informed decisions based on costs:

So, we often get syllabi very late, like right before the semester starts. So, if I had known in advance what the requirements were going to be for those courses, I would have done things differently. It was a tight budgeting September and October of that year where I was just trying to keep things together. I don’t think I’ve ever not taken a class because of the price of texts. Yeah, but I think if I had had more information, I might have made some choices differently.
(Participant 3)

Three participants acknowledged that they enjoyed a certain degree of economic privilege that insulated them from having to make choices about courses based solely on textbook costs. If their finances were such that expensive textbooks would have caused significant hardship, they suggested that their course selections might have been impacted:

I am unusually well-funded for someone in my program in terms of what my graduate stipend looks like. And I also come from—I’m not a first-generation student. I come from a solidly middle-class family. My resources are also different. So, when I talk about not making those choices, that’s within the context of my financial situation as well. Acknowledging that if I didn’t have that buffer or my GA stipend was lower, I absolutely would have made choices differently.
(Participant 3)

While one participant noted that being in a dual-income household meant that she did not need to worry about the financial implications of textbooks, another pointed out that transitioning to be a full-time student has made her look at textbook costs more closely:

If I were to see a list that had like a bunch of textbooks listed, that would absolutely factor into my decision about taking the course, just because, you know, financially speaking, right, like as somebody who’s now a full-time student who doesn’t have a GA position. You know, I’ve gone from a two-income household to a one-income household. And so that really factors a lot into it, right? Like if I had to pay a couple hundred dollars for books, like that would be significant for me, so that would be something I would consider. (Participant 11)

Impact of Required Textbooks on Perceptions of Faculty

While textbook requirements generally played little role in course selection, they impacted student perceptions of teaching faculty. Participants applauded faculty for acknowledging student concerns about textbook costs and for their efforts to mitigate those costs:

So, like my one professor, she made the text available to the library, and we almost use it like an optional part of the coursework. My other two professors, even though there are these required texts, they do not mandate that we have like the most up-to-date versions of the texts. They have given us resources on how to obtain older copies of the text. So, I think it's something that people in my department at least we're all kind of aware that it's a pain, and people have tried to take steps to do that. (Participant 4)

Conversely, participants criticized faculty who failed to take measures to keep costs at a minimum. Participant 3, for example, said she held a negative view of faculty who assigned expensive texts that ended up not being used in class. Just as faculty who acknowledged cost concerns were viewed as conscientious of the student experience, those who did not do so were viewed as out of touch. In some cases, this criticism stemmed from what they perceived as poor pedagogical choices, such as requiring excessive numbers of textbooks that were used minimally in the course or not clearly relevant to the topic at hand. As participant 2 commented:

I have definitely been in classes where I did not feel like I should have needed to buy that book because it didn't really add anything to my understanding of the topic, and I've actually in my own teaching switched books because I felt like my students weren't getting anything out of the books that I had chosen as well. So, I—you know—even in a doctoral program that it's still every once in a while there's been books that I've been like "Why am I reading this? I don't understand how this has anything to do with the course objectives or anything I'm learning." (Participant 2)

Students also inferred that some faculty overlook the implications of digital technologies when assigning textbooks. For example, duplicative content in online learning management systems could in some instances obviate the need for a textbook:

And so, in those instances, I don't think the faculty are intending to be—"malicious" isn't the right word, but—aren't intending to just make us pay ridiculous amounts of money. It's more that they haven't thought about the fact that the alternative learning structures that they built really make the book redundant. But I think it's hard in some disciplines more than others for them to think about a syllabus as being sufficiently rigorous or sufficiently real to their discipline without it having a brick of a book attached to it. (Participant 3)

In some cases, students noted how digital technologies present usage hurdles to some students:

The professors that I've encountered haven't thought about students who might have disabilities that prevent them from looking at materials online, so there's not something in place for those

students. And that's more common than most people would think, the students' inability to read online. (Participant 12)

Other students attributed excessive textbook requirements to inertia, laziness, or an unwillingness to change on the part of faculty—or as Participant 11 described, being “out of touch,” rather than poor pedagogical choices.

As soon as I see the textbook, I'll be like “Okay, how are you going to use this? Since now I know we have a textbook, how is it going to be integrated?” And so, I would say I'm a little skeptical when I see that a course has a textbook. Because yeah, I don't want it to be a waste of money. And I don't want it to replace the instruction. (Participant 6)

While participants were not asked about it explicitly, they also indicated mistrust toward faculty who required the purchase of books they authored, suggesting that these faculty might have ulterior financial motives in assigning commercially produced texts they had written. As Participant 6 commented:

I would say if the textbook was written by faculty, even if it's not the same faculty that's teaching the course, I would be cautious or skeptical about it. I would be wondering if it's like self-promotion over, I don't know, that this was the best possible material. Which isn't necessarily to question the instructor, but it feels like, “Is this a conflict of interest?” in my head. (Participant 6)

Reflections on the Future of Textbooks

All interview participants indicated that they hope to see required textbooks provided by the university either freely or with no undue burden to students. Their comments show that they perceive this to be an equity issue that potentially hinders students' academic success. Some of their observations are based on their experience as doctoral students, while others are based on their experience teaching courses:

I'd like to see all books be open access, because the prices of some of them are absolutely ridiculous. So, I would really like to see them be free. There're so many other things, whether you have the assistantship or not, that that money can go towards. ...we just have to make sure that it works for students with disabilities too. (Participant 1)

The interview participants shared various approaches to reduce costs and increase accessibility of textbooks. Nine participants mentioned instructional faculty's role in achieving these goals, e.g., avoiding unnecessary textbooks whenever possible, assigning only required materials, providing articles and chapters via the course management system without incurring additional costs for students, using free and/or open materials, working with libraries to place course reserves, allowing to use older editions, and providing multiple formats for accessibility purposes. Participant 2 commented:

I think anytime that the faculty can provide a free option for their students, they should. And if that option is available, they should make sure that they let students know early... I know it's a lot of work, but I think it would be awesome if faculty were willing and able more often to create

their own materials and offer them for free... the pandemic actually helped a little bit in the sense that faculty became more aware of a lot of students' struggles that they didn't know already. (Participant 2)

Others talked about the need for the library to continue to play a central role in providing access to required textbooks. While their comments tended to focus on traditional library functions such as course reserves and licensed e-textbook acquisitions, some participants discussed services such as open monographs, OER, HathiTrust Emergency Temporary Access Service (ETAS), and alumni access. The participants seemed to understand that libraries are usually not able to purchase numerous copies of the same print textbooks. A few participants emphasized the importance of increasing awareness of OER through outreach efforts:

Are there ways to make that [access to digital content] a longer commitment to alums—that would be fantastic—and what's available that way? I wasn't in State College for much of last year and so the fact that I could access so many library books remotely [via HathiTrust ETAS], because that kind of increased availability of those texts, was fantastic, and I used the heck out of it. (Participant 3)

I don't have a strong opinion whether it shouldn't come from what the faculty is assigning or creating themselves as opposed to what the library is gaining access to. But some sort of collaboration so that the student is able to access it without having to Google "free PDF." (Participant 11)

As the participants reflected on what the future of textbooks might look like, some speculated that doctoral education will increasingly rely on articles, chapters, and open content, rather than textbooks. Participant 1 noted:

I like the articles because then you can have it be as recent as you want. And I know that you can scan a chapter or two and put it up for your students, and if they want to print it off, they can. So, I see textbooks, formal textbooks, going away eventually. (Participant 1)

Participant 4, however, argued that assigning textbooks was a way for the university to legitimize what was being taught, commenting:

I guess I want to be careful when I say we should sort of re-institutionalize how we think about textbooks. That doesn't mean throwing out all of the good things that textbooks currently provide. But I do see textbooks as political documents. And I think that whatever the institutions that control the purchase of those textbooks, like whatever they want those textbooks to say or not say, I think is what happens. (Participant 4)

Others shared their continued preference for reading print books and a desire to maintain their own print collection, particularly for books that are important for their areas of study. At the same time, they emphasized the importance of accessibility and flexibility. This was summed up by Participant 3:

I would prefer to be reading my own hard copy book so that I'm—I shouldn't say this to a librarian, but like I'm a marginalist. I write in my stuff. I fold pages. I'm not nice to my books. But that's also important to me in the way that I make sense of things. So, I would still prefer to have my own books. But I don't think that should ever be the only option... I think some of the ways that textbooks are going to be evolving is that we're going to find ways to be moving away from the written word. (Participant 3)

In terms of their experiences with open textbooks, a few participants spoke about challenges that were specific to the field of education and the prevailing negative perceptions of open access (OA) and OER materials. Describing a recent conversation with her advisor about an opportunity that had arisen to publish in an open textbook, Participant 6 said,

If I want to go into academia and get tenure, it looks better if I have it in a journal than a textbook just from, like, a prestige standpoint. I'm sure, to be honest, that was part of her [the advisor's] thought. I also got the feedback "Oh that's less prestigious. It's got to be less meaningful for you when you put that on your CV." (Participant 6)

One participant expressed concern about the idea of not receiving payment for work:

I am a little reticent to jump on the open access digital train because one, I don't like the idea of the author or editors not getting royalties for the purchase, you know, they put a lot of work in in doing so in making those books. I don't want them to get shortchanged. (Participant 7)

Several participants shared that they have experience publishing or using open textbooks. Their comments suggest that the open, free, and flexible nature of open textbooks worked in their particular situations. Participant 3 commented that OER materials would have been "fantastic" for an ethnographic methods class that she had taken, noting, "they were trying to be more inclusive about it. But there was no good inclusive ethnography methods textbook." Others expressed enthusiasm for participating in the open textbook movement in the future and shared their ideas:

I actually wrote my geography textbook for my seventh graders and published it online... But so, what I was trying to do was say, "Okay, how do I write a text that fits my audience and makes the rest of my classroom experience better? And how can we use a text that will actually facilitate learning? And how do I turn this into a handbook that can be both instructional but also like referenced, right?" (Participant 4)

I think a good space for the open resource textbooks... would be to get some of these older [seminal] works that are not being published anymore ... because the professors that require these are less interested in reading from cover to cover. (Participant 12)

Overall, the participants' comments reveal both an interest and willingness to explore the possibilities of OER, not least for reasons of equity and affordability. At the same time, there may be some hesitancy, possibly due to the influence of prevailing negative perceptions of OER among faculty as well as within their scholarly fields.

Conclusion

This study paints a complex picture of the textbook usage practices of doctoral students and allowed the researchers to find future opportunities for open textbooks. Compared with earlier studies centered on undergraduate students, doctoral students in the current study were less focused on cost savings, although they expressed their desire for free and open access to course materials whenever possible.

Most doctoral students, like undergraduates, attempted to find the most cost-effective option through Web searching. Borrowing print copies from the library or using print course reserves was not frequently mentioned, although some expressed a desire for faculty and librarians to collaborate more so that syllabi and required textbooks are available via the course management system earlier. Methods textbooks were frequently mentioned as examples of required textbooks. While most doctoral students liked convenient online access to textbooks, many also expressed their preference for reading print books and having their own print copies. This implies that libraries are expected to provide online access for quick reference purposes for all students while some doctoral students might continue purchasing their own print copies, particularly for the items that are in their fields of study.

The study participants expressed that required textbooks generally do not affect their course selections. This contradicts the existing research on undergraduates, which is focused more on consideration for cost savings as the driver for advancing OER. Many expressed appreciation for faculty who provide free access to scanned chapters or collaborate with libraries to manage costs. At the same time, the students were critical of faculty who assigned unnecessary textbooks or failed to take measures to keep costs at a minimum. Doctoral students expected faculty to assign the most relevant and useful materials for readings, which might be in the form of an article, chapter, video, or open content, instead of generic or outdated textbooks. These findings could provide useful data points for librarians and instructional designers to share with faculty as they support them with course preparation.

All of the study participants expressed interest in supporting free and open textbooks. Several students shared ideas for OER, such as old seminal texts, ethnographic works, and methods textbooks. Some students had experience in publishing or using open textbooks. At the same time, many discussed challenges associated with online reading and accessibility. Research articles and chapters were the most common formats of required readings for these doctoral students. Some expressed skepticism due to perceived lack of prestige associated with OER and OA materials. Those concerns mirror, and are in many cases informed by, faculty perceptions. As Skidmore and Provida (2019) write:

The largest barrier to participation in OEP [Open Educational Practices] is the lack of professional recognition. Tenured and tenure-track faculty members who evince interest in becoming involved in OEP worry about the amount of time needed to do it properly. Those concerns are compounded if the faculty member thinks that the time and effort expended on OEP will not be recognized in the normal career progression processes, namely tenure and promotion (p. 10).

This issue points to a need for institutions to provide greater weight to these efforts in promotion and tenure decisions. While some universities have recognized open educational practices in their promotion and tenure guidelines (McCarthy, 2022; Miami University, 2022; Szeri & Mukherjee-Reed, 2020), this is not yet the norm. Libraries should work with faculty and other relevant stakeholders to advocate for

similar guidelines at their institutions, using frameworks that other scholars have developed to aid in these advocacy efforts (Coolidge et al., 2020; Elder et al., 2022).

In addition to suggesting a need for assigning greater institutional and professional value to faculty open education efforts, the data point to a need for greater transparency in the communication of required course materials. While the Higher Education Opportunity Act of 2008 (Miller, 2008) requires all institutions of higher education receiving federal financial aid to publish a list of required and recommended materials prior to course registration, compliance with this requirement varies widely. Some institutions have implemented course marking systems in which courses that use OER or other low-cost materials are clearly designated in platforms like course registration systems and campus bookstore websites, and while seven states have enacted legislation concerning course marking, Pennsylvania is not among them (Ainsworth et al., 2020). The Penn State Libraries continue to collaborate with faculty, students, the university bookstore, the registrar's office, and others to work toward course marking, and other institutions without course marking should follow suit. Libraries can also potentially partner with students and other relevant stakeholders to push for state legislation where none currently exists in order to provide students with greater transparency regarding their course materials.

The participants' responses point to opportunities for libraries to improve their outreach and support efforts related to OER and affordable course materials. Libraries can work with doctoral students to ensure that they have access to the required texts in a manner that is useful to them. Additionally, libraries can play the role of consultant by providing the expertise and resources that support an infrastructure for future educators to develop, publish, and curate OER, while eliminating misconceptions about OER and OA. Liaison librarians might reach out to faculty who teach ethnographies and methods courses, or the areas that the doctoral students recommended, to explore opportunities for OER. Doctoral students with teaching assignments are also positioned to potentially advocate for the use of OER in their departments.

Future research could add to this study and address its limitations. While the present study focused solely on doctoral students, including faculty perspectives would build on the richness of the data, especially if the interview protocol is informed by the doctoral student perspectives provided in this study. Additionally, this study could be replicated in other disciplines in order to explore how the present findings compare with fields beyond education. Successful open and affordable education efforts require the collaboration of multiple stakeholders. Given their unique positionality as students and current/future educators, doctoral students can serve as invaluable partners for libraries to advance open textbook initiatives.

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The authors have no conflicts of interest relevant to this article.

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Appendix

Appendix A. Interview Questions

Demographic Questions

1. Please tell me a little about your degree program and what year you are in.
2. What's your pronoun?

Textbook Needs and Usage

- 3 Among courses you have taken, what courses required commercial textbooks?
4. How did you obtain access to the required commercial textbook?
 - a. Purchased a copy
 - b. Rented a copy
 - c. Borrowed from a library
 - d. Borrowed or obtained a free copy from someone
 - e. Other (describe)
5. Why did you acquire access that way?

Impact of Required Textbooks

6. How have textbook requirements affected your course selection?
7. How have textbook requirements affected your perception of the instructional faculty?

Reflections on the Future of Textbooks

8. What do you want to see happen in terms of required textbooks in the future?
 - a. The library purchase required textbooks
 - b. Increased availability of open textbooks (for long-term and more flexible use)
 - c. Other
9. What other thoughts do you have for the future of textbooks?

Appendix B. Coding Scheme

Textbook Needs and Usage

- Courses requiring commercial textbooks
 - Quantitative method / statistics
 - Qualitative method / statistics
 - Theories
 - Other
- Access method
 - Purchased
 - Rented
 - Borrowed print copy from library
 - Accessed online
 - Instructor provided
 - Borrowed or obtained a free copy from someone
 - Other
- Reason for the access method
 - Cost
 - Time / Convenience
 - Print preference
 - Digital preference
 - Long-term needs
 - Other

Impact of Required Textbooks

- Impact on course selection
 - Impact
 - No impact
- Impact on perception of the instructional faculty
 - Negative
 - Positive

Reflections on the Future of Textbooks

- Desires
 - Equity / free / open
 - Instructor role
 - Library role

- Challenges with open textbooks
 - Online reading difficulty
 - Prestige / legitimacy
 - Philosophical issues, e.g., author compensation

- Future of textbooks
 - Role of textbooks
 - Articles, chapters, and other alternatives
 - Open textbooks opportunities

- Involvement in open textbooks

Open Peer Review

Larson, A. (2022, October). [First review of the article Doctoral students' perspective on textbooks and Open Educational Resources: Needs, impact, and future directions, by M. Hosoi, B. McGearry, & L. Munip]. Journal of Open Educational Resources in Higher Education, 1(1), 38-41.
doi:10.13001/joerhe.v1i1.7205

Reviewer: Amanda Larson

Recommendation: Revisions Required

Review 1 of 2 (Completed 2022-06-21)

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

This article is in scope for the Journal of Open Educational Resources in Higher Education as it's a study about doctoral students and their experience with OER in their Education degree program.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

The article proceeds logically and follows the outlined format in the submissions guidelines for the journal and is almost 6000 words.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate

balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

The methodology seems fine, inductive analysis through open coding is valid for coding interview data. The sample size seems small (14), but the authors don't provide data about how many students are in the doctoral programs in Education, so it's impossible to tell if it is statistically significant.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

Overall, the article doesn't read very homogeneously. There are places like the Introduction and Literature review that read very stilted, and other places like the Methods and Results, that read with more flow. I wonder if it's suffering from having multiple authors and not being edited to have a more homogenous voice. It could also be over-edited to make it fit within the word limit, based on the lack of transitions throughout the article.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

While situated in the scholarly conversation through the literature review, the authors don't follow up with the convention of suggesting how others might use their research or where it can be expanded upon, and only talk loosely about how it will inform their practice at their institution.

What are the stronger points/qualities of the article?

Some of the stronger points of this article are:

Fills a gap in the literature by studying the impact OER have on graduate / doctoral students

The quotations from the grad students that came out of the interviews

What are the weaker points/qualities of the article? How could they be strengthened?

The flow of the article is stilted, different sections read with different voices, a lack of connection back to how this applies to the broader discipline/how folks might use this information to inform their practice/what gaps still remain. It could be strengthened by unifying the voice of the article so it sounds like one author instead of sections written in different voices, and by adding in how librarians/libraries could use this research or build upon this research.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Sound

Overall Evaluation

1-Weak Accept

Open Peer Review

Larson, A. (2022, October). [Second review of the article Doctoral students' perspective on textbooks and Open Educational Resources: Needs, impact, and future directions, by M. Hosoi, B. McGeary, & L. Munip]. *Journal of Open Educational Resources in Higher Education*, 1(1), 42-44. DOI

Reviewer: Amanda Larson

Recommendation: Accept Submission

Review 2 of 2 (Completed 2022-08-22)

Scope, Objectives, Content

*Is the article in scope for *Journal of Open Educational Resources in Higher Education*? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?*

Yes, absolutely. The article discusses original research about doctoral students in an education program and OER. The doctoral student voices captured here are especially important and fills a gap that the community doesn't hear much about.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

Yes, the article is much improved! The organization now follows a logical progression and flows smoothly from one section to the next.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the

author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

The research method seems appropriate for the problem the authors seek to address. The use of open coding and inductive analysis of the data is appropriate.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

Much improved! This article now reads more homogeneously and cohesively throughout. Some of the block quotes look awkwardly spaced but that can be corrected in the copy editing phase.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Capturing the perspectives of doctoral students in this article is helpful to all academic libraries seeking to do outreach to grad students, and the authors suggest how others can build on the work they've done at the end of the article.

What are the stronger points/qualities of the article?

Voices of doctoral students are strongly highlighted throughout the article which gives voice to a much underrepresented group in the body of existing libraries and OER literature.

What are the weaker points/qualities of the article? How could they be strengthened?

None of the conclusions are particularly new (a part from less emphasis on cost savings)? But they do corroborate what other research has found within a different group that is often underrepresented in library outreach and research.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Very Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Highly Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Sound

Overall Evaluation

2-Accept

Open Peer Review

Miller, R. (2022, October). [Review of the article Doctoral students' perspective on textbooks and Open Educational Resources: Needs, impact, and future directions, by M. Hosoi, B. McGeary, & L. Munip]. Journal of Open Educational Resources in Higher Education, 1(1), 45-47. doi:10.13001/joerhe.v1i1.7205

Reviewer: Robin Miller

Recommendation: Accept Submission

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

This article is well within the scope of JOERHE and provides interesting, and not often represented, views on the use of OER materials in higher education. This is an important topic, as the authors point out in the article, that doctoral students should be viewed as not only recipients of the benefits associated with the use of OER but also as potential partners with the library for OER promotion (production?) in the future.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

Yes, the article proceeds logically and adheres to recommended structure and section guidelines.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the

author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

The authors' methodology, approach, and conclusions are sound and factually accurate. The authors' literature review and references establish a solid foundation and understanding of the OER landscape and show that they are well versed in current conversations surrounding their topic.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

The writing style is clear and easy to follow.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Yes, the article provides interesting, and underserved, views of the use of OER that should be considered by those working in OER, higher education, and libraries.

What are the stronger points/qualities of the article?

The authors' recognition of an area within the OER landscape that has not been actively researched.

What are the weaker points/qualities of the article? How could they be strengthened?

Not necessarily a weak point, but I would have liked to see more detailed inquiry into the future of textbooks and OER. Perhaps even adding another question specifically asking about production of OER by doctoral students and instructors - have you done it, would you do it (or do it again), how do you feel about doctoral students vs. full-time instructors producing OER?

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Sound

Overall Evaluation

2-Accept

A Case Study Exploring the Development of a Quality Open Education Clinical Microbiology Lab Manual and Online Experiential Lab Course

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Keywords: Open Educational Resources, Biology, OER Creation, Quality Matters, Experiential Learning

Abstract

The benefits of online instruction favor the flexibility of teaching and learning anywhere, anytime. However, online education poses a specific challenge for courses within the hard sciences, such as microbiology, due to the specificity of laboratory equipment utilized and laboratory safety guidelines followed in traditional (in-person) lab courses. As such, traditional experiments may not readily transition to an “at home” environment nor are virtual lab instruction platforms considered “equal” by many hard science departments. Research suggests that effective online learning results from careful planning and instructional design strategies through a systematic model for design and development (Hodges et al., 2020).

The University of North Alabama (UNA) is primarily a teaching institution focused on student success, academic access, and affordability. It had been working on expanding its online programming in the three years prior to the pandemic through committed funding to support robust online experiences, including funding for Quality Matters (QM) course reviews and stipends for faculty to investigate and adopt Open Educational Resources (OER). UNA not only successfully transitioned to the online

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environment during the pandemic but also experienced record growth in overall enrollment due in part to the support systems available for professors who were interested in transitioning online prior to the pandemic. This paper explores how the combined efforts of a microbiology professor, OER librarian, and instructional designer created a high-quality, practical, and experiential laboratory learning opportunity for students using an open, online environment in microbiology.

Introduction

Background

In March 2020, the COVID-19 pandemic introduced striking changes in higher education, as professors transitioned to “emergency remote teaching” (Hodges et al., 2020). However, transitioning to a remote teaching environment during a crisis or disaster does not reflect the ideal approach for professors moving their instruction online. Prior to the pandemic, online learning—especially in the hard sciences—carried a stigma of being lower quality than its traditional classroom counterparts (Hammerness et al., 2022). While the benefits of online instruction favor the flexibility of teaching and learning anywhere, anytime, online education poses a specific challenge for the hard sciences. Furthermore, courses, such as microbiology, that study microscopic organisms (e.g., bacteria, viruses, fungi, protozoans, and other microbes) require expensive and specialized equipment like microscopes, incinerators or Bunsen burners, stains, growth media, and incubators. They also pose a potential health hazard when students are not properly supervised during use of equipment and microbial cultures. As such, traditional experiments may not readily transition to an “at home” environment nor are virtual lab instruction platforms considered “equal.”

In addition to the challenges presented by moving a microbiology course online, the University of North Alabama’s (UNA) Anderson College of Nursing and Health Professions (ACONHP) requires that all students complete a microbiology course. The Department of Biology created a clinical microbiology course specifically to support ACONHP’s nursing programs.

To address these challenges, a clinical microbiology course was developed using the Quality Matters (QM) internal review process, so that lecture and lab components could be offered in either a traditional or online modality for ANCOHP students. Research suggests that effective online learning results from careful planning and instructional design strategies through a systematic model for design and development (Hodges et al., 2020). To accomplish the goals of the course development, the instructor of record, an instructional designer (ID), and an Open Education Resources (OER) librarian combined efforts to build an open online laboratory manual using the respective frameworks.

This paper explores the frameworks, support systems and the innovative ideas detailing how the disciplines worked collaboratively to produce a quality online learning experience for the clinical microbiology laboratory by creating a novel OER that meets the American Society for Microbiology (ASM) standards for allied health science students.

The University of North Alabama

Like other higher education institutions worldwide, UNA was faced with the need to rapidly transition courses online at the beginning of the pandemic. UNA had been working on expanding their online programming in the three years prior to the pandemic and had committed funding to support robust online experiences, including funding for QM course reviews and stipends for faculty to investigate and adopt OER. UNA is primarily a teaching institution focused on student success, academic access, and affordability. To address these focus areas, the university implemented banded tuition in 2018, which is a flat rate fee for students taking between 12 and 18 credit hours and has frozen tuition since the Fall semester of 2018 (Eubanks, 2019). In the 2020-2021 North Alabama Online Annual Report, Provost Ross Alexander noted “Additionally, and notably, the University has celebrated record enrollment every consecutive term since Summer 2018, including this past Fall and Spring during the pandemic, as a direct result of online education” (p. 3).

During 2019, the Department of Biology and ACONHP began to discuss the development of online courses that would be offered through the Department of Biology to support programs of study in ACONHP. One class that emerged from these discussions was a new clinical microbiology course for nursing and allied health majors that provided a microbiology course tailored to the scientific background of allied health students. As with many other nursing programs, UNA’s ACONHP requires a course in microbiology as a prerequisite to their nursing program. Rather than mixing ACONHP students in courses with Biology majors, who have more rigorous training within chemistry and physics, and trying to introduce all aspects of microbiology, this new clinical microbiology course focuses on content that would best prepare allied health majors for their later coursework and professions. In addition to creating a course specific to the needs of ACONHP students, the new course was designed with the additional advantage of being offered in either the traditional or online modality while maintaining ASM standards for microbiology education in the allied health sciences for both lecture and laboratory course components (ASM, 2018a). A lab manual was written specifically for the course that attempted to keep content and experiments as similar as possible between the two modalities thus giving online and traditional laboratory students hands-on practice for the development of necessary microbiological skills. The lab manual is openly licensed and available to students at no costs; traditional laboratory students pay a \$50.00 lab course fee to cover microbiological media costs including bacterial growth media and cultures while online lab students pay \$60.00-\$70.00 to purchase pre-made bacterial media plates and a microscope with staining kit from online vendors such as Amazon.com.

The Department of Biology is made up of 15 full-time faculty members including two microbiologists—one who specializes in microbial ecology and one clinically oriented microbiologist. The clinically oriented microbiologist designed and developed the new course in clinical microbiology. As an added benefit, this microbiologist works part time for a clinical laboratory at a local regional hospital and can relate experiences from an actual clinical laboratory to experiences students encounter in the teaching laboratory.

Instructional Design and Quality Matters

UNA created a new course development program in 2018 to ensure that professors interested in teaching online had the skills and design necessary to deliver quality experiences to students. Through this process, professors work one-on-one with an ID over twelve weeks to ensure the course is designed to meet QM Standards through an internal institutional review process. The process is initiated by the professor through the creation of a course development agreement. Once the agreement has received administrative approval, the professor and ID schedule the initial meeting to establish the project timeline, objectives, and expectations. The primary function of the ID is to provide support throughout the development process. Additionally, the ID offers suggestions for improvement and serves as a sounding board to hash out design ideas. At the end of the development period, the ID reviews the course utilizing the institution's internal review process which follows the QM course review guidelines and expectations.

UNA currently employs five IDs. All IDs hold at least a master's degree and have been trained to frequently facilitate QM workshops in *Applying the Quality Matters Rubric*, *Designing Your Online Course*, and *Improving Your Online Course* (Quality Matters, 2022a). The ID who worked on this microbiology course holds a doctoral degree in Instructional Leadership and Technology. She has 24 years of experience in higher education, worked with QM for 10 years, has reviewed over 100 online courses, and now leads the university's master's degree program in Instructional Technology and Design.

Open Education Program

Prompted by a statewide OER initiative, UNA began scaffolding a comprehensive campus program in 2018. To emphasize the priority of this effort, OER was written into UNA's 2019-2024 campus strategic plan, *Roaring with Excellence*, as an aspirational goal to "adopt, implement, and utilize Open Educational Resources (OER) in half of all academic programs" (University of North Alabama, 2019). A working group was formed in late 2019 to assess campus understanding and use of OER. The results of that assessment showed a need for education and promotion of OER across campus (Pate et al., 2020). To achieve the strategic goal and to increase faculty understanding and utilization of OER, a stipend program was launched in May of 2020 to compensate faculty who adopted, adapted, or authored OER, just as the pandemic was altering higher education and the need for open, online resources became more vital than ever.

UNA's OER program is currently facilitated by a librarian from Collier Library and Information Services in conjunction with the executive director of Educational Technology Services (ETS). The librarian has completed extensive training in open education, including the Open Education Network's Certificate in OER Librarianship. She has also completed copyright training through the Library Copyright Institute as well as completed the Creative Commons Certificate program. She designed a self-paced "Intro to OER" course in UNA's learning management system, Canvas, that is required for faculty who apply for stipend funding, and she is available for one-on-one consults as faculty begin working with OER. The executive director of ETS has made it a requirement for all new online course development to include the OER

librarian during the initial meeting between the faculty and ID team to discuss utilizing OER instead of traditional costly course materials.

Literature Review

Microbiology

Jeff Seaman, Director of Bay View Analytics, conducted a science, technology engineering, and mathematics (STEM) survey in 2020 of 896 instructors at two- and four-year institutions. It was reported that 73% of STEM instructors transitioned to remote learning during COVID, with more than one-third having never taught online. Within this same survey, faculty reported the biggest perceived barriers included academic integrity, student motivation, and student engagement with online coursework (McKenzie, 2021; Seaman et al., 2021).

According to McKenzie (2021), “The shift to remote learning forced STEM instructors to increasingly accept online education, but the concerns about how to give students meaningful lab experiences remain” (para. 1). For STEM professors already leery of the online experience, this necessary and quick transition may have cracked open a door, piqued curiosity, and allowed for opportunities to begin exploring effective open and online education. This is leading to the important question of how online STEM labs can offer high-quality, practical, and experiential learning opportunities for students in an open, online environment. Brogan et al. (2021) notes that while some OER resources were available for general biology labs, the content was either insufficient for a semester-long biology lab, designed for traditional biology laboratory environment, or required instructor guidance, and commercially available virtual labs were cost-prohibitive. Brogan et al. also notes that due to a lack of an OER resource that met their need, they elected to design and write their own second-semester OER general biology laboratory manual.

According to Brockman et al. (2020), “Laboratories provide students with a stimulating learning environment to acquire and develop practical skills which are otherwise unattainable through lectures and readings. The evaluation of laboratories is critical for educators to develop a well-rounded microbiology curriculum” (p. 1). As such, instructor observation of students and feedback to students provides essential checkpoints within the microbiology curriculum. In addition, skills learned in the microbiology laboratory are often used in subsequent courses, thus ensuring proper teaching and student performance of key microbiological skills are essential. For example, aseptic technique is a key concept that is often learned in either the first or second lab meeting and is a concept that students will use to ensure their own safety while working with microbes. For allied health majors, aseptic technique will lay foundations for necessary clinical techniques such as how to maintain a sterile field. Thus, ensuring the online and traditional microbiology labs are similar will benefit students by ensuring proper acquisition of and proficiency in necessary techniques for later coursework and clinical practice.

McKenzie (2021) reports that some faculty try to ensure that online experiences are enriching in addition to being as similar as possible to in-class experiences, and that students are challenged to apply skills and knowledge gained from coursework rather than simply relying on testing to determine student understanding. Recognizing the concern of faculty to shift laboratory experiments online, McKenzie (2021) notes that 35% of surveyed instructors felt that commercially available online labs failed to meet

instructor needs thus leading faculty to experiment with a wide range of solutions for online lab content, including lab kits mailed to students, adaptation of commercially available online lab programs, or staggering of virtual and traditional laboratory meetings during the COVID-19 challenge. For microbiology, the challenge of teaching during the COVID-19 pandemic was not related to lecture instruction but how the laboratory could transition to the online environment while still ensuring that students learned the necessary skills required for their later coursework in a safe environment.

Quality Matters Quality Assurance Framework

QM is a nonprofit global organization comprised of over 1,500 organizations, in over 30 countries across six continents and is known for its expertise in online education quality assurance standards and evaluation practices focusing only on course design (Quality Matters, 2022b). Course design is the planning and preparation that occurs prior to the delivery of the course to students. The program offers a variety of professional development opportunities, quality assurance rubrics, and review processes for Higher Education, K-12, Continuing and Professional education, and publisher products for both K-12 and Higher Education. (Quality Matters, 2022c).

The primary reason for QM's widespread adoption is that it offers a faculty-driven peer review process that was designed by faculty for faculty and utilizes a continuous quality improvement process rather than an evaluative format. QM does not offer a pass/fail approach to quality assurance. Instead, it provides an extensive opportunity for collegial collaboration through feedback and course revision opportunities whether or not minimum expectations are met in an initial course review. Additionally, the rubrics are based on standards of best practices, current research literature, and instructional design principles to promote student learning while serving as a guide for IDs, faculty, institutions, and students as they navigate online and hybrid learning endeavors. To ensure the standards meet current expectations, QM conducts a review of the standards and rubric every three years by a 12-person Rubric Committee that is advised by an eight-person Legacy Committee composed of previous Rubric Committee members (Quality Matters, 2022d).

OER in Instructional Design

In their 2020 paper on collaboration between library, faculty, and instructional design, George and Casey noted that integrating OER in new course development added little to the workload since all logistical issues such as "integration, workability of links, databases, and any other LMS issues" were being addressed as the course was being built (p. 109). As a result, George and Casey state that the instructional design team "has recommended that all new courses should at least consider OER for all course content or a portion to benefit students" (p. 109).

Harrison and Devries (2019) found that utilizing open education practices (OEP) made course development workflows more efficient, creative, and collaborative. In their paper, they note "many of the instructional designers who participated in the study see OEP involvement as an opportunity to rethink education, and to provide local and global public service in their professional role" (p. 12).

Similar to what Morgan discusses in her 2019 study, the ID for this microbiology course sees herself as an advocate for OER and has developed most of the courses in the instructional design master's program at UNA using OER instead of costly course material. Because of her familiarity with OER, she can navigate the faculty barriers that Morgan cites such as time and resistance to change, and she is able to

provide, in conjunction with the OER librarian, strong institutional support. Ren (2019) also examines the impact of the ID/faculty partnership and, like Morgan, writes “there is a rationale to examine the effectiveness of building partnerships between IDs and faculty to overcome the OER adoption barriers in higher education institutions, such as the lack of time, expertise, or supportive resources” (p. 3485). Ren also emphasizes the importance of administration prioritizing OER, ID, and faculty collaboration.

Methods

American Society for Microbiology Standards

ASM is the national microbiology society for the United States and serves as both a national and international leader for microbiological scientific research and education. The ASM curriculum committee has published standards for undergraduate microbiology to support the education of science majors (ASM, 2018b) and allied health majors (ASM, 2018a). The two standards differ in the scope of general microbiology covered and specific skills assessed. For example, Microbiology in Nursing and Allied Health (MINAH) guidelines focus more on how microbes impact human health, pathogen identification and treatment, and the spread of infectious disease while ASM standards for a general microbiology (suitable for science major courses) address microbial evolution, cell structure and function, and microbial processes in addition to briefly covering healthcare related microbiology (ASM, 2018a; ASM, 2018b). Undergraduate microbiology courses and programs that follow ASM guidelines for undergraduate education ensure that students are receiving a common core of knowledge and skills thus standardizing the microbiology curriculum across various colleges and universities.

Quality Assurance Framework

The QM Higher Education Rubric served as the framework for designing the microbiology online lab. It consists of eight general standards with forty-two specific review standards which are distributed among them. The eight general standards address the following: 1) Course Overview and Introduction; 2) Learning Objectives or Competencies; 3) Assessments and Measurements; 4) Instructional Materials; 5) Learning Activities and Learner Interaction; 6) Course Technology; 7) Learner Support, and 8) Accessibility and Usability (Quality Matters, 2022d). Each standard is supported by current scholarly literature and best practices and places emphasis on the concept of alignment. This ensures that the critical course components of learning objectives, assessments and measurements, instructional materials, learning activities, learner interaction, and course technology work together to ensure students achieve the desired learning outcomes.

OER Framework

The development of new OER material for courses requires an understanding of the principles of OER and open licensing of the completed work. When creating OER, authors should make sure the final product meets the 5R framework outlined by Wiley (2014), which includes the ability to retain, reuse, revise, remix, and redistribute the work. The work should be freely available to students and should strive to meet or exceed accessibility standards. Since this microbiology course is offered online, WCAG 2.1 accessibility standards should be addressed during the development of the lab manual as part of the

QM process and will be reviewed again before the lab manual is published (Accessibility Principles, 2019).

Once the lab manual is ready to be imported into the Digital Press at Collier Library, which is built on the Pressbooks platform, the OER librarian will work with the author to choose the appropriate Creative Commons (CC) license for the manual. During preliminary discussions about CC licenses, the decision was made to not consider any version that includes the “No Derivatives” designation because the author hopes others will find and adapt her work. She has benefited from adapting other lab manuals in her courses and wishes to contribute to the library of available biology OER.

Merging the Frameworks for Microbiology

The laboratory component to the course was designed to provide students in either the traditional or online modality with as similar an experience as possible to ensure that online students were receiving training in core microbiology techniques while at the same time meeting ASM, QM, and OER standards thus allowing consistency between the two course modalities.

To accomplish this goal, meetings were held every two weeks during the course design and QM process via Zoom. During each meeting, aspects of OER, QM, and ASM standards were discussed, and coursework was developed to support each goal. This process benefited from the professor’s previous exposure to the QM and OER frameworks. Prior to this project, she had completed two QM certification courses and had attended an OER workshop which led to her adapting a different OER microbiology lab manual. Because of her work adapting the OER lab manual, she was familiar with open licensing as well as searching for images and other materials that could be included in the manual she created specifically for this course. Due to the previous training with QM, the professor was familiar with the expectations of quality course design. The team collaboration ensured that critical course components such as course objectives, module objectives, instructional materials, learning activities, tools and assessments worked together to contribute to student mastery, while maintaining OER compliance and meeting ASM standards.

Results and Discussion

Microbiology Lab Course Set Up

The lab course was designed to be presented in two formats: a traditional format appropriate for face-to-face laboratory instruction and an online format termed Lab@Home which contains modified protocols that are safe for students to use where they live. Both formats were developed utilizing Canvas and contain videos to introduce the specific lab topic and procedures utilized during the lab, a link to the instructor written OER lab manual designed specifically for the clinical microbiology course, and assessments for each lab. See Table 1 for examples of how the modalities for the in person and Lab@Home compare. For Lab@Home, students can work ahead while traditional laboratory students would complete one lab experiment per week (see Table 1).

Table 1

Assessment comparison between the traditional and Lab@Home (online) developed clinical microbiology laboratory.

Lab Experiment	Traditional Lab	Lab@Home	Difference
Lab 1: Aseptic Technique	Tech Exam: Aseptic Technique	Tech Exam: Aseptic Technique	Content and assessments are the same between the labs though procedures differ. [Students use different tools and cultures between the two modalities. Lab@Home students work near a candle and collect skin bacteria or bacteria from the surface in their home while traditional laboratory students are given specific cultures and work with a Bunsen burner.]
	Lab Quiz: Aseptic Technique	Lab Quiz: Aseptic Technique	
	Lab Report: Aseptic Technique	Lab Report: Aseptic Technique	
Lab 2: Isolation Streak & Types of Media	Tech Exam: Isolation Streak	Tech Exam: Isolation Streak	Content and assessments are the same between the labs though procedures differ. [Students use more microbiological media types in the traditional lab.]
	Lab Quiz: Isolation Streak	Lab Quiz: Isolation Streak	
	Lab Report: Isolation Streak	Lab Report: Isolation Streak	
Lab 3: Enumeration	Tech Exam: Serial Dilution	Tech Exam: Serial Dilution	Content and assessments are the same between the labs though procedures differ. [Lab@Home students serially dilute milk or yogurt while traditional lab students collect a urine sample for serial dilution and work with more media types.]
	Lab Quiz: Enumeration & CFU/ml	Lab Quiz: Enumeration & CFU/ml	
	Lab Quiz: CFU/ml calculation	Lab Quiz: CFU/ml calculation	
	Lab Report: Enumeration & CFU/ml	Lab Report: Enumeration & CFU/ml	

Lab 4: Microscopy	Lab Quiz: Microscopy	Lab Quiz: Microscopy	Content and assessments are the same between the labs though procedures differ. [The traditional lab has a wide variety of slides compared to Lab@Home.]
	Lab Report: Microscopy	Lab Report: Microscopy	
Lab 5: Staining	Tech Exam: Staining	Tech Exam: Staining	Content and assessments are the same between the labs though procedures differ. [Lab@Home uses fewer staining methods than the traditional lab.]
	Lab Quiz: Staining	Lab Quiz: Staining	
	Lab Report: Staining	Lab Report: Staining	
Lab 6: Biochemical Tests	Lab Quiz: Biochemicals	Lab Quiz: Biochemicals part 1	Lab@Home receives a data set to interpret rather than inoculating various media. Both modalities use biochemical data to identify bacterial unknown.
	Lab Report: Biochemical Tests Unknowns	Lab Quiz: Biochemicals part 2	
		Lab Report: Biochemical tests Unknowns	

Lab 7: Methods of Control	Lab Quiz: Physical Methods	Lab Quiz: Physical Methods	Content and assessments are the same between the labs though procedures differ. [Lab@Home students expose plates to sunlight and incubate plates in fewer temperature environment than traditional lab students. The traditional lab students also have access to UV lights for physical methods of control testing and potentially a wider variety of antiseptics and disinfectants than Lab@Home students. Lab@Home students are given a data set for antibiotic data while traditional students would test several antibiotics as part of their experiment.]
	Lab Quiz: Chemical Methods	Lab Quiz: Chemical Methods	
	Lab Report: Control of Growth	Lab Report: Control of Growth	
Lab 8: ELISA	Lab Quiz: ELISA	Lab Quiz: ELISA	Content and assessments are the same between the labs though procedures differ. [At present, Lab@Home student use home ELISA test kits such as pregnancy, drug, or ovulation tests available from local stores while traditional students use an ELISA kit from Edvotek. This lab will be rewritten so that traditional lab students will use a commercially available hCG (pregnancy) test kit.]
	Lab Report: ELISA	Lab Report: ELISA	
Final Exam	Comprehensive Final Exam	Comprehensive Final Exam	Assessment is the same between the labs.

Microbiology Lab Course Completion

Data for Fall 2021 and Spring 2022 semesters are from traditionally taught in-person lecture and laboratory sections while data for Summer 2022 are from an online lecture and Lab@Home. All lab sections were taught with the designed OER lab manual. Fall and Spring semesters are four months while the Summer online microbiology course was one month (June 1-June 29). Because the Summer class is more intensive, students often struggle with mastery of content, especially when working or taking classes outside of BI302. Notwithstanding the summer term time constraints, lecture grades reflect the same general trend of B and C letter grades being most common among all three semesters (Table 2). While some students do better with the hands-on experiments of the laboratory component of BI302, many students struggle with application of lecture information thus resulting in a wider grade distribution among the laboratory sections compared to the lecture sections. The lecture component of BI302 includes a group project, an individual epidemiology project, chapter quizzes, and module exams which help students to apply lecture information in a variety of contexts whereas the laboratory component assessments focus on collecting, analyzing, and applying experimental data.

Student comments were not collected, nor was Institutional Review Board permission received to include student comments. Course evaluation data is only collected for Fall and Spring semesters; thus, it was not included as the online only course would not have been reflected in the data set.

Table 2

Comparison of percentage of lab grade, drop, fail, and withdrawal between traditional BI302 lab and online BI302.

Term	Fall 2021		Spring 2022		Summer 2022	
Total Enrollment	36		42		17	
Course	Lecture	Lab	Lecture	Lab	Lecture	Lab
% Withdrawal	5	5	7	7	0	0
% A	11	0	33	19	12	0
% B	42	31	41	43	47	18
% C	31	31	17	22	41	29
% D	3	19	2	7	0	47
% F	8	14	0	2	0	6

QM/ NCD Internal Review Results

At the end of the New Course Development process, the Clinical Microbiology Laboratory online course underwent an Internal Quality Assurance Review utilizing the guidelines and expectations set forth by QM. As previously stated, QM does not offer a pass/fail approach to quality assurance but provides an extensive opportunity for collegial collaboration through feedback and course revision opportunities whether or not minimum expectations are met in the initial course review. The microbiology course met all essential standards and received a perfect score of 100% on the internal review process.

After the initial offering, lab protocols for Lab@Home were modified to more closely match the protocols used with the traditional laboratory experiments. For example, the Control of Growth experiments in the traditional and online modalities differ (see Table 3).

Table 3

Comparison of the Control of Growth Lab between traditional and Lab@Home modalities.

Experiment	UV	Temperature	Antiseptic/ Disinfectant	Kirby Bauer (Antibiotic)
Traditional Lab	UV light exposure (230nm wavelength)	4C (refrigerator)	Mouthwash	Antibiotic disc
		21C (room temperature)	Hydrogen peroxide	
		37C (incubator)	Bleach/ Lysol	
		65C (incubator)	Isopropanol	
Lab@Home	Sunlight exposure	-10C (freezer)	Mouthwash	Data set
		4C (refrigerator)	Hydrogen peroxide	
		21C (room temperature)	Bleach/ Lysol	
		37C (sunny car)	Dish soap	

Both modalities use common household antiseptics and disinfectants for the Control of Growth experiment. Differences between the modalities occur with temperatures, UV sources, and antibiotic testing as students in the Lab@Home section would not have access to high temperature incubators, UV cabinets, and antibiotics at the correct concentrations for the Kirby Bauer test. Continual improvement goals for the laboratory manual strive to keep procedures as close as possible between the two modalities.

With the shift to online learning brought about by the pandemic and continued through Hyflex learning (shifting to online modality to accommodate student absences and university closings due to weather events), a lab manual that accommodates both online and traditional modalities while at the same time meeting ASM standards is needed. This lab manual is available in the Digital Press at Collier Library via the Pressbooks publishing platform and is one of the first widely available OER lab manuals specifically designed for an online microbiology lab course. In addition to being able to accommodate a Hyflex teaching model, cost savings to students is significant in that commercially available laboratory manuals range \$100-\$150 per manual, or approximately \$150 per student, for prepackaged kits from vendors such as Carolina Biological. The manual can be viewed at <https://una.pressbooks.pub/bi302-lab/>.

Conclusion

Microbiology OER Lab Manual Implementation

Two challenges were initially faced with the creation of the clinical microbiology course: 1) splitting of the original microbiology course which serviced both hard science majors and allied health science majors and 2) creating a laboratory for online and traditional instructional modalities that offered comparable learning experiences for students.

Splitting the mixed majors microbiology laboratory was relatively straightforward in that experiments took on more of a clinical focus with an instructor written OER laboratory manual for the allied health science students, while the science majors laboratory continued to use the previously adapted OER lab manual from McLaughlin and Petersen (2016). For example, the clinical microbiology experiments focus more on student provided specimens or procedures that are important for clinical identification and treatment of pathogens – skills that allied health students will employ daily during clinical rotations and later in their careers. The students majoring in science use instructor provided stock cultures for laboratory experiments with the goal of exposing majors to a variety of techniques and a broader skill base that science majors will use in later courses or graduate studies. Both the science majors' lab manual and the clinical microbiology lab manual for the allied health sciences have a core set of experiments that are offered in the same sequence to offset excessive lab set up as the two classes are frequently offered on the same day for traditional laboratory formats.

The second challenge was the creation of an OER lab manual that supported both traditional and online modalities of instruction while at the same time ensuring that students received hands-on experiences and acquired the necessary foundational skills for subsequent coursework. The first time the laboratory was offered online, students made their own bacterial media using agar or gelatin commercially available from most grocery stores and searched the internet for microscopic images to complete labs; subsequently offered sections of the online laboratory use pre-made media and student grade microscopes purchased from online vendors which provide more standardized supplies for student experiments, hands-on experience for the staining lab, and the ability to view student made slides as well as prepared slides provided with the microscope. As such, there are currently only two labs that significantly differ from the traditional and online lab manuals – the biochemical lab (see Appendix A) including the unknowns project and the Enzyme-linked immunosorbent assay (ELISA) lab.

Future Directions

Now that the laboratory manual has been launched and tested in the online classroom, the instructor and the OER librarian will work together to finalize details of the laboratory manual, including locating or creating openly licensed images for inclusion in the text in preparation for publication in UNA's Digital Press. The instructor will be applying for an OER stipend to help her complete the work to get the manual ready for publication. Once that process is complete, the instructor, OER librarian, and ID will begin working on transitioning the class from a traditional (costly) textbook to OER for the lecture. They are currently assessing the use of PLOS Pearls, "a living collection of short educational and highly useful articles that address topics of relevance and importance within the wide-ranging field of pathogens research" for inclusion in lecture instruction (PLOS, 2019).

Acknowledgements

The authors would like to thank the University of North Alabama for their support in developing a new course that meets the needs of allied health science students by offering instruction through online and traditional modalities. They would also like to thank Dr. Kathleen Richards, Director of the University Writing Center, for hosting a faculty writing retreat where the authors completed the bulk of this paper and for reviewing the final draft.

Conflict of Interest Statement

The authors have no knowledge of any conflicts of interest.

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Appendix

Appendix A: Comparison of the Biochemical lab for the Traditional and Lab@Home modalities. Differences between the two modalities are highlighted in yellow.

Lab 6 (L6): Biochemical Tests [Traditional Lab]

Course (CO)	Objectives	Lab Objective (LO)	Learning Activities	Evaluations & Assessment
1. Apply Aseptic Technique to lab processes and methodologies. (MINAH 22,24)	1. Use Aseptic Technique to inoculate biochemical media. (LO1,6)	1. Use Aseptic Technique to inoculate biochemical media. (LO1,6)	<p>1. Read: Blankinship, L.A. (2021). Biochemical Tests. In <i>BI302 Clinical microbiology lab manual</i>. (LO1-3)</p> <p>Blankinship, L.A. (2021). Dichotomous key. In <i>BI302 Clinical microbiology lab manual</i>. (LO2,4)</p> <p>2. Watch: Blankinship, L.A. (2021). <i>Lab Lecture: Biochemical Tests</i>. [Video]. Canvas Studio. (LO2-3)</p> <p>Blankinship, L.A. (2021). <i>Lab Lecture: Overview of Dichotomous Key</i> [Video]. Canvas Studio. (LO4)</p> <p>3. Complete: · <i>Lab Quiz: Biochemicals (LO2-3)</i></p>	<p><i>1. Lab Quiz: Biochemicals (LO2-3)</i></p> <p>2. Lab Report: Biochemical Tests (LO1-3)</p> <p>3. Unknowns (LO2-4)</p>
2. Examine microbiological processes in pure culture. (MINAH 22-23)	2. Classify microbes based on their biochemical results. (LO2-5)	2. Classify microbes based on their biochemical results. (LO2-5)		
3. Relate experimental findings to lab and lecture concepts. (MINAH 23-25)	3. Apply the use of pH indicators to determine metabolic processes by or within a cell. (LO3,5)	3. Apply the use of pH indicators to determine metabolic processes by or within a cell. (LO3,5)		
4. Classify microbes based on microbial physiology or biochemistry. (MINAH 23)	4. Provided a dichotomous key, identify a bacterial unknown. (LO2-5)	4. Provided a dichotomous key, identify a bacterial unknown. (LO2-5)		
5. Use appropriate terminology when communicating microbiological concepts and findings. (MINAH 23-25)				

6. Use
microbiological
equipment correctly.
(MINAH 23-24)

- Lab Report:
Biochemical
Tests (LO1-3)
 - Unknowns
(LO2-4)
-

Open Peer Review

Beznosko, D. (2022, October). [Review of the article Case study exploring the development of a quality open education clinical microbiology lab manual and online experiential lab course, by N. Lindsey, J. Pate, & L. Blankenship]. Journal of Open Educational Resources in Higher Education, 1(1), 68-70. doi:10.13001/joerhe.v1i1.7181

Reviewer: Dmitriy Beznosko

Recommendation: Revisions Required

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

The topic is about the design of the online lab for the microbiology class. OER materials and approach to the lab are discussed. The topic is important in the view of the continuing pandemic.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

The organization is logical and well structured. It may be even a bit excessive giving some details that might be common knowledge, and detailed description of the QM and OER framework etc. If no page limit, can leave as is.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the

author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

reference to the methodology of using the framework of QM and OER are explained, the quality is checked against the standards of QM. No survey of the students was conducted.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

easy read, references are present. its MLA, not IEEE, is that what it needs to be?

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

yes, shows the work done to adopt the microbio lab for the online students and provide them experience as close to in-class as possible

What are the stronger points/qualities of the article?

the overall idea and description of the work done

What are the weaker points/qualities of the article? How could they be strengthened?

students opinion/feedback is lacking

no data is provided on the student performance, comparison between how at home students did in terms of tests/grades/participation, any metrics?

I understand that a survey is a possible idea for the next semester, but some assessment data should be provided!

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Very Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Sound

Overall Evaluation

2- Accept

Open Peer Review

Lo, L. (2022, October). [Review of the article Case study exploring the development of a quality open education clinical microbiology lab manual and online experiential lab course, by N. Lindsey, J. Pate, & L. Blankenship]. Journal of Open Educational Resources in Higher Education, 1(1), 71-74.
doi:10.13001/joerhe.v1i1.7181

Reviewer: Leo Lo

Recommendation: Revisions Required

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

The article is in scope for JOERHE. The article uses a case study to illustrate how to solve the problem of developing an OER (at-home) lab manual for a microbiology course. This is a valuable topic to explore as the authors noted, “traditional experiments may not readily transition to an “at home” environment nor are virtual lab instruction platforms considered “equal” by many hard science departments.” By sharing this case study, it could help others in developing OER for other natural sciences courses with lab requirements. This topic is especially timely because of how the pandemic has forced many lab-based courses to online platforms.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

The article proceeds logically. It begins by presenting a difficult problem of transitioning in-person lab activities to a virtual/at-home format. The authors presented background information for context, and explained the different frameworks and standards that went into the development of the lab manual.

The authors did a great job explaining the steps of the development process of the proposed outcome - an OER lab manual. However, I believe it would help improve the “roadmap” of the paper if the measurement of the project (the QM/ NCD Internal Review in the Results section) was stated in the

Introduction section. While the internal review is not the ultimate score of the project, stating it early could help readers anticipate that some type of formal evaluation of the project would be discussed.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

As this is not a research article, the Methods section explains the different frameworks and standards, and how the authors merged them to develop the lab manual. The different frameworks and standards were clearly explained. However, the section would be stronger to elaborate more on the merging of the frameworks.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

The article was written in an easy to follow way. Tables were properly used to compare the at-home lab activities and the traditional lab activities.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

The article contributes a valuable practical example that will benefit others who are plan to develop OER for lab-based microbiology courses.

What are the stronger points/qualities of the article?

This is a clearly written case study of the development of an OER lab manual for at home/virtual lab activities. The tables that illustrate the differences between Lab@Home and traditional lab manuals are especially useful for readers.

What are the weaker points/qualities of the article? How could they be strengthened?

From a narrative standpoint, a minor critique is that the article could provide a clearer “roadmap” for the readers in the Introduction section.. For example, an internal review is discussed in the Results section, which could be mentioned earlier in the paper to guide the readers to that point. The merging of the frameworks section in the Design/Methods section would benefit from a bit more elaboration.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Very Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Highly Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Not Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Sound

Overall Evaluation

3- Strong Accept

Open Peer Review

Morrison, A. (2022, October). [Review of the article Case study exploring the development of a quality open education clinical microbiology lab manual and online experiential lab course, by N. Lindsey, J. Pate, & L. Blankenship]. *Journal of Open Educational Resources in Higher Education*, 1(1), 75-79. doi:10.13001/joerhe.v1i1.7181

Reviewer: Ashley Morrison

Recommendation: Revisions Required

Scope, Objectives, Content

*Is the article in scope for *Journal of Open Educational Resources in Higher Education*? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?*

The scope and content of the article are relevant to JOERHE. Case studies incorporating OER are of interest to general readers, and STEM-focused content is very valuable to a subset of readers.

The content could be brought further within the scope of the journal by shifting more of the focus of the content to OER. At present, my reading is that the lab manual discussed in the paper has not yet been openly licensed and disseminated as OER. Depending on the timeline for that action, this could be a stronger submission once the product can be shared with readers.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

The article proceeds logically. The article adheres to the recommend structure and section guidelines. No changes suggested.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

The methodology and reasoning in this paper is sound and logical. As a description of a specific case study, the approach used by the authors is appropriate. To the best of my ability to assess it, all content is factually accurate with regard to course design and OER; however, I am unable to provide an authoritative assessment related to the components that address microbiology subjects and procedures.

There are a few articles, chapters, or other sources that may be relevant for inclusion in the literature review, specifically with regard to OER materials developed and designed to support labs in the sciences. Currently, the literature review does not address this intersection. Some of these sources are:

Prost, L. (2021). Open Educational Resources in the Biochemistry Laboratory: Development of An Interactive, Flexible, and Free Lab Manual. *The FASEB Journal*, 35.

Knight, S., Bentley, M., Regner, L., & Murphy, L. (2016). Open Educational Resources in the Laboratory: Moving the Introductory Biology Laboratory Manual onto Pressbooks. *The FASEB Journal*, 30, 776-16.

Liu, J. C., Johnson, E., & Haroldson, E. (2021). Blending Geoscience Laboratory Learning and Undergraduate Research With Interactive Open Educational Resources. In *Blended Learning* (pp. 315-332). Routledge.

Brogun, D. Y., Faucette, A. N., Polizzotto, K., & Tamari, F. (2021). Development of an online general biology open educational resource (OER) laboratory manual. *Journal of microbiology & biology education*, 22(2), e00133-21.

Tısoğlu, S. (2017). Exploring the use of open educational resources in chemistry laboratory course context: A case study.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

There were no significant issues related to expression or flow. The writing style was accessible and easy to follow.

One style choice could be updated to enhance accessibility. The use of highlighting to indicate differences in Table 3 should be considered in combination with another visual cue to distinguish, if possible. Not all readers are able to perceive highlighting or other color-based signals. Underlining the relevant text may be an option.

I noticed that the authors switch between using the phrase "open education resource" and "open educational resource" occasionally. I believe both are commonly used, but sticking to one may be helpful for consistency.

In the attached file with notes, I have also pointed out some potential opportunities to include citations or references to support claims or otherwise clarify terminology. These are small suggestions and may not be necessary.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Yes. The article provides a useful model for faculty / instructional designer / librarian collaborations for course material development. It's also valuable as a case study instructing STEM instructors who wish to transition traditional labs to online or remote modalities.

What are the stronger points/qualities of the article?

The case study provides detailed descriptions of the traditional lab and online lab assessments and specific differences between the two. I can see this being replicable for instructors who are making this transition. This content seems timely, with many courses remaining online or Hyflex past the peak of COVID-19. Table 1, which lays out the high level details and comparison of assessments between the two modalities, is especially useful.

The collection of relevant frameworks and standards in the Literature Review and Design/Methods sections serve as very helpful primers on topical backgrounds that are necessary to understand the goals of the authors. They provide the right amount of context for readers.

What are the weaker points/qualities of the article? How could they be strengthened?

As mentioned when addressing scope, this paper could be strengthened for inclusion in the Journal of Open Educational Resources in Higher Education by placing greater emphasis on the OER lab manual or other OER materials being produced by the team. Because the OER is not yet complete or available, this might be challenging to address at present, but I perceive this as critical to the scope of this particular journal.

As a reader, I was also left curious about the student success outcomes or other impacts of adapting the course for online learners and adopting new materials. Perhaps this is something to address in the Future Directions section if it is not something that could be discussed in Conclusions currently?

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Very Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Not Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Not Sound

Overall Evaluation

2- Accept

Do OER Textbooks Have Value Beyond Cost Savings?

An Analysis of Student Attitudes and Faculty Teaching Strategies in an American University

Dr. Yang Wu¹

Keywords: Open Educational Resources, Open textbooks, Student textbook use, Faculty instruction strategies

Abstract

The study examines the use of Open Educational Resource (OER) textbooks by 704 students in nine courses at an American public research university. It seeks to better understand the effectiveness of OER in comparison to traditional textbooks by surveying how often students read OER texts and examining how instructors in the courses are teaching using OER. The study found an alarming trend: the impact of OER has been limited because of students not reading assigned textbooks and instructors not actively teaching with them. This may be reflective of a phenomenon not previously noticed by OER researchers—high textbook prices causing many instructors to abandon serious use of required texts while students are still painfully purchasing them. This causes students to develop a habit of not reading textbooks. Findings of the study suggest that the frequency with which students use required texts, their attitudes towards textbooks, and how instructors are teaching with OER are important factors in assessing the effectiveness of OER that go beyond cost savings.

Note: In accordance with the conditions of the Institutional Review Board approval for this project, which stipulates that the identities of the instructors whose courses have been surveyed and their students must be protected, the institution studied will not be disclosed

Introduction

Undergraduate textbooks have become the fastest growing college expense in the last two decades (United States Bureau of Statistics, 2016). Coping with rising textbook prices, many students now forgo purchasing required works for their courses, or delay purchasing them to search for cheaper prices (Wakefield Research, 2018, p. 1; National Association of College Stores, 2021). Responding to this

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development, many instructors have switched to Open Educational Resources (OER), online textbooks that are free for students. A growing body of research literature has also attempted to examine the impact of OER on student learning (Illowsky et al., 2016; Watson, Domizi & Clouser, 2017; Ikaiahifo et al., 2017; Lawrence & Lester, 2018; Jhangiani et al., 2018; Clinton, 2018; Grissett & Huffman, 2019).

However, studies of OER effectiveness have often overlooked one major issue, a decline in student use of textbooks. Research in the last two decades (Podolefsky & Finklestein, 2006; Berry et al., 2011; Starcher & Proffitt, 2013; Juban & Lopez, 2013; French et al., 2015; Gammerdinger & Kocher, 2018) have revealed that most undergraduates, including 82% of students surveyed in one study (Berry et al., 2011, 34), don't regularly complete assigned and required readings in their courses. In fact, there is a debate among scholars who study the subject on whether textbooks are important in undergraduate teaching. Whether this trend is related to high textbook prices and if OER texts can help improve student learning in this situation have not been explored. This study seeks to address the issue through an analysis of survey data from 704 undergraduate students who used OER in 2019 at a large public research university in the southern United States.¹ Adding a critical perspective to studies on the effectiveness of OER materials, it applies methods used by studies on student textbook reading. The study reveals that the impact OER may have on student learning is limited due to many students not actively using assigned texts and instructors not using textbooks heavily in their teaching.

Literature Review

Findings from studies on student textbook use can be insightful for research on OER effectiveness in several ways. Like advocates of OER, researchers on the subject are also strongly concerned about rising textbook prices (Berry et al., p. 31; Juban & Lopez, p. 325; Gammerdinger & Kocher, p. 1). While OER advocates have sought to address this problem by replacing traditional texts with free alternatives, researchers on student textbook reading have questioned the relevance of using increasingly expensive assigned readings by examining whether students benefit from using them. They have also worked to develop strategies to make students effectively use textbooks to improve their learning.

Studies on student textbook reading are also skeptical on whether the inability to purchase textbooks is a major factor behind students not using them. Some have pointed to cases where student textbook use was low even though almost all students could afford required works (Starcher & Proffitt, p. 400-401; Podolefsky & Finklestein, 2006, p. 338-341). They, instead, viewed the subject primarily as a matter of student motivation and the role played by instructors in fostering student reading of assigned texts. Studies highlight issues such as students' poor reading strategies, failure of instructors to teach these strategies, and their inadequate emphasis on textbook use in teaching as the main factors discouraging students from reading assigned texts (Starcher & Proffitt, p. 405; French et al., p. 176-177). Researchers on the topic generally fall into two groups. One group, which is more optimistic, has highlighted data showing that students do see value in reading the textbook, even if they don't, and that certain strategies by instructors can encourage them to read (Berry et al., p. 37-38; Kerr & Frese, p. 28-29). The other,

which is more pessimistic, has often pointed to cases where students do not complete readings, even when instructors are actively encouraging them to do so. They have raised doubts on the value of textbooks (Juban & Lopez, p. 330).

These findings are important to research about OER textbook effectiveness because many OER studies have simply assumed that giving students access to free texts would improve their learning. They have sought to measure the effectiveness of OER works primarily by comparing student grades in courses that use OER with those taught using traditional texts, particularly among students who have struggled to purchase textbooks, such as those from low income families, under-represented backgrounds (African American, Hispanic/Latino, American Indian, Alaskan Native, Pacific Islander and mixed race), and first-generation students (Lawrence & Lester, p. 559-560; Jhangiani et al., p. 8-9; Colvard, Watson & Park, p. 264-266; Grissett & Huffman, p. 26). These studies also surveyed how students feel about OER works compared to traditional textbooks. They discovered that students prefer OER more since these books are cost free and have often used this to claim that OER benefitted student learning (Illowsky et al., p. 269-270; Watson, Domizi & Clouser, p. 293-294; Ikahihifo et al., p.131; Clinton, p. 183-184).

However, studies on OER impact overall have found that using OER textbooks did not lead to changes in student grades (Hilton, 2020, p. 869), even if students prefer these books over traditional ones. Studies have also not shown that using OER texts necessarily results in more students actually using the assigned materials. In fact, some studies have noted that at times OER can even lead to fewer students using required texts (Hendricks, Reinsberg & Rieger, p. 90; Grissett & Huffman, p. 28-29; Lawrence & Lester, p. 559). Causes for this have never been thoroughly studied.

Studies have also noted that students in certain STEM subjects, like mathematics, did not like reading required texts. Kersey (2019) argues that STEM courses are focused on having students solve equation-based questions. They also use online homework systems, interactive digital learning tools that provide quick explanations to questions and their connections to course concepts. Kersey surmises that quick explanations provided by online homework may make students feel that reading textbooks is unengaging and unnecessary. Basing his assumption on a survey of students in two STEM courses, one using a traditional and another using an OER textbook, he notes that students in general felt that reading textbooks did not benefit their learning and preferred to use more interactive learning materials like homework systems. Using an OER textbook in one course did not change this mindset among students or lead to more use of the class textbook (p. 253-257).

These discoveries raise questions about the extent that OER, as well as textbooks in general, are responsible for student success. Studies on OER impact have also not given much attention to the role played by instructors in encouraging students to use OER works or how important textbooks are to their teaching. Many have assumed that instructors would want to structure their courses around textbooks, making assignments and lectures closely connected to a book. OER advocates often highlight the advantage of OER texts over traditional works by noting that the former can be modified and selectively used to make them more relevant to specific courses (Hendricks, Reinsberg & Rieger, p. 90). Whether

instructors still build their courses around textbooks has not been tested, and studies have not explored the effectiveness of strategies used by instructors to encourage student use of assigned texts. Neither have they explored if online homework systems are changing the way instructors teach and the importance they place on textbooks.

However, studies on student textbook use also have limitations. Though they have questioned whether the ability to purchase required texts is a major reason behind students not using these works, these studies have not examined if students who cannot afford or frequently delay purchasing textbooks are reading less compared to others. There is a need to compare the behavior of certain student demographics, such as students who have difficulty purchasing textbooks versus those who do not; students in STEM courses, where textbooks are more expensive versus non-STEM students; and upper level (3rd and 4th year) students, who may have learned to skip purchasing assigned texts to cope with high prices versus lower level (1st and 2nd year) students who may be more likely to purchase the assigned text, regardless of cost. A comparison between these student demographics could help examine if high textbooks prices are having an impact on reading of required works by disadvantaged groups, and if using OER as opposed to traditional textbooks improves the amount of reading that students do.

This study is a preliminary exploration, applying methods from studies on student textbook use to investigate how students are using OER, with the aim of broadening the perspective of OER impact studies. It seeks to generate questions for further research rather than drawing definitive conclusions. Study findings taken from one institution are not necessarily applicable to many other institutions, whose student learning habits and faculty instructional strategies could be different. However, an examination of students at one institution could help uncover factors and issues behind student use of OER for researchers to consider and refine larger understandings on how to make OER more effective.

Methods

Survey

The study was conducted by the libraries of the institution studied to evaluate the impact of its OER stipends program, which provides financial compensation to faculty each year to replace traditional textbooks and learning resources with OER materials in one of their courses. It was approved by the university's Institutional Review Board, and surveyed students in nine courses that were taught at the institution in fall 2019 using OER textbooks (Table 1):

Table 1:
Courses surveyed

Course	Description
PHYS 1.	Course on physics for lower-level undergraduate students. (STEM)
PHYS 2.	Course on physics for lower-level undergraduate students. (STEM)
MATH 1.	Course on calculus for lower-level undergraduate students. (STEM)
MATH 2.	Course on algebra for upper-level undergraduate students. (STEM)
COMP	Course on computer programming for upper-level undergraduate students. (STEM)
SOC	Course on sociology for lower-level undergraduate students. (Non-STEM)
ENG 1.	English course for upper-level undergraduate students. (Non-STEM)
ENG 2.	English course for upper-level undergraduate students. (Non-STEM)
EDUC	Education course for upper-level undergraduate students. (Non-STEM)

All these courses were delivered in face-to-face format, which was representative of most courses taught at the institution and most other institutions in the United States during the time of the study. Instructors of these courses were OER stipend recipients who were willing to adopt OER texts in their teaching. The purpose of the stipends is to incentivize instructors to select and use low- or no-cost texts. The instructors were selected because they previously taught using very expensive traditional materials for their subjects, ranging from \$100-\$235. The instructors were asked to give their students a written survey questionnaire as a condition for receiving stipends (Figure 1.):

Figure 1
Survey questionnaire

1. How often do you purchase textbooks for your courses?
 - a. Response options: All or most of the time; sometimes; little to none
2. For students who purchase textbooks always or most of the time: Why do you purchase textbooks (Please select all that apply)?

- a. Response options: Having textbooks are essential to completing the course or doing well in it; Instructors told you to do so; Other, please explain (free response option)
3. For students who purchase textbooks sometimes, a little, or none: Why do you not purchase textbooks?
 - a. Response options: Unable to afford them; I do not feel they are useful to my learning; I can pass or do well in a course without them; Other, please explain (A free response option)
4. How often do you delay purchasing textbooks?
 - a. Response options: All or most of the time; sometimes; little to none
5. Please choose the range that best represents your household/family's income
 - a. Response options: Under \$50,000; \$50,000-\$100,000; over \$100,000
6. Are you a:
 - a. Response options: Lower level: freshman or sophomore; Higher level: junior or senior
7. With which of the following racial/ethnic groups (from the US Census categories below) do you identify? (Students from underrepresented backgrounds were identified from results)
8. Are you a first-generation student?
 - a. Response options: Yes/No
9. How often do you use the textbooks that you purchase?
 - a. Response options: Quite a bit or always; moderately; a little or none
10. How often have you used the free textbook for your course?
 - a. Response options: Quite a bit or always; moderately; a little or none
11. Are you satisfied, unsatisfied or neutral with the free textbook used in your course? Please explain (Free response question)
12. Do you have any suggestions on how teaching using free textbooks can be improved? (Free response question)

The survey applies methods from studies on student textbook use, collecting data on student reading of assigned texts, student attitudes towards reading, and instructor teaching strategies. It also breaks down student responses by demographics commonly used by research on OER impact, such as income group, under-represented and first-generation status, and student year of study to analyze if high textbook prices affect student reading of required works and the impact of using OER to replace them. The courses—five for upper-level students and four for lower-level students—ensure that there is a good representation from both groups. Five courses are in STEM subjects, and another four are non-STEM. Like many STEM area courses, the five STEM classes surveyed all require students to use online homework software. This allows for a good comparison of the reading patterns of students taking STEM and non-STEM courses, and whether interactive online homework influences teaching and textbook use. Switching to OER saved students in the courses a great deal of money and gave them access to textbooks at the start of class. The study explores whether this affected their reading and attitudes towards required texts.

Analysis

The survey was anonymous, and students were not required to complete all survey questions. The study accepted all responses that answered questions related to the student's year of study, under-represented and first-generation status, textbook purchasing and use, and instructors were asked to provide a copy of their course syllabus, showing the role that readings play in their teaching. Addressing the issue of why students read or do not read textbooks, and the role played by high textbook prices and instructors, the study uses a mixture of Chi-Square, Cramér's V and Bonferroni tests, which are used to determine if there is a statistically significant relationship between different sets of data, the nature of this relationship, and qualitative analysis of survey findings. Findings were analyzed in four areas:

A1. Student textbook purchase: Results for questions 1 and 4 were examined to discover how widespread students were in not purchasing or delaying purchasing textbooks. Chi-Square, Cramér's V and Bonferroni tests were conducted on the results of questions 1 and 4 with results of questions 5, 7 and 8 to see if low income, under-represented and first-generation students are more likely to not purchase or delay purchase assigned texts. They were also performed on the results of questions 1 and 4 with results of question 6, as well as between the results of questions 1 and 4 with students from STEM and non-STEM courses to see if there are any significant differences in textbook purchasing and delay purchasing between higher and lower-level students, as well as STEM and non-STEM students.

A2. Student use of textbooks: Results for questions 9 and 10 were examined to see how often students read traditional and OER works, and whether the use of OER led to more use of textbooks. Chi-Square tests were conducted, comparing results of questions 9 and 10 with those of 1 and 4 to see if use of textbooks is associated with how often students purchased or delayed purchasing assigned texts, and if students used the OER textbooks more. Tests were also conducted between the results of questions 9 and 10 with those of questions 5, 7 and 8 to see if low-income, under-represented and first-generation students are less likely to read traditional textbooks, and if they used OER works more. In addition, tests were conducted to see if upper and lower-level students were more likely to use OER texts, and if STEM and non-STEM students used OER more.

A3. Role of instructor in student textbook use: Results of question 10 were broken down by course to see how much students in each class read their OER textbook. Results for each course were compared with the class syllabus, along with student responses to question 12 to see what role the instructor played in how often students used OER texts.

A4. Student attitudes towards the value of textbooks and reading: Questions 2 and 3 encourage students to think about whether textbooks play an important role in their learning and how instructors teach courses. Students are given response options that enable them to reflect on these

questions, and the free response option for further reflection. Student responses to these questions are analyzed to gain a better understanding of their attitudes towards reading traditional textbooks. Questions 11 and 12 engage students to reflect on their attitudes towards OER works and how instructors used these books.

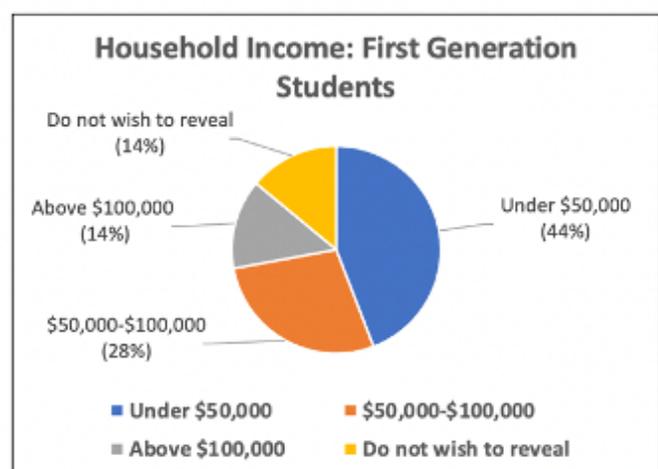
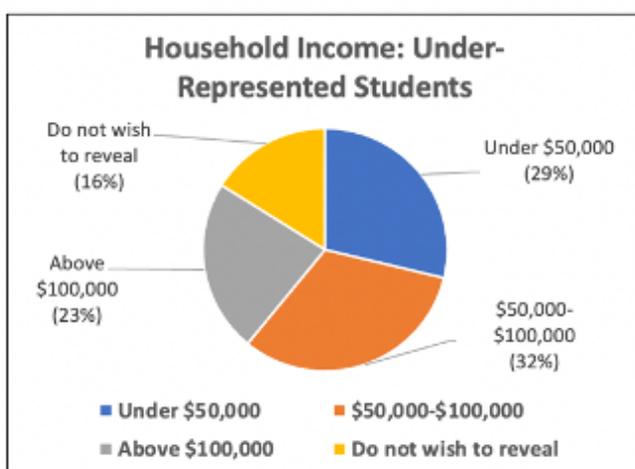
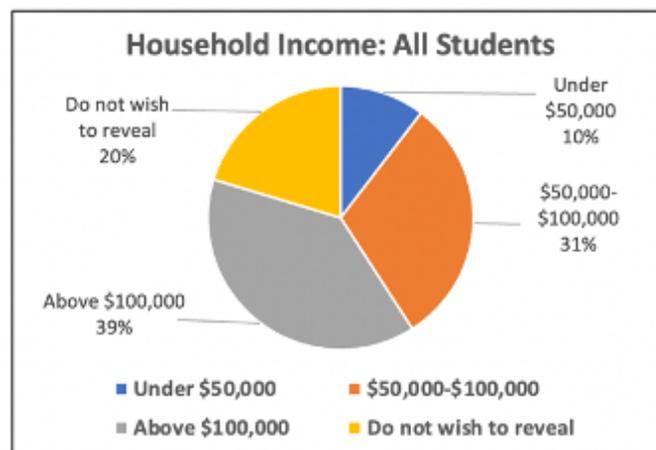
Results and Discussion

Respondents

704 out of 959 (73%) of students in the courses completed the survey. They include 324 lower-level and 380 upper-level students, with 87 from under-represented groups and 86 from first-generation backgrounds (See Appendix A for full breakdown). Using the US Census Bureau’s estimate of average household income of the state that the institution is in during 2019, \$53,199 (United States Census Bureau, 2019) as a basis to evaluate the household income of students, a high percentage of students belong to high income households. Under-represented and first-generation students were a small percentage among the total survey respondents. They are more likely to be from lower income backgrounds (Figure 3.).

Figure 3

Breakdown of Student household income levels



However, around 20% of students surveyed, including some first-generation students, did not answer the question on their household income. While it is possible that some students did not know their family income, sensitivity about family wealth could have discouraged some from revealing their income. The number of low-income students could potentially be higher.

Areas of Analysis

A1. Student textbook purchase

Two thirds of students reported that they purchased required textbooks all or most of the time (Appendix B). However, a third of students, a sizable percentage, do not regularly purchase these works. Over 44% of students also reported that they delay purchasing textbooks in their courses all or most of the time.

Breaking down textbook purchase by demographics, it appears that delayed purchasing is the main strategy for students from financially disadvantaged groups to cope with high textbook prices. Four Chi-Square tests were conducted using results of Questions 1, 5, 6, 7, and 8. Each Chi-Square test related the answers to Question 1 to those of Questions 5, 6, 7, 8, each respectively. The independent variables (IV) for each test are student household income, if students were upper or lower level, if students were under-represented, and if students are first-generation, respectively. The dependent variable (DV) is student textbook purchase. No statistical associations were found from these tests. Students at all income, under-represented and non-under-represented backgrounds, level of study, along with first-generation students, purchased textbooks at a similar rate. Those who did not purchase assigned texts did not fall into any specific group.

However, a Chi-Square test using Question 4 how often students delayed purchasing textbooks as DV and Question 5 household income as IV found some statistical significance ($\chi^2(4)=57.935$, $p<0.01$, $\alpha=0.05$). A Cramér's V strength test found a weak association between household income level and delayed purchasing of required texts ($\phi_c=0.227$). A Bonferroni post-hoc test comparing delayed purchasing of textbooks among different student populations further determined that students from households making under \$100,000 were more likely to delay purchasing textbooks most or all the time, while those from households making over \$100,000 were more likely to delay purchasing assigned works sometimes to none ($p=1.54975E-07<0.05/9=0.0056$).

Another Chi-Square test, using Question 7, under-represented and non-under-represented students as IV and delaying purchasing textbooks as DV also found statistical significance ($\chi^2(2)=14.590$, $p<0.001$). A Cramér's V strength test found a weak relationship ($\phi_c=0.145$) between how often under-represented and non-represented students delayed purchasing required texts. A Bonferroni test determined that students from under-represented backgrounds are more likely to delay purchasing textbooks most or all the time ($p=0.0022<0.05/6=0.0083$) compared to other students. Interestingly, a Chi-Square test found

no statistical significance in how often first-generation students delayed purchasing texts compared to other students, even though these students were often from low-income backgrounds.

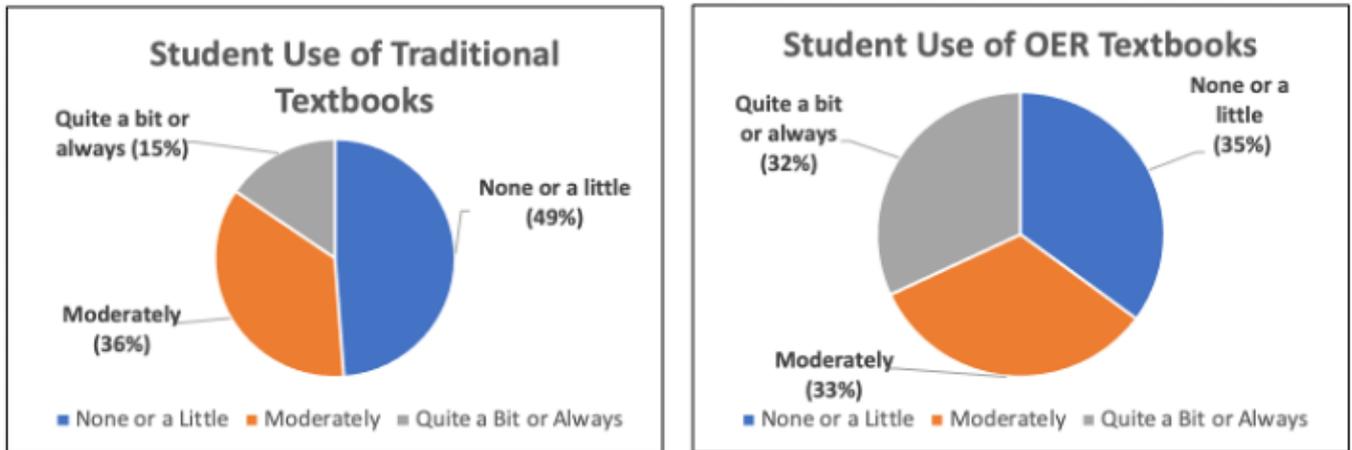
Chi-Square tests were also conducted to see if upper and lower-level students (Question 6), as well as STEM and non-STEM students were more or less likely to not purchase or delay purchasing textbooks (Question 4). A significance was found between higher and lower-level students ($\chi^2(2) = 12.009$, $p = 0.02 < 0.05$). A Cramér's V strength test found a weak relationship ($\phi_c = 0.131$) between how often lower and upper-level students delayed purchasing assigned texts. A post-hoc Bonferroni test determined that lower-level students are less likely to delay purchasing textbooks than higher level ones ($p = 0.003088715 < 0.0083$). This suggests that students learn to delay purchasing required works more as they progress in their studies. No significance was found on whether students in STEM and non-STEM classes were more likely to not purchase or delay purchasing textbooks.

A2. Student textbook use

Student use of traditional and OER works are as follows (Figure 4.):

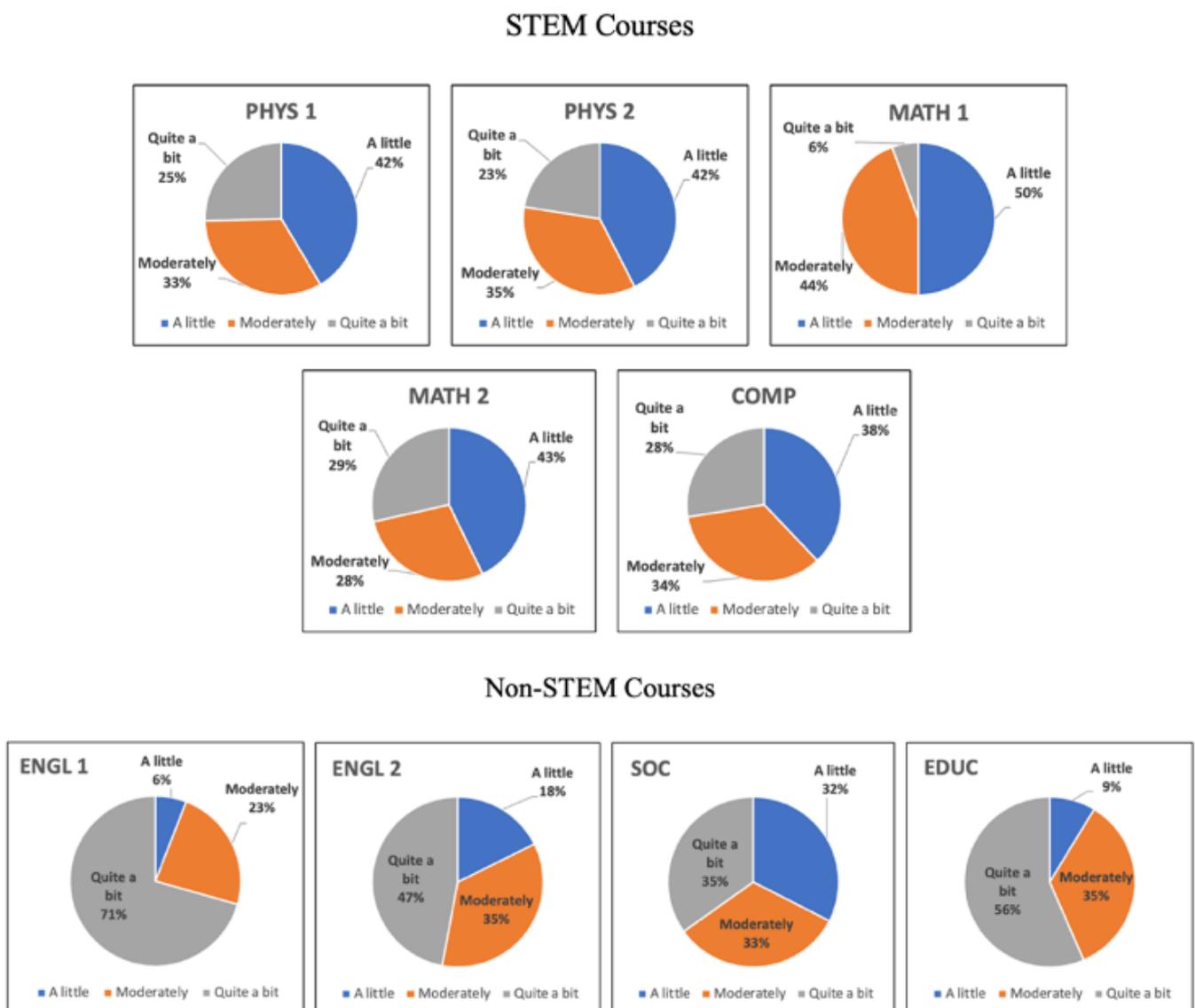
Figure 4

Student use of traditional and OER textbooks



Overall, student use of traditional textbooks was low. Only 15% of students used traditional works that they purchased quite a bit or always. OER did increase student textbook use to some extent. However, use of OER texts varied greatly by class. (Figure 5.):

Figure 5
Student OER use by class



Chi-Square tests, using Question 9, student use of traditional textbooks as IV and Questions 1 and 4, how often they purchased and delayed purchasing required texts as DVs found no statistical associations. This corresponds with the larger finding that student use of traditional texts was low,

regardless of whether they purchased or did not purchase them, or how often they delayed purchasing textbooks. Tests using Question 9 as IV and Questions 5, 7 and 8, student household income, student backgrounds, and whether students are first-generation as DVs also found no statistical associations. While students from different backgrounds purchased textbooks at a similar rate, they overall did not use these books much. Chi-Square tests also found no statistical association in how upper and lower-level students, or students from STEM and non-STEM courses used traditional texts.

Chi-Square tests were also conducted using Question 10, how often students used the free OER text in their courses as IV, and how often they purchased and delayed purchasing traditional textbooks as DVs. These tests discovered that students who purchased traditional texts all or most of the time were more likely to use OER ($\chi^2(4) = 15.774, p < 0.003, \alpha = 0.05$). A Bonferroni test found that students who had purchased textbooks all or most of the time were more likely to use OER works quite a bit or always ($p = 0.00308872 < 0.0056$), while others were less likely to read textbooks quite a bit or always. A Cramér's V strength test found the association between how often students purchased traditional texts and how often they used OER to be weak ($\phi_c = 0.106$). No statistical association was found between how often students delayed purchasing textbooks and how often they used OER works.

Tests using Question 10 as IV and Questions 5, 7 and 8 as DVs uncovered only one association. A test using Question 8, whether students were first-generation or non-first-generation as DV, discovered that first-generation students were more likely to use OER compared to other students ($\chi^2(2) = 15.231, p < 0.01, \alpha = 0.05$). A Bonferroni test found that first-generation students are more likely to use OER textbooks quite a bit ($p = 0.001533811 < 0.0083$), whereas other students are more likely to use OER a little to none. However, a Cramér's V strength test found the association between first-generation students and OER used to be weak ($\phi_c = 0.148$).

Two other tests were carried out, with Question 10 as IV and Question 6, whether students were upper or lower level and students in STEM and non-STEM courses as DVs. An association was found between how STEM and non-STEM students used OER textbooks ($\chi^2(2) = 58.874, p < 0.001$). A Cramér's V test found a weak relationship ($\phi_c = 0.289$) between use of OER works by STEM and non-STEM students. A Bonferroni test found that non-STEM students are more likely to use OER textbooks quite a bit or always, whereas STEM students were more likely to use these works a little or none.

Overall, the data suggests that students from all backgrounds, levels of study and in STEM and non-STEM courses have a dysfunctional relationship with traditional textbooks. Most spend large amounts of money and effort to purchase required texts but do not seriously use them. The ability to purchase textbooks does not directly correlate to student use of them. Students who did not purchase assigned readings do not fall into any disadvantaged demographic group that had difficulties purchasing them, and delays in purchasing textbooks did not affect student use of them. This, along with low use of traditional texts by students, raises the possibility that many students who did not purchase required textbooks are doing so mainly by choice, not seeing textbooks as necessary rather than inability to afford them. Analysis of student use of OER works also supports this conclusion. Students who did not

purchase textbooks were less likely to use required readings than others, even when given a free one. They may have ingrained attitudes inherited from experiences with traditional texts.

Data on the use of OER texts also indicates that free access to textbooks does not lead to more use of them. Chi-Square tests do not show that students from disadvantaged groups are more likely to use OER textbooks than others. The exception to this is first-generation students. They do not delay purchase of assigned texts even though many are from poorer backgrounds. This may be caused by lack of experience with college life. The same can be used to explain their use of OER readings.

While data shows that non-STEM students are more likely to use OER works, a breakdown of textbook use by class indicates that OER textbook use can vary greatly in each class, and only two non-STEM courses had high OER use (Figure 5.). This suggests that there may not be a difference in textbook use among STEM and non-STEM students, and that instructors may play a more important role in influencing OER use.

A3. Role of instructors in student textbook use

Breaking down OER textbook use by class and examining the syllabi of the courses, it was discovered that teaching strategies by different instructors was critical in influencing how often students use OER. Instructors of the nine courses used a variety of OER textbooks by OpenStax, Lumen Learning and other OER creators. Four of them (PHYS 2, ENGL 1 and 2, and EDUC) also created readings for their students that included parts of several OER works. However, only the instructors in ENGL 1 and EDUC—the two courses that had the highest level of student textbook use—made the reading of OER materials a priority.

Comparing instructor teaching strategies and student responses on how teaching using OER can be improved, three factors—the selection of readings, directions on how to use required texts, and integration of OER with the course—played an important role in student use of textbooks. Instructors of ENGL 1 and EDUC both engaged students to read by carefully selecting readings from a variety of OER, making them aligned with assignments. The instructor of EDUC also made class readings limited, assigning students no more than 15 pages per class, and made some activities and exercises from OER textbooks graded class assignments. Both instructors mentioned content from assigned works in their lectures and even gave students directions on how to read the books. The instructor of ENGL 1 often gave very specific instructions, asking students to focus on certain concepts and to think about a specific question when they are doing their weekly readings.

The other courses, however, took a different approach to textbooks. Instructors of the five STEM courses focused primarily on testing the usability of open-source online homework systems they operated, which are either completely free or low-cost systems. They sought to use these systems to replace learning packages offered by publishers, which typically contain a textbook and access to online homework, and are very expensive. Class lectures essentially focused on giving students instruction of important course concepts, which were tested both in class and at home through questions in online systems. Though the

instructors assigned OER textbooks to their courses, reading these works was not emphasized. Instructors of MATH 1, MATH 2, and COMP even called the textbooks “reference texts,” giving students additional knowledge or a way to learn outside of class. While a textbook was assigned to students, it was one of several options given by instructors to study outside of class, along with alternatives that did not require extensive reading, like videos explaining math and programming concepts. The instructors of PHYS 1 and 2 assigned students specific readings for each week but did not emphasize the importance of reading them. The syllabus for PHYS 1, in fact, simply stated that it was best for students to “skim” over the chapters before class. However, lack of emphasis on reading assigned texts is not limited only to STEM courses. Instructors of SOC and ENGL 2 did not emphasize textbook reading either. The instructor of SOC, like STEM instructors, also described the course’s OER textbook as “supplemental” instead of required reading.

A4. Student attitudes towards the value of textbooks and reading

In total, 637 of 704 students surveyed responded to Questions 2 and 3, explaining why or why not they purchase their textbooks. Among them, 434 students chose response options to explain why they purchase required texts:

1. Having textbooks is essential to completing the course or doing well in it;
2. Instructors told you to do so; and
3. Other.

Another 203 chose to explain why they do not purchase their textbooks by selecting these options:

1. Unable to afford them;
2. I do not feel they are useful to my learning;
3. I can pass or do well in a course without them; and
4. Other.

Some also wrote specific comments. Students were allowed to select all answers that applied to them.

Analyzing their responses (Appendix C), around half of the students who purchased textbooks most or all the time indicated that they did so mainly to comply with the directions of instructors, rather than feeling that assigned texts are useful for their courses. A few students also wrote in comments that they only purchased required works because other students did so, or that they often had no choice but to purchase textbooks for courses because these came in a package that included online homework. Among students who did not regularly purchase textbooks, only 17 indicated that they did so because they simply could not afford these works. Most students indicated that textbooks were not useful to their learning, that they can pass or do well in their courses without the required works, or a combination of both.

Students who purchased or did not purchase textbooks alike often wrote comments that questioned the value of these works to their learning. Their chief criticism was that many instructors did not use the textbooks they asked students to purchase. One student who purchased required texts regularly noted, “Sometimes I purchase a textbook due to teacher saying it’s needed, and I find myself never or rarely using the book.” Students who did not regularly purchase textbooks often blamed instructors for assigning them expensive works that were not used regularly. One student noted, “Some professors don’t go by the book and say that what they say in class and their notes are more beneficial.” Others claimed they are not sure if textbooks are useful since many instructors often assign students class readings but made it optional for students to purchase them.

Comments from students may not always reflect reality. It is possible that some students lack motivation to read and are trying to find excuses for not reading. However, the fact that a large majority of students in the survey were skeptical of the value of textbooks, regardless of whether they purchased them or not, suggests that students overall do not feel these works play an essential role in their learning or academic success. They may have gotten such feelings from past experiences with how instructors taught using textbooks. This is likely widespread among instructors. Results of student responses also reinforces the study’s earlier conclusion that students have a dysfunctional relationship with textbooks, with many students purchasing expensive assigned texts but not using or seeing much benefit in them, and other students learning from their experiences to not use works required by their instructor.

In total, 692 students responded to Question 11, if they were satisfied, unsatisfied or neutral towards the OER textbooks. Around 270 gave substantive feedback to Question 12, how teaching using OER works can be improved. Interestingly, most comments from students were about the benefits of having free textbooks rather than their quality or how they were used. Students from both low and high-income households appreciated the free texts. One from the former group noted, “Having professors use these free resources makes my life easier because I don't have to worry about choosing between purchasing course material or groceries.” Another, from the latter group stated, “I'm fortunate enough that my parents purchase my textbooks for me, but it makes me feel incredibly guilty when my tuition is already through the roof.”

These comments may seem to contradict the study’s earlier claim that most students could afford to purchase textbooks. However, the larger data suggest that many students are purchasing textbooks even though they have a hard time doing so. Students from wealthier backgrounds purchasing required texts may create pressure for less privileged students to do the same, but student comments suggest that even some students from higher income households find textbooks too expensive. While students liked the cost savings they received, many were ambivalent about whether OER works benefited their learning. Some noted that the textbooks did not improve their grades. Others questioned if required texts are necessary, claiming that they can do well from listening to lectures and reading instructor notes. Many students noted that they would only do readings that were strongly connected to assignments and exams. Some even asked for alternatives to textbooks, such as videos to study with.

Comments from students in ENGL 1 and EDUC, the two courses where instructors did make an active effort to engage students to complete readings and connect textbooks to assignments and class lectures, were more positive. Many students praised the instructors for their efforts, giving comments like “We actually use them (textbooks) in this class, and they are directly relevant to what we are learning.” However, a few students, even in these courses, commented that they were not given enough motivation to read. This supports the earlier assertion that students are generally ambivalent about the value of textbooks.

Conclusion

This study challenges research on both OER effectiveness and textbook reading. It questions whether giving students OER reading materials benefits their learning. The situation in the study is not one where students cannot learn from textbooks because they lack access to them. Most students do follow course instructions and purchase works required by instructors. Though many delay the purchasing of textbooks, this factor does not appear to influence their reading. However, the impact of assigned texts on student learning has been severely undermined by poor utilization of them by instructors and a general student perception that these works are not useful to their learning. Statistical analysis and student comments from the survey both indicate that large numbers of students do not have a habit of using textbooks. Some are even deliberately not using required texts. While OER did increase student use of textbooks, findings of this study suggests that students would mainly use OER works if their instructors made a significant effort to link these materials to course assignments and assessments, and that OER did not change their views towards textbooks. Conclusions of this study question the assertion of some researchers on student textbook use: students feel that reading required materials are important to their learning, even if they don't do it (Berry et al.; Kerr & Frese).

This study has several limitations. It surveyed a relatively small number of students and instructors at one institution. Conducted before the COVID-19 pandemic, it also focused on face-to-face courses, the main form of instruction in American higher education at the time and did not account for the growth in online learning since 2020. To what extent instructors in online courses relied on textbooks needs further study. The institution being studied is also unique in some ways. A land grant university, it was originally dedicated to providing education to students from working class backgrounds. The university's national ranking rose in recent years, and it became an R1 research institution. Like other institutions on the rise, its enrollment and tuition also significantly increased. Perhaps these factors accounted for the current situation, with students from well-off backgrounds becoming the majority and most students purchasing textbooks. This might not be reflective of the student populations of other institutions. Despite this, the university studied is an important public research institution in its state and region, and some instructors in the STEM courses studied have received national acclaim for their teaching. The discovery of many students rejecting the use of textbooks and faculty not actively teaching with them in a large research university is alarming. Understanding this phenomenon is crucial to ensuring that OER texts can be implemented in a way that truly benefits students.

Several factors related to instructors and students need to be analyzed. From the instructor side, the role that textbooks play in courses must be put into the context of the different needs of instructors, what strategies they think are most productive in fostering student learning, and how much time they have to plan courses. It is possible that textbook reading is less relevant to certain instructors. STEM instructors, for example, may see required readings as cumbersome because their courses are based mainly on solving mathematical and computational equations. Instructors may want students to spend more time practicing solving equations on online homework systems and receiving instant feedback rather than reading. From this perspective, homework systems could be changing the way instructors teach, eliminating the role of textbook reading.

However, OER textbooks are more than just readings. Many OER works used in the study also have large numbers of practice questions, which can be assigned to students. These questions could be useful practice exercises to STEM students, since online homework can only give students a limited number of questions. One math OER textbook used in the study even has interactive online questions that explain answers. It is possible that many of the instructors studied did not want to heavily depend on OER texts because they were unhappy with the quality of the OER works they used. The study conducted a review of syllabi of courses taught by the instructors. It found that the instructors of MATH 1 and 2, COMP, PHYS 1 and SOC never actively used textbooks. Though they required students to have required texts, the instructors often made reading them optional. They probably did not explore the benefits of OER works because of this.

Why instructors are not actively using textbooks needs further study. One explanation, based on the results of the survey, which uncovered rampant delay purchasing of required works by students, is that many instructors may be accustomed to teaching without textbooks due to concerns that students will wait too long to buy them. They, as a result, did not feel that textbooks are important to their instruction and did not make a major effort to integrate OER works into their teaching. This could have created a reciprocal relationship, with high textbook prices causing students to delay their purchase, instructors becoming less reliant on using the books they assign, and students more aware of the dwindling significance of reading textbooks in their learning success. This hypothesis needs further investigation. If this is the case and is widespread among instructors, it may highlight a hidden outcome of rising textbook prices; the true impact of high textbook costs in some institutions is not students having no access to required readings, but instructors abandoning the effective use of them, leading students to question the value of textbooks.

Student reading skills also need to be further investigated. The study only looked at student usage of textbooks and attitudes towards them. It did not assess whether students have skills to complete assigned readings, gain required knowledge from them, and if OER use improved student grades. It is possible that the instructors studied were reluctant to enforce student reading of required texts because they feel students lack skills for reading, and that strategies to encourage them to read, along with teaching students how to read, are too time consuming. Instructors may turn to alternative resources to compensate students' reading, seeing these as more effective than textbooks. Activities of instructors in

MATH 1, 2 and COMP, such as giving students videos and other learning resources that do not require extensive reading and optional class texts may be evidence of this strategy. Student attitudes towards textbooks and their reading skills may also be in a reciprocal relationship with instructor teaching strategies, with the two influencing each other to reduce the role of required readings in higher education.

The conclusions of the study suggest that the OER community may need to rethink its strategies to support instructors and students. OER are a wide range of materials incorporating cutting edge educational technologies. They can include resources that do not require a lot of student reading. Developers of OER can create diverse teaching materials that effectively assist student learning but also reduce the amount of reading, and OER promoters can also assist faculty to creatively use non-textbook OER in their teaching. However, they should not give up vigorously promoting the importance of having students read and improving their reading skills. Studies have shown that students who develop strong reading skills tend to have higher metacognitive ability that allow them to excel in learning (Pressley, 2015). Not encouraging students to read may harm their growth. The OER community must actively assess why students are not reading textbooks and offer strategies for instructors to improve student reading. This is crucial to ensuring that OER textbooks have a positive impact on student learning.

Collectively, the study's findings indicate that student attitudes towards textbooks, their use of required works and reading skills, along with how instructors are teaching with OER texts are important factors in assessing the effectiveness of OER. Studies on OER effectiveness need to incorporate perspectives from research on student textbook use into their analysis. They must also address the issue of why instructors are not relying on required texts in their teaching, the role played by high textbook prices, and student reading skills in this phenomenon.

Conflict of Interest Statement

The Author declares no conflict of interest.

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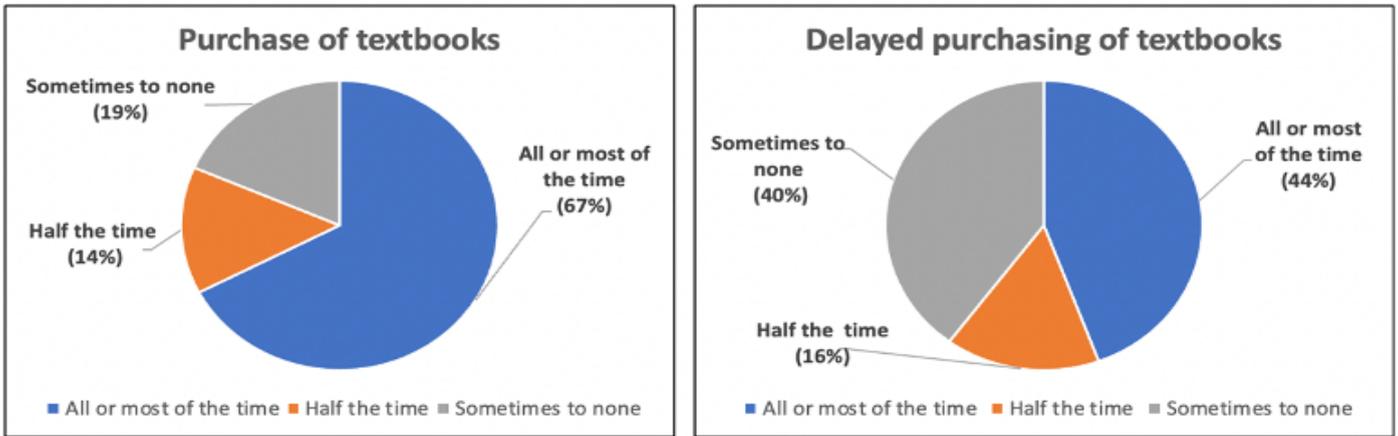
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Appendix

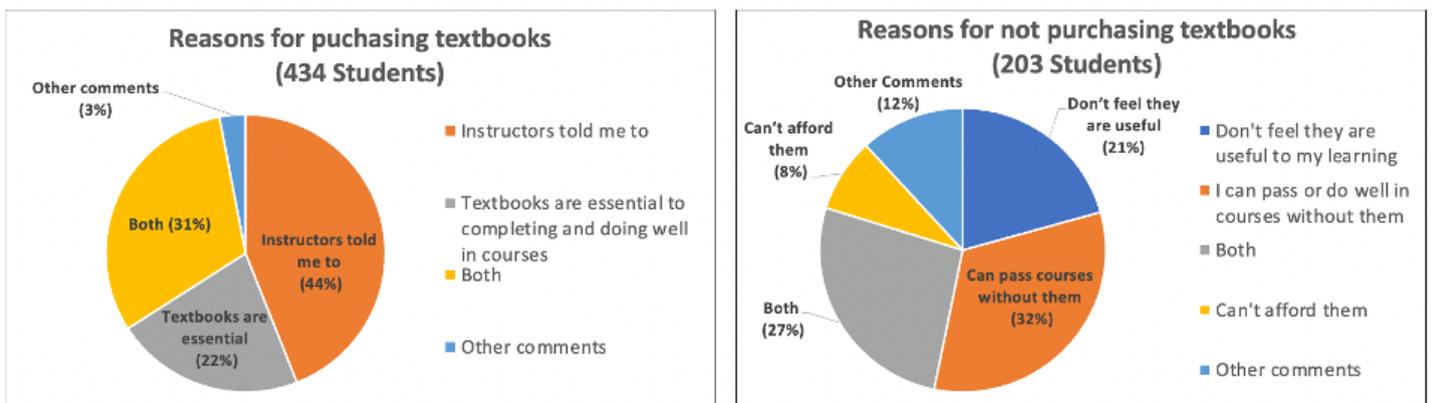
Appendix A. Full breakdown of student demographics

Course	Number of Responses	Lower-level Students (1 st , 2 nd year)	Upper-level Students (3 rd , 4 th year)	Under-represented Participants	First Generation Participants
PHYS 1.	429/600	236	193	65	54
PHYS 2.	40/60	22	18	1	6
MATH 1.	18/22	15	3	3	2
MATH 2.	14/18	11	3	2	1
COMP	29/50	1	28	2	8
SOC	43/49	35	8	2	3
ENGL 1.	51/60	3	48	4	6
ENGL 2.	34/40	1	33	2	0
EDUC	46/60	0	46	6	6
Total:	704/959	324	380	87	86

Appendix B. Student purchasing and delayed purchasing of textbooks



Appendix C. Student reasons for purchasing and not purchasing textbooks



Open Peer Review

Bourdages, L. (2022, October). [Review of the article, Do OER textbooks have value beyond cost savings? An analysis of student attitudes and faculty teaching strategies in an American university, by Y. Wu]. Journal of Open Educational Resources in Higher Education, 1(1), 105-108.
doi:10.13001/joerhe.v1i1.7201

Reviewer: Lauren Bourdages

Recommendation: Accept Submission

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

The topic discussed in this paper explores the effectiveness of open educational resources a key element in the open education umbrella. This topic is essential because it looks at OERs beyond just cost savings which is the most talked about element but not the most important. This is a meaningful conversation to have.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

The article follows a logical structure that I am used to seeing in an academic journal. The sections flow in the expected order and are all present.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the

author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

Applying methods from studies on textbook use is a novel approach to studying the effectiveness of OERs, I haven't seen this brought up very often and this is the first time I can remember seeing a full research study done in this manner. It's clear that the author understands the subject and is aware of previous work done in both OERs and student textbook use in general. The literature review was very thorough. I do wonder why the study was limited to only students in face-to-face courses, especially given the growth in online learning over the last few years. There are often radically different instructional design strategies used in online learning vs. in-class learning that lead to different types of textbook usage. The exclusion of this demographic without any explanation about limitations feels like a gap in the research. The conclusions logically flow from the literature review and study analysis.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

In terms of flow, I found the early part of the analysis section hard to read because of the way the test results were incorporated, they break up the flow in a way that makes it hard to understand the analyses being made.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

The article contributes a new understanding of an ongoing problem and does a good job of highlighting other areas that need to be explored and makes suggestions for how other researchers could explore them.

What are the stronger points/qualities of the article?

The conclusions drawn by this study are a highlight as is the construction of the study itself. The literature review is very strong and has a good breadth and depth.

What are the weaker points/qualities of the article? How could they be strengthened?

In the analysis section, the author mentions several types of test by name, specifically the Chi-Square, Cramér's V and Bonferroni tests, it would be beneficial to the reader if these tests were explained somewhere in the body of the article such as in side boxes or through hyperlinks. It's better for the reader if the author doesn't assume that they have prior knowledge of the tests they are using.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Very Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Sound

Overall Evaluation

2- Accept

Open Peer Review

Krueger, S. (2022, October). [Review of the article, Do OER textbooks have value beyond cost savings? An analysis of student attitudes and faculty teaching strategies in an American university, by Y. Wu]. Journal of Open Educational Resources in Higher Education, 1(1), 109-112.
doi:10.13001/joerhe.v1i1.7201

Reviewer: Stephen G. Krueger

Recommendation: Accept Submission

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

This article fits the journal scope perfectly by studying usage of OER in higher education. The topic is important because it takes an in-depth look at actual usage of OER by students and instructors, adding nuance and complexity to discussions that often focus solely on textbook costs.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

The article proceeds in a coherent and logical way that is consistent with the convention of scholarly publications.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the

author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

The methodology is sound and clearly described, including survey instruments and response numbers as well as analysis. The conclusions are tied to clearly explained data. Current, relevant sources are covered in the literature review and cited throughout the article.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

No concerns with the writing style or references.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

The article contributes valuable practical knowledge to the field. It adds an important angle that those working on OER need to be aware of, situating itself explicitly as an introductory study. The combination of OER research with textbook usage research is extremely valuable. The author includes the survey instrument and descriptions of its use in the article, which will make it possible for others to build on the research as well as learning from this example.

What are the stronger points/qualities of the article?

This article combines existing areas of study, on OER adoption and textbook usage, to add an important angle and level of nuance to research on OER. While it may be difficult for OER advocates to realize that these resources do not automatically solve all the issues that they are sometimes hoped to, the findings of this article are extremely important to learn from and build on. More fully understanding the practices of students and faculty will help realistically acknowledge and address barriers to education. It is especially interesting to consider how the history of exorbitant textbook costs has had long-term impacts on how students and instructors use all materials, regardless of cost or lack thereof.

What are the weaker points/qualities of the article? How could they be strengthened?

This is less of a weakness than a potential audience limitation. Many library workers and other OER advocates may not be accustomed to reading the kind of detailed data analysis built into this article. I do not think this should be removed, but including more quotes from the open-ended questions could help keep readers engaged and add a demonstrative element to the data.

The ideas for future research get a little buried in the broader Conclusions section; breaking those into a subsection would guide more focus to them.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Highly Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Sound

Overall Evaluation

3- Strong Accept

Open Peer Review

Schares, E. (2022, October). [Review of the article, Do OER textbooks have value beyond cost savings? An analysis of student attitudes and faculty teaching strategies in an American university, by Y. Wu]. *Journal of Open Educational Resources in Higher Education*, 1(1), 113-116. doi: 10.13001/joerhe.v1i1.7201

Reviewer: Eric Schares

Recommendation: Revisions Required

Scope, Objectives, Content

*Is the article in scope for *Journal of Open Educational Resources in Higher Education*? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?*

Yes, article is in scope for JOERHE. Deals directly with students and instructors using OERs.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

Yes, article is structured well.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

Methodology is sound and claims to be IRB-approved.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

Have some concerns with references, elaboration requested, etc. See attached file for full comments.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Yes

What are the stronger points/qualities of the article?

This paper looks at OER textbook usage, attitude, faculty emphasis, and textbook price to investigate if students are more likely to use a textbook that is freely available. Overall, this is a good exploration of an interesting topic and makes a valuable contribution to the literature.

What are the weaker points/qualities of the article? How could they be strengthened?

I did have a few unanswered questions however that I would like the author to further elaborate on before publication. Please see attached file for full comments.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Sound

Overall Evaluation

1- Weak Accept

Supplemental File Comments

This paper looks at OER textbook usage, attitude, faculty emphasis, and textbook price to investigate if students are more likely to use a textbook that is freely available. Overall, this is a good exploration of an interesting topic and makes a valuable contribution to the literature. I did have a few unanswered questions however that I would like the author to further elaborate on before publication.

Major issues:

A main unanswered question I have from this paper is related to faculty. Page 4 states that the nine courses which make up the dataset were taught by instructors who were OER stipend recipients. What criteria were used to award these stipends? Is it payment just to use an OER, or payment to help develop their own OER? A main conclusion of this paper is that student use of OER (or any textbook?) is highly dependent on instructor emphasis and effort to incorporate into the course; ENGL 1 & 2 used the OERs heavily, as evidenced by Figure 7. I found it very strange that instructors who were paid to use OER could simply add it to a Supplemental or Recommended Reading list, not fully incorporate it into the course, yet still be awarded the stipend money. “Textbook reading was not emphasized” (p. 12). So why did the instructors of MATH 1, 2, and COMP even apply for and get awarded stipends? More clarity on this would be appreciated.

Please change all pie graphs from 3D to a flat 2D view. There are numerous well-documented problems with interpreting this style of graph, and the third dimension does not add any visual encoding to the data.

Minor issues:

I found it strange to include so many citations into the same parenthetical (Introduction, Lit Review). Surely not *all* these references say the same thing? Do all six references in the Introduction agree on 82% of undergraduates not completing assigned readings? Same with page 3 “studies also surveyed how students feel about OER...” What do the studies say?

“In fact, there is a debate among instructional faculty...” citation is needed here.

In Lit Review, you have references to studies which show textbook usage is low even when students could afford them. This seems particularly relevant to this study. Please elaborate with some findings.

“Some studies have noted that at times OER can even lead to fewer students using...” Why? Please elaborate from the reference.

Survey questions: please define underrepresented backgrounds. Seems to be derived from Q7, but there is no further explanation. As this is a highly used datapoint in the analysis, more information is requested.

p. 10 “whereas other students are more likely to use textbooks a little to none” Should this specify *OER* textbooks, or all textbooks as a whole?

As mentioned above, it seems to me the main criteria is instructor emphasis. The strong usage in ENGL courses should almost single-handedly be the cause of the weak relationship found in STEM vs. non-STEM courses at the bottom of page 10. Seems to be almost a confounding variable. A follow up on instructor attitudes would be very interesting.

Figure 8: can the student choose only one option for reason for purchasing/not purchasing textbook, or multiple choices?

p. 15: perhaps rethink word choice of “reputation”

OER State Policy Discourse

Adding Equity to the Cost Savings Conversation

Casey McCoy-Simmons¹

Keywords: Open Educational Resources, Higher Education, Public Policy, Discourse Analysis

Abstract

In response to rising tuition, state disinvestment, and financial uncertainty over the years, open educational resources (OER) have been introduced as a solution to address the college affordability crisis (Colvard et al., 2018). The Scholarly Publishing and Academic Resources Coalition (SPARC) sees OER as not just a way to lift the financial burden of educational materials, but also as a path to improving teaching and learning, strengthening the economy, advancing societal goals, and breaking down barriers to education (SPARC, n.d.-b). State policymakers have created grant programs or other initiatives to incentivize the creation, use, or expansion of OER in an effort to decrease costs associated with postsecondary education. This raises the question of how state policy discourse defines the problem that then informs the solutions addressed in OER legislation and how introducing an equity discourse into OER policy making can strengthen efforts to remove barriers to higher education.

Introduction

The term “Open educational resources” (OER) was coined by the United Nations Educational, Scientific and Cultural Organization (UNESCO) at the 2002 forum on Open Courseware in Higher Education (UNESCO, n.d.). As the originator of the term, UNESCO’s (n.d.) definition is often directly cited or built upon to identify OER as: “teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions.” For a resource to be truly “open” the legal permission for use must allow users to: retain, reuse, revise, remix, and redistribute educational materials (Wiley, n.d.). The “5R’s” provides anyone with the ability to not only access these materials indefinitely (retain), but to also edit (revise), mix with other OER content (remix), present the content publicly (reuse), and share with others (redistribute). Limiting any of the 5R’s also limits the openness of materials, but disagreement in the open content community over the ability to include certain restrictions has created a variety of definitions that arguably weakens the common goal of open education (Cronin, 2017; Wiley, n.d.; Wiley et al., 2014). Cronin (2017) shares

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that using “open” as an umbrella term can be a strength as individuals have the flexibility to mold open education practices (OEP) and OER to their own needs, but this flexible definition can also weaken the open education movement by rendering the open content label as meaningless. There are also emerging definitions within open education, including varied definitions of OER, that can lead to redefining facets of the field of open education. Lambert (2018) proposes one such definition of open education that highlights the social justice benefits often left out of prior research:

Open Education is the development of free digitally enabled learning materials and experiences primarily by and for the benefit and empowerment of non-privileged learners who may be under-represented in education systems or marginalized in their global context. Success of social justice aligned programs can be measured not by any particular technical feature or format, but instead by the extent to which they enact redistributive justice, recognitive justice and/or representational justice. (p. 239)

Despite the subtle differences in the definitions of OER, a unifying practice when creating OER content is the use of an open license, such as a Creative Commons license, which includes the option of adding components to lessen or strengthen the accessibility – or openness – of educational materials (Wiley et al., 2014).

Because OER are published under an open license, OER can assist states with their initiatives to counter the high costs of costs of commercial textbooks. Several states have created grant programs or other initiatives designed to introduce and expand the use of OER in public postsecondary institutions. The growth of state policies incentivizing, or sometimes even directing, institutions to replace traditional textbooks with OER is in need of further study. More specifically, the discourse displayed in these policies is important to consider as it sets the tone for how each state defines OER, why OER is needed, and what problem OER will solve – which can vary by region (Placier, 1993). The purpose of the policy analysis in this paper is to 1) analyze the discourse state policymakers use in signed legislation promoting OER in higher education and 2) provide research-based policy recommendations for states pursuing or expanding on OER legislation.

Literature Review

Within a higher education context, OER has been introduced as an innovative tool with a record of increasing student retention rates and quality of student learning as well as decreasing students’ annual college costs (Bhattarai & Seid, 2020; Bliss, 2015; Colvard et al., 2018; Senack, 2014). Due to its cost savings benefits, OER is largely touted as a way to address the college affordability crisis, a crisis created in part by college tuition increasing at a faster rate than inflation almost every year since 1980 (Laderman & Weeden, 2020). The cost of replacing textbooks may seem minute compared to the cost of college tuition. However if all Introductory to Psychology courses in the United States adopted an OER textbook, approximately 1.6 million students would save up to \$160 million per year (Nusbaum et al., 2020). The high price tag of course materials is a primary reason why 65% of students surveyed in 2013 chose to go without a course textbook, even though 94% understood this decision could negatively

impact their grade (Senack, 2014). This is especially notable for low-income students who face greater difficulties in paying for textbooks on top of other tuition and fees (Colvard et al, 2018). Therefore, offering free or low-cost alternatives has been shown to produce even higher grades and decrease drop-out rates at a faster rate for students, especially low-income students. (Bhattarai & Seid, 2020; Bliss, 2015; Colvard et al., 2018). The same impacts from adopting OER have also been shown for first-generation and racially marginalized students (Nusbaum et al., 2020).

While research shows the same or increased student success outcomes (Fischer et al, 2015) and perceptions of educational quality in classrooms that traded in commercial textbooks for OER (Ikahihifo et al., 2017; Bliss et al., 2013), barriers still exist to challenge or prevent integrating OER into a sustainable higher education curriculum. In the United States, the use of OER has grown in popularity, specifically in higher education. This is partially due to increased interest by large foundations, like the William and Flora Hewlett Foundation, that help to fund state policy and higher education leaders in the pursuit of expanding access to and affordability of a college education (Bliss, 2015). Despite the worldwide interest and national funding of OER, many faculty and staff members within higher education still face barriers in creating, using, or expanding OER at their institutions (Hodgkinson-Williams, 2010). These barriers can vary across departments, institutions, and states, making a one size fits all approach to OER unfeasible. For example, while introducing OER policies can be a successful step in implementing OER in one institution, this could be detrimental in another that is less trusting of administration or relies more on a bottom-up approach (Cox & Trotter, 2016).

Despite the increasing visibility of the language of OER, textbook affordability, and equitable access to educational materials, there is limited research on OER accessibility and the impact of OER accessibility on equitable educational outcomes (Willems & Bossu, 2012; Navarrete & Luján-Mora, 2018). This holds especially true regarding research with a focus on usage and perception of OER by systemically marginalized students, including disabled, queer, trans, and racially marginalized students (Seiferle-Valencia, 2020). Bensimon (2018) identified the use of proxies, or race-evasive language like “low-income”, in equity and social justice conversations further harms racially marginalized populations. The push for disaggregated data that filters results by race, gender, class, and other social identities that can contribute to differing educational outcomes is one way to center the voices of Black, Indigenous, Latinx, and Asian people. Focusing on cost savings or the financial benefits of replacing commercial textbooks with OER, and the lack of disaggregated data within this research, may, therefore, overlook other identities or factors that can shape students’ ability to acquire educational materials (Katz, 2019).

Methods

To examine policymakers’ discourse that can further advance or hinder equitable outcomes in higher education, I employed policy discourse analysis (PDA) to analyze enacted legislation concerning OER in public postsecondary institutions. When viewed through a poststructuralist lens, discourse is an important tool that policymakers yield in order to create and maintain power as policymaking has historically been conducted within a positivist nature that separates the “expert” elites from the public

community (Foucault & Gordon, 1980; Sidney, 2006; Young & Diem, 2017). By rejecting language's ability to objectively describe reality, poststructuralism accepts the inability to control language as it fluctuates based on contextual social settings created by the dominant discourse (Allan, 2009; Bioland, 1995; Fairclough & Fairclough, 2012). Regarding this study, state policies were viewed as reflective of a greater social context, specifically the college affordability crisis. OER's primary purpose as a cost savings tool to fix this crisis is not an objective fact, yet the passage of legislation stating this has created a hierarchy where the dominant discourse defines the problem and resulting policy solutions. According to Derrida, the only way to break this hierarchy is to deconstruct the text with the goal of exposing binary oppositions that "exclude and devalue allegedly inferior terms or positions" (Bioland, 1996, p. 527). In deconstructing OER state policies, guided by a poststructuralist framework, the goal is to not replace the original hierarchy with a new, equally oppressive, hierarchical system – but to abolish the hierarchy of dominant discourse by accepting the social construction of language that is used to further marginalize students that policymakers are committed to serve (Bioland, 1996). Guiding this analysis of OER state policies are the following research questions:

1. What discourses do state policymakers use in signed legislation promoting OER in public postsecondary institutions?
 - a. How does this discourse shape the problem, solution, and intended impact of OER?
2. How can introducing a counter discourse strengthen or expand on state OER legislation?

I searched the Scholarly Publishing and Academic Resources Coalition (SPARC) OER State Policy Tracker for state policies that were signed into law to adopt, create, or expand OER across the state at public higher education institutions (HEIs). As a global member organization advocating for open access, open data, and open education, SPARC has tracked state policy activities concerning OER in the United States since 2015 (SPARC, n.d.-a). SPARC updates this list weekly during active legislative sessions and collects state policies enacted in previous years. At the time of data collection, the SPARC OER State Policy Tracker was last updated on February 10, 2021. Thirty states were found to have at least one existing policy, or activity in the current session, concerning OER in K-12 or postsecondary education. After an initial analysis, several themes emerged that excluded 22 states due to: lack of existing signed legislation; initiative that is not supported by a signed legislative bill; pertaining explicitly to K-12 schools or non-postsecondary institutions; or not implementing statewide adoption, creation, or expansion of OER at HEIs.

These exclusion criteria assisted in narrowing the analysis to policies currently in practice in order to stimulate ongoing discussions of the most interest to state legislators and higher education leaders (Kelchen et al., 2019). Analyzing discourse only in signed legislation, compared to analyzing previous bill versions and supporting legislative texts, created a focus on the policy currently put into practice. Policies that focused on a singular institution, or online degrees, were not included as they would be outliers within a discussion on statewide implementation. Even though statewide implementation was a top criterion, the actual adaptation of the policy was not analyzed as policies are not often implemented

exactly as intended and analyzing how an institution implemented each state policy was out of scope for this project (Kelchen et al., 2019). The resulting sample included in this analysis came from eight state policies (see Table 1 for more details on each state policy): Colorado (HB 1331), Connecticut (HB 7424), Minnesota (SF 2415), New Jersey (S768), Oregon (HB 2871), Oregon (HB 2729), Texas (SB 810), and Washington (HB 1561). Each policy text was linked from the SPARC OER State Policy Tracker to the corresponding state legislature website where the final, enacted and signed bill was downloaded in full.

Table 1
OER State Policies

State and Year	Policy	Main Purpose	State Oversight
Colorado, 2018	HB 1331	<ul style="list-style-type: none"> ● Establish OER grant program ● Establish OER council 	OER Council: <ul style="list-style-type: none"> ● Five faculty members; ● Three library professionals; ● One person enrolled as a student at a public institution of higher education ● One instructional design expert; ● One informational technology expert; and ● One administrator; ● AND executive director of the Department of Higher Education, commissioner of education, and state librarian

Connecticut, 2019	HB 7424	<ul style="list-style-type: none"> ● Establish OER grant program ● Establish OER council 	<p>OER Coordinating Council:</p> <ul style="list-style-type: none"> ● Statewide coordinator ● A faculty, admin, and staff member from University of Connecticut ● A faculty, admin, and staff member from regional community-technical college system ● A faculty, admin, and staff member from Charter Oak State College ● A faculty, admin, and staff member from Connecticut State University System ● A faculty, admin, and staff member an independent institution of higher education ● One student from any public or independent higher education institution
Minnesota, 2019	SF 2415	Establish Z-degree textbook program	Board of Trustees of the Minnesota State Colleges and Universities
New Jersey, 2019	S768	Expand the use of open textbooks and commercial digital learning materials	Secretary of Higher Education
Oregon, 2015	HB 2871	<ul style="list-style-type: none"> ● Establish OER grant program ● Employ an OER specialist 	Higher Education Coordinating Commission

Oregon, 2017	HB 2729	Establish an OER council	Higher Education Coordinating Commission; <ul style="list-style-type: none"> Stakeholders include “faculty, staff and librarians from public universities listed in ORS 352.002 and community colleges”
Texas, 2017	SB 810	<ul style="list-style-type: none"> Establish OER grant program State repository study proposal 	Texas Higher Education Coordinating Board
Washington, 2018	HB 1561	<ul style="list-style-type: none"> Establish OER grant program Multi-state partnership outreach 	Washington Student Achievement Council

PDA was the best strategy to pursue the research questions because it builds upon discourse analysis’s objective approach to identify, and better understand, the dominant discourse that enables systems of oppression to persist, with the goal of disrupting these inequitable practices (Allan & Tolbert, 2019). In line with Allan and Tolbert’s (2019) description of PDA as a grounded methodology, multiple stages of coding took place using both inductive and deductive coding to mitigate researcher bias (see Table 2 for coding examples). In the first stage, data was manually coded using Nvivo software where initial coding produced a list of proposed codes (Saldaña, 2014). Then, focused coding identified the most salient themes in line with the research questions (Allan & Tolbert, 2019; Saldaña, 2014). Four overarching

themes emerged from the data: what is being presented as the problem, what is the solution to the problem, what will be the desired result of this solution, and who holds power through this process. A closer analysis of each theme then led to identification of dominant discourses and “potential policy silences” in OER state policy texts (Allan & Tolbert, 2014, p. 144).

Table 2
Codebook

Codes	Text Example	Text Coded
Problem <ul style="list-style-type: none"> ● Textbook Costs – Ed Material Costs 	“Student expenditures on textbooks and other educational materials represent a significant portion of student educational costs, adding up to, on average, an additional twenty-two percent above the cost of tuition and fees for a first-year community college student” (Colorado).	Textbook Costs – Ed Material Costs
Solution <ul style="list-style-type: none"> ● Expand OER ● Multi-State Partnership ● OER Council or Committee ● OER Grant Initiative ● OER Replace Traditional Textbook ● State Funding ● Z-Degree 	“Ensure that the institution is making a good faith effort to provide open textbooks to students” (New Jersey).	Expand OER

<p>Desired Result</p> <ul style="list-style-type: none"> ● DFW Rates ● High Enrollment – Number of Students ● High Impact Courses ● Multiple Sections, Courses or Institutions ● OER Awareness ● Share OER Publicly ● Student Cost Savings 	<p>“Each report must include (1) the number of courses transitioned to using an open textbook resulting from the programs in this section, and (2) the total amount of student textbook savings resulting from the transitions” (Minnesota).</p>	<p>Student Cost Savings; Multiple Sections, Courses or Institutions</p>
<p>Who Has Power/Agency</p> <ul style="list-style-type: none"> ● Higher Ed Admin ● Higher Ed Faculty or Staff ● Higher Ed Institutions ● OER Council and/or Committee ● Policymakers – Government Leaders ● Students 	<p>“The board shall establish and administer a grant program to encourage faculty at institutions of higher education to adopt, modify, redesign, or develop courses that use only open educational resources... Under the program, a faculty member of an institution of higher education may apply to the board for a grant to adopt, modify, redesign, or develop one or more courses at the institution to exclusively use open educational resources.” (Texas)</p>	<p>Policymakers – Government Leaders; Higher Ed Faculty or Staff; Policymakers – Government Leaders</p>

OER Defined	The purpose of the program	Cost to Access
<ul style="list-style-type: none"> • Cost to Access • Public Domain – Open Access License 	<p>The purpose of the program is to encourage the use of low or no-cost open educational resources in Oregon’s post-secondary institutions of education (Oregon, HB 2871).</p>	

Results

Following data analyses, a dominant discourse of “cost savings” was identified as the lead reason for introducing each examined OER legislation. The policy solutions varied but tied back to the dominant discourse by focusing on the problems of high textbook costs, financial access to educational materials, and increasing college costs for students. This led to calls for implementing OER in high-enrollment and high-impact courses with the goal of achieving a high return on investment across public HEIs.

Problems and Solutions

Colorado was the only policy document that directly outlined a problem that needed to be fixed, but the solutions put forth in the other examined policy documents made clear that the dominant discourse was concerned with addressing the problem of high or increasing college costs. The introduction of Colorado’s HB 1331 stated that “student expenditures on textbooks and other educational materials represent a significant portion of student educational costs” and further mentioned that because of these costs “students often do not buy textbooks or course materials, resulting in poor academic performance.” Highlighting the use of OER at other HEIs that have helped reduce student costs, Colorado goes on to call for the expansion of OER at public HEIs. Similarly, Connecticut and New Jersey sought to expand OER. Connecticut specifically discussed identifying “high-impact courses for which open educational resources will be developed, converted or adopted” and promoted the use of OER across campuses. New Jersey not only wanted to expand OER, but also to ensure HEIs were making progress towards implementing OER in order to “achieve savings for students enrolled in the institution.” Another solution presented by Minnesota incorporated the expansion of Z-Degrees, or zero textbook cost college degrees, at three colleges within the Minnesota State Colleges and Universities system.

Intended Impact

Following the dominant discourse of high college costs, policy texts shared a dominant discourse of student cost savings as their intended impact. States not only declared cost savings as a key goal, but intended to see “significant savings” (Colorado and Connecticut) or “the highest level of savings” (New Jersey) as a result of OER expansion. To track these savings, each state that implemented a grant initiative required that participating HEIs reported student cost savings or prioritized grant funds based

on the potential to save students money. It was also common for policy texts to require HEIs to report the number of courses using OER, which followed the discourse of implementing OER in “high-impact” or “high-enrollment” classes. Minnesota required both of these metrics in their grant reports stating that reports must include “(1) the number of courses transitioned to using an open textbook resulting from the programs in this section, and (2) the total amount of student textbook savings resulting from the transitions.” On top of reporting student cost savings and number of courses, Colorado also requested HEIs applying for grants to submit how they intended to evaluate the use of OER. Outside of this request, the methods for evaluating use or impact of OER was not clear for any state. While states focused on similar outcomes, there was an absence of how to measure those outcomes.

Power in Discourse

The process of targeting OER expansion differed across each state as well as who would provide oversight for these initiatives. In Colorado, an OER council was established with the purpose of serving as a resource to and providing support for public HEIs to create and expand OER. Comprised of twelve members representing geographic diversity of the state, including one currently enrolled student, all members represented public HEIs. Connecticut had a similar makeup of council members, but included representatives from independent institutions, and the council’s main purpose was to solely oversee the OER grant process. Oregon, Texas, and Washington differed by granting their existing state higher education governing bodies oversight.

New Jersey stood alone in assigning the state’s Secretary of Higher Education the duty of managing the policy’s OER expansion plan. This plan was also unique in that it required HEIs to submit an annual report on their intent, or actions already taken, to “expand the use of open textbooks and commercial digital learning materials in order to achieve savings for students enrolled in the institution.” The Secretary of Higher Education would then evaluate these institutional reports to determine if they met the priorities outlined in the policy text. A final report from the Secretary would cover these findings as well as track “...which institutions of higher education are offering textbooks” and be submitted to the New Jersey Governor and Legislature.

Some of these initiatives were created with a broad focus, like Oregon (HB 2871) that encouraged “the use of low or no-cost open educational resources”, but the majority of states made OER grants inclusive only to faculty. For example, Texas declared these grants were meant to “encourage faculty” to incorporate OER into their courses. Washington and Connecticut followed suit as they designed each grant to support faculty in their pursuit of creating, adapting, or adopting OER. In the creation of Minnesota’s Z-Degrees, faculty were also identified as those who would receive opportunities and incentives “to identify, review, adapt, author, and adopt open educational resources.”

No matter who was appointed to oversee the OER grant initiative, or who was allowed to access grant monies for OER expansion, state legislators and government leaders were key in determining who was included in each policy text. Both Colorado and Connecticut designated the executive directors of their state higher education departments control of appointing members to each OER council. As stated earlier, New Jersey’s Secretary of Higher Education was the sole person overseeing their OER initiatives

while Oregon, Texas, and Washington’s higher education commissions took the lead. Even with dispersing oversight duties outside of the legislative body, all states required a report, typically submitted on an annual basis, sent to state legislators and government leaders. Texas’s reporting requirement included submitting a report covering key policy metrics to “the governor, lieutenant governor, speaker of the house of representatives, and each standing legislative committee with primary jurisdiction over higher education.”

Defining OER

While all policy texts in this study advocated for the expanded use of OER, how states defined this term varied (see Table 3 for states’ OER definitions). Core pieces of the UNESCO (n.d.) definition were seen across policies. For example, Colorado, Minnesota, Oregon, and Texas all defined OER as “teaching, learning, and research resources” that resided in the public domain. On the other hand, Colorado detours from UNESCO’s “no-cost” requirement by stating that resources could be available “for free or very low cost.” Connecticut also added a financial value to OER as long as it was “lower than the market value of the printed textbook or other educational resource.” While New Jersey’s policy defined OER as being freely accessible to the public, it also called for an expansion of programs to “reduce the cost of commercial digital learning materials.”

Table 3

States’ OER definitions

State Policy	OER Definition
Colorado	"Open educational resources" means high-quality teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits free use or repurposing by others and may include other resources that are legally available and available to students for free or very low cost. Open educational resources may include full courses, course materials, modules, textbooks, faculty-created content, streaming videos, exams, software, and other tools, materials, or techniques used to support access to knowledge.

- Connecticut "Open educational resource" means a college level resource made available on an Internet web site to be used by students, faculty and members of the public on an unlimited basis at a cost lower than the market value of the printed textbook or other educational resource, including full courses, course materials, modules, textbooks, streaming videos, tests, software and other similar teaching, learning and research resources that reside in the public domain or have been released under a creative commons attribution license that permits the free use and repurposing of such resources.
- Minnesota "Open educational resources" are high-quality 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 repurposing by others, and may include other resources that are legally available and free of cost to students. Open educational resources include

course materials, modules, custom and open textbooks, articles, faculty-created content, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge.
- New Jersey "Open educational resource" means an educational resource that is licensed under an open license and made freely available online to the public.
- Oregon "Open educational resources" means teaching, learning and research resources that: (a) Reside in the public domain or that have been released under an intellectual property license that permits their free use and repurposing by others; and (b) Conform to the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) and to any additional accessibility standards established by the Higher Education Coordinating Commission by rule.

Oregon	[no definition was included as this bill builds on top of, and references, HB 2871]
Texas	"Open educational resource" means a teaching, learning, or research resource that is in the public domain or has been released under an intellectual property license that permits the free use, adaptation, and redistribution of the resource by any person. The term may include full course curricula, course materials, modules, textbooks, media, assessments, software, and any other tools, materials, or techniques, whether digital or otherwise, used to support access to knowledge.
Washington	"Open educational resources" means freely accessible, openly licensed educational textbooks, documents, materials, and media that reside in the public domain for free use and repurposing for the intention of teaching, learning, assessing, and researching.

Discussion

As seen in state policy texts over the last several years, the dominant OER discourse focuses on the cost savings potential. This discourse is likely to continue as college affordability remains a policy issue that has been compounded by the economic impact of COVID-19 (Laderman and Tandberg, 2021). But what has been left out of the policy conversation is the equitable impacts for marginalized students, specifically students of color, when replacing commercial textbooks with OER alternatives. This creates a policy silence that evades inequities based on race since the dominant cost savings discourse centers around low-income students without acknowledging the income disparities between racially marginalized and white students (Kochhar & Cilluffo, 2018; McIntosh et al., 2020). Current evidence suggests that access to free and widely available OER materials can have a greater impact on student outcomes and success rates for students of color (Colvard et al., 2018; Nusbaum et al., 2020), but more studies with disaggregated data are needed. By naming the racial inequities in higher education and the positive impact of OER on students of color, policymakers can signal that collecting data beyond basic cost savings metrics is an important measurement of OER success (Stone, 2012). Without this knowledge, OER implementation can still ease student debt, but it may not benefit the students who need the financial assistance the most if those students are invisible in the state policy discourse.

Policy Recommendations

The following four policy recommendations are a result of the key findings from the initial analysis:

College affordability crisis: who is being impacted and who will benefit from OER

In analyzing OER state policies for dominant and counter discourses, cost savings (dominant) was mentioned in all seven while equity (counter) was never mentioned once. By naming educational inequities in the policy process, policymakers can signal that increasing both education and equity are worthy policy goals (Stone, 2012). Prioritizing OER at institutions and in classrooms with target student populations that could benefit the most from free and accessible OER on day one of classes, versus only focusing on high enrollment courses, can continue to work towards Nusbaum's et al (2020) conclusion that OER can provide a high-quality education while also serving as an educational equity tool.

Broaden metrics to track outcomes and success of OER implementation

Currently the main measurement of OER success is the total student cost savings that is maximized by replacing high-cost textbooks in high-enrollment courses. Many policies and institutions also include DFW (students who receive a D or F grade or who withdraw) rates to measure the success of OER implementation. What these measurements miss are how different populations of students may be reacting to OER. Cole (2010) argued for disaggregated data in the classroom due to the tendency to overgeneralize student-faculty interactions for minority students. This argument can also be applied to the use of OER in the classroom, as students from different racial and ethnic minority groups bring various lived experiences to higher education that need to be accounted for in the data. Including disaggregated data (race, gender, student status, etc) can not only highlight these differences, but better inform higher education leaders and policymakers how OER shapes student outcomes and success across our diverse student populations.

Expand seats at the table: Diversify stakeholders by reaching outside of public HEIs.

Public higher education institutions are overwhelmingly represented in OER councils and task forces, while students, community members, independent institutions, and K-12 educators are missing. Washington had the broadest representation by appointing the Washington Student Achievement Council (WSAC) to take charge of the OER grant pilot program. WSAC consisted of one representative from each education sector – non-profit HEIs, four-year HEIs, community and technical colleges, and K-12 institutions – as well as five citizens, including a current student. This can be an example for how other states can include a variety of educational professionals as well as stakeholders outside of HEIs to contribute to a more community centric vision of open education. Also, the inclusion of private universities would add additional voices from HEIs serving a growing range of college students.

Standardize the definition of OER

The UNESCO definition of OER is a global standard for freely accessible and adaptable resources that is obscured in policies adding an access or “low cost” fee to OER. Assigning a cost, even a small amount,

to accessing OER not only alters the intended use and definition of OER, but disregards the financial and opportunity cost students may still accrue that negates potential equitable outcomes of using OER.

Conclusion

This study showcases the significance of how policy discourses have the power to define policy problems and influence the development of solutions addressed by OER and affordable course materials legislation. The policies prioritize OER as a cost savings tool rather than as a tool for increasing education equity. By introducing a critical framework to policy (re)formation, this research aims to promote policy discourse that breaks down the dominant power structure that perpetuates the dominant discourse to better leverage the knowledge and lived realities from groups outside of government offices (Sidney, 2006). Without this change in discourse, OER implementation can still ease student debt, but it may not benefit the students who need the financial assistance the most if their interests and needs are not considered in the state legislation process.

Conflict of Interest Statement

The author has no conflicts of interest.

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Open Peer Review

Gumb, L. (2022, October). [Review of the article OER state discourse: Adding equity to the cost savings conversation, by C. McCoy-Simmons]. Journal of Open Educational Resources in Higher Education, 1(1), 137-140. doi:10.13001/joerhe.v1i1.7183

Reviewer: Lindsey Gumb

Recommendation: Revisions Required

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

This article is certainly in scope for JOERHE and provides important discussions highly relevant to open education.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

Yes, the article proceeds logically. Recommended structure and section guidelines - I would suggest adding Introduction and Literature Review headings to what you already have written as well as a Conclusion.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

The overall methodology is sound, however, there is one glaring issue. "... each text must include and define the term "open education resources" in order to set parameters on what resources were being promoted and how those resources were being determined. How a policy defined OER was not a factor as long as the phrase was used." -- This is the weakest quality of the methodology. It's confusing that one requirement was that the policy included and defined the term OER but that the definition wasn't taken into consideration. By not better understanding how the policies defined OER, the New Jersey legislation was used in the analysis. New Jersey's legislation is extremely problematic because, as the author quotes in the article, the state's legislation is intended to "expand the use of open textbooks and commercial digital learning materials in order to achieve savings for students enrolled in the institution." This particular legislation conflates OER with inclusive access, and allows institutions to use either to meet their savings goals. This legislation has been pointed out as a poor example and a "lesson learned" for the Open Ed community.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

This article flows well and is beautifully written. It's easy to understand with minimal policy jargon.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Yes! The article references state legislation and makes it easy to understand.

What are the stronger points/qualities of the article?

This paper offers a policy analysis, which the field of Open Education desperately needs more of! We need more understandings of how and why OER policy is crafted as well as what makes it work well (or not). I'm so excited for this paper and its potential impact.

What are the weaker points/qualities of the article? How could they be strengthened?

Please see my above notes in the methodology section.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Very Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Highly Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Highly Sound

Overall Evaluation

3-Strong Accept

Open Peer Review

Tan, X. (2022, October). [Review of the article OER state discourse: Adding equity to the cost savings conversation, by C. McCoy-Simmons]. Journal of Open Educational Resources in Higher Education, 1(1), 141-144. doi:10.13001/joerhe.v1i1.7183

Reviewer: Xiaoqing Tan

Recommendation: Revisions Required

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

The article is in scope for the Journal of Open Educational Resources in Higher Education. The topic discusses the significance of adding equity to the cost savings conversation in the OER state policy discourse, which is of great importance and highly related to open education, open data, open access, etc.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

The article has a clear structure and is easy to read, although it does not strictly adhere to the recommended structure. The article does not seem to have formal introduction and literature review sections. Instead, it copy-pastes the abstract as the introduction followed by a section called “Guiding Perspectives”. However, this issue can be addressed by expanding the abstract to include more details and incorporating the current “Guiding Perspectives” section.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

The article intends to examine existing state policies and includes reasonable exclusion criteria citing papers in current open educational practices to narrow the analysis to the most relevant state policies.

The article employs policy discourse analysis (PDA) to analyze enacted legislation concerning OER in public postsecondary institutions and provides a clear data analysis flow. However, it would be better if the author mentions or compares PDA with other previously established methods of policy analysis, e.g. [1] and [2].

[1] Bertrand, M., Perez, W., & Rogers, J. (2015). Unmasking policy insiders' discourses and discursive in upholding and challenging racism and classism in education. *Education Policy Analysis Archives*, 23(93), 1–30. <https://doi.org/10.14507/epaa.v23.2068>

[2] Suspitsyna, T. (2012). Higher education for economic advancement and engaged citizenship: An analysis of the U.S. Department of Education discourse. *Journal of Higher Education*, 83(1), 49–72. <https://doi.org/10.1353/jhe.2012.0003>

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

The article has a clear structure with a proper format of reference.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

The article provides policy recommendations based on their findings and discusses in deep with multiple up-to-date references, which includes but is not limited to diversifying stakeholders by reaching outside of public HEIs, standardizing the definition of OER, and broadening metrics to track outcomes and

success of OER implementation. It is clear that the article contributes knowledge or practical examples that will inform/improve others' practice or education.

What are the stronger points/qualities of the article?

The article analyzes the equity issue in the current practice of OER state policy discourse, which is no doubt an important and urgent topic that needs to be emphasized and enhanced.

The article has a clear structure and is easy to read with multiple practical recommendations, which helps improve the current practice in OER

What are the weaker points/qualities of the article? How could they be strengthened?

As mentioned above, it would be better if the author could discuss more previous related methodology.

There is no figure or table presentations in the article. The quality of the article would be much improved if the author could find a way to visualize the findings.

It would be better if the author could discuss the data access of the data used for analysis. Given that the Journal of Open Educational Resources in Higher Education is a journal emphasizing open data, providing links or information about data from SPARC OER State Policy Tracker may help encourage more future studies.

The introduction and related work parts could be addressed by expanding the abstract to include more details and incorporating the current "Guiding Perspectives" section.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Very Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Highly Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Sound

Overall Evaluation

2-Accept

Understanding Mathematics Instructors' Perceptions of OER

A Mixed Methods Study

Amie Freeman¹

Hengtao Tang²

Jade Geary³

Keywords: Open Educational Resources, pedagogy, mathematics, needs assessment, barriers

Abstract

The adoption of open educational resources (OER) in an institutional setting has been shown to reduce the cost of course materials for students, minimize inequities, and allow instructors to customize course materials. This study tapped into instructors' perspectives of limited adoption of OER in a Mathematics department at a large university in the Southeastern United States. A convergent mixed-methods study was conducted to determine how Mathematics instructors used course materials, how OER were perceived within the Mathematics department, and to gauge barriers to the adoption of OER. Quantitative and qualitative data were collected by a preliminary survey administered to the Mathematics department and along with follow-up semi-structured interviews with voluntary faculty participants. The results show that numerous barriers deter Mathematics faculty from the use of OER including content quality, time concerns, and difficulties customizing content. An additional theme derived from the interviews was that textbook adoption for the lower-level mathematics courses is often determined by a department-level committee. However, mathematics instructors have attempted to integrate OER in their teaching. The findings of this study provide practical implications for raising mathematics instructors' awareness of OER and identify an action plan for implementing OER in mathematics classrooms.

Introduction

Open Educational Resources (OER) are openly licensed educational materials that allow for user customization at no cost (Hilton, 2016). These resources can help students who cannot afford expensive

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course materials to remove financial learning barriers, especially those from low-income communities and Pell Grant recipients (Colvard et al., 2018). In recent years, open course materials have been gaining popularity among colleges across the United States (Spilovoy et al., 2020).

Since 2015, our institution, the University of South Carolina, has coordinated an OER initiative. This initiative aims to help faculty become comfortable with using OER in their courses and to save students money by providing access to no-cost course materials, including OER and library-licensed content. Despite the institutional success of the OER initiative, some departments tend to still rely heavily on traditional textbooks. Numerous courses offered by the Department of Mathematics are taught with commercial texts and digital courseware. Many students, regardless of major, are required to take Mathematics courses to fulfill their graduation requirements. If affordable learning resources were adopted within the department, especially in high-enrollment courses, the potential cost savings for thousands of students annually would be tremendous.

To better serve the pedagogical goals of instructors, and the learning and financial needs of students, we wanted to know under what circumstances instructors select OER over commercial content, as well as the hardships and difficulties that exist in the selection and integration of OER into syllabi. In this article, we will discuss the implementation and results of a survey developed to understand the use of OER and commercial textbooks in the Mathematics department of our institution.

Literature Review

The rise of open educational resources (OER) can be dated back to UNESCO's 2002 Forum on Open Courseware when the term "OER" was initially coined. According to UNESCO (2012), OER includes:

...teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions. (p. 1)

Advantages to the use of OER stem from their innate characteristics; they are free, open, and customizable. In contrast to the increasing price of traditional textbooks, OER are advantageous in affording educators' and students' free access to a wide range of educational resources, which has the potential to significantly reduce the financial burden for students to attend college (Bliss et al., 2013; Hilton et al., 2014). Furthermore, since OER are typically shared under the terms of Creative Commons licenses, OER can be adopted in a variety of educational contexts with minimal concerns regarding copyright restrictions (D'Antoni, 2009; Hilton et al., 2013, 2014). For customization, OER provides users with permission to retain (e.g., save a copy), reuse (e.g., use a portion of or the whole materials in another context), revise (e.g., make needed changes), remix (e.g., combine two resources), and redistribute (e.g., share materials in a class) available resources in line with their needs (Wiley & Hilton, 2018). Another advantage of OER is the time-effectiveness of access to updated resources since revised versions become immediately available for use without waiting for long publication cycles (Kimmons, 2015).

There are numerous potential benefits to adopting OER. Improving learner achievement is one of the primary goals for instructional interventions in educational settings. Whether the use of OER has improved or inhibited student performance in college courses has garnered much attention. Evidence that OER decreased college students' educational costs without harm to their course performance has been well documented with the use of OER in college-level courses (Cozart, Horan, and Frome 2021; Jaggars, Rivera, and Akani 2019; Schick and Marklein 2013; The College Board 2013). Some researchers referred to students' course grades or exam scores in determining whether OER improved student performance. Grewe and Davis (2017) indicated the use of OER was positively correlated to students' final grades in an online history course. Clinton (2018) found students using OpenStax textbooks in an Introductory Psychology course spent less money on course materials and performed slightly better than those using traditional textbooks. Ross et al. (2018) also noted no significant difference in the average grade existed between two offerings of a college-level introductory sociology course, one of which used OpenStax textbooks while the other taught with commercial counterparts. Colvard et al. (2018) reported Pell Grant recipients had a significant increase in final grades and marked fewer fails and withdrawals, confirming the effectiveness of OER in promoting educational equity. This has been of particular importance during the COVID-19 pandemic when students have not had access to shared textbook programs (e.g., course reserves) often housed at a college library.

Given those advantages of OER, faculty who have used OER provided positive remarks. In a meta-analysis of articles on OER published between 2015 and 2018, Hilton (2020) recapped that faculty consistently perceived OER as the same quality as, or better, than traditional commercial textbooks. In a white paper published by The California OER Council (2016), a majority of sixteen faculty participating in the pilot study expressed positive perceptions of using OER, seven of whom rated OER better than traditional textbooks. Delimont et al. (2016) interviewed thirteen college instructors about their preference for using different types of textbooks for teaching, twelve of whom preferred OER over traditional textbooks. Similarly, Abramovich and McBride (2018) found almost all faculty favored the use of OER for their college-level courses. The faculty's perception of OER influences their decisions to accept OER in their courses, but the faculty's positive perception of OER may not necessarily incur effective teaching (Hilton, 2020).

It is noteworthy that, given that anyone can publish OER, OER need to undergo verifications and curations before being implemented in courses to ensure students learn effectively. Free-standing OER without any pedagogical strategies cannot empower students with specific expertise desired in a domain. To provide accessible resources, screening and then adapting available OER to support instructors' pedagogical demands are required (Hilton et al., 2014). As such, librarians and instructional designers have provided services to support the implementation and use of OER (Reed & Jahre, 2019), ranging from financial allocations for the creation of OER to the provision of learning materials surrounding the use of OER.

Despite support, barriers still exist when it comes to implementing OER across campuses. Various studies have been completed to explore the barriers that faculty face and the majority of them have the same themes (Martin & Kimmons, 2020; McGreal, 2019). McGreal (2019) explored these barriers through a survey encompassing thirteen higher education institutions. McGreal's survey (2019) revealed common frustrations and concerns that faculty have when it comes to electing OER. One such issue is the amount of time that it takes to locate and determine the quality of OER (Martin & Kimmons, 2020; McGreal, 2019; Taylor & Taylor, 2018). Another issue was the lack of technical knowledge and

understanding that faculty possessed that would be needed to implement OER (Martin & Kimmons, 2020; McGreal, 2019). A third issue, which is a common one, is that of navigating copyright issues when utilizing OER (Martin & Kimmons, 2020; McGreal, 2019). In general, faculty awareness of OER was also an issue (McGreal, 2019). Martin and Kimmons (2020) also found that faculty had limited working knowledge of what OER were but did show enthusiasm for wanting to learn more about them. Yet, when they went to implement the 5Rs, they were often frustrated by the technical skills needed to do so (Martin & Kimmons, 2020). Due to the various skills needed to implement OER, it is recommended by various articles to have a team consisting of various personnel (i.e., instructional designers, librarians, technology support, etc.) to help implement OER across campuses. (Ren, 2019; Taylor & Taylor, 2018).

When looking specifically at the area of Mathematics OER, studies primarily focused on cost savings or effectiveness. Chiorescu (2017) implemented a lower-cost course software for a math course which increased course savings for students and raised grades compared to previous courses. Kersey (2019) found no significant increase in final grades between a proprietary calculus course and an OER calculus course, but did see an increase in the homework scores of students using OER. Due to the gap in the literature around OER and college-level mathematics, we wanted to further explore perceptions of OER, understanding of OER, and use of OER by Mathematics professors.

Methods

We utilized a convergent mixed methods (Cresswell and Plano Clark, 2017) approach to answer our research questions. A convergent mixed methods design was selected because it allowed us to collect our quantitative and qualitative data at separate times and to analyze them separately (Creswell, 2014). Quantitative data was collected to develop an understanding of instructors' awareness of OER. Qualitative data was collected to provide additional insights to explain and extend quantitative results. Once all of the data were collected, we were able to make more informed inferences by integrating findings from two data sources than what one method of data collection alone would have provided (Creswell, 2014).

For this study, we chose to focus on a department on campus that the vast majority of students move through for the general education requirements. Given the gap in the current literature about using OER in college-level math courses, we selected the Mathematics department to contribute to the theoretical implications and practical impact of OER. A preliminary survey was sent to the email lists held by the Libraries' Mathematics liaison to ascertain instructor perspectives on student access and availability of course materials. The survey was modified based on the instrument developed by Jhangiani (2017) in order to reflect its applicability to mathematics courses and our institution. The survey consisted of four sections: (1) eligibility, (2) demographics, (3) textbooks, and (4) open educational resources. Demographic information (see Table 1 for demographics), such as how long the instructors have been teaching, the modality of their courses, and the textbook selection process were collected. An invitation was also included to solicit participants for our follow-up interviews. This survey was sent to 39 instructors and six of them responded to our survey. Descriptive statistics were used to process quantitative data to present a description of math instructors' awareness of OER.

Table 1
Demographics

Instructor	Years Taught	Status	Participated in Interview
P1	> 30	Associate Professor	Yes
P2	1 - 10	Associate Professor	Yes
P3	> 30	Professor	Yes
P4	11 - 20	Associate Professor	Yes
P5	11 - 20	Professor	No
P6	1 - 10	Professor	No

A total of four instructors volunteered to complete a follow-up interview. A series of interviews were then conducted via Microsoft Teams. The interviews were semi-structured which allowed researchers to address a preset list of questions and also ask follow-up questions to provide additional information (Creswell, 2014). Sample interview questions included items such as “What is the selection process for the course materials you use?” “What was your experience using OER (if applicable)?” and “What support would you need or expect when using OER?.” Each of the interviews was 45-60 minutes long. All interviews were recorded and then transcribed through the software program Temi before being coded to determine the hardships and needs surrounding the availability and access of course materials within the Mathematics department. For qualitative data analysis, inductive analysis (Saldana, 2021) was applied via two cycles of coding. Open coding (Saldana, 2021) was applied for the first cycle to assign codes and revise or replace existing codes if needed. Pattern coding (Saldana, 2021) was used to compare codes generated in the first cycle to solicit categories and themes about participants’ perceptions of OER. To ensure the rigor and trustworthiness of qualitative findings, peer debriefing was conducted with two OER scholars (Spall, 1998). Also, rich descriptions from the participants’ interview quotes were provided to reinforce the rigor of the findings (Creswell, 2014).

Results

Demographics

All respondents were tenured professors with the ranking of either Associate Professor or Professor. Each respondent was solely responsible for the decision of textbook adoption for their courses but, in the qualitative interview, they mentioned that there is a textbook adoption committee in the Department of Mathematics that determines the textbooks for lower-level mathematics courses. Those courses may be taught by graduate assistants, adjuncts, or other non-tenure-track professors. Those courses were open to around 100-150 students before the pandemic. For higher-level math courses, the instructors who are tenure-track or tenured usually have a smaller class size. From the demographics portion of the study, we found that:

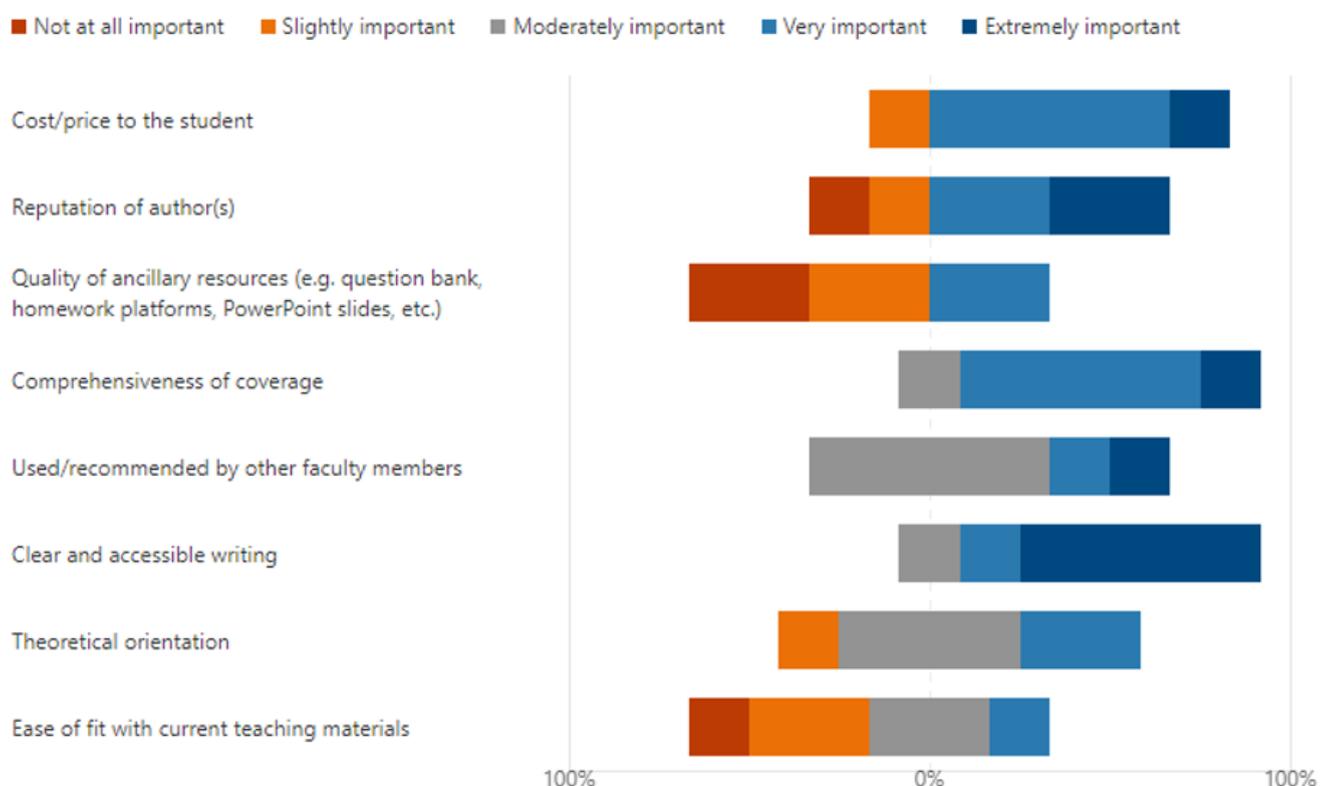
- Only one out of six instructors have not required students to purchase an access code for an online resource that comes bundled with a required textbook;
- During the past three years, only one instructor often (per semester) received queries from students about whether they really needed the required course textbook;
- Only two out of those six instructors teach at least one undergraduate/graduate course without a formal textbook;
- A majority of the instructors (n=4) assign students work that can only be completed with the purchase of an online access code or homework system.

Textbook Adoption

When asked how important each of several factors were when selecting a required textbook (Figure 1), instructors provided a range of responses. Clear and accessible writing was the most important factor for the six math instructors. Other leading factors were the comprehensiveness of content coverage and the cost and price to the students. The quality of ancillary materials was ranked of least importance.

Figure 1

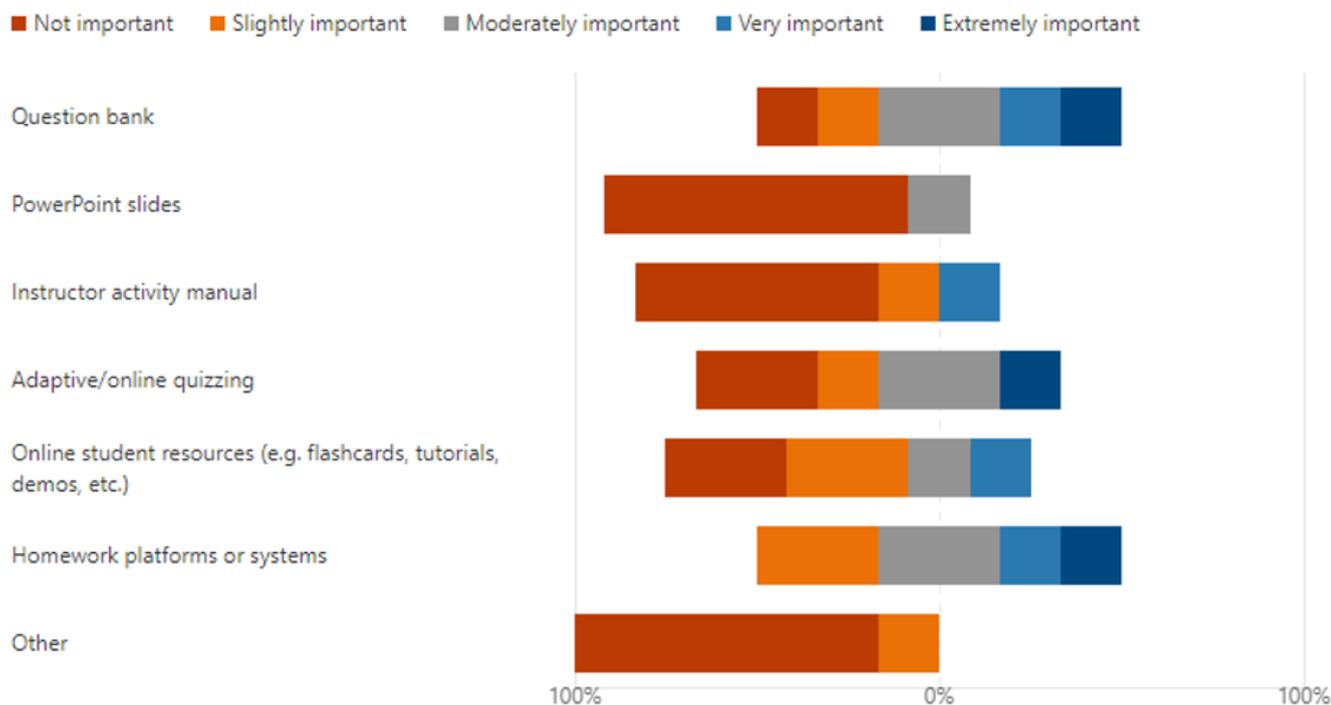
Responses to “When selecting a required course textbook, how important are each of the following factors to you?”



A follow-up (Figure 2) question asked about the importance of various ancillary resources to the instructors' teaching. Overwhelmingly, the availability of homework platforms/systems and question banks ranked as the most important resources for instruction, while PowerPoint slides and instructor activity manuals were ranked as the least important.

Figure 2

Responses to “How important are the following ancillary resources to your teaching?”



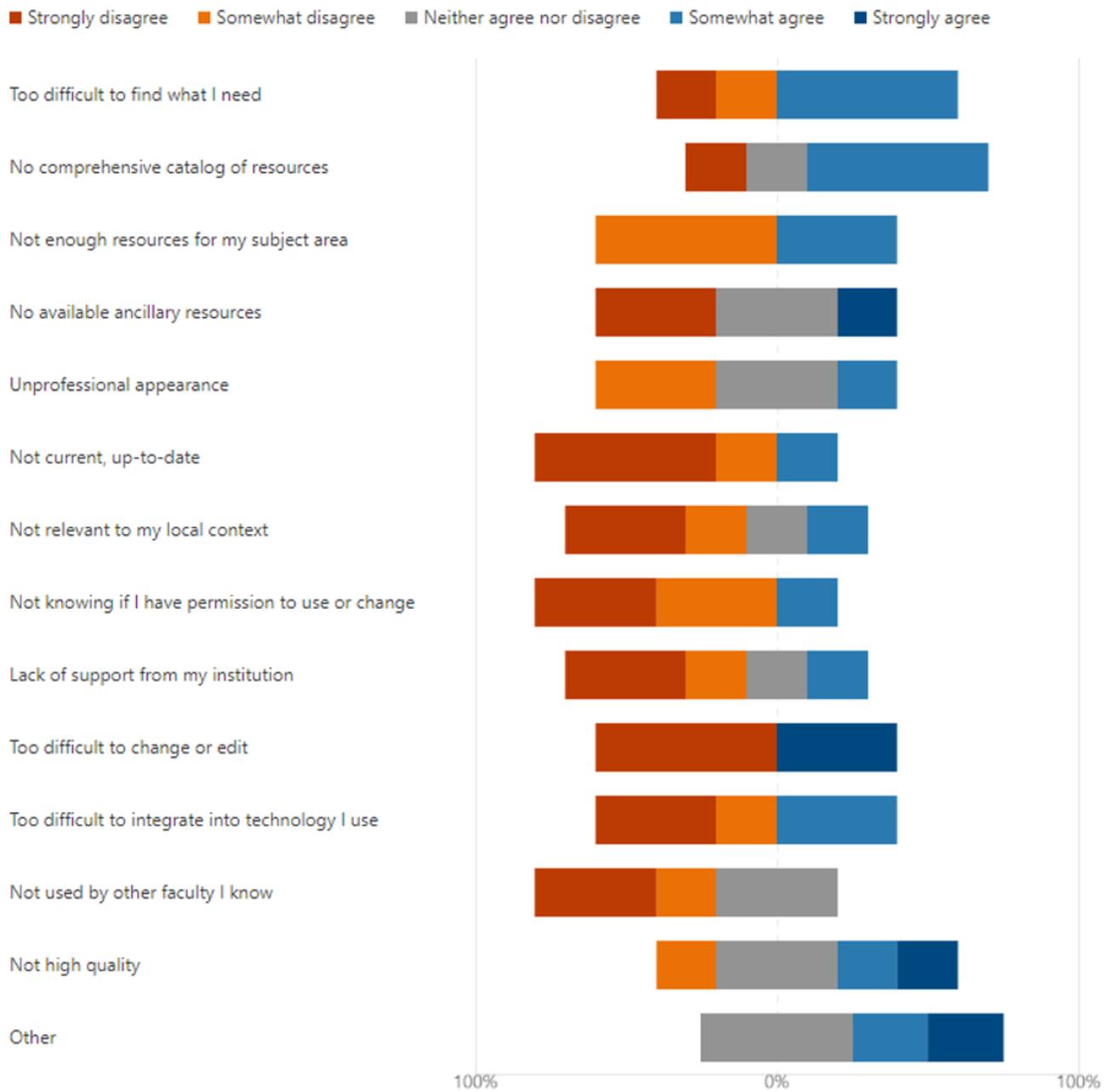
Open Educational Resources

Four out of six responding instructors were aware of the existence of open educational resources but only two of those who were aware of OER had used them in their courses. The other two who were aware of OER understood how OER could be used in the classroom, but had not adopted them for use. The two remaining instructors had heard of OER but did not know much about them.

When asked about the deterrents to the use of OER (Figure 3), the most important deterrent was the perception that OER are “not high quality.” This viewpoint was also reflected in our interviews. In contrast, “not current, up-to-date” was the least important deterrent preventing math instructors from using OER.

Figure 3

Responses to “If you are aware of OER, to what extent do you feel that the following are deterrents to the adoption of OER in your courses?”



Qualitative Themes

Three themes describing Mathematics instructors’ perception of OER emerged from the analysis of the interview transcripts: 1) Textbook adoption for the lower-level mathematics courses is determined by a department-level committee; 2) Math instructors attempted to integrate OER in their teaching; and 3)

There are some barriers in the integration of OER in math instructions. The following is a description of the themes and examples of faculty perceptions from the transcripts.

Theme 1: Textbook adoption for the lower-level mathematics courses is determined by a department-level committee.

This theme described participants' experience with decision-making about textbook adoption in college-level math courses. Two categories subsumed this theme, including the committee's decision and no control over cost.

Committee's decision

This category describes the participants' awareness that the textbook adoption decision for most entry-level courses in the mathematics department is made by a department-wide committee. In contrast, for some upper-level math courses, the instructor chose the textbook solely on their own.

P1: For some of the lower-level courses, it's kind of a committee and departmental decision. So I participate in that process, but for upper-level classes, you know, it's my choice.

P2: For our very low division classes, there's the department as a whole has decided on textbooks that are to be used by the instructors, and this happens at a committee level.

No control on cost

This category describes the participants' perception that instructors teaching lower-level math courses have no control over textbook costs. Participants generally agreed that the costs may not be the primary concern for the committee when selecting the textbooks. Even though some instructors wanted to select a different textbook, it wasn't always possible as the course information was linked with the school bookstore so that students could purchase books directly.

P2: Well, one of the issues is that it sets the bookstore automatically, I have no power over that even.

P3: And for some of the people who are involved with the selection process, all of that ancillary stuff is important because they're adjuncts or part-time instructors or something. And they're teaching hundreds of students compared with me teaching dozens.

Theme 2: Math instructors attempted to integrate OER into their teaching.

This theme described participants' efforts to integrate OER into their classes. The interviewed participants had used or at least heard about OER before and shared their experience with OER. Two categories were discussed below.

Considering whether the value of textbooks matched their prices

The participants shared that whether the values of textbooks matched their price was an important motivation for them to consider adopting external resources, such as OER. P1 mentioned that the content in the textbooks drove him to look for other options. Similarly, P2 echoed that there was a gap between the quality of the service provided by the textbook publishers and instructors' need to provide updated, reliable content, and that open textbooks might be an option to close the gap.

P1: I've had to find other, you know, the publisher systems are better. But even they, you know, aren't as good as I would like them to be.... I think it's the content delivery, the content, that is really driving some of the technology.

P2: I have a very low opinion of the textbook companies. They do, they do things like they release a new edition every year. And the only differences are that they've changed the numbering of all the problems so that you can crop prints easily. So the fact that open bracket, there are open textbooks out there that are trying to work against this.

Following 5R principles to integrate OER in math instruction

The participants described their integration of OER in the classrooms. The integration effort was well aligned with the 5R principles of using OER. For example, P2 mentioned content licensed under Creative Commons was integrated into two of his lessons. Also, P4 shared his experience of remixing and reusing open-licensed content in the course.

P2: I've actually given the textbook that I'm teaching two courses with CC courses right now. And I'm just, I'm just uploading the textbooks to the, to the Teams, Microsoft Teams sites that I'm using. So that's nice. And also just that I want to make sure that the students can easily obtain them.

P4: But one thing that we've been more and more interested in is in the more technical licensing aspect with Creative Commons, and working with copyright in terms of the people that we have talked to who do want to, you know, maybe do more mixing and matching between different resources in a more, I guess, a more format rather than sort of coming up with a big course reading list almost to create like a, like a Frankenstein type OER.

Theme 3: There are some barriers to the integration of OER in math instructions.

This theme described the participants' perceived barriers in their effort to integrate OER into math courses. Four categories described below were covered under this theme.

Concerns about quality

The participants shared their concerns about the quality of content in OER. For example, P1 felt that OER should be more polished and was inferior to the design of a published textbook. P2's concern about

the quality of OER mainly resulted from the authorship of open textbooks, as esteemed scholars in the field had seldom written an open textbook. P4's concern also stemmed from the presence of untruthful information in OER.

P1: I think the other concern that I've had is a lot of times a lot of these OER resources aren't, I guess, OER resources as we've done. And isn't it. But, I mean, there's just not quite the level of polishment that that I would get from, from, a published book.

P2: In the sense that I feel that the, the people who want to write these textbooks are not usually people who are very esteemed by mathematics, because they're not, they're not doing sophisticated things. They're doing the basics that everybody knows, somebody who decides to write that is already not, you know, if you're, I have no examples of somebody who is, you know, a Nobel Prize winner.

P4: We found that there's such an overwhelming amount of bad information out there. It can be hard to locate the good information, um, and people kind of want help picking out things like, you know, quality OER, and then incorporating them with more traditionally licensed or copyrighted resources.

Concerns about extra time for adopting OER

The participants discussed their concerns about the extra time necessary for adopting OER. One of the reasons was that they had to revise and remix content if OER could not be used as-is, which might take nearly as much effort as writing new content (P4). In addition, the participants found it time-consuming to personalize custom OER for the instruction for students.

P4: If the material doesn't seem suitable then editing would be nearly as much effort as just rewriting it from scratch. So this is, yeah, this is not something that I usually seriously consider.

P1: Over 10 years we developed 200 of these, you know, for, for a calculus book, you need probably 2000. And you know, they're very individualized. They're not easily reproduced and generalized.

Concerns about ancillary assignment platforms

The participants described their concerns about ancillary resources to OER. The effectiveness of math courses was reliant on students' practices of using acquired knowledge to complete assignments. The participants were concerned about whether OER provided any assignment platforms or exercises, even for OER with high-quality content. P2 also shared one example of choosing traditional textbooks that the department recommended over open textbooks. The decision was made because the publishers provided an online platform that negated the burden of hiring extra graders for his class.

P1: I said that one of my requirements looking at for, for most of the classes that I'm teaching is some kind of an online homework system and most, most of the OER texts that I've seen do not

have integrated, you know, they, you know, they'll say, we'll go, you can put together your own homework problems from, you know, from, from WeBWork or something like that.

P2: I am planning on using a fully free online Creative Commons licensed textbook for calculus. But that is contingent on being able to use an online homework system. And this is the main reason why I've demanded that the students buy the textbook that the department recommends, because we just don't have enough money to have graders for this class.

P4: And I find that there's no substitute for reading your, reading the student's work. And I will say that one disadvantage of some OER is sometimes it doesn't have exercises.

Concerns about the subject culture

The participants discussed how the subject culture in the field of mathematics might hinder the adoption of OER, as mathematic scholars tend to share their works in public without copyright concern. P3 and P4 mentioned that math professionals do not mind sharing resources so may not have to use published OER. Instead, they may use free, high-quality resources shared by esteemed scholars.

P3: The two guys that wrote the two different books that we generally use have written pretty good books, all in all, and they're free.

P4: And so for example, it's very common for mathematicians too, where their creep it's like, you want to read any of my papers. You don't have to fuss around with the journal's website, any of this, you either go to my website or you go to this favorite server called the arXiv and you can get the, and to me, this seems very natural and I know in other disciplines, people are kind of very protective of their papers and it's, it's hard to even find work.

Discussion

The results of this study may offer value to stakeholders concerned with outreach to mathematics departments regarding the use of open educational resources. Survey results and interview responses allow us to better understand who had the decision-making capacity when it came to selecting the textbooks for a course. While the survey was indeterminate as to why there was such a range of responses, interviews revealed that most upper-level courses faculty do have full responsibility for their textbook selection while lower-level courses and general education courses were typically selected by a committee or another faculty member. Therefore, stakeholders may consider outreach beyond individual instructors, additionally focusing on departmental administrators and curriculum designers. Outreach should be designed to better inform all who are involved in the selection of course materials not only of motivating factors for adopting OER, but also of the ways in which low and no-cost materials can be implemented with limited effort.

We also learned that faculty are primarily concerned with clear and accessible writing, the reputation of the authors, and the cost to the student when selecting course materials. Additionally, the availability of

accessible ancillary materials is critical when teaching a high-enrollment course. Understanding the need to proactively address these factors can prepare those involved in OER initiatives to effectively tailor their services and resources to ensure that instructors are confident in locating, selecting, and adopting quality course materials.

The deterrents to using OER as revealed in the survey and interviews also must be addressed. The impression that OER are of low quality, are difficult to locate, change, and edit, and does not offer sufficient supplemental and ancillary content are barriers to approach with education and enterprising solutions. And, of course, the legitimate concerns expressed about the time necessary to effectively implement OER should be foremost when working with instructors. It is necessary to address these concerns in a thoughtful, respectful manner that alleviates concerns and provides suggestions for overcoming these barriers throughout the delivery of the content.

Ultimately, we hope that the insights gleaned from survey and interview results will be influential in encouraging the adoption of OER within Mathematics departments. The results may be used by stakeholders to guide all aspects of the planning and implementation of OER initiatives developed for Mathematics. Future studies will describe the actions taken to create and publish the learning resources developed to address the concerns and needs of Mathematics faculty. In addition, future research will investigate the effectiveness of these materials in addressing the support areas determined by this preliminary study.

Limitations

As with any study, there are limitations that should be considered. The first limitation of the study was the limited size and demographics of our sample. We only had a 15% response rate from the survey and four interview participants. We would have liked to hear from others in the department but, as this research was being conducted during COVID, we are aware that faculty were juggling multiple responsibilities. Furthermore, this impacted our response rate for the subsequent interviews. The second limitation resulted from the subjective interpretation of qualitative data, although we took actions to ensure the rigor and the trustworthiness of our findings. For future research, we would solicit more responses and consider pursuing this research from a multi-institutional perspective. This would allow for a greater understanding of OER perspectives and uses at various institutions.

Conclusion

The use of Open Educational Resources has the potential to greatly reduce the cost of course materials for students enrolled in Mathematics courses, may reduce inequities between students, and would grant instructors greater control over the content with which they teach. However, as evidenced by the results of this mixed-methods study of Mathematics instructors, there are many barriers that complicate the adoption of OER such as concerns of quality control, lack of full control over the textbook selection process, time constraints, and the availability of ancillary and supplemental materials. These insights provide a greater understanding of how support areas, such as libraries, can assist instructors in the selection, adoption, and customization of OER in a Mathematics department.

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Conflict of Interest Statement

The authors declare no conflicts of interest.

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Open Peer Review

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Reviewer: Erica Finch

Recommendation: Revisions Required

Review 1 of 2 (Completed 2022-07-07)

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

This article discusses a survey on faculty perceptions of OER in a university mathematics department and explores barriers to the adoption of OER. Findings indicate that many entry-level mathematics courses are taught by adjuncts or non-tenure track instructors who have no control over textbook selection. Instead, a department committee selects the textbooks to be used in all sections of lower-level courses. Another barriers to the adoption of OER is the importance faculty place on online homework platforms, which may be included with commercial textbooks. Findings from this survey could better inform OER outreach efforts to university mathematics departments by including department administrators in the conversation and expanding the discussion beyond textbooks. It is within the scope for the Journal of Open Educational Resources in Higher Education and is of relevance to its readers.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

Overall, the article adheres to the recommended structure and the section guideline and proceeds in a logical fashion. A handful of items that might be moved from one section to another to improve flow and clarity have been commented on individually in the document.

The findings of this study are of exceptional interest to those engaging in OER outreach activities, however the Discussion section as it is written does not engage with those findings in a meaningful way. The Discussion section currently discusses the development of an action plan related to the findings, which is outside the scope of this article. Instead, the Discussion section should be rewritten to explore your findings and situate them within the current literature.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

I appreciated the author's use of a mixed methods study to provide further context and insight into the results of their quantitative survey. The findings would be given greater relevance by demonstrating to the reader that the authors have read and considered literature on faculty perceptions of OER and barriers to adoption, which exists in abundance. While the topic of the article is faculty perceptions of OER and barriers to OER adoption, the literature review fails to explicitly address these topics, which significantly weakens the study.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

Minor issues throughout would be addressed with copy editing. There is one missing reference for Creswell and Plano Clark, 2017.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

The article provides valuable information for those engaged in OER outreach and education, particularly concerning mathematics departments. It draws attention to factors that should be considered when building an outreach strategy, such as the fact that the textbook selection process for entry-level courses, where the cost-savings for OER would have the biggest impact, may be undertaken by a committee rather

than an individual instructor. It also highlights the importance of discussing OER beyond textbooks, as instructors in mathematics department place a great deal of importance on homework platforms that might come bundled with commercial textbooks.

What are the stronger points/qualities of the article?

The authors choice of mixed methods study to engage with their topic was an excellent choice, and yielded important results from both the quantitative and qualitative surveys. Combined, the findings provide useful insight that could help support the adoption of OER in a university mathematics department.

I appreciated the accessible language and tone of the article. The authors enthusiasm for the potential benefits of OER shines through in all aspects of their writing.

What are the weaker points/qualities of the article? How could they be strengthened?

The literature review does not include explicit discussion of faculty perceptions of OER or barriers to OER adoption, both of which are central to this study. To strengthen the article, the authors should include literature that addresses these topics in their literature review.

The discussion section is outside the scope of the article, focusing on the development of an action plan based on the findings. To strengthen the article, the authors should instead discuss the relevance and implications of their findings by situating their findings within the current literature.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Sound

Overall Evaluation

1- Weak Accept

Open Peer Review

Finch, E. (2022, October). [Second review of the article Understanding mathematics instructors' perceptions of OER: A mixed methods study, by A. Freeman, H. Tang, & J. Geary]. Journal of Open Educational Resources in Higher Education, 1(1), 167-169. doi:10.13001/joerhe.v1i1.7147

Reviewer: Erica Finch

Recommendation: Accept Submission

Review 2 of 2 (Completed 2022-09-09)

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

The article is in scope for Journal of Open Educational Resources in Higher Education. It discusses Open Education Resource adoption in a mathematics department and the barriers to OER adoption. This topic is of high relevance as students are struggling to pay for textbooks, publishers are moving towards lend-lease rather than ownership models, and student privacy is compromised by publishers' data collection activities.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

The article proceeds logically and adheres to the recommend structure and the section guideline.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the

author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

The article is factually accurate and it is clear that the authors have investigated previous work on the subject. I appreciate the additions to the literature review that provides further context for attitudes towards and barriers to OER adoption.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

There are no general problems with format or style.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

The article contributes to our knowledge on barriers to OER adoption. The selected interviewee quotes provide interesting depth and context to the authors' research. This article will inform others whose work it is to promote OER adoption and use to instructors, and provide some guidance on specific challenges they will need to overcome.

What are the stronger points/qualities of the article?

I appreciate the mixed-methods approach, particularly the instructor interviews and the context their responses provide for the quantitative results. As I mentioned before, the enthusiasm the authors have for OER comes through the writing and helps make the article an engaging read.

What are the weaker points/qualities of the article? How could they be strengthened?

All concerns that were previously raised have been addressed. Thank you for taking the time to make suggested changes!

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Very Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Highly Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Highly Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Highly Sound

Overall Evaluation

3- Strong Accept

Open Peer Review

Martin, J. (2022, October). [Review of the article Understanding mathematics instructors' perceptions of OER: A mixed methods study, by A. Freeman, H. Tang, & J. Geary]. Journal of Open Educational Resources in Higher Education, 1(1), 170-173. doi:10.13001/joerhe.v1i1.7147

Reviewer: Joyce Martin

Recommendation: Accept Submission

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

The authors of "Understanding Mathematics Instructors' Perceptions of OER: A Mixed Methods Study" examine why, despite a coordinated OER initiative at their institution, faculty in the Department of Mathematics continue to rely on commercial text and digital courseware. Given the noted lack of literature around OER and college level math instruction, this topic seems both timely and important. The authors discuss how the results of their study can be used to develop materials which address the barriers to use brought to light through their quantitative and qualitative data collection.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

The article flows logically from a statement of the current situation with OER at the authors' institution, to their desire to increase OER usage in high enrollment courses most students need to fulfill graduate requirements. This introduction is followed by a literature review covering the benefits of OER adoption in higher education in general and mathematics in particular. A discussion of methods, findings from the quantitative study, and supporting data and themes from the qualitative data, are followed by a helpful discussion of how these results can help libraries and institutions develop materials to promote OER which address concerns brought to light by this study.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

The methodology employed by the author team is sound. The use of both quantitative and qualitative data, collected and analyzed separately, created richer and more nuanced data. The conclusions drawn by the authors were logical and I believe they will be helpful to academic libraries and institutions looking to promote the use of OER's in their institutions.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

The writing is clear, and free of jargon. This article is accessible to all, there is no need to be a mathematician to understand the concerns and barriers regarding the integration of OER from the set of faculty who responded to this study.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Theme one from the qualitative data notes that faculty often are not fully in control over the textbook decisions for the large lower-level math courses which might have the broadest financial impact for students. For those promoting OER in higher education, the authors correctly explore who those decisions makers are as well as other key factors holding back use of OER such as the need for easy-to-use online homework platforms that facilitate grading.

What are the stronger points/qualities of the article?

The thematic analysis of the qualitative data was quite clear and useful.

What are the weaker points/qualities of the article? How could they be strengthened?

The authors note in their "limitations" section one weakness in their article, which is the small size of their sample. They had only six respondents to their quantitative survey (15 % response rate) and four respondents to the qualitative interview from the original six respondents. The study was conducted during COVID which the authors note could have affected their response rate. I think the authors acknowledgement of this weakness as a limitation is helpful.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Very Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Highly Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Highly Sound

Overall Evaluation

3- Strong Accept

Open Peer Review

Shannon, D.. (2022, October). [First review of the article Understanding mathematics instructors' perceptions of OER: A mixed methods study, by A. Freeman, H. Tang, & J. Geary]. Journal of Open Educational Resources in Higher Education, 1(1), 174-176. doi:10.13001/joerhe.v1i1.7147

Reviewer: Denis Shannon

Recommendation: Accept Submission

Review 1 of 2 (Completed 2022-07-08)

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

This article fits directly in the scope for Journal of Open Educational Resources in Higher Education. The topic discussed is related to open education, and it is certainly important, particularly as it relates to courses that are the most widely taken at many institutions.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

The article is well organized and does proceed logically. I found it engaging and easy to read and comprehend.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the

author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

The methodology used in this article is appropriate for the problem addressed. I was pleased to see both quantitative and qualitative data was gathered for this work. The paper is well researched, factually accurate, and thoroughly investigates the existing literature related to the topic.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

I think the article flows very well, is concise, and is clear. I really don't see any issues with the writing style or flow.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

This article does provide practical examples of some of the reasons that OER are not more common in undergraduate mathematics courses. This information can be used by others doing research on OER in mathematics, or higher education in general. I think it also demonstrates areas of improvement for readers who may be considering or actually creating OER.

What are the stronger points/qualities of the article?

The article is well-written, engaging, and concise. The figures are easy to read and understand. It is also interesting to learn about some of the specifics of OER as it relates to mathematical instruction.

What are the weaker points/qualities of the article? How could they be strengthened?

The only weakness I would mention is the small sample size. This could of course be strengthened by broadening the scope, perhaps including other schools, but this is of course a significant undertaking and I think the data that has been gathered for this study is good.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Very Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Highly Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Highly Sound

Overall Evaluation

3- Strong Accept

Open Peer Review

Shannon, D.. (2022, October). [Second review of the article Understanding mathematics instructors' perceptions of OER: A mixed methods study, by A. Freeman, H. Tang, & J. Geary]. Journal of Open Educational Resources in Higher Education, 1(1), 177-179. doi:10.13001/joerhe.v1i1.7147

Reviewer: Denis Shannon

Recommendation: Accept Submission

Review 2 of 2 (Completed 2022-08-29)

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

The article is in scope. It talks about adoption of OER for mathematics courses, which are widely taken.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

The article does proceed logically, and is very easy to read and comprehend.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

The methodology is appropriate for this study. Importantly, the authors used both qualitative and quantitative data.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

The article has no issues that I could tell with regards to expression or flow.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

It does. I think it is especially illuminating to learn about the general attitude towards sharing that exists in the field of mathematics, which I wasn't aware of until I read this for the first time.

What are the stronger points/qualities of the article?

It's easy to read, and the focus is on a topic that's widely applicable across campuses.

What are the weaker points/qualities of the article? How could they be strengthened?

I think all of the weaknesses that could be addressed have been, and the ones that could not have been acknowledged as areas for future study.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Very Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Highly Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Sound

Overall Evaluation

3- Strong Accept

Programmatic Characteristics of Open Education Initiatives at U.S. Post-Secondary Institutions

Jonathan Bull¹

Michele Gibney²

Keywords: Open Educational Resources, programmatic characteristics, funding, governance structures, assessment

Abstract

Although a number of academic research papers showcase the benefits of Open Educational Resources (OER) on student success metrics, the literature still lacks a central collection of knowledge identifying programmatic characteristics between 4-year public, 4-year private, and 2-year community colleges that support these OER initiatives in the United States. To address this gap in the literature and provide evidential statistics that suggest common programmatic characteristics, this quantitative study collected 149 survey responses from program managers of OER-related initiatives at institutions of higher education in the United States. While some previous research on this topic has focused on regional adoption or other aspects of OER usage, this research offers a unique perspective and aggregated exploration on how these initiatives are started, funded, governed, and assessed. The results of this study build on existing evidence that OER programs tend to be overseen by committees, are more likely to offer incentive payments for faculty, and offer at least some form of program assessment.

Introduction

Open Educational Resources (OER) are “teaching, learning, and research materials that are either (a) in the public domain or (b) licensed in a manner that provides everyone with free and perpetual permission to engage in the 5R activities” (Creative Commons, n.d.). As a result of rising costs for traditional textbooks, the use of OER in higher education has been on the rise to increase fair and equitable access to student learning materials (Karpel & Schneider, 2018). In many cases, the adoption and integration of OER in the curriculum has been a direct result of institutional initiatives and associated programs supported by academic libraries, as determined by an institutional website analysis completed by

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Veronica McGowan (2020): “48% of all sample OER initiatives are sponsored by the institutional library; 21.6% are sponsored by the institutional Center for Teaching Excellence; 11% by a partnership of institutional subunits” (p.35). In addition, libraries may often be a source of advocacy and assistance due to librarians’ experience with the publishing industry, expertise in information literacy, and role as information providers (George & Casey, 2020).

In 2018, the authors and another colleague, all from different private postsecondary institutions in the United States, presented at the 15th Annual Open Education Conference. Their presentation centered on the limited attention paid to the travails of the smaller, private institutions that lack the inclusion and support derived from state-level policies that overwhelmingly allocate resources to public institutions of higher education. The authors recognized that independent institutions with Open Education initiatives were trying to achieve the same outcomes as public institutions that have the backing of state funding and legislative influence. In the rapidly evolving higher education landscape, private institutions are competing in the same ways to attract students and increase enrollment and retention, and OER can be a contributing factor for many student decisions such as whether to register or drop a course (Griffiths et al., 2020; Clinton & Khan 2019). Based on their own anecdotal experiences and those of OER advocates and colleagues at similar private institutions, the authors surmised that lack of financial resources, state assistance, and mandate incentives could be a major hindrance to OER exploration and adoption.

The OpenEd Conference presentation centered on results from a small-scale, pilot survey of private institutions’ implementation of OER programs across the United States. One of the primary discoveries was that approximately 50% of smaller privates do not have designated staff to work on OER: support is ad-hoc, not facilitated by a designated or recognized pilot or program (Gumb et al., 2018). These results led to the development of a second survey, administered in February and March 2020 to explore more broadly the programmatic characteristics at all types of postsecondary institutions invested in Open Education.

The 2020 survey was sent to project managers of OER-related initiatives at United States post-secondary institutions of higher education in order to ascertain common programmatic characteristics, including implementation, organization, selection, and assessment. Additionally, the survey had multiple questions devoted to programmatic sustainability. Due to the global COVID-19 pandemic, recognized throughout United States higher education in March 2020, a week after the survey’s close, the authors have removed near and far future sustainability data from this analysis. Given the uncertain pandemic recovery future, pre-pandemic sustainability responses must be revisited in future research studies.

While several earlier OER surveys are available, they focus on regional OER initiative adoption or local institutional OER faculty adoption (de Oliviero Neto et al., 2017; Hodgkinson-Williams & Arinto, 2017; Shigeta et al., 2017; Riskey et. al, 2020; Zaid & Alabi, 2020). This research, therefore, uniquely focuses on how OER initiatives are initiated and operated across the United States in a wider, aggregated exploration, including funding, governance, and assessment.

Literature Review

Funding

Much of the existing literature that mentions funding focuses on what is happening at the federal-level, state-level, and/or philanthropic level. For federal funding, perhaps the largest investment in OERs is Trade Adjustment Assistance Community College and Career Training (TAACCCT) Grants Program through the Department of Labor, which allocated nearly \$2 billion in grant funding to educational institutions “completed in two years or less” in “education and career training programs,” which leaves out many institutions without career training focus or with four-year degrees (Stacey, 2013, p. 77). This program also made monies available to states, which in turn administered the grants. Miller (2019) notes that numerous funding models have been tried but “most come from either state or philanthropic funding” and not the federal level (p. 19). For instance, 29 states have enacted legislation that either creates textbook affordability initiatives or directly provides investment funds to be used for faculty development to create OER (“OER State Policy Tracker,” 2021). Most state funding in these instances are directed towards public university systems, however, a few exceptions exist. Connecticut’s H.B. 7424 (Connecticut General Assembly, 2019), for example, specifies \$75,000 in OER grants to be awarded to faculty at both public systems and independent institutions. However, private institutions often rely on either external or internal private funding. In particular, the Hewlett Foundation and the Gates Foundation have provided significant funding for OER development in K-12 and post-secondary institutions around the world (Hewlett Foundation, n.d., Gates Foundation, n.d.) For internal funding, Caro & Lesko (2014) cite factors such as the (or lack of) availability of funding for OER programs in addition to availability of institutional staffing support, and faculty attitudes toward OER can enable and/or inhibit the implementation of campus initiatives. While much of the previous discussion focused on government and private foundation funding, that may be changing. OER funding initiatives, through donor funding, have also begun to emerge, but still remain in early stages (Valentino, 2015).

Governance

OER initiatives have taken many different forms and sizes, as indicated by case studies in the literature. Two broad categories serve to differentiate these studies into examples of either non-library-led or library-led research. The non-library-led initiatives display significant diversity in both size and scope, ranging from large multi-institutional programs to single pilot department-level projects.

For example, illustrative of a huge non-library-led initiative, ‘Achieving the Dream’ (Griffiths et al., 2020) outlines one of the largest types of OER initiatives: the Z-degree program. A Z-degree program is defined “a two or four-year degree program that exclusively uses zero-textbook-cost (ZTC) materials such as open educational resources (OER) and open textbooks” (Anderson, Kelly, & Lynch, 2021, p. 133). ‘Achieving the Dream’ includes collaboration across 38 institutions, about 2,000 instructors, nearly 160,000 students, and 6,600 OER course sections, which has saved students millions of dollars—over \$10.7 million in textbook costs (Achieving the Dream, n.d.). In addition to ‘Achieving the Dream,’ many other institutions are also pursuing the Z-degree (Tepe, 2015) or broadly expanding OER-supported courses (Winitzky-Stephens and Pickavance, 2017).

On a smaller scale at the local institutional level, various non-library-led departments have piloted or examined OER, including Chemistry (Shorb & Moore, 2010; Allen, et al, 2015); Aquaculture and Fisheries (Pounds & Bostock, 2019); Psychology (Clinton, 2019; Engler & Shedlosky-Shoemaker, 2019; Grissett & Huffman, 2019); and Business (Seeley, et al., 2018), just to name a few. Regardless of any reported success or failure, none of these projects appear to be formalized—beyond a course or two—and remain in a pilot phase.

While many disciplinary departments show interest in OER, the literature shows that libraries have often led institution-wide and inter-departmental initiatives that vary in size and scope, including negotiating and resolving organizational obstacles and complexities. For instance, Thompson and Muir (2020) outline how two Scottish university libraries are coordinating OER initiatives at their respective institutions, but have also noted barriers to adoption due to institutional culture and the role in which teaching assessments plays as part of the United Kingdom's Teaching Excellence Framework (TEF) that do not consider OER inclusion. The University of Wisconsin Milwaukee organized an institution-wide, university grant-funded OER program to recruit faculty to review and adopt OER resources, while also trying to connect OER directly to the library's mission (Woodward, 2017). Numerous other institutions have tried similar initiatives (George & Casey, 2020; Avila & Wray, 2018; Miller & Homol, 2016; Katz, 2020). These programs have shown some early success, but few have reported any results beyond the initial funding and pilot project phase.

Assessment

While much of the literature has focused on the implementation of, or barriers to, OER initiatives, some papers have addressed assessment of existing OER initiatives. This literature has primarily focused on qualitative feedback (i.e., OER stakeholders' "perception" or opinion) and quantitative feedback (i.e., data-driven metrics, such as retention rates and cost savings). These metrics also accord with the COUP Framework from the Open Education Group which prioritizes Cost, Outcomes, Usage, and Perceptions (COUP) (Open Education Group, n.d.).

Fischer, et al. (2015) examined data from a mixed population of college and community college students (n=16,272) split into treatment and control groups. Results found that students were more likely to succeed in classes that had Open Educational Resources than those that did not offer OER. This study offers valuable insight into OER and corroboration of impact across a broad student population and across multiple disciplines. Somewhat conversely, Clinton and Khan (2019) found no difference in learning efficacy by conducting a meta-analysis of 22 case studies of OER versus non-OER courses but did find a lower dropout rate in OER-supported courses.

A meta-study by Hilton (2016) analyzed the effect of OER on student learning outcomes in nine case studies. The review article examined aggregated data gathered from 45,149 students. Three studies offered evidence favoring OER adoption. Three others showed no significant difference (p. 586). Only one of the nine studies showed any evidence of lower learning outcomes. A second larger meta-analysis by Hilton gathered data from 121,168 students and faculty (Hilton, 2020). Overall, Hilton concluded that OER did not appear to decrease student learning. However, while these meta-studies focused only on students' cost savings and learning outcomes, they did not examine whether there were commonalities between the OER programs (staffing, funding, organization, etc.) that were showing positive, neutral, or negative data related to cost savings and learning outcomes.

SRI International collected significant data for its “Achieving the Dream” OER degree initiative (Griffiths et al., 2020). Collected from 2016 to 2018, data sets included: number of faculty members, number of students, two instructor surveys, site visits to 10 institutions to collect qualitative data, additional student-level data from 11 “research partners”, data from OER grantees, and data from five “cost partners.” This data was analyzed for a variety of factors, but focused primarily on the efficacy of Open Educational Resources for community college populations.

Additional studies also focused on OER cost savings impact, using various data gathering methods (Nyamweya, 2018; Colvard et al., 2018) and a framework by MHEC to standardize the measurement of impact and return on investment as well as methods of communicating these out (Zabeck, 2022). For the most part, this literature does not clarify whether positive reported impacts are due to implementation of organized OER initiatives, which would better ensure continuance, or student learning assessment. Assessment is further complicated when assessors do not account for the differences between assessing an OER initiative and the OER itself that is being utilized. Problematic OER impact studies and conflated assessment foci cause issues in gathering accurate data (Wiley, 2021).

Methods

Procedure

This project surveyed project managers of OER-focused initiatives at United States post-secondary institutions of higher education in order to ascertain common programmatic characteristics, including implementation, organization, and assessment.

In order to assess these aspects of OER initiatives in U.S. post-secondary institutions, a 29-question survey was developed. This survey included questions related to an institution’s demographic information, in order to eliminate duplicate responses, and specific information about institutional OER initiative organization, process, funding, and assessment. The survey was reviewed and exempted by the Institutional Review Boards (IRBs) of Valparaiso University, Roger Williams University, and University of the Pacific. This survey was hosted on Survey Monkey and was sent to several open education and adjacent email lists in February and March 2020, inviting group members to respond before March 15, 2020 (Appendix A). The survey instrument that was used is included in a supplementary file to this article. However, responses to questions 24-28 were not assessed within this paper due to the impact of COVID-19. The responses of questions 24-28 will be assessed in a future paper, along with similar responses to be collected after COVID-19 becomes endemic.

Design

The study focused on how and why OER initiatives are started, operated, and assessed. Through closed- and open-ended questions, participants were asked to address the following aspects of OER programmatic characteristics:

- Initiative genesis
- Campus units/departments support and involvement in decision-making
- Initiative funding

- Campus assessment metrics

Responses

A total of 197 responses were received from January 21 to March 15, 2020. Of those 197 responses, 48 responses were deemed invalid for various reasons. Twelve responses had incomplete institutional identification, which made it impossible to de-duplicate. The remaining 36 invalid responses appeared to be duplicate entries and were removed. As a result, 149 responses were analyzed, interpreted, and reported. In addition, as earlier noted, because of the effect of the COVID pandemic, sustainability questions were not considered, since early 2020 responses may prove invalid now and in the future.

Results and Discussion

A total of 149 valid responses were examined, for which study results are reported here. While 149 valid responses may not provide statistically significant findings, the data does offer qualitative patterns of thematic trends. As a consequence of the limited data set, the authors examined either frequency or cross-tabulation of responses but without statistical significance determination (i.e., p-value) due to the small data set.

Basic Demographics

A variety of institution types are reflected in the 149 valid responses. Within the 31 basic United States higher education Carnegie Classifications, respondents categorized their institutions across the academic spectrum: 81.2% of respondents (n=121) represented publicly funded institutions versus 18.8% of respondents (n=28) from independent or privately funded institutions.

Respondents were grouped with their Carnegie Basic Classification, with 56 responses (37.7%) for Associate-level institutions, 18 responses (12.2%) for Baccalaureate-level, 28 responses (18.9%) for Master's (M1-M3), 8 responses (5.5%) for Doctoral/Professional, and 38 responses (25.6%) for Doctoral/Research (R1-R3). Respondents were also asked to contribute information about FTE staffing related to their OER initiative(s). Responses ranged from zero to 1,300 employees, including fractional values with 53% (n=79) indicating less than 1 FTE dedicated to the institution's OER initiative, 31.5% (n=47) for 1 to 4 FTE and 11.4% (n=17) with 4 or more FTE. Five respondents were unsure or did not know.

The average age of these programs varied as well. Results demonstrated a range of 1-3 years (47%), with the next most common being 3-5 years (20.8%). No institution surveyed indicated a program older than 10 years. Eighteen institutions (12%) gave no response when asked about program age. There were no responses for the "more than 10 years" option.

Governance/Administration

When asked about the reasons for starting an OER initiative, respondents offered a variety of responses. Each respondent could list multiple reasons for the origins of their institution's OER program, including an "other" option (See Supplemental File for survey instrument); these open-ended responses were then organized and categorized. The rising cost of textbooks was by far the most common reason given, accounting for 68.9% of institutions' responses, with "retention concerns" the second most common reason given (34.9%). Of the 16.8% of "other" responses, there were a few notable and unique responses. For instance:

- "Desire to reduce equity gaps in student outcomes for disproportionately impacted populations"
- "Institutional initiative to grow the college, resulting in a more diverse socioeconomic student body"
- "Student Government President asked about work being done on campus around OER after attending a regional meeting where OER was discussed"

A survey question concerning how OER initiatives are administered revealed a variety of approaches. Respondents indicated a range of departments were involved in their initiatives. Libraries were the most frequently mentioned campus collaboration unit (n=128, 85.9%). This specific response might be partly influenced by the authors' academic unit affiliation and their choice of email lists for survey dissemination, but it does also accord with existing literature. However, despite a prevailing library influence, the majority of respondents (n=120, 70.5%) also indicated multiple campus units were involved in the administration of the OER initiative(s). To clarify if these units share governance of a single OER initiative or have parallel or complementary OER initiatives, respondents were also asked if governance is shared (or not shared) across the institution. After non-responses (n=15) and "do not know" answers (n=2) were excluded, 132 responses detailed how OER initiatives are governed.

Of these 132 valid responses, most responses (n=101) reported some sort of centralization: a single unit or single committee; a shared committee of multiple units; or an advisory committee to an administrative unit. The several "other" open-ended responses (n=10) included a report of no formal committee in existence, or supplied an answer that was difficult to discern.

Institutional Funding (pre-COVID-19)

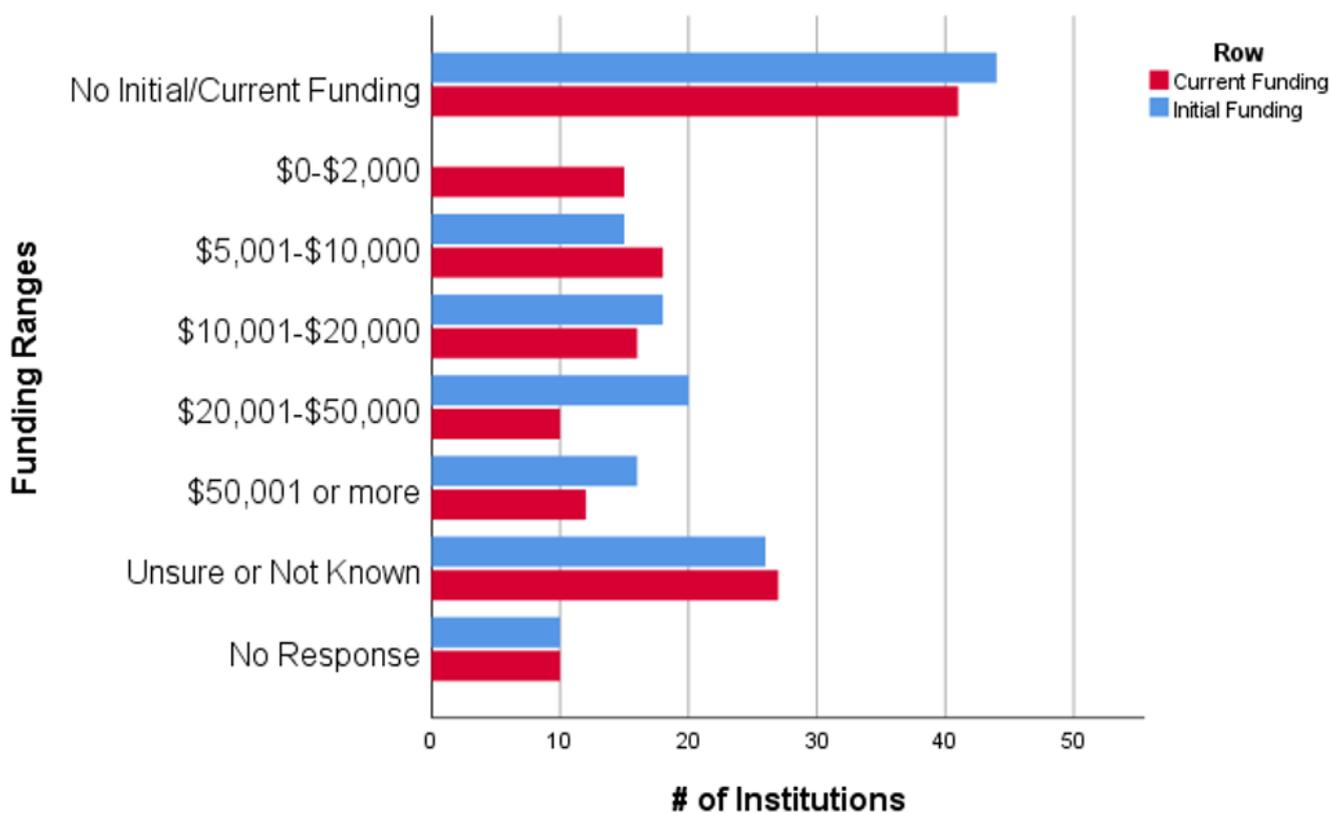
Information about institutional funding at the local level for OER initiatives was also requested. A slight majority of responses (n=81, 54%) indicated an ongoing source of funding, while another nine (6%) indicated that current funding was from one-time funding, such as a grant.

47 (31.55%) respondents replied that their respective institution(s) were not currently funding their OER initiatives, with five of those respondents specifying previous funding that had ended. Eight percent (n=12) of respondents did not respond to the question.

There was some variance between initial funding levels and current funding levels (Figure 1), but several institutions were unsure of their funding levels (17.4% for initial funding; 18.1% for current funding) as well as more responses for “\$0 - \$2,000” funding level in current funding (n=15) than in initial funding (n=0). \$2,000 - \$5,000 funding range did not yield any responses in either initial funding or current funding.

Figure 1

Initial funding vs. Current Funding



There were no responses for "\$2,001-5,000" funding range

Of those initiatives that indicated some sort of current funding, funding purpose typically prioritized faculty participation incentives (i.e., stipends, awards, grants for review, adoption/adaption, creation, etc.), with 83 responses (43.7%), followed by memberships/affiliations in groups such as the Open Education Network and SPARC (n=29; 15.3%).

Programmatic Assessment

The survey also explored several aspects of programmatic OER assessment, revealing a wide range of institutional experiences. Student cost savings as a result of OER initiatives assumed special importance. Respondents reported textbook savings estimates ranging from \$50,000 to over \$1,000,000, but with no savings estimate range earning more than 5% of responses (Table 1).

Table 1*Estimated Total Textbook Savings by Current Institution Funding Levels*

Current Funding Level	Estimated Total Textbook Savings Per Institution						Total
	\$50,001 - \$100,000 ^a	\$100,001 - \$250,000	\$250,001 - \$500,000	\$1,000,000 or more	No Response ^b	Unsure or Not Known	
\$0-\$2,000	2	2	3	1	5	2	15 (10%)
\$5,001-\$10,000	0	1	1	7	8	1	18 (12%)
\$10,001-\$20,000	2	2	3	1	3	5	16 (11%)
\$20,001-\$50,000	0	1	4	2	0	3	10 (7%)
\$50,001 or more	0	0	1	6	3	2	12 (8%)
No Current Funding	5	1	4	4	19	8	41 (27%)
No Response	0	0	0	0	10	0	10 (7%)
Unsure or Not Known	0	2	3	7	8	7	27 (18%)
Total	9	9	19	28	56	28	149

a. No institution indicated an estimated savings amount below \$50,000.

b. While many institutions did not respond to this question, there were 11 institutions that later indicated several cost savings per student formula in use.

As another example, length of OER initiative was examined against the number of courses that have implemented one or more OERs because of involvement in this initiative (Table 2). A plurality of institutions (n=41; 27.5%) reported that 26 or more courses implemented an OER, with the majority of those responses (n=33) from OER programs that have existed 1-5 years. The next most popular response was “Unknown/Not Sure” (n=28; 18.7%)

Table 2.*Examining Age of OER Initiatives and Course Implementation*

Q. How Many Courses Have Implemented an OER in part because of an OER initiative? ^a										
OER Initiative Age Range ^b	0-2	3-5	6-10	11-15	16-25	26+	No Response	Other	Unsure/Not Known	Total
Less than 12 months	8	5	0	1	0	0	0	0	3	17 (6%)
1-3 years	1	7	13	9	8	18	0	0	14	70 (24%)
3-5 years	0	1	2	3	5	15	0	0	5	31 (10%)
5-10 years	0	0	0	2	2	7	0	1	1	13 (4%)
No Response	0	0	0	1	0	1	10	1	5	18 (6%)
Total	9	13	15	16	15	41	10	2	28	149 (50%)

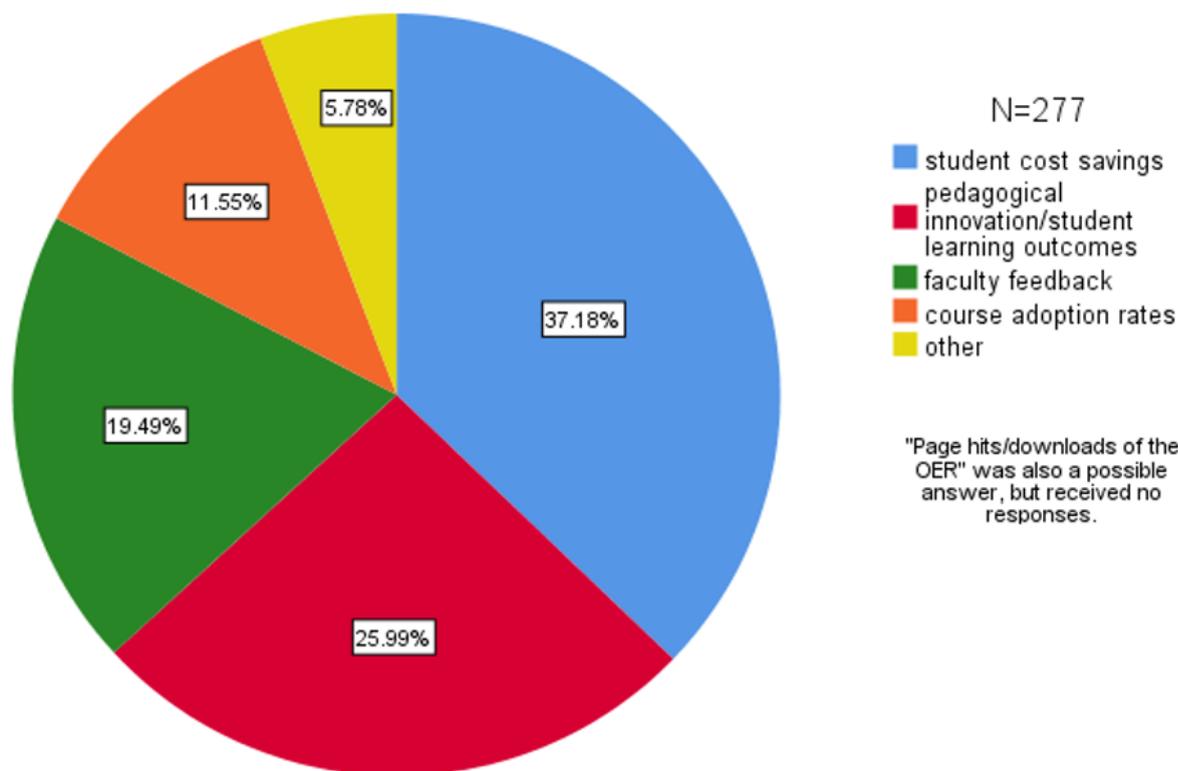
a. The question specifically asked for "course" as opposed to "course section" as "course sections" since many OER initiatives may only keep track of initial course implementation

When asked more specifically about assessment methods, responding institutions reporting assessment activities focused primarily on surveying. Typically, students (26.2%) and/or faculty (20.7%) were surveyed at the end of an OER course, according to responses, while 23.2% of respondents indicated no assessment was being conducted at this time. However, nearly 19% of institutions reported tracking the number of courses adopting OER as part of their ongoing assessment strategies.

Related to assessment, the authors asked about what marketing or promotional metric(s) might be used in order to justify the OER initiative to institutional stakeholders (Figure 2). This question, where respondents could select more than one option, received substantially more responses (n=277) when compared to the prior, more specific assessment question.

Figure 2

What metrics do you typically promote to justify the OER initiative?



Nearly 63% of evaluative metrics focused on student impact, including student cost savings (37.2%) for course textbooks and pedagogical innovation related to student learning outcomes (26%). Page hits or OER downloads did not receive a single response for either an assessment strategy or promotional metric. This corresponds with the literature that Cost and Perceptions are the most trending elements from the COUP Framework (Open Education Group, n.d.).

Discussion

The primary goal of this paper was to explore how OER initiatives start, operate, and thrive. The authors gathered data on initiatives at all levels—public universities, community colleges, and private universities in order to identify common programmatic characteristics.

Programmatic Governance

The survey found that the majority of OER initiatives are campus collaborations involving multiple departments. While academic libraries are, in general, the most widely cited participant, survey results revealed noteworthy inclusion of additional campus units. Shared governance models (70.5% of respondents) suggest the efficacy of campus partnerships to ensure that OER programs flourish.

The survey found that the two most common reasons for commencing an OER program were rising costs of textbooks and associated student retention concerns. This holds true with what has been

published in previous literature (Griffiths et al., 2020; Senek & Donoghue, 2016; Wright & Reeves, 2019; Karpel & Schneider, 2018; Bidwell, 2014; Salem, 2017).

Programmatic Funding

Funding is, of course, a large concern for OER program operations. The results from this survey did show that the majority of respondents enjoyed some funding for an OER program (54%). These monies were typically invested in incentivizing faculty content production. Absent funding, based on anecdotal evidence from authorial observations, suggests an OER program will only survive if champions are willing to volunteer their time, knowledge, and effort.

A paucity of publications compares funding models and successful adoption of OER. For the most part, these papers compare non-academic organizations funded initiatives, such as Hewlett and Gates, against institution or public funding (Stacey, 2013; Stacey, 2010; Pena, 2009). The primary finding is that well-funded programs have a significant advantage in monetary and human resources that fosters success in planning for sustainability such as M.I.T.'s OpenCourseware or Rice University's OpenStax (previously Connexions), both originally funded by the Hewlett Foundation (Stacey, 2010).

At smaller universities, an ideal scenario might involve small, institutionally provided faculty incentive grants with sustainable long-term funding coming initially from the academic division (Provost department and affiliated monies) and later, from donor relations, e.g., donations from alumni supporting the student success implications of OER initiatives. At smaller public universities, depending on the state, institutions may be able to expect public funding for small faculty grants. Based on the survey conducted for this paper, however, 32% of respondents receive zero funding, which may fluctuate post-COVID as higher education funding monies continue to be volatile.

Those without funding must discover alternate strategies for OER creation, promotion, and adoption. Suggestions include increased OER use, adoption, and creation as standards for the faculty's academic portfolio in campus promotion and tenure decisions (Yano, 2017; DOERS3, n.d.). Faculty dossiers might include annual student awards acknowledging 'Best OER' (Dankowski, 2016). Staff assistance on converting a course would reduce time and thereby incentivize faculty.

Raising the profile of an OER program at an institution without funding is far more difficult, but it is not inconceivable, as survey results indicate. The authors would suggest that additional research is needed to clarify 'lessons learned' from successful initiatives without dedicated funding, as this might foster other OER start-ups with little or no budget.

Programmatic Assessment

Assessment informs both continuous improvement and sustainable funding. The latter includes regular communication about return-on-investment to senior leadership. Several survey questions investigated assessment methods in use by OER program administrators. While some respondents reported zero assessment, three primary methods are in common use:

1. Textbook cost savings for students
2. Student and faculty survey results related to the course's OER
3. Number of course OER conversions

In previous literature, similar assessment methods are described. Hilton (2020) and Watson et al. (2017) surveyed faculty/student experiences. The SRI International “Achieving the Dream” report (Griffiths et al., 2020) studied the “economic impacts for both students and institutions and the experiences of key stakeholders” (p. 6). The least time intensive methods of assessment are to determine money saved by course and number of courses converted. This survey’s results strongly supported that assumption, as these methods were popular among respondents with 37.2% collecting data on student cost savings and 19% tracking the number of courses. A Likert scale survey of student use experiences is second in simplicity and can easily be bundled into the typical student end-of-quarter/semester course surveys. It was therefore surprising to learn that 23.2% of respondents revealed zero assessment at even this rudimentary level. This could be due to the initiative still not yielding enough data to assess, or could be due to a lack of institutional assessment culture, infrastructure, or policy.

OER page hits or downloads were listed in the survey instrument, but received no ticks by respondents. The authors found this somewhat odd, because this data is often available, through platform metrics, such as Google Analytics, or through data request to the web host. This could be a valuable metric for assessment and promotion; particularly if used, in conjunction with other scholarly metrics, in order to show impact with views/downloads at the institution, in the region, or globally. If the institution allows for OER to be considered in the promotion and tenure package, impact on this scale could take on additional benefits for the faculty member specifically. Additional research localized at Rutgers University (Todorinova & Wilkinson, 2020) as well as a national survey (Thoms et al., 2018, DOERS3, n.d.) has been done on the use of OER in the tenure and promotion process.

In other literature, additional assessment and promotional metrics involve study of student learning outcomes. In several studies, measures of student success relating to grades, passing, and retention are also of high importance. For example, Winitzky-Stephens and Pickavance (2017) found that while OER might increase the students’ average grades, other factors such as demographic background and educational experience had a much higher impact on grades and retention than the type of text (whether free or fee-based) used.

As results suggest, assessment metrics deserve further study. Contrasting the efficacy of OER and non-OER course usage in different contexts such as cost savings, student outcomes, curricular innovation as well as different academic settings, from community colleges to Carnegie Classified R1 institutions, would serve to clarify OER contribution within a larger higher education context.

Conclusion

The investigators’ primary purpose was to identify how OER programs are implemented, organized, and assessed across a range of institution types. While much of the data clarified programmatic beginnings and current operations, connections between organization, funding, assessment, and success were harder

to parse out from a quantitative study with a small response rate. It was difficult to successfully identify those connections based on institutional type (2-year, 4-year public, and 4-year private) due to the fact that answers to questions varied so widely even among the subtypes.

The results of this study, however, do build on existing evidence that OER programs tend to be overseen by committees, are slightly more likely to have incentive payments for faculty, and offer at least some form of program assessment. These main three factors of governance, funding, and assessment are tied to the perceived sustainability of a program and provide a road map for those at the nascent stages of institutional OER programming. Future research to provide insight into the relationship between sustainability and operating strategies of an OER program is needed, especially considering a disrupted post-COVID-19 higher education environment. While sustainability of a program can be seen in successful implementation of the three factors, additional research, perhaps as a qualitative study or larger scale mixed methods survey that further examines aspects of governance, funding, and assessment, is necessary. Lastly, future research is also needed to assess the impact of COVID-19 and its related financial and sustainability consequences on Open Educational Resources, both for initiatives/programming and in general. The authors are planning on retooling and distributing a smaller scale version of the survey used in this research, focusing solely on how the pandemic changed sustainability factors such as funding and OER program managers' impression of near and far OER futures at their institutions. This secondary research article would compare the two data sets pre- and post-pandemic.

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Conflict of Interest Statement

The authors have no conflict of interest to declare.

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Appendix

Appendix A: Survey Email List

- Digital Commons Google Group (digitalcommons@googlegroups.com)
- OER Advocacy Coalition (oer-advocacy-coalition@googlegroups.com)
- EDUCAUSE (OPENNESS@listserv.educause.edu)
- IR Managers (irmanagers@googlegroups.com)
- Community College Consortium for Open Educational Resources (CCCOER) (ccoer-advisory@googlegroups.com)
- Scholarly Communication and Open Resources for Education (SCORE)/California Academic & Research Libraries (score@listserv.carl-acrl.org)
- Creative Commons Open Education Platform (cc-openedu@googlegroups.com)
- Open Textbook Network (open-textbook-network@googlegroups.com)
- American Library Association SCHOLCOMM list (scholcomm@lists.ala.org)
- SPARC OER Forum (liboer@sparcopen.org)

Open Peer Review

Brunet, M. (2022, October). [Review of the article Programmatic characteristics of open education initiatives at U.S. post-secondary institutions, by J. Bull & M. Gibney]. Journal of Open Educational Resources in Higher Education, 1(1), 201-204. doi:10.13001/joerhe.v1i1.7143

Reviewer: Mélanie Brunet

Recommendation: Revisions Required

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

Yes, this article falls within the scope of this journal by providing an overview of how OER initiatives are started, governed, funded, and assessed. Its importance stems from the attempt at covering all of these aspects and trying to point out some commonalities to inform long-term sustainability, even if the authors had to leave out some of the data they collected because of the changing context due to the COVID-19 pandemic.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

Yes, the article proceeds logically and follows the recommended structure and section guidelines. In the Word document attached, I suggested in a couple of places that some short sections be moved, but nothing major

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate

balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

There is no mention of the problematic aspects of many existing studies on the impact of OER on students, so I suggest referring to Wiley's recent article on the matter (details in the Word document attached). I also suggest referring to the COUP Framework since it is used in many of those studies, and the most recent attempt to have a consistent way of measuring the costs and benefits of OER initiatives (not necessarily individual OER). It is indeed very easy to conflate the two as some programs rely on studies of specific OER for awareness and promotion. In terms of the data, while the analysis could use some clarification, overall the authors do not appear to be drawing unwarranted conclusions based on insufficient evidence.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

I have pointed out in the Word document places where I think words are missing. The frequent use of "in order to" was a bit distracting and could be shortened to "to". But overall, it was very easy to follow and flowed nicely.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

I think that despite not being able to find many distinctions between types of institutions due to the limited data, the article still contributes to the knowledge on OER initiatives. Perhaps the most insightful part for me as a manager of an OER program was the observations about assessment. The data revealed that it was quite inconsistent and sometimes completely absent, which points to the urgency in continuing to develop ways of evaluating OER initiatives.

What are the stronger points/qualities of the article?

I appreciate the focus on the assessment of OER programs (which is often missing), but also that it brings it all together in a coherent package that includes origins, governance, funding, and assessment.

What are the weaker points/qualities of the article? How could they be strengthened?

Some recent initiatives, like the DOERS3 OER Contribution Matrix and the Midwestern Higher Education Compact's suggested approach to reporting costs and benefits of OER were not mentioned. They are somewhat recent developments that would add to the authors' argument and evidence. While I recognized a lot of studies that were mentioned, I was surprised that many others were not, perhaps because there are a lot of studies on measuring OER impact on student outcomes (and they do get a bit repetitive) but to refer to more of them would help make the point that some aspects are well studied (although not without some problems) and that others are not.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Sound

Overall Evaluation

2- Accept

Open Peer Review

Cole, A. (2022, October). [Review of the article Programmatic characteristics of open education initiatives at U.S. post-secondary institutions, by J. Bull & M. Gibney]. Journal of Open Educational Resources in Higher Education, 1(1), 205-207. doi:10.13001/joerhe.v1i1.7143

Reviewer: Alison Cole

Recommendation: Accept Submission

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

Yes – synthesizes available information about characteristics of OER initiatives in the U.S. while adding to the conversation with new survey data.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

Yes, the article follows submission guidelines.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

Clear expansion on pre-existing work and the presentation mentioned in the introduction.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

Some issues with APA Style – page number font, running head case, title missing from page 2 instead of “Introduction”, title on the title page should be bold. Minor errors in in-text citations (ones that should be et al., missing or misplaced punctuation); Double-check reference citations - corporate authors and capitalization errors, if two have the same author – the earlier publication should be listed first. In APA style all direct quotes should have locator information. Senak & Donaghue reference is not cited in the text. Make sure all text is black (some is gray). Formatting/APA errors do not affect expression or flow.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others’ practice or education?

Yes

What are the stronger points/qualities of the article?

This research pulls together existing studies and survey data about OER initiatives while contributing to the conversation from different types of institutions (not just well-funded ones), there is a wide point of view. I am looking forward to seeing what comes out of the planned secondary research article.

What are the weaker points/qualities of the article? How could they be strengthened?

Would like to see the survey questions and survey data included as an appendix.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Very Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Highly Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Highly Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Highly Sound

Overall Evaluation

3- Strong Accept

Open Peer Review

Kirschner, J. (2022, October). [Review of the article Programmatic characteristics of open education initiatives at U.S. post-secondary institutions, by J. Bull & M. Gibney]. Journal of Open Educational Resources in Higher Education, 1(1), 208-211. doi:10.13001/joerhe.v1i1.7143

Reviewer: Jessica Kirschner

Recommendation: Revisions Required

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

This article shares the results of a survey looking at the characteristics of OER initiatives, which is certainly in scope for the journal. Exploring trends/patterns in these initiatives is an important topic and should be of interest and useful to OER practitioners.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

The organization is logical and follows the recommended structure and section guidelines.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

The methodology and analysis (primarily descriptive statistics) are appropriate for the article. I look forward to seeing the survey instrument in the final version (the article mentions it as a supplementary file), and I think the inclusion of the instrument will answer some questions about depth of some of the points in the article (see my response to weakness). All included conclusions are supported by the data.

While I don't believe that there were any important works left out of the citations, I was surprised that the Open Ed Group and their COUP framework was not mentioned in the literature review section on assessment, although works from some of the groups members were included.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

The writing is very clear and easy to follow. When reviewing, I'd recommend keeping an eye toward eliminating repetition within sentences/paragraphs and ensuring sentences are clear--there were a couple that appeared to have a word missing (I'm happy to provide some notes on this, if the authors would like).

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

This is the part I'm struggling with a bit for this article, to be honest. I think the study that the authors undertook is a very useful and interesting one. As they point out, no similar large scale studies have been done, and it would be good to have a better understanding of the landscape of OER initiatives. The current article aligns survey results with literature and points out further avenues for exploration, but doesn't include many actionable takeaways. They do include tables aligning funding and cost savings and age of program and courses impacted without exploring these relationships in depth, although I do admit that exploring these connections too in-depth may be a stretch based on the sample size. I wish there was more "so what" addressed in the article, whether it being connection between funding and program success, characteristics for a successful program and/or a roadmap for newer programs, or something similar. That being said, I think that if someone were looking for an general overview of OER program characteristics grounded in data, this article does a good job and is a valuable contribution.

What are the stronger points/qualities of the article?

I think the article provides a great overview of their survey results, which explores OER initiatives' implementation, funding, governance, and assessment practices. It is very easy and clear, and the data presented provides a unique overview of OER initiatives--filling a gap in the literature. I think the survey and results are a great contribution to the OER field and only wish that the response pool had been larger so that larger trends and additional analysis could have taken place, although this is no fault of the authors.

What are the weaker points/qualities of the article? How could they be strengthened?

When reading the article, the biggest question I was left with was how did the authors define OER initiatives. As is noted, "OER initiatives have taken many different forms and sizes." However, I think it may be helpful for the authors to include a broad definition or overview of OER initiatives. Are these grant programs? Those just focusing on education and advocacy? Publishing support? All of the above? I'm not sure if these types of characteristics were collected in the survey (incentives for faculty was mentioned), but the goals and projects of the initiatives could be important, especially when looking at initiative sustainability in relation to funding.

I'd also be interested in seeing more detail provided in the data (e.g. what non-library units were involved with governance, more specificity on funding source), but, again, this might not have been collected.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Very Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Highly Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Sound

Overall Evaluation

2- Accept

Conversations With Open Textbook Authors

The Factors That Help and Hinder Accessibility

Elena Azadbakht¹

Teresa Schultz²

Keywords: Open Educational Resources, Accessibility, Disability, WCAG, Born Accessible, OER Creation

Abstract

For Open Educational Resources (OER) to truly be within the reach of all who want or need them, OER must be made accessible to disabled learners. This is often a time- and resource-intensive endeavor. Accessible open textbooks rely on diverse teams of experts and advocates, funding and access to resources, and a supportive institution or scholarly community. This study involved semi-structured interviews with the creators of eight accessible open textbooks who were identified during a previous research project. A handful of themes emerged that illuminated several common resources and barriers these authors and their allies faced when trying to ensure their works were accessible to disabled learners. A lack of both time and access to, or familiarity with, easy-to-use technology created challenges. Additionally, tools for making content accessible, as well as long-term staffing and continued maintenance issues also emerged as themes in the study. These findings highlight the ways in which academic institutions, funders, and open education proponents might support faculty authors of OER struggling with accessibility, such as by providing funding and resources, and by advocating for more robust platforms and tools.

Note: The authors use the phrase “disabled learners” and “disabled students” throughout this article. They recognize that there are ongoing discussions over the language of disability and using person-first language (people with disabilities) versus disability-first language (disabled people) when writing about disability and accessibility. The authors referred to the National Center on Disability and Journalism’s *Disability Language Style Guide* when writing this article (National Center on Disability and Journalism, 2021).

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Introduction

The rise of the open education movement has led to the development, promotion, and adoption of Open Educational Resources (OER). This, among other benefits, allows for streamlined adaption and redistribution of open content. However, to be truly open, OER must be accessible to disabled learners, including those with visual, auditory, and various cognitive and physical impairments. One in four adults in the United States has some kind of disability (Okoro, 2018). According to a 2017 study from the National Center for Educational Statistics, 19% of undergraduates in the United States from 2015-2016 had a disability (National Center for Education Statistics, 2017). Taken together, these figures indicate that disabled learners make up a significant portion of the population who deserve equitable access to educational materials like OER. In fact, the Americans with Disabilities Act of 1990 and Section 508 of the Rehabilitation Act of 1973 require that such educational content be made accessible (“Americans with Disabilities Act of 1990, As Amended,” 2009; “Section 508 of the Rehabilitation Act,” n.d.). Thus, accessibility is a shared interest and key concern of OER creators, advocates, and users alike. Even so, due to the lack of resources required to ensure OER are accessible, including time and expertise, much more work needs to be done to make accessibility a reality.

This study expands upon previous research the authors conducted on OER and web accessibility. Starting in 2020, we evaluated a random sample of about 350 open textbooks using a custom-made rubric based on the World Wide Web Consortium’s Web Accessibility Content Guidelines (WCAG), version 2.1 (World Wide Web Consortium, 2018). The majority of the textbooks in our study failed to adhere to basic accessibility best practices, such as providing alternative descriptive text for any images, properly formatting tables, and appropriately using headings (Azadbakht et al., 2021). As noted above, all educational material must be made accessible to comply with existing laws and policies, but our previous research illustrated how many educators and institutions are not complying with these laws. Advocates often promote how OER helps support equity. But, so far, many OER fail to meet the needs of disabled learners. OER are made to be shared and disabled students should be able to use them without requesting remediation from the author or a third party. It is therefore imperative that we find ways to encourage the production of accessible OER.

In order to do so, OER advocates need to gain a better understanding of the factors that both help and hinder accessibility work. Prior studies have looked at the challenges of making content accessible, but there is a dearth of research focusing on what worked from the perspective of most compliant authors. Moreover, we, being librarians who advocate for OER, know firsthand how much time and effort goes into creating a truly accessible resource and wanted to identify some ways our institutions and the greater OER community can support authors. To that end, we conducted nine semi-structured interviews with 11 participants, all of whom were heavily involved in creating eight of the most accessible texts evaluated in the previous study.

Literature Review

An uptick in lawsuits brought against college or universities in recent years that have failed to make their content accessible has brought the issue of OER accessibility to the forefront (McKenzie, 2018a, 2018b). Ensuring equal access to education to vulnerable learners, like disabled people, is also an aim of organizations like the United Nations (United Nations, 2020). Morina (2017) notes, however, that merely setting goals and policies are not enough; disabled students need sufficient support if they are to succeed in higher education contexts. Morina's literature review outlines the numerous barriers disabled students face, such as the "negative attitudes displayed by faculty members" and "inaccessible information and technology," and the need for greater faculty awareness and training (Morina, 2017, p. 6-11). Zhang et al.'s (2020) systematic review of accessibility and OER highlighted how this area of research is still in its infancy. The review noted how this area of research is limited to just a handful of countries. What's more, only two studies mentioned authoring tools. The authors speculated that tools are one reason OER are not more accessible and recommended that such tools and platforms begin including more features that support accessibility. Zhang et al. also discussed how current research focuses on assessing the accessibility of OER themselves rather than how effective they are at reaching disabled students or how they impact learning. Finally, they advocated for more educator support and training so that they are better prepared to make use of OER and ensure accessibility standards are upheld (Zhang et al., 2020).

There has also been an effort to address the needs of disabled students within higher education more broadly, as part of a desire to make various educational policies and practices more inclusive to such students. However, expecting faculty to acquire the skills needed to provide inclusive educational experiences, such as those needed to remediate OER for accessibility, presents a major challenge (Bong & Chen, 2021). Several studies have found that faculty report various barriers to using OER, including technology (Belikov & Bodily, 2016; Hong Xu, 2018; Iniesto et al., 2021; Jung et al., 2017; Martin & Kimmons, 2020; Taylor & Taylor, 2018; Zeichner, 2020). A lack of both time and money are the biggest issues would-be OER adopters face. Although, a lack of expertise with technology tools and copyright were also concerns. For example, Martin and Kimmons (2020) conducted interviews with eight faculty members, four of whom were adjuncts, at a large, private university in the Western United States. The participants cited technical issues, funding, and time as barriers to adopting OER. Gaining the skills needed to successfully modify an existing open textbook is both time and resource-intensive. The authors note, "only the most committed" are likely to do so. Belikov and Bodily (2016) analyzed over 200 responses to a survey of faculty on OER and identified similar barriers to adoption including a cited lack of time to search for, evaluate, and modify resources.

The authors discussed above, notably Martin and Kimmons (2020) and Belikov and Bodily (2016), as well as others have proposed ways of mitigating the aforementioned barriers and streamlining OER creation and/or discovery and adoption. Some specifically focus on ensuring the accessibility of OER. Most recommendations center around educating or training and heavily supporting potential faculty authors and adopters, but other strategies have also been put forward (Bong & Chen, 2021). Two specific examples include the creation (and subsequent assessment) of a learning analytics tool (Avila et al., 2020) and the development of a new workflow for library publishing, or other campus publishing units, that place accessibility at the forefront (Thomas et al., 2021). Reed and Turner (2018) illustrate the benefits of bringing in students to help gauge the accessibility of OER. They describe how the University of Texas at Arlington Libraries partnered with the Disabilities Studies department at the

institution to create an internship project for a student in that program that was focused on the development of a set of processes and best practices for the evaluation of open textbooks that the Libraries could use going forward. Navarrete and Lujan-Mora (2018) likewise describe a user profile/persona authors and developers can use to make their web content and sites more accessible. To gauge the usefulness of this profile, they used it to create an OER site and then conducted usability tests of the site with several disabled learners.

Other notable examples include BCcampus' Accessibility Toolkit and the work of Affordable Learning Georgia (Coolidge et al., 2021; Gallant, 2021). BCCampus supports the development of teaching and learning best practices at institutions of higher learning throughout British Columbia (BCcampus, n.d.). Its toolkit is a collection of resources, including templates and guides, aimed at authors and their collaborators seeking to create accessible open textbooks (Coolidge et al., 2021). Affordable Learning Georgia, whose aim is to reduce the financial burden textbooks represent to students in the state, recently developed a plan for making both existing and future OER adopted and created by the faculty and staff it supports accessible (Gallant, 2021). The plan contains several components, including a complete audit and remediation of extant materials conducted by the Center for Inclusive Design and Innovation, a partner organization, as well as extensive faculty accessibility training and the creation of accessibility guides. Additionally, Affordable Learning Georgia's program manager is creating accessible templates that faculty can use and working with other partners on a new open-source publishing platform called Manifold that will host Georgia's OER (Gallant, 2021).

To help address the gap in the literature of OER and accessibility, we set out to answer the following research questions:

1. What factors help OER authors and those who support OER creation ensure their products are successfully born accessible?
2. What factors hinder the creation of born-accessible OER?

Methods

In order to answer our research questions, we opted to pursue semi-structured interviews with the authors and people who helped support the creation of accessible textbooks on our campus. We wanted to include both authors and their on-campus supporters as we assumed that the authors were not always responsible or even aware of the accessibility work that went into their textbooks but that, at least in some cases, support staff provided this labor.

We created our interview protocol (Appendix A) based on our knowledge of accessibility work garnered from prior research, including the barriers that people face such as lack of time, money and knowledge, as well as difficult-to-use tools that support accessibility in creation. We worked with an accessibility expert on our campus to develop the interview protocol. Questions focused on the role participants and others played in the open textbook's creation, at what point did they begin to consider accessibility or, if they never did, and why not; what prompted them to consider accessibility; any tools they used that supported accessible creation; and what helped and hindered their accessibility work (see Appendix A).

We tested the interview protocol on two colleagues at our institution: one who taught a class using OER, and a library staff member who had helped them gather the material. We made changes to our protocol

based on their feedback and submitted it to our University's Institutional Review Board which granted the project exempt status.

We created our participant pool by using a study sample from our previous research study (Azadbakht et al., 2021) that determined the accessibility of open textbooks. We looked for books that had three or fewer fails (only two books had no fails, and neither of those books had an identified individual as an author). We also looked for books published since 2015, assuming their creators and supporters would be more likely to remember details, and also tried to include a mix of organization types (from community colleges to large research universities) as well as disciplines and authoring platforms. We then searched for contact information for authors and/or supporters connected to these books, removing some as we went because we discovered the authors had since retired or had no public contact information. This resulted in an initial list of 30 people associated with 15 books to contact. We opted to contact the first person listed for each book beginning in September 2021 and sent a follow up email if that person did not respond. If we still did not hear from them, we then moved to the next person on the list for that book. We did not offer incentives for participating.

We heard back from and scheduled interviews with 11 people connected to eight out of the 15 books. In three cases, we interviewed one author as well as one person who helped support the book; for two of the books, we interviewed the two people involved at the same time. For the third, we interviewed them separately. Interviews took place from late September through early November 2021 using the Zoom webinar platform and were recorded. Both researchers took part in all interviews except for two due to scheduling conflicts, with one acting as note taker and the other as the interviewer. After reviewing the interviews, we decided we had reached saturation and thus concluded this portion of the project.

Based on notes from our interviews, we created an initial list of themes that we used to code our interviews, along with Taguette, an open-source coding program for qualitative research. We each coded one interview and discussed any discrepancies. We then each coded half of the remaining interviews and discussed any questions with each other at the end.

Our final study sample represented one community college; five large, research-focused public universities; one smaller public university; and one not-for-profit group. Six out of the eight open textbooks came from U.S. organizations, and two came from Canadian institutions. Disciplines included: water treatment, business, journalism, linguistics, storytelling, open education, and nursing. In the Results section, we will refer to our participants by pseudonyms suggested by an online random name generator; however, one participant, Apurva, informed us she did not wish for anonymity and thus we will use her real name. Apurva also spoke as both a creator of an OER and as someone who supports their creation with her work for the Rebus Foundation. The Rebus Foundation is not-for-profit that promotes and supports the development of new and open digital publishing models and related technologies (Rebus Foundation, n. d.). In order to ensure our other participants remain unidentifiable, we will refrain from providing too much demographic or institutional information about them here.

Results

Who Performs the Work

When it came to who performed the work to make the textbooks accessible, a number of people in various positions were involved. However, the two most prominent were student employees and instructional designers. Several interviewees noted that student employees worked to format the books and ensure they were accessible by adding appropriate alternative text and using proper editing features for lists and headings. One participant, Harmony, noted that their office employed a student who actually used a screen reader and was able to thus conduct reviews of the textbooks to help ensure there were no issues: “I mean her skill set and the value that she adds to our team is incredible beyond just her ability to screen for accessibility, but she’s also able to be really an important member of the team in terms of ensuring the document is all formatted in a way that’s consistent.”

Instructional designers (ID) also often provided important assistance, from just reminding the OER creators to keep accessibility in mind, to helping creators understand the accessibility standards a book needed to follow. Cornelia noted that the ID they worked with had the technical knowledge to oversee the accessibility work, which was knowledge that this author-participant lacked.

Other people who performed accessibility work included librarians, a university’s accessibility office (often by providing guidance and help in answering accessibility questions), other university staff personnel, the faculty themselves, and outside OER groups such as the Rebus Foundation. Apurva, from The Rebus Foundation, said her office both tries to remind OER creators about accessibility as well as also performing accessibility checks, something that another participant, Bernard, noted they received help with from the Rebus Foundation. Yet another participant hired an outside consultant to conduct a review of specialized material in their book for accessibility.

Regardless of who ultimately made the book accessible, a major theme from the study was the importance of teamwork and the privilege of having a support system made up of experienced individuals to lean on. Finding the right mix of partners was key; many teams were comprised of members with different skill sets. “I don’t think I could have done this book on my own. I teach full time. I’m so busy,” Aina said. Another participant, Leandra, admitted that “[w]e could have created it, but it just wouldn’t have been a usable, user-friendly, accessible resource” without the team. Along the same lines, a few participants said that this team-based approach made for a better final product. “What actually emerged was this really rich tapestry...it was really cool,” observed Aina. As noted above, these teams more often than not included students, if only as reviewers or user testers. However, some students did create content and helped to evaluate or remediate content for accessibility.

Knowledge of Accessibility

Another theme that emerged was the creator’s knowledge—or lack thereof—of accessibility best practices. While some of the participants displayed some level of knowledge for what to look for when it came to accessibility, some expressly admitted they knew nothing. Cornelia in her interview said “I

couldn't have done it all myself. I didn't have the knowledge, I didn't have the tools I didn't...Right?" In contrast, Apurva, whose role focuses on supporting authors, discussed how she knew nothing about accessibility when she first started working with OER but has since learned a great deal. Some participants said they were not aware of using any tools for accessibility, even though in other areas of their interviews they discussed using platforms for this purpose. This seems to indicate that OER creators work to make OER accessible without always realizing it. Some participants also discussed a broader view of accessibility than this project took on, noting that they considered financial and technological barriers also an issue of accessibility.

Of those who did express knowledge of accessibility issues, most were not the creators themselves, but those supporting the creation of the book. This makes sense when considering many of the people working on a book's accessibility status are in these positions and are expected to have some expertise.

Support for Accessibility

Another theme we explored was the factors that helped authors make their books accessible. Subthemes in this area included planning for accessibility from the start of a project, financial support, community help, institutional culture, and setting realistic goals.

Most of the participants discussed how they included planning for accessibility at the start, or near the start, of a project. One participant, Ruthi, noted they had learned this as a lesson from prior projects where they knew they wanted to make it accessible but did not focus on it, noting, "it came down to the very last minute [and] we don't have time to do the accessibility work, and that really bothered me." Ruthi also suggested creating a plan for accessibility at the start by considering what types of content a book will have and what will be needed to make them accessible. Meanwhile, Apurva suggested slowly addressing it throughout the project so that it's also not left until the end.

Financial support also appeared as a major need. About half of the participants discussed the role it played in their project. For instance, Harmony, whose role involves supporting faculty authors at their institution, noted that "We can't do it without any, you know, funding," while Ursula, a faculty author who Harmony supported, noted how Harmony's office relied on financial support to pay their student workers who perform much of the accessibility work. Apurva argued that they didn't want accessibility work to become yet another thing that people are expected to provide for free. Participants noted the money paid for Pressbooks, staff to work on the project including freelancers, and stipends for faculty creating the books. Participants said the money came from their institution, a local regional OER group, and grants.

Some of the discussion related to the importance of institutional culture included the need for the institution to make accessibility a priority. For instance, Harmony noted that their institution has "embraced" accessibility, while both Ursula and Aina discussed how their institutions have provided training in support of accessibility. However, others discussed the importance of their role and how their institution defined it. These participants' positions were focused on teaching. Meaning, that research was not a priority while excellence in teaching was. Therefore, they saw OER – and working to make them

accessible – as something that fit their position and, in some cases, as something that could help them advance. Conversely, Bernard noted that in order to receive credit for their work, they needed it to be considered peer reviewed, which is what led them to the Rebus Foundation’s support program which helped them make the book accessible. In fact, Rebus has made accessibility one of its priorities (Rebus Foundation, 2017).

Some participants also said that having modest ambitions and setting realistic expectations while working on their projects helped to ensure their final product’s accessibility. Primarily, this meant limiting an OER’s scope, choosing content types (e.g. text) that are simple and easy to make accessible, and prioritizing some content and features over others. For example, a few discussed identifying must-haves and nice-to-haves at the start of the project. Then, focusing on the former first and only turning to the latter if they had the time to do so. Others articulated a “perfect is the enemy of the good” approach and set about creating imperfect but usable first versions of their textbook. They then used these first versions as a foundation to build upon. This allowed content creators to “put off” working on more complex content or features until they had the time and resources needed to make them accessible.

Barriers to Accessibility

Staffing issues of various kinds were a major barrier to creating accessible open textbooks. As noted above, none of the open textbooks discussed during the course of this study were the work of a sole author. However, the support type and support level available to each of the “core” authors varied. Some were fortunate enough to have a specific unit or team on campus they could essentially hand their projects to and who would make their books ready for publication, with accessibility remediation and evaluation included. Others had to identify and cultivate relationships with partners from all over campus and the greater OER community, or had to figure out how to solve certain accessibility issues on their own. Turnover and precarious employment situations also impacted a team’s ability to efficiently produce an accessible OER. For example, part-time employees or adjuncts could not devote as much time to the creation of these OER as they would have liked and sometimes left the institution before an OER had been completed.

Determining who is ultimately responsible for the textbook going forward was also sometimes an issue. OERs are living documents and need to be maintained and updated. Several participants mentioned needing to fix broken links after publication or having to respond to questions from other instructors wanting to adopt or adapt their works. At some institutions, this maintenance falls under the purview of the “publisher,” which is often the library, the instructional design team, or funding body. At others, the faculty authors and/or their departments had to step into this role.

A related challenge was time, or lack thereof. Time and time management issues made it difficult to take on an OER project in the first place, complete the OER, and ensure that the OER is truly accessible. Faculty authors and their collaborators are perpetually busy and are juggling many competing responsibilities. “[Y]ou’re teaching, you’re spread thin, you’re teaching four different, five different topics across six different courses,” Bernard explained. Several participants also noted that deadlines were imposed by others, such as grant funders, or constrained by factors such as a semester start date.

Good project management strategies sometimes helped authors overcome the challenge of a shortage of time, such as planning for accessibility in advance, regular team meetings, and ongoing communication between team members. However, several participants admitted that some content had to be cut if they or their collaborators could not find a way of making this content accessible before key deadlines. "...We were just racing against the clock, and so... some things you have to say no to," said one participant, Reuben.

Some participants discussed issues with discipline-specific or special content such as linguistic notation (i.e., tree diagrams), mathematical expressions and equations, and test banks. There was often a lack of an established set of standards or best practices for this discipline-specific content. Cornelia explained how "there's no existing standard" in their field for making certain key notation accessible to blind or visually impaired learners. In response to a question asking how colleagues at other institutions are addressing this issue, Cornelia answered, "Everyone's just making up their own solutions." Even subject and accessibility experts admitted that they could not always identify easy solutions to the questions that would arise.

Tools

Technological tools were cited as a major frustration when doing accessibility work but were simultaneously necessary to produce the level of accessibility found across this study's OER. Relatively easy-to-use platforms, tools, and resources played a role in facilitating accessibility. For instance, many of the authors began their OER in Microsoft Word or Google Docs and relied on these tools' built-in functions for ensuring the content they were creating was accessible. Several used Pressbooks as their publishing platform and depended on its accessibility aids and checks when uploading their work. A few participants discussed turning to BCCampus' Accessibility Toolkit and resources like it when needing to evaluate whether what they were producing was accessible or to find the answer to a particular question they had.

However, technology caused a lot of heartache. Some authors and teams lacked access to specific tools. "We just weren't always sure that, individually, we had the full set of tools to make it happen by ourselves," said Ursula. Others cited their insufficient knowledge of or training in specific tools and how it sometimes led to frustration and wasted time and effort. "There were times that I wanted to throw the computer at this thing, because in a lot of ways, again, ignorance is bliss, right? Why am I getting this flag, why is it not accessible, right?... I don't know what I don't know, in some cases," said Reuben. And still others bemoaned the dearth of multipurpose tools or a "one and done" checker. Many teams had to rely on several different tools to assess the accessibility of various content types, including WebAIM or other, similar extensions for checking HTML code, Adobe Acrobat for checking PDFs, Grackle for checking Google Docs, two different color contrast checkers, and more. "It's always been tricky with recommending tools to faculty because there isn't that magical click a button here and it'll test on Pressbooks whether your book is good to go or not," said Apurva.

Discussion

The results from our semi-structured interviews can begin to provide a picture of what works – and what doesn't – when making accessible OER. These include: having the support of a team, planning for accessibility from the beginning of an OER project, tools that make accessibility easy to do, and support from the OER community.

Team Work

Perhaps the most important factor is having some kind of support, whether in the form of a team, helpful tools and guides, or an active community that authors can go to with questions. Not everyone will come into an OER project as an accessibility expert – and, frankly, many will not leave as one either. Yet, our project shows it is still possible to achieve accessibility even without this prior knowledge.

Some types of support do appear to be more important than others, however. Having a team in place that assists in the creation of OER can help ensure that an author thinks about, plans for, and actively implements accessibility. Many OER authors might not have thought much about accessibility before, especially if their institution has not made it a priority, but staff that regularly oversee the creation of OER can implement accessibility best practices into their work, making it easier to perform at scale as these staff members do not need to constantly relearn the necessary skills.

However, it will always require some effort and time to oversee and complete this work. Several of our participants highlighted how hiring and training student workers to perform much of this labor is a successful strategy, but staff and librarians will likely need to grow their own accessibility knowledge in order to train and help manage the work. Staffing does need funding, however. As our participants noted, much of their work would have not have been possible if someone had not provided the money to pay for it. Funding is thus crucial to ensuring accessible OER.

We recognize that having the funding and staffing to support OER creation is often a privilege. However, accessibility should not be a privilege. Therefore, we argue that when providing these resources and support for faculty creating OER, libraries and universities need to ensure that accessibility is considered a core service that receives early support and is not treated as an additional benefit.

Planning

The participants also demonstrated the importance of considering and planning for accessibility at the start of an OER creation project. The longer a team waits to begin this work, the harder it will be as more remediation will ultimately be needed. Tools such as the accessibility checklist and Word template from Affordable Learning Georgia and BCCampus' toolkit can help teams with this planning. But, based on the interviews we conducted, we also recommend the following when planning for accessibility:

- Consider what content types will be included in the OER. Some content will require more work than others. For instance, text and images are fairly easy to make accessible, but videos will not only need closed captions but may also include iframes that can create other accessibility issues.
- Create a list of goals for the project and categorize them into “must have” and “would like to have.”

- Consider the timeline for the project. You might not be able to accomplish all of your goals in this time frame. Therefore, it is important to prioritize.

User-Friendly Tools

Assisting authors as much as we, as OER advocates, can to use the tools and other resources available to them can ease the work of OER support staff. Many of the authors we interviewed did not consider that using tools such as Pressbooks helped make their books accessible, but it was also clear to us that they did indeed use these tools and their features. Building accessibility into platform training for OER authors can help ensure that accessibility is part of OER creation from the very beginning. That being said, trying to provide too much accessibility training, as Affordable Learning Georgia found (Gallant, 2021), might not always be worth the time. Instead, those who support the creation of OER should continue to work with the companies and organizations that provide authoring tools and platforms to ensure accessibility is built into their products and make accessibility a top consideration when choosing which tools and platforms to work with. This can include pushing OER-related organizations to prioritize accessibility as well as insisting on accessible platforms and other tools from vendors – and refusing to work with them if their products are not accessible. In particular, work done by the Rebus Foundation exemplifies the kind of advocacy needed to continue to ensure the platforms and tools authors and institutions rely on have robust accessibility features.

Community Support

Until all Colleges and Universities are staffed to fully support the creation of OER, the broader OER community will remain essential for creators who lack such support. Webinars and other resources can help creators who find themselves alone and unsure of how to proceed. That said, we note that several of our study participants did not seek accessibility help from the OER community but from their own discipline's community. Although outreach of this kind can only go so far, OER advocates should continue to promote and share resources with current and future authors and to engage with them regularly to ensure, at the very least, that existing accessibility issues do not go unnoticed.

Conclusion

Accessibility is imperative to making OER truly available to all learners. Thus determining what factors help or hinder OER creators' ability to adhere to best practices and standards, like WCAG, is crucial. Our study found that accessible OER depend on collaboration and the expertise and the effort of diverse teams, as well as the wider OER community. Financial support, especially to pay staff or students and afford faculty creators more writing time, and following project management best practices, like planning for accessibility at the start of the project, are also factors that helped make OER in the study accessible. A lack of time and resources, as well as competing priorities and issues with platforms and tools, did create some challenges for the authors. Institutions, organizations, and funding bodies can support the creation of accessible OER by developing units and/or hiring staff with the knowledge and skills to assist potential authors, provide needed resources and training opportunities, and advocate for the continued development of the platforms and tools that help facilitate the production of accessible content. Members of the open education community can likewise offer their support and promote accessibility – and its related skill sets – more broadly. To that end, future research should dig deeper

into OER authors' experiences, their creative processes and practices, and the challenges they face using various platforms and tools to illuminate the work that still needs to be done to make learning open and accessible to all.

Acknowledgements

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Conflict of Interest Statement

We have no conflict of interests to report regarding this research.

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Appendix

Appendix A

Accessible OERS: Conversations with Creators Interview Protocol

Introduction

Hello! Thanks so much for agreeing to talk with us today. As you already know, we're interested in learning more about open textbook authors' experiences adhering to web accessibility standards, and we identified your work as one that successfully adhered to such standards. We have prepared [number] questions but may ask some additional follow-up questions as we go along. I will ask the questions, while my colleague here will take notes.

We'll record our conversation for later review. However, anything you share with me will be kept strictly confidential. You will not be personally identified in any of the presentations or publications that might result from this interview. Also, participation is voluntary, so you may choose to discontinue this interview at any time. Just let me know.

Do you have any questions before we begin?

[Pause for response]

Okay, great. I'm going to start the recording now.

Questions

1. Could you tell us a little about yourself (job title, institution, academic background, research interests, etc.) If your position has changed since you wrote the textbook, could you tell us about your position at the time?
2. Let's talk about the project that led to your open textbook.
 - a. Can you tell us the role you played in creating the open textbook in question?
 - b. What inspired or motivated you to write it?
 - c. Who else was involved? Please include anyone involved in its publication, not just your fellow editors and authors
 - d. How long did it take you to write and publish it, start to finish?
3. At what point in the project did you start thinking about accessibility (provided that you did)?
 - a. Who or what prompted this?
 - b. Which standards or best practices did you look to and why? Were there any specific to your institution?
 - c. If you didn't consider accessibility when writing your book, is there a reason why?

4. What tools did you use to make your book accessible or to assess your compliance to accessibility standards/best practices?
5. What were some challenges you faced in making your book accessible?
 - a. Prompts if needed: Did you have challenges finding or using technology to assist in making your book accessible? What about guidance for what to focus on in making the book accessible? How much did money (or lack thereof) affect this?
6. What helped (i.e., do you have any recommendations for other authors)?
 - a. Prompts if needed: Were there tools that you particularly liked? Why did you like them? Was there support from specific groups/people, and if so, why was it helpful?
7. What advice would you have for authors wanting/needing to make their open textbooks accessible?
8. Do you have any other comments you would like to share?

Closing

Okay, I'm going to stop the recording now. It's been wonderful hearing about your experience creating an open textbook. If you're interested, we'd be happy to share the final report with you when it's ready?

You have both of our email addresses, so feel free to reach out if you think of any other questions.

Open Peer Review

Arnold, N. (2022, October). [Review of the article, Conversations with open textbook authors: The factors that help and hinder accessibility, by T. Schultz & E. Azadbakht]. Journal of Open Educational Resources in Higher Education, 1(1), 229-232. doi: 10.13001/joerhe.v1i1.7157

Reviewer: Nicole Arnold

Recommendation: Revisions Required

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

Yes, this article's topic (OER and web accessibility) is related to the Journal's scope. This is a very important topic. In fact, if a learning object is not accessibility and it is put forth by a university for students to use, there could be legal repercussions. The article also points out that a sizeable population relies on accessibility features in order to read items. In addition to this, with the advent of COVID-19, more and more instruction and learning has moved online. When Libraries were temporarily closed, OERs became more prominent. This topic is not only extremely important, it's also very timely.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

Yes. In addition to results, it also adds a discussion portion, which I think is a very good addition.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the

author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

The article's analysis is based upon the literature review and the interviews conducted. It is very clear how the author(s) arrive at their conclusions. The article makes use of current literature on this topic, ensuring that their analysis is based off of the current setting of OER and accessibility. As a result of this literature review, the authors opted to fill in more fully an area of research that has yet to be expanded qualitatively.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

I had no issues with the writing style or references.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Yes. The author(s) gives concrete examples of what would help and what would hinder. The author(s) are able to use the interviews conducted to paint a very clear picture of what can be done in the future so that OERs are totally accessible to those with disabilities.

What are the stronger points/qualities of the article?

The strongest point of this article was the marshaling of interviewees. Their interview pool was very diverse, with interviewees coming from public universities, one smaller public university, and a non for profit group. They also had some interviewees from Canadian institutions. The OERs written by the interviewees also spanned a huge number of subjects. This was very important because of the nature of these subjects. For example, creating a screen readable mathematical formula presents a different type of hardship in comparison to a screen readable word chart. Being able to take all of this into account is very important.

What are the weaker points/qualities of the article? How could they be strengthened?

This is a small request, but I think using the Pseudonyms more prominently and giving some background on who that Pseudonym is contextually would be helpful. For example, is "Ruthi" from an R1? Or from a small university? Using the pseudonyms more prominently rather than using pronouns would also help with clarity.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Very Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Highly Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Highly Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Highly Sound

Overall Evaluation

2- Accept

Open Peer Review

Bongiovanni, E. (2022, October). [Review of the article, Conversations with open textbook authors: The factors that help and hinder accessibility, by T. Schultz & E. Azadbakht]. Journal of Open Educational Resources in Higher Education, 1(1), 233-235. doi:10.13001/joerhe.v1i1.7157

Reviewer: Emily Bongiovanni

Recommendation: Accept Submission

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

This article is aligned with the scope of the journal. The topic of accessibility in OER is important and not widely discussed in scholarly literature. It is exciting to see more research on accessibility hurdles and progress in OER!

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

There is good use of sections and I was able to follow the article easily.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

The paper is well researched and the literature review provides good context. The article successfully pulls together themes from the interviewees responses.

I do wonder if in the future the authors would consider including participants who weren't successful in making accessible resources to better understand their hurdles and why they weren't successful, as opposed to only participants who were successful in making accessible resources.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

There were no issues with expression or flow.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

The article highlights areas in which accessibility support can grow. I think librarians and others supporting the development of OER or managing OER programs will benefit from the information presented in this article.

What are the stronger points/qualities of the article?

The scope and research topic is great and will benefit the community.

What are the weaker points/qualities of the article? How could they be strengthened?

The discussion section could be strengthened with slightly better flow, perhaps an outline of themes to be discussed. It might help to remove the recommendations on planning for accessibility, since this doesn't directly tie to the research.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Very Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Highly Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Highly Sound

Overall Evaluation

3- Strong Accept

Open Peer Review

Filiatreau, A. (2022, October). [Review of the article, Conversations with open textbook authors: The factors that help and hinder accessibility, by T. Schultz & E. Azadbakht]. Journal of Open Educational Resources in Higher Education, 1(1), 236-239. doi:10.13001/joerhe.v1i1.7157

Reviewer: Amy Filiatreau

Recommendation: Revisions Required

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

Yes, the article appears to be in-scope, and the topic is a high-priority one.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

The article proceeds logically and the process is described quite well. It was a simple project (as far as the methodology) and based on previous research.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

It appears obvious to ME that accessibility in OER is desirable and necessary, but that is assumed here, rather than proven. Some readers may ask why students with learning differences need accessible texts, or

might argue that if a student requires accommodations, that is the time to make the text accessible, rather than making it a default part of the writing process. Since the authors clearly state that MOST of the OERs they evaluated did not even have basic accessibility, that fact flies in the face of "all educational material must be made accessible to comply with existing laws and policies" - they apparently do not HAVE to be accessible. It would have been helpful to have included a reference that definitively makes the case for OER accessible texts. (For example, Section 508 refers to federal agencies only, and doesn't necessarily relate to HE institutions, even those who receive federal funds (to my knowledge anyway), so it is unclear why that is included here.)

The research process here is clear, and results are based on the experience of the interviewees. The literature review refers to many other similar recent studies.

I wish they had included a table(s) with more detail on the results; for example, which interviewees worked at large or small universities, because the availability of resources like instructional designers and funding varies so wildly based on what size/kind of institution it is. Something like:

Participant A - Large or small U - Public, private, community college - nonprofit or for-profit - Help from instructional designers or not - Help from student workers or not - University embraces/requires accessibility or not - Funding available or not - Which technologies/platforms used

I would like to have had some description of how they came up with their interview protocol - did they based it on protocols that are known to be sound? Did they have it evaluated to determine they were asking the right questions in the right way?

I also wish they had paired this with some interviews of authors who did not consider accessibility at all, but perhaps that will be a future study.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

The writing style is clear and flows easily. All references match up with in-text citations.

It is unnecessary to name any of the interviewees, whether anonymous or not, in my opinion, and I find it distracting. It could just be "Participant A" or something.

The Rebus Foundation is name-dropped on page 5 without any indication of what it does. It would have been helpful to have a description, as well as a link. A link to the BCcampus Accessibility Toolkit and Affordable Learning Georgia. Yes, I can Google these, but direct links are always helpful.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

The contribution is not particularly original or groundbreaking. The literature review indicates that research has already been done that shows the same findings that they found. However, the findings may help bolster more resources for accessibility in OER.

Again, it would have been helpful to know where the respondents come from - large or small universities - because if I am from a small university trying to make the case to my boss that I need help and funding, but cannot show that other universities our size offer this kind of support, I have a losing argument.

There are not a lot of practical examples here about how these people improved their own situations, i.e., how they made the case that they need more resources and funding, more training etc.

If the tech and platforms tools need improvement and built-in accessibility features, how do we advocate for that?

I also think that having transcripts to all of the respondents' comments - perhaps edited for length or to protect privacy and be within the IRB - would have been helpful as an appendix or providing a link to these somewhere. I find myself wanting to know more about what they said.

What are the stronger points/qualities of the article?

Very clear, simple premise/research question, and clear results indicating that teamwork, time management, tech help, and funding are necessary to have good accessibility in OER. Having candid comments from those who have experienced this process is a good thing.

What are the weaker points/qualities of the article? How could they be strengthened?

Not a lot of new news here; it was already known that time, resources, and funding are important for accessibility in OER - and accessibility in general. Other ideas for strengthening the article are in the section above.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Sound

Overall Evaluation

2- Accept

Just One Textbook?

Student Perceptions of and Preferences for Open and Affordable Educational Resources

Elizabeth Nelson¹

Christina Riehman-Murphy²

Keywords: Open Educational Resources, course materials, assessment, user experience, perception

Abstract

In this study, we set out to assess undergraduate students' perceptions of, and preferences for, open and affordable educational resources (OAER) in courses where a faculty member had recently adopted them as part of a campus library-led grant. A survey was sent to students at the completion of their course in which OAER were used, yielding 223 responses over three years of surveying. Our survey results showed that students greatly appreciated the lack of cost associated with open and affordable materials. Students also overwhelmingly perceived OAER as the same or better quality as commercial course materials they had used in other courses. However, student responses around their perceptions of, and preferences for, access and format yielded results that indicate that, when it comes to OAER, students are nearly as concerned about how they access their course materials and what format they are in as they are about how expensive their materials will be to purchase. In this article, we will discuss our analysis of these responses regarding students' ranking of factors instructors should consider when assigning materials and their preferences and perceptions of how they access their course materials.

Introduction

Open educational resources (OER) are “teaching, learning, and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions” (UNESCO, n.d.). Assigning OER in place of commercial textbooks can positively impact a variety of important higher education issues: from pedagogical concerns, like student engagement and learning, to institutional concerns, like affordability and retention. While the open education movement grows and diversifies its goals, a core driver of OER use remains that higher education in the United States is inaccessible or inequitably accessible to many because of financial barriers – including those erected by

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expensive required course materials. As early as 2005, U.S. Congressional reports stated that the cost of course materials had already “...risen at twice the rate of annual inflation over the last two decades” (GAO, 2005). Since then, this trend has intensified. An analysis from 2020 indicates that prices are now increasing at three times the rate of inflation (Nagle & Vitez, 2020). In online news sources, parents and students are often cautioned to budget up to \$1,200 per year to cover the cost of their assigned course materials alone (Del Valle, 2019).

At Penn State, we often discuss both OER and OAER, or open and affordable educational resources. “Affordable” is a term that varies in definition from institution to institution but, at Penn State, we define affordable educational resources as “any required course material that students purchase for less than \$50. This may include low-cost or no-cost options and library materials that do not have an open license” (Penn State, 2022). By including this term, our affordable “umbrella” covers both materials that cost less than \$50 total per student and materials paid for by the University Libraries or a similar institutional entity, rather than by the students directly.

Whether or not individual students consider \$50 affordable is debatable, but the general impact of trying to improve the affordability of higher education by addressing the expense of required course materials is supported by students around the country. A notable proponent of affordability in higher education is the Student Public Interest Research Group (Student PIRG) (affiliated with the US Public Interest Research Groups (US PIRG)), which distributes national surveys to US college students on how the cost of higher education has affected them, then publishes these results in their Fixing the Broken Textbook Market reports (Nagle & Vitez, 2020). Both their pre-COVID (2019) and mid-COVID (2020) reports provide startling revelations on student’s inability to afford their required course materials (Nagle & Vitez, 2020). Most notably, every edition of the Fixing the Broken Textbook Market report since 2014 has reported that approximately 65% of this national pool of surveyed students has skipped buying textbooks due to their cost (Senack, 2014). In the 2020 survey report, 25% of students surveyed in 2019 said they had to take on extra hours at work to be able to afford their course materials; 19% of students chose not to enroll in certain courses because of the cost of assigned materials; and, most concerning, 11% stated that they had skipped meals specifically in order to make up for the costs of their course materials (Nagle & Vitez, 2020). In the 2021 survey report, special attention was paid to food insecurity, due to the impact of the COVID-19 pandemic. Out of the more than 5,000 students surveyed in 2020, 10% reported missing meals due to COVID-19 and, of those 10%, 82% reported not buying assigned course materials due to the cost compared to the 65% of food-secure students who reported not buying assigned course materials due to the cost. The report goes on to state, “Students who experienced hunger in the pandemic skipped buying access codes [to assigned course materials] at nearly twice the rate as their peers. This set of students cannot choose to prioritize either health or academic success; they have been priced out of both” (Nagle & Vitez, 2021).

In Pennsylvania, which is the sixth most expensive state in which to attend a public university (Hanson, 2022), Penn State University has long sought to address student access to course materials via a variety of affordability initiatives (Riehman-Murphy et al., 2020). At Penn State Abington, one of Penn State’s 23 campuses, librarians have attempted to address these barriers around the cost of access to course materials by creating the Affordable Course Content Faculty Fellowship (ACCF). The campus, located

just north of Philadelphia, is a majority-minority campus with a significant percentage of students from diverse backgrounds, first-generation students, and students with high financial need. Since its inception in 2019, this endowment-funded faculty-focused program has supported three annual “rounds” of faculty participants as they explore, evaluate, adopt, and teach with OAER in their courses. As of the writing of this article, ACCFF has supported 19 faculty in adopting OAER for 22 courses. Since initiating this adoption program three years ago, 2,703 students have been impacted by these courses and have collectively saved more than \$100,000.

To assess both qualitative and quantitative impacts, we survey both faculty and students who participate in ACCFF classes at the end of the first semester in which the OAER was implemented. After exploring the Open Education Group’s OER Research Toolkit (Open Education Group, n.d.), we determined that student perceptions of and their preferences for their course’s OAER materials were of particular interest to us in order to help us understand how to better design our program and support our faculty. In this article, we’ll be focusing on how students perceive the nature of open and affordable course materials, and especially how those perceptions affect their preferences for how they access and use those open materials.

Literature Review

Impact on financial barriers and impact on student learning are key metrics of assessment for OER. OER research has investigated whether OER are valuable as learning materials in comparison to commercially published textbooks and other commercial course materials. In a landmark survey of higher ed institutions in Florida in 2012, more than 20,000 students from 11 institutions around the state were surveyed. The results of the survey showed that 63% of students rated their newly assigned OER as similar or higher quality than their previous non-open materials (Florida Virtual Campus, 2012). This area of research has remained vital and growing in recent years. In a synthesis of research published between 2015 and 2018 examining the perception and/or efficacy of OER as learning materials, Hilton (2020) found that, out of 29 studies published, “a strong majority of the participants report that OER were as good or better [than commercial texts]”.

Cost savings for students are often used to quantify impact of OER largely due to the reduction of high textbook costs and the tangible return on investment in areas of student success and retention, which speak to a variety of institutional stakeholders. The Open Education Group developed the COUP framework to study the impact of OER around four frames: “cost,” “outcomes,” “use,” and “perceptions” (Open Education Group, n.d.). This framework has been used to assess a number of OER programs and demonstrate largely positive gains in all four areas as a result of the OER. For instance, Bliss, Robinson, Hilton, and Wiley (2013) used the COUP framework to assess the effectiveness of an OER adoption pilot across eight community colleges and reported positive impacts in areas within the framework such as reduction of financial costs to students, increase in students’ ability to immediately access their course materials, and student preparation in the classroom. Tillinghast, Failkowski, and Draper (2020) added an E to COUP to explore how OER-enabled pedagogy (OP) impacts engagement

as well. These frameworks help researchers design studies using clear metrics in order to measure the success of OER initiatives.

A closer look at some student perception-focused studies shows that there are additional factors concerning access and format that impact perception, making them important for OER adoption programs to consider. Students consistently rate ease of access as important as cost savings (Jhangiani 2017, Brandle et al. 2019, Cooney 2016, Wynants & Dennis 2022, Hong 2019). In some cases, students ranked ease of access more important than cost savings. (Jhangiani 2017, Magro & Tabaei 2019). Wynants & Dennis (2022) found that students considered the attributes of OER that most contributed to their learning were self-check quizzing, organization, design, formatting, online accessibility and technical features, videos, and visuals. The aspect students mentioned least, however, was cost.

Methods

Our survey results replicated these earlier studies with the vast majority of students rating their new open or affordable course materials as being the same or better quality as other course materials they have used in the past and with students overwhelmingly grateful that the course materials were free or low cost. However, as we considered how students access their course materials and how that might affect their perception and use of these materials, we wondered; in a higher-ed landscape where fully online course materials are increasingly common, how much do students really think about where those materials come from? And, if their course materials are all packaged into their course's learning management system (LMS), do they see those materials as being at all separate from the rest of the course content (i.e., lectures, assignments, etc.) that came directly from the instructor?

In our discussions of these questions, we kept coming back to the idea that if students do see differences in how they access and use different kinds of assigned course materials as opposed to materials like lectures and assignments that come directly from the instructor, then that might be a hidden factor impacting their perceptions of OAER vs paid course materials – one that we had not previously considered. In response, we revised our ACCFF course survey to explore this question further.

The survey was hosted and distributed online via Qualtrics and consisted of 25 questions. We provided a mix of qualitative and quantitative questions that asked students how they made purchasing decisions in regards to assigned course materials in general, how they accessed their materials in their ACCFF courses, what kinds of technology they use to access course materials, what considerations they want their instructors to keep in mind when assigning course materials, and their perceptions of the format, quality, usefulness, and ease of use of the assigned materials in their ACCFF courses.

The courses taught by instructors in each cohort of ACCFF may be taught in the summer, fall, or spring of the academic calendar after their acceptance into the cohort. We distribute an optional survey for students to each section of each ACCFF course near the end of the course's semester and work with the instructor's schedule to choose specific times that will be convenient for all. Students are asked to take the survey to assist in our project but are assured that survey participation is not required and that their survey participation and answers are anonymous.

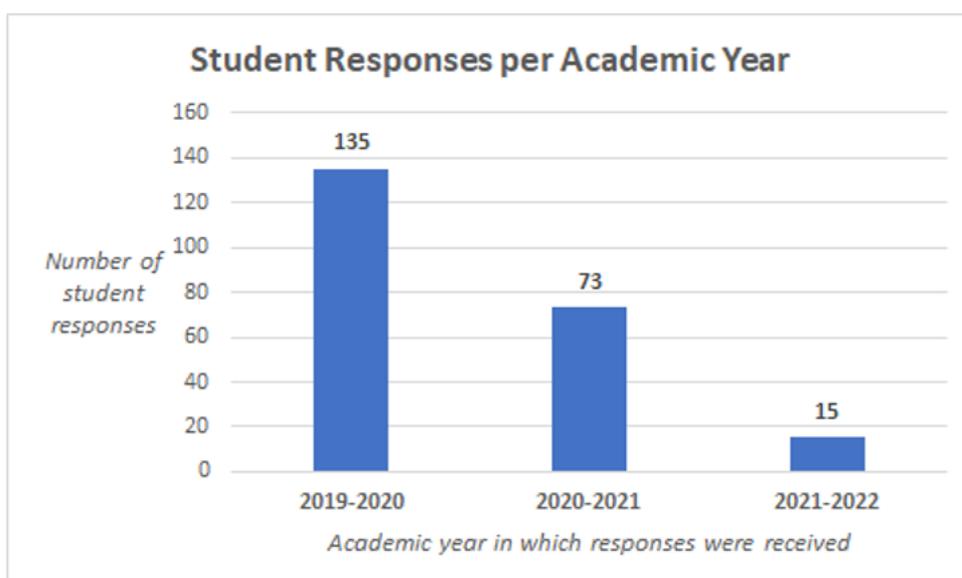
Survey results have been collected at the end of each semester for all courses within that semester throughout the three years of the ACCFF program. Rather than analyze each course's responses separately, we have chosen to analyze them all together as part of the shared program. However, the introduction of COVID-19 and remote learning did have a significant impact on our survey response rate. We greatly prefer to distribute the survey during in-person class meeting times if possible as this does seem to have a positive impact on participation rates. During COVID-19's period of remote learning, however, all surveys were necessarily distributed asynchronously online and received much lower responses; accordingly, most of our survey results come from the pre-COVID ACCFF courses.

In total, twenty-two courses at Penn State Abington have participated in ACCFF since the program began in 2019: seven courses were first taught with their new materials in the 2019-2020 academic year; eight courses in semesters during the 2020-2021 academic year; and seven courses in semesters during the 2021-2022 academic year. Approximately 898 students were enrolled in these courses during the first semesters in which the new open and affordable materials were integrated into the courses. Although these courses have continued to be taught since then, and many have continued to use these new materials after their first semester of integration, only those students enrolled during the first semesters during which these materials were integrated were targeted for participation in our survey.

Of those 898 students, the survey was distributed to approximately 757 students – some in-person (prior to COVID-19) and most via links in their Canvas courses (during COVID-19 remote learning). From those 757 students, we received 223 student responses, giving us a response rate of 29.5%. We received 135 responses from students in courses taught in the semesters during the 2019-2020 academic year; 73 from students in courses taught in semesters during the 2020-2021 academic year; and 15 from students in courses taught in semesters during the 2021-2022 academic year. This decline in our response rate, which we attribute largely to COVID-19's disruption of in-person learning and student engagement, is apparent in Figure 1.

Figure 1

Number of Student Responses per Academic Year



Results

In this article, we hope to add to our shared understanding of how students access and perceive their OER course materials. In order to do so, we will focus primarily on students' responses to our surveys' questions 17, 9, 10, 11, 15, and 16. (Please see Appendix A for a link to the full list of survey questions, as well as for responses, codes, and other information related to our in-depth discussion of these specific questions.)

Before beginning our results analysis, we feel it is important to acknowledge that, as stated previously, COVID-19 and the accompanying worldwide evolution of remote and virtual learning happened during the years of our programs' survey collection. It is likely that these events and their impact on students also had an impact on student responses and perceptions. For instance, we know that many faculty switched to digital materials during this time, possibly reluctantly and without prior experience with these materials, which may have had an accompanying impact on students' experiences with learning from digital materials in general (Blumenstyk, 2022). However, we are as yet unaware of what other impacts this time of extreme change may have had on our students and what influence it may have had on their responses over time.

Question 17: Ranking Factors

Question 17 asked students to rank the top three things they feel are most important for instructors to consider when choosing course materials.

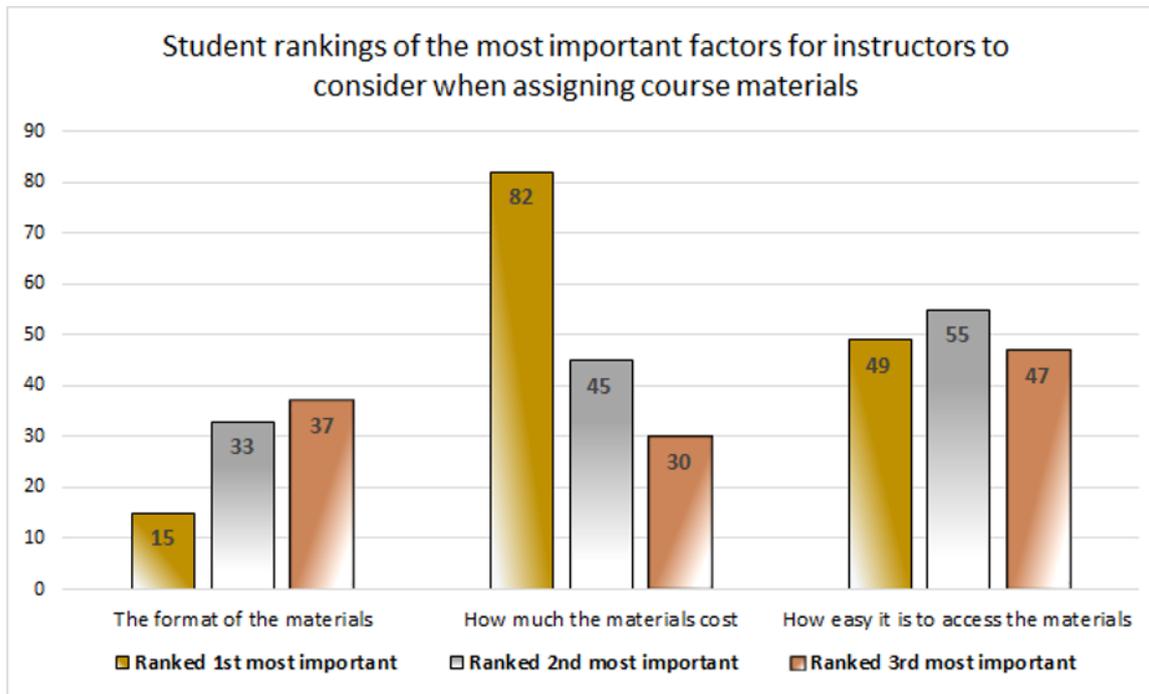
The majority of respondents chose factors #1, #2, and #3, listed below. However, the ordering of the factors differed between responses.

- Factor #1: the format the materials are available in – i.e., print, digital, accessible by phone, etc.
- Factor #2: how much the materials cost – i.e., to purchase, rent, subscribe to, etc.
- Factor #3: how easy it is to access the materials – i.e., in print, online, via Canvas, via publisher's website, etc.

When choosing the most important factor instructors should consider when choosing textbooks, 82 students picked factor #2, 49 students picked factor #3, and 15 students picked factor #1. When choosing the second most important factor, 55 students picked factor #3, 45 students picked #2, and 33 students picked #1. When choosing the third most important factor, 47 students picked #3, 37 students picked #1, and 30 students picked #2. See Figure 2.

Figure 2

Student Ranking of the Factors Instructors Should Consider when Assigning Course Materials



While the financial cost of the materials was the primary concern among the majority of students, it was interesting to see how closely they also ranked the ease of accessing those materials. It's clear that students' ability to easily use their materials is nearly as important to them as being able to access them for free. However, if faced with the decision, would students rather have an expensive but easy to navigate textbook, or would they prefer a free textbook that might be more difficult to use?

Questions 9 and 10: Accessing Materials

Question 9 asked: "Compared to most other courses you've taken, how would you rate access to the materials for this course?" where the answer choices were:

- Easier to access
- About the same to access
- More difficult to access

From our 223 respondents, we received 202 responses to Question 9. 166 respondents (82%) indicated the course materials were easier to access than materials in other courses they had taken, 35 respondents (17%) indicated that the course materials were about the same to access, and only 1 respondent (0.4%) indicated that the course materials were more difficult to access than materials in other courses they'd taken.

Question 10 asked respondents to explain their answer to question 9 in their own words and received 170 open-text responses. These open-text responses were analyzed for emerging themes through

independent open coding by both research team members. Individual codes were then merged into a shared spreadsheet. The team then reviewed each code together. For codes that aligned, a description of the code was added to the spreadsheet and the responses were reviewed for alignment with that description.

For each discrepancy in coding, the team worked through them to come to an agreement, added a description of the finalized code to the spreadsheet, and re-reviewed for accuracy and alignment. All codes were then collaboratively analyzed for themes, which emerged through the open coding process. We identified eight separate themes among these reasons given for why students chose their response. In Table 1, we have included the 8 themes, along with a tally of how many responses fell within that category. Please note that many responses are counted multiple times as one response may have mentioned elements of several different themes. Accordingly, the responses do not add up to the number of participants.

Table 1

Question 10 Themes

Theme	# of responses
Comparison to other courses' materials or other assigned materials	15
Ability to access materials in a timely fashion	1
Ease of accessing and/or finding the materials	75
Cost of the materials	47
Convenience of accessing digital materials	25
Specific challenges related to their materials or courses	8
The "mode" of access they used	116
Perception of the nature of the materials	20
How they used the materials as learning objects	12

Ease of Accessing and/or Finding the Materials

Among the 75 responses that fit into the "Ease of accessing and/or finding the materials" theme, 56 responses mentioned that the materials were just generally easy to access without further clarification. For example, one student response in this category reads, "It was easy to access since all we had to do was click the provided link on the syllabus to access the material". 14 of the 75 responses mentioned that the materials were easy to navigate or use, such as this student's response: "Everything I needed was on the class's Canvas page. The chapters needed were the only materials shared so I didn't have to scroll

through the whole book”. 15 of the 75 responses mentioned that the materials were easy to find specifically, rather than to navigate or access, such as this student’s response: “Since everything could be found on modules or online it was definitely easier”.

This presents an interesting area for further research – how much does ease of use impact students’ willingness or ability to use their materials at all? In Question 17 we saw that students rank the cost of a material as more important than how easy it is to use – but we cannot take that to mean that students will use any material so long as it is free, regardless of how easy or difficult it is to use.

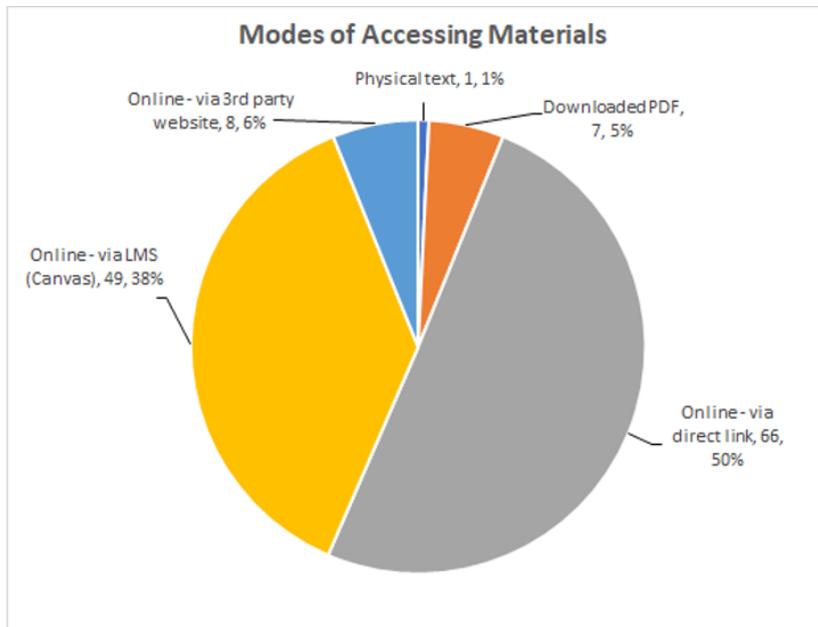
Mode of Access

The largest theme we saw responses under was the “mode of access” theme. Responses that fit this theme included indications of the following responses, outlined in Table 2.

Table 2

Mode of Access Theme Responses

Sub-theme of responses	# of responses
Having or using a physical version of the text	1 of 116
Downloading or using a PDF of the materials	7 of 116
Accessing the materials “online” or via a link or URL, with no context as to where that material is hosted, via what website or interface it’s being accessed, etc.	66 of 116
Specifically accessing the materials online via the course LMS page (Canvas)	49 of 116
Specifically accessing the materials online via a non-LMS website, like the University Libraries’ website, a third-party non-University website, etc.	8 of 116

Figure 3*Modes of Accessing Materials*

At Penn State, our LMS is Canvas – all (or nearly all) courses have a Canvas course, but how instructors use those Canvas courses varies widely. After the COVID-19 pandemic and the resulting emergency move to remote instruction, we have heard internally that significantly more instructors are building and using their Canvas courses more robustly. However, prior to 2020, instructors might have been using their Canvas course as anything from a fully populated set of modules and assignments, to just a shell to host and distribute copies of their syllabi.

To ensure that lack of previous comfort with Canvas course design was not a barrier, our ACCFF faculty participants received help and consultations in integrating their new OAER into their Canvas courses as well as into their course content, assignments, and syllabi. We have sought to encourage faculty to think of how students will need to access those materials and try to provide course materials in ways that will make sense to both students and to the instructor. For example, providing a link to or embedding the required readings for each module directly within each module, rather than just listing readings by module or date in the syllabus.

What intrigued us was that approximately 57% of our responses said that the course materials were easier or as easy to access as any course materials they have used before simply because the mode of access was “online” or via a link. One student said, “[the] teacher was able to provide a link that make [*sic*] it easy to access [the assigned course materials].” Other students shared similar reasons for why their material was easy to access, including examples such as “I liked that the link was on my computer

and it was more motivating to access” and “It was easy and online already, I didn’t have to dig out a book and do anything it was all in front of me.”

Additionally, a further 42% of our responses explained that the course materials were easier or as easy to access as previous non-open course materials because they accessed those course materials via the course’s organizational structures in Canvas specifically – as one student explained, “It’s in modules in Canvas, easily accessed.” Given the above focus on helping our participating faculty think about how their students would use Canvas, we were not surprised to see that many students felt that accessing materials directly in Canvas would provide an easy “one-stop shop” for all their coursework needs.

Question 11: Method of Access

Question 11 asked students, “How do you prefer to access course materials, in general?” 201 students answered this question, and of those, 16 (8%) indicated that they prefer print materials, 82 (41%) prefer online materials, 62 (31%) prefer the option of using either a print or online version of the same materials, and 39 (19%) had no preference.

It was interesting to see that, despite previous research showing that students seem to prefer learning from print over digital materials (Lindshield & Adhikari, 2013), our respondents here not only preferred online options, but also cited online format of materials as something that made it easier for them to use those materials. Further research could explore how students rate how easy course material is to access or use, versus how well they feel they can engage with and learn from it – and which of those factors is more important to them in how they evaluate the usefulness, quality, or efficacy of that course material.

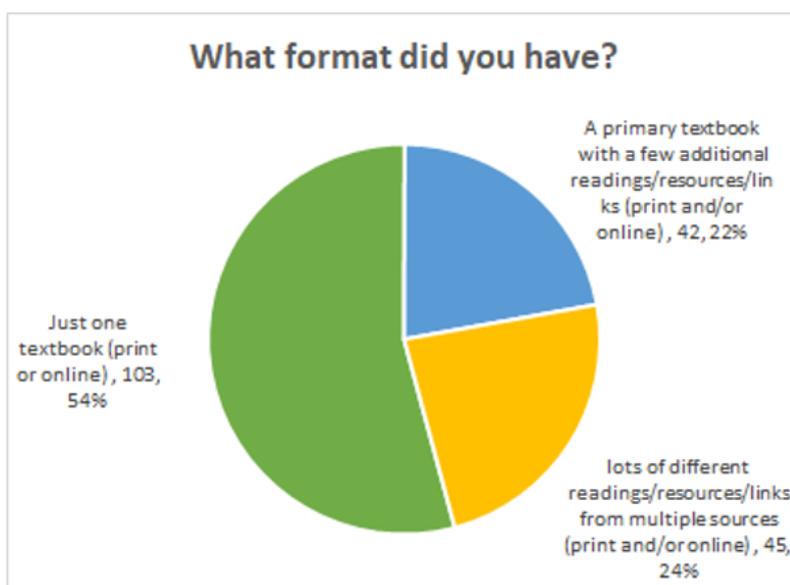
Questions 15 & 16: Format of Materials

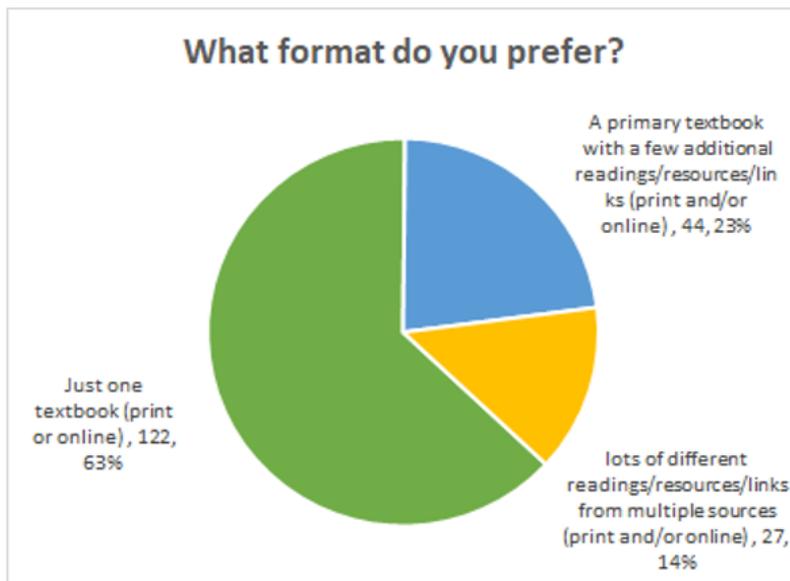
Question 15 asked students, “Which best describes the format of your materials for this course?” 201 students answered this question and 103 (51%) said they had “just one textbook (print or online),” 42 (21%) said they had “a primary textbook with a few additional readings/resources/links (print and/or online),” and 45 (22%) said they were assigned “lots of different readings/resources/links from multiple sources (print and/or online).” 11 students (5%) answered “Other” and then described the format of their materials in various ways.

In Question 16, we followed up by asking students, “In what format do you prefer your course materials to be, in general?” Again, 201 students responded. 122 students (61%) said they preferred to have “just one textbook (print or online),” 44 (22%) said they preferred to have “a primary textbook with a few additional readings/resources/links (print and/or online),” and 27 (13%) said they preferred to have “lots of different readings/resources/links from multiple sources (print and/or online).” Eight students (4%) answered “Other” and then described the format of their materials in various ways (See Table 3 and Figure 4).

Table 3*Responses to Actual and Preferred Format of Course Materials*

Question 15: Which best describes the format of your materials for this course?	# of responses
Just one textbook (print or online)	103 of 201 (51%)
A primary textbook with a few additional readings/resources/links (print and/or online)	42 of 201 (21%)
lots of different readings/resources/links from multiple sources (print and/or online)	45 of 201 (22%)
Question 16: In what format do you prefer your course materials to be, in general?	# of responses
Just one textbook (print or online)	122 of 201 (61%)
A primary textbook with a few additional readings/resources/links (print and/or online)	44 of 201 (22%)
lots of different readings/resources/links from multiple sources (print and/or online)	27 of 201 (13%)

Figure 4*Actual and Preferred Format of Course Materials*



Because 51% of our students felt that they had been assigned just one textbook to learn from and 61% of the students identified that they prefer to be assigned just one textbook in general, we can see that most of them felt they had been assigned exactly the kind of course materials they prefer. Additionally, in revisiting our coding of the 170 open-text responses to Question 10, we found that 21 responses mentioned, in their own words, that they felt their course materials were easier or as easy to access as any previous course materials. Specifically, because in their ACCFF course they had been assigned “just one textbook.”

These results together are particularly interesting because very few of our ACCFF instructors actually assigned just one course material or just one textbook. In fact, many of them used a “patchwork” approach to adopt sections of various OER, library-licensed materials, and even Fair-Use-acceptable portions of non-open texts as their course materials.

The use of multiple types of materials had been on our minds throughout the project because it was a significant pain point for many of our faculty, especially those from disciplines in which assigning readings from more than one textbook is uncommon. Our English Language/Literature faculty, on the other hand, found this a natural approach and related it to their disciplines’ common use of “course packets,” in which short readings from many different authors and books are combined to make up a collection of literature that the class will spend the semester discussing. We had discussions and provided support to our other faculty in strategizing how this course packet approach could be used in their disciplines as well. So, it was especially surprising to see students showing that, from their perspective, they thought of those patchworks of materials as “just one textbook.”

Additionally, since these students also claimed that only having one material was the reason their materials were easy to use, this leads us to think about how materials from many sources can be presented together smoothly in order to increase students' ease of access. Unless it is explicitly stated what each reading is, where it comes from, and how it differs from the other assigned readings, students seem likely to interpret them all equally as “things my professor told me to read.” If all of the readings

are presented within the structure of the course Canvas page and neatly embedded or linked to in exactly the modules where students need to use them, then this interpretation of a “package” of both course and course materials becomes even more natural.

However, if students understand all the course materials assigned within their modules as “just one textbook,” or at least as a collection of materials that exist for them solely to support their course, they may not be thinking further into where those materials come from, who wrote them, how they came to be part of the course. This also leads us to consider how instructors could more explicitly call out the different origins of their course materials in order to help students think critically about where and from whom their course materials are coming, why they were chosen, how they relate to the course content, and who is or is not being represented in the conversation expressed in the materials.

When instructors are taking the time to deliberately choose the source of each piece of their course materials, rather than teaching from a pre-packaged publisher’s text, they can also take the time to choose the authors of those materials. This is a fantastic opportunity for instructors to deliberately choose to teach with course materials authored by those from diverse cultural and experiential backgrounds. It also allows instructors to make their course material selection process more transparent and to engage students in discussions about why they chose certain materials, how they determined their value to the course, and how students can apply those same skills when they need to find credible information from authors within their field in future.

Conclusion

Our assessment of our ACCFF project focused on how students interact with OAER materials and how they understand them as course materials. As a result of our survey, we’ve found that, although OER and commercially published textbooks can be quite different from the perspective of a professor, a librarian, or an instructional designer, they may not be so dissimilar from a student perspective. In fact, to students, it appears that what matters most is how they access the material and how easy it is for them to access the material, not the nature of the materials or the publishing process the materials went through.

Our results indicate that many of our students perceived any materials assigned together in their LMS as a single unit of “course materials” – almost as though their LMS has become both course and textbook in their eyes. This kind of container collapse is discussed in librarianship already in how we teach patrons to identify, evaluate, and use distinct kinds of information sources (Cyr et al., 2021; Greer & McCann, 2018; Brannon et al, 2021). Because the markers that differentiate sources of various publishing formats are not always as clear in digital spaces as they would be in print, we often need to help students discern between sources like magazine articles, newspaper articles, blogs, eBooks, and scholarly research articles. Therefore, it is not surprising that, in a digital space like a Canvas course or other LMS, students whose course materials are assembled from a variety of OER, library-licensed materials, and readings from books attained under Fair Use would skip over the different origins of these materials and collapse them into the category of “the assigned readings”, or even “this course’s textbook.”

This leads us to both challenges and opportunities in how students will interpret the authority of their course materials when they are not presented via polished, publisher-produced textbook interfaces. It seems to us that students may be placing the ultimate determination of authority in the hands of their instructors, not the textbook publishers – that is, a course material has authority because the instructor assigned it, and not the other way around. That may give instructors using OER a tremendous opportunity to exercise that authority and deliberately assign readings from authors of color, authors of diverse cultural, geographic, linguistic, or other backgrounds, etc. This is an opportunity to provide better representation, so students can see people like themselves working and writing in the fields they are studying, and so that students who have not had experience with viewpoints from people of backgrounds other than their own can be encouraged to diversify their understanding and explore opinions, perspectives, and experiences outside of what is familiar to them.

Finally, our results also give OER supporters and advocates another approach when helping faculty adopt OER for their courses. When adopters strive to find a single OER that perfectly replicates their previously assigned material, they may be doing so try to reduce student confusion over having more than one assigned course material, as well as to (quite reasonably) reduce the amount of work the faculty member will need to do to knit dissimilar materials together within their course. Now, we can point to how students are interpreting course materials assigned through an LMS to show that neither of these struggles need to be so pressing. Students do not seem to experience confusion about having readings assigned from multiple materials – provided, of course, that the readings are all easy for them to access both in terms of logistically finding and navigating within the materials and of whether they had to purchase access. And instructors may not need to knit together materials from various sources and smooth over the connections – in fact, not doing so may provide more opportunities for discussion about where these materials come from, who wrote them, how and why their perspectives, approaches, language, etc. are different, and what that says about the information they present.

This final point has led us to an important recommendation – that, whenever possible, OER adoption projects must work closely with instructional designers as they support their adopting faculty. Having instructional designers involved could help ensure that faculty have a knowledgeable partner to turn to when it comes to integrating their chosen OER into their courses. We have identified a number of researchers exploring this area already (Ren, 2019; Smith & Lee, 2017; Morgan, 2019; Katz & Van Allen 2020; and Piña & Moran, 2018) and we strongly encourage our peers in this field to add these experts as partners in their work with OER.

Next Steps

The most interesting takeaway from these results, for us, is the idea of “just one textbook.” We find this fascinating and hope to explore further to understand what implications this has, especially in terms of best practices for organizing assigned course materials in an LMS in ways that will encourage maximum student engagement. We are also interested in looking at what this can tell us about how OER should be designed to be most easily integrated into an LMS, and what strategies should be used when they cannot be directly embedded and must be linked to instead.

In future, we also hope to directly compare what format of materials students were assigned and what format they perceived those materials to be in. Being able to clearly compare what students were

actually assigned, from an instructor's or librarian's perspective, with how the students perceived those materials would give us greater insight into the differences between how these two groups think about course materials and, by extension, OER.

Acknowledgements

We would like to acknowledge Dr. Damian Fernandez, the former Chancellor at Penn State Abington who originally greenlit and provided internal funding for our ACCFF project; our OAER colleagues at Penn State who have worked to support both ACCFF and OAER advocacy, adoption, and authorship across our institutions; the faculty and students who participated in ACCFF and graciously added their thoughts to our surveys responses; and our peers in open education who have shared their experiences, research, and resources to help support the growth and assessment of initiatives like ours.

Conflict of Interest Statement

We have no conflicts of interest to declare in relation to this research project.

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Appendix

Appendix A: Students' Responses and Coded Responses to Survey Questions 17, 9, 10, 11, 15, and 16

Table A1

Question 17 – Factors ranked by importance

#	Factor to be ranked
1	The format the materials are available in. (Please consider if you can access a print or digital copy as needed, if you can access it on your phone/mobile device, etc.)
2	How much the materials cost. (Please consider that the possible cost may include many various purchasing, rental, or subscription options.)
3	How easy it is to access the materials. (Please consider this in terms of your normal, daily access to the materials in print or online, via services like Canvas or the publisher's website.)
4	What you can legally do with the materials once you have them. (Please consider options such as selling the materials back, sharing them with friends, keeping them permanently, etc.)
5	What extra or additional features the material includes to help with your learning. (Please consider features such as banks of homework problems or test questions, practice tests, or self-grading homework or quizzes.)
6	How your privacy is protected when you access/use the materials. (Please consider whether or not the materials require you to submit homework, assignments, or quizzes through a third-party service (such as Canvas, Cengage, MindTap, WebAssign, etc.) instead of directly to your professor.)
7	How accessible the materials are for general or specific disability needs. (Please consider if the materials can be used with a screen-reader, can be understood without access to visuals/sound, can be accessed in print or digital formats, or any other specific concerns you may be aware of.)

Table A2

Question 10 - Chart of code descriptions as applied to open-text responses

Theme	Explanation of coding to theme
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Comparison to other courses' materials or other assigned materials	Responses coded to this theme evaluated the ease of accessing the course materials in comparison to ways they have or have not liked accessing course materials in other courses.
Ability to access materials in a timely fashion	Responses coded to this theme mentioned the importance of “day one” or immediate access to course materials – often specifically mentioning concerns such as books selling out too quickly at the bookstore, global shipping delays, etc.
Ease of accessing and/or finding the materials	Responses coded to this theme mentioned whether or not the materials themselves were easy to access, easy to find, and/or easy to navigate.
Cost of the materials	Responses coded to this theme specifically mentioned the cost (or lack of cost) of purchasing a course material as a factor in how easy it is to access.
Convenience of accessing digital materials	Responses coded to this theme specifically discuss how having digital course materials impacts their ease of access for those materials, either positively or negatively.
Specific challenges related to their materials or courses	Responses coded to this theme mentioned negative aspects of materials of this kind in general – for example, that the student finds digital texts harder or more time-consuming to use in any course, or that switching to virtual/remote learning made all their courses harder for them. (These responses were generally not about the assigned course materials, or at least not explicitly so.)
The “mode” of access they used	Responses coded to this theme specifically mentioned some mode or method of access and how it made the materials either easier or more difficult to access. These modes and methods include having a physical version of the text; downloading or using a PDF of the materials; accessing the materials “online” or via a link or URL, with no context as to where that material is hosted; specifically accessing the materials online via the course LMS page (Canvas); specifically accessing the materials online via a non-LMS website, like the University Libraries’ website, a third-party non-University website, etc.
Perception of the nature of the materials	Responses coded to this theme mentioned at least one of two different ways students seemed to be perceiving their course materials; namely, that they had “just one textbook” or “no course materials”, regardless of how many separate course materials they were actually assigned.

How they used the materials as learning objects	Responses coded to this theme justified the students' thoughts on whether or not their materials were easy to access by discussing how useful the materials were as learning objects; specifically, if students used the materials, if the materials corresponded well to the course content, if students felt they could easily understand the information in the materials, and/or if students felt the materials were useful or helpful for their personal learning.
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Table A3

Question 11 – Student preferences on modes of access

<i>How do you prefer to access course materials, in general?</i>	<i># of responses</i>
I prefer print	16 of 188
I prefer online	77 of 188
I prefer to have them available both in print and online	56 of 188
It doesn't matter	37 of 188

Table A4

Question 15 – Format of course materials, “other” open-text responses

<i>Which best describes the format of your materials for this course? -- “Other” open-text responses (as written)</i>	one link
Lots of different online links	PRESENTATION SLIDES
online	Slides and readings on Canvas he takes them from the book for this course
PDF	Canvas
online	no material required
A website to do our homework on	none

Table A5

Question 16 – Preferred format of course materials, “other” open-text responses

<i>In what format do you prefer your course materials to be, in general? --- "Other" open-text responses (as written)</i>	PRESENTATION SLIDES
online	slides, the way he does it now is perfect
I don't care	Canvas
online	I don't mind them all

Full list of survey questions

The full survey is available for download from our [GoogleDrive folder](https://drive.google.com/drive/folders/1nLlwfdAsBupzsl124kLk6468YuWG79B?usp=sharing) at <https://drive.google.com/drive/folders/1nLlwfdAsBupzsl124kLk6468YuWG79B?usp=sharing>.

Open Peer Review

Holdsworth, L. (2022, October). [Review of the article Just one textbook? Student perceptions and preferences for open and affordable educational resources, by E. Nelson & C. Riehman-Murphy]. Journal of Open Educational Resources in Higher Education, 1(1), 264-267 doi:10.13001/joerhe.v1i1.7173

Reviewer: Liz Holdsworth

Recommendation: Revisions Required

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

This article is within scope of JOERHE.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

The article proceeds logically.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

There are some elements in the methodology that could be strengthened.

It would be helpful context to know how many total surveys were sent out, how many responses came in each year/semester, and whether similar surveys on course materials have been deployed at Penn. I had to read this paper twice to understand how the surveys were deployed - over a three year period and not at the end of a three year stint. A low survey response rate is not unexpected from students, so please acknowledge if that is the case.

It may be impossible, due to the number of responses, to see if there are any significant differences in the semesters. However, it would be helpful to see if there are other factors in responses in addition to Covid-19. Hypothetically, spring semester students find materials easier to access due to more experience with the LMS.

Please describe how the open ended responses were coded. There are varying methodologies. If you did not choose a specific methodology, please summarize the steps you took.

You have highlighted relevant survey responses for this paper, which makes sense as it is an extensive survey. Would it be possible to include the full responses as an appendix or linked in the Google Drive with the instrument?

Wherever possible, please create a graph or infographic to showcase your data. The data visualization as well as prose description will help with understanding.

While not necessary for revision, the authors may find the following papers of interest:

<https://eric.ed.gov/?id=EJ1184998>

<https://www.irrodl.org/index.php/irrodl/article/view/2462>

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

Writing style and references were good.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Yes, this article is applicable. The conclusion that the students just need the documents right in front of them in the LMS is invaluable.

What are the stronger points/qualities of the article?

This article takes an important look at the "how" of student access and balances it with expense. The authors excellently describe the opportunities for social justice in the curriculum and the collapse of the framing of different information sources. The article correctly focuses on a smaller portion of the survey results than the total.

What are the weaker points/qualities of the article? How could they be strengthened?

There are some clarifications in the survey methodology that would strengthen the paper that I described. Graphs explaining the data would also be helpful. .

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Sound

Overall Evaluation

2-Accept

Open Peer Review

Hollich, S. (2022, October). [Review of the article, Just one textbook? Student perceptions and preferences for open and affordable educational resources, by E. Nelson & C. Riehman-Murphy]. Journal of Open Educational Resources in Higher Education, 1(1), 268-270. doi:10.13001/joerhe.v1i1.7173

Reviewer: Shanna Hollich

Recommendation: Accept Submission

Scope, Objectives, Content

Is the article in scope for Journal of Open Educational Resources in Higher Education? Does the topic discuss an element related to open education, open data, open access, or other open topics? Is the topic an important one, or is it trivial or of low priority?

The article is very much within the scope of the Journal of OER in Higher Ed. I think the topic here is an important one as well. While there is a proliferation of research regarding student perception of OER and their relative value to more traditionally-published classroom materials, this particular article is filling a necessary niche and has some novel findings.

Organization

Does the article proceed logically? As applicable, does the article adhere to a recommended structure and the section guideline?

The article proceeds logically and the overall structure is good. Specific comments available in the document, but article's structure and sections are all well done.

Methodology, Approach, Conclusions

The methodology for data gathering and analysis should be appropriate for the problem addressed. Inferences from data should be sound--the author should not reach unsupported conclusions. Not all papers will use a scientific research methodology, but all should employ sound reasoning and an adequate balance between description and critical analysis. Consider: Is the article factually accurate? Is it clear the author knows, or has investigated, previous work on the subject of the article? Has the author failed to reference recent or seminal work on the subject?

The methodology here is good. The approach and research design makes sense, the authors are very clear and up-front about the limitations of the design, particularly with respect to influence from outside factors

such as COVID-19, and the conclusions they draw are factually accurate and flow logically. The article is well-grounded in the existing literature.

Writing Style, References

Please indicate whether there are problems with expression or flow, but do not comment about grammar or basic edits. Do NOT take the time to do copy editing - that will be handled later in the process. However, general comments pointing out problems with style or format are useful.

No problems with writing style or references were observed.

Application:

Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Absolutely. The findings in this article are the first I've seen of this kind, and they confirm and enhance anecdotal insights that librarians and practitioners in the area of open education have noticed for several years. I'm looking forward to seeing future researchers build upon this work even further.

What are the stronger points/qualities of the article?

This article is very strong. It is well-written and well-organized, and it situates itself very nicely within its own niche in the field of OER research and student use and perceptions of OER. It's absolutely publishable in its current state.

What are the weaker points/qualities of the article? How could they be strengthened?

No real weak points identified, the article is strong as-is. There are some minor issues that could be addressed that would make the article even stronger, and these are noted as comments in the Word document itself.

Peer Review Ranking: Scope

Does the topic discuss an element related to open education, open data, open access, or other open topics?

Highly Relevant

Peer Review Ranking: Clarity

Clarity of expression and flow? Does the article proceed logically?

Very Clear

Peer Review Ranking: Contribution

Contribution to Higher Education research and/or practice

Highly Contributes

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate?

Highly Appropriate

Peer Review Ranking: Research Assessment

If this is a research paper, is the methodology appropriate? Does the article contribute knowledge or practical examples that will inform/improve others' practice or education?

Highly Sound

Overall Evaluation

3-Strong Accept

Introducing a Holistic Review of OER

Letter from the OER Reviews Editor, John Raible

John Raible¹

Keywords: OER assessment, 5 R's, COUP Framework

Introducing OER Reviews Editor, John Raible

Dr. John Raible is an Instructional Systems Specialist with the National Park Service. Previously, he served as a Senior Instructional Designer at the University of Central Florida's Center for Distributed Learning. In this role, he worked with faculty to transition courses from a face-to-face environment to a blended or online environment. His research areas include the integration of emerging technology into online curriculum, accessibility for online learners, and the use of OER materials. He has presented at local, state, national, and international conferences; in addition to being published in multiple peer-reviewed journals. John has taught online and blended courses at both the community college and university level.

John's work with Open Educational Resources is multifaceted. He started by seeking alternatives to expensive commercial textbooks through the use of eBooks from other providers. University contracts prevented this so he turned to zero cost materials that lead to OER. Partnering with the library, he and others brought awareness and change to university

leadership on the importance of OER and flexibility with university contracts.

John used his position as an instructional designer to help faculty transition away from commercial textbook to OER with grant funding from the State of Florida. His partnership with faculty, instructional designers, and librarians led to the development of 4 new OER textbooks and hundreds of thousands dollars in student savings.

John has partnered with others to use the COUP (Cost, Outcome, Use, and Perception) framework to examine the implementation of OER. He took research to another level by conducting his dissertation study on faculty perception of OER adoption across an entire public higher education system. The results of his work has contributed to the growing body of OER knowledge.

So why does he do it? One word: access. Access to information is critical to a properly functioning higher education system. Page by page, access is being restricted to many things in higher education. OER has the potential to ensure access for everyone.

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Letter from the OER Reviews Editor

A traditional book review allows for the critical examination of a static published work, but rarely provides an opportunity for the continued growth and advancement of the text. The Reviews section of JOERHE gives readers and authors an opportunity to converse about Open Educational Resources (OER) in a way that is not usually possible with a traditional book review.

In the early stages of imagining this new journal, there were many conversations about having a book review section as is common for traditional scholarly journals. Instead of reviewing traditional books, we decided to review published OER. Reviewing a published OER is a unique task because the reviewer has the opportunity to not only critically evaluate the OER content, but also to become a contributor to the work. The permissions granted by open licensing expands the possibilities for partnership, collaboration, and growth in open education, and OER Reviews seeks to provide a place for this collaboration to be nurtured.

Careful consideration was taken to make sure that the review process was a practical and useful assessment for OER advocates and practitioners. The OER Review provides an expert reviewer's opinion as well as an accompanying OER assessment rubric. The rubric, adapted from the *Affordable Learning Georgia Quality Standards for Open Educational Resources* [1], provides readers with a quick way to assess an OER for their own

scholarly outputs and teaching objectives. It asks the reviewer to assess the content's relevance, accessibility, clarity, and ancillary materials. Providing this dual level review ensures that the reader receives a blend of expert opinion and clearly defined evaluative criteria which will enable them to not only better assess whether the OER is suitable for adoption, but also use the rubric as a blueprint for adaption. This holistic review process highlights the Revise and Remix elements of the 5Rs of OER [2] and hopes to encourage the continued growth of the resource. JOERHE looks forward to continuing to review published OER and invites educators to propose published works for review in future issues.

References

[1] "[JOERHE OER Textbook Rubric](#)" is a derivative of "Affordable Learning Georgia Quality Standards for Open Educational Resources" by the University System of Georgia, used under a Creative Commons Attribution 4.0 International license. "JOERHE OER Textbook Rubrics" is licensed under a Creative Commons Attribution 4.0 International license by John Raible

[2] The 5Rs of OER were created by David Wiley and published freely under a Creative Commons Attribution 4.0 licence at <http://opencontent.org/blog/archives/3221>

Note: 'Letters from the Editors' are not peer-reviewed and reflect the individual opinions of the editor(s).

OER Review: *Power, Profit, and Privilege: Problematizing Scholarly Publishing*

Chelsee Dickson¹

Keywords: Open Educational Resources, Scholarly Communications, Academic Publishing, Open Access

Makula, A. (2022). *Power, profit, and privilege: Problematizing scholarly publishing*. <https://pressbooks.pub/pppscholarlypublishing/>

Review

As students, researchers, and academics, we often do not think of the dark side to scholarly communication and scholarly publishing. Amanda Makula delves into these topics in her open textbook entitled *Power, Profit, and Privilege: Problematizing Scholarly Publishing*. This textbook was created for the Scholarly Communication Notebook (SCN), an online community/repository that hosts community-designed examples of teaching and doing scholarly communication. The SCN aims to solicit and produce open texts that introduce readers to the scholarly communications system (Scholarly Communication Notebook, n.d.). Makula places emphasis on scholarly journals and the problems surrounding the current publishing paradigm. This Open Educational Resource (OER) is organized into three parts: “The Fundamentals,” “(Some) Problems,” and “Assignments.” Each part contains subsections that take a deep dive into the different aspects of the publishing cycle, including how knowledge is created, evaluated, disseminated, and preserved.

Library and Information Studies (LIS) students, faculty, and instructors would benefit from reading this text at their own pace and completing the assignments therein. This resource is intended for upper-level undergraduate or graduate students interested in pursuing publication, as well as early career librarians or those interested in scholarly communication topics and practices. It is licensed under a Creative Commons CC BY-NC license, which means anyone can access, edit, and share the resource if the use is noncommercial.

Makula begins with a chapter entitled “The Fundamentals” which contains six subchapters. All six subchapters contain exercises, additional readings, and resources for those that would like to further their knowledge beyond the textbook. Makula gives readers a great starting point and asks them thoughtful

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questions. Each subchapter is short. This means readers will not be totally consumed while navigating this textbook; it can be read in a matter of two–three hours, though the exercises will take longer to complete.

The first subchapter is titled “What is Scholarly Publishing?” and discusses the major players in the publishing cycle with helpful definitions and colorful diagrams. This allows readers to see the information in a pictorial format rather than simply words on a page, which is especially helpful for visual learners. The second subchapter, “Academic Culture,” discusses the promotion and tenure process in higher education and connects this discussion to the previous subchapter. The language used throughout is easy to understand and reader friendly. Next is “Scholarly Journals and Peer Review,” a subchapter which describes the important characteristics of a scholarly journal and provides readers with a basic definition of peer review and how it is situated within the scholarly publishing process. Key concepts are in bold, and videos are embedded to break up larger blocks of text.

Following this subchapter is “Finding Scholarly Journals,” which as the title suggests, assists readers in discovering scholarly, relevant journals in their field. This subchapter looks at journals through the lens of both an author and a reader, encouraging students and instructors to critically engage with journals as a way to both to stay up to date in their disciplines and to assess viable publishing outlets. For the novice author, this chapter provides multiple links for further help in finding a journal that “fits” their work. Directly connected to this subchapter is the following subchapter, “Evaluating Scholarly Journals.” This subchapter asks readers who have possibly chosen a journal for publication how best to evaluate that publication. The subchapter includes infographics to assist in the synthesis and comprehension of the outlined information. The last subchapter, “Copyright,” provides a basic explanation of copyright and authors’ rights and links these topics to scholarly publishing. Makula provides real-life examples which help readers understand the concept of copyright, often difficult for those with little to no knowledge of the law.

Overall, the subchapters under the “The Fundamentals” section flow naturally, building upon one another and guiding students and instructors through the basics of scholarly communication principles. Readers with expertise in copyright or any of the previous topic areas may choose to skip the “Copyright” subsection as it is geared towards beginners. It is helpful to those looking to dip their toes into scholarly publishing as subject matter and has many resources compiled into one place with links for a deeper dive, questions for reflection, and opportunities for creative collaboration with fellow students. This OER largely serves as the raft which guides students through the waters of scholarly communication. “The Fundamentals” are a placid stop until reaching the dark and turbulent topics in the second section, “(Some) Problems.”

This second section is divided into two subchapters, both of which revolve around scholarly communication and the world at large. Makula touches on changes in society, activism, and issues of accessibility, diversity, equity, and inclusion that affect academia and scholarly publishing. She continues to use real-world examples to help readers put these concepts into context and drive home the points made. All examples are current as of the year 2022. For instance, she references the Covid-19 pandemic and the subsequent rise of pre-print repositories as well as the expedited research publishing processes which helped share information necessary to combat the coronavirus. The introduction to this

section ends with an embedded version of the documentary, *Paywall: The Business of Scholarship*, a film which sets the tone for the next subchapters (Schmitt, 2018).

Beginning with the subchapter “Power,” Makula questions who holds the power in the scholarly publishing arena and the effects of this power dynamic. This subchapter also wades into open access and lists its benefits, though a discussion of the downfalls (for example, why scholars choose not to publish open access) would have been helpful to balance the author’s preference for openly accessible materials. For-profit and commercial publishers are identified as the dominant force in scholarly publishing, and this subchapter questions why the academic community continues to pay for content they have created. This is one of the major problems to which this chapter is referring, and Makula asks tough and timely questions as libraries deal with the serials crisis, canceling of journal subscriptions, and transformative agreements. Makula also highlights an ugly truth: while publishers commoditize and control scholarly content, prohibiting creators from reaping the benefits, academics are still stuck in the loop of conforming to traditional publishing expectations for promotion and tenure purposes. These are issues most would rather sweep under the rug, but Makula does not shy away from pushing back the curtain that hides this disturbing reality. Makula returns to the consideration of open access publishing models which strive to shift the power away from commercial publishers and ends the subchapter with a list of open access repositories and an exercise.

Following that is “Profit,” a subchapter concerning how motivations of money and prestige influence scholarly publishing, creating a resistance to change and transformation. Also included is a brief history of how journals became money-making machines, which paints a full picture of the publishing landscape from past to present. Makula goes on to discuss the serials crisis and includes a graphical illustration of the exponential rise in journal subscription costs. This chapter portrays libraries as victims, held prisoner to exorbitant journals prices, subscription bundles, and “Big Deals” that gouge money from libraries’—already tight—budgets. A table with profit margins of other industries compared to scholarly publishers breaks up the text and puts this issue into perspective. The numbers might shock and incense the reader, hopefully into a state of activism. Other issues with journal purchasing models are introduced, including increasing Article Processing Charges (APC), and the problem with the use of the assessment metric, the Journal Impact Factor (JIF), is discussed. These purchasing and profit models developed by the commercial publishing industry have huge impacts on the creation and distribution of knowledge. While this may seem depressing, Makula concludes the subchapter with an example of a university that is actively adjusting their promotion and tenure review by incorporating Open Science. This example shows readers that real change can happen.

The last subchapter in the “Some Problems” section is titled “Privilege.” It aims to identify for the reader those with privilege in the publishing cycle and those without. Makula delivers an explanation as to why this privilege is imbalanced and provides suggestions as to its rectification. This subchapter highlights inequities of race and ethnicity in publishing, which lead to a lack of diversity in scholarly journal content and scholarship produced by the academy. Inequality ultimately results in a biased and unbalanced publishing landscape. Gender inequities against women also abound in academia, leading to further bias which again interferes with the production of new knowledge. Wider global inequities are discussed, highlighting the inequality of knowledge production, consumption, and dissemination between the global North and the global South, as scholarly publishing is skewed towards the global North and “developed” countries.

These are, admittedly, very hard topics, but all are distilled into easy to swallow chunks of information; this subchapter presents the material as matter of fact and closes with a call to action that is brilliant. The final section, “Assignments,” includes two projects: a publishing plan for those delving into the world of scholarly publishing, and a promotion plan which will help authors further promote their work. Through her text, Makula has given readers the tools of knowledge and self-efficacy.

This OER is a fantastic resource for students and instructors, novices and experts, those in the field of scholarly communication and those from entirely different backgrounds. *Power, Profit, and Privilege: Problematizing Scholarly Publishing* provides readers with a sense of agency in the scholarly publishing cycle if they choose to take it. The information in this text will assist emerging authors in understanding the underbelly of scholarly publishing and will hopefully encourage them to take a stance and become advocates for open access and equitable publishing practices. These topics are relevant to everyone because they are relevant to humanity: issues of power and privilege affect us all, and Makula’s text pushes us to buck the traditional trends in academia and strive for a better future.

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JOERHE OER Textbook Rubric

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Criterion	Complete	Partial	Missing	N/A
Comprehensive standard scope and sequence for a college course.	✓			
Content is accurate based on my expertise	✓			
Content is presented with no or minimal bias or slant, taking into account the context of the particular subject being addressed.	✓			
Content is up-to-date and avoids presenting information that will make the text obsolete quickly, taking into account the particular	✓			

subject being addressed.				
Content has been reviewed by subject matter experts through a peer review process – preferably, but not restricted to, double-blind peer review.			✓	
Variety of instructional materials, including reflective questions, learning activities, and other features which promote learner engagement and active learning.	✓			
High-quality ancillary (supplementary) materials which aid the instructor in the teaching process.				✓
Content is written in accessible and internally-consistent writing style	✓			
Content is accessible to students with disabilities through the compatibility of third-party reading applications.		✓		

