

SUSTAINING OPEN EDUCATIONAL RESOURCES (OER) INITIATIVES IN  
HIGHER EDUCATION: PRACTICES, SUCCESSES, AND CHALLENGES

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the Faculty of the Graduate School  
at the University of Missouri-Columbia

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In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

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by

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DECEMBER, 2022

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SUSTAINING OPEN EDUCATIONAL RESOURCES (OER) INITIATIVES IN  
HIGHER EDUCATION: PRACTICES, SUCCESSES, AND CHALLENGES

presented by Grace Zhou Seo,

a candidate for the degree of doctor of philosophy,

and hereby certify that, in their opinion, it is worthy of acceptance.

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## DEDICATION

First and foremost, I dedicate this dissertation to my God, the Heavenly Father, who is my sustainer and has granted countless blessings and provisions throughout the process of completing my doctoral degree. All glory belongs to Him.

I dedicate this dissertation to my parents. I feel deep gratitude for my loving parents, Xiaodong Zhou and Yonghui Gao. To provide me with an equal educational opportunity, to help me become successful, and to pay for my U.S.-based tuition and textbooks for my undergraduate studies in a cross-border dual degree program, you worked two jobs in mainland China. Your hard work afforded me the privilege to continue my studies and inspired me. That inspiration was like a seed that grew into a research interest in OER and formed many of my thoughts for this dissertation.

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**ABSTRACT**

**INTRODUCTION:** For the past decade, many educational institutions have launched initiatives to provide services and funding for professors to adopt, adapt, and create OER for enhancing student success. The initiatives could initially encourage faculty to use OER in their courses, but the continued effort to sustain proved difficult.

**GOAL:** The research goal is to explore how higher education institutions sustain OER initiatives by examining the experiences and perspectives of the key players: faculty, administrators, librarians, and instructional designers who work on the front line of OER initiatives as OER users, educators, and advocates.

**METHODS:** Exploratory two-case studies with qualitative methods including interviews, focus groups, and documents.

**FINDINGS:** The findings indicate that student success, people's ideology, and interest in OER are the driving forces behind OER initiatives. A combination of efforts was needed from grassroots and top-down to sustain the initiatives. Successful practices include a combination of institutional incentives and support, connecting key players, and implementing faculty outreach strategies. Themes are also identified for successes and challenges of sustaining initiatives. Successes include: (1) reducing costs for students; (2) helping faculty rethink courses and seek new ways of teaching; and (3) providing faculty freedom to customize for teaching as they desire. Challenges include: (1) experiencing

difficulty in getting faculty on board; (2) needing a master database to increase OER discoverability; and (3) experiencing personnel turnover.

## CHAPTER 1: INTRODUCTION

In the United States, the cost of college and the rising costs of textbooks are a continual national concern. College textbook prices rose 88% between 2006 and 2016, approximately triple the rate of the Consumer Price Index (27%) (U.S. Bureau of Labor Statistics, 2016). As of August 2019, 44 million Americans have outstanding student loan debt, which has become one of the most significant consumer debt categories (Warner & Thune, 2019). Student loan debt is not the result of tuition fees alone; textbooks are a significant portion of the education costs for students. In some instances, such as community colleges, textbook costs can be even more expensive than tuition (Martin et al., 2017).

Textbook costs are a substantial barrier for the majority of students to succeed in their academic pursuits, including academic access, student performance, and time-to-graduation rates (Jenkins et al., 2020). In a Florida virtual campus survey of more than 21,000 college students, students reported that the cost of required textbooks had caused negative impacts on academic performance and time to graduate, including earning a poor grade, taking fewer courses, and dropping a course (Florida Virtual Campus, 2019). A 2021 report by the Public Interest Research Group (PIRG) found that 65% of students surveyed skipped buying a textbook because of cost (Nagle & Vitez, 2021).

Many U.S. institutions have recognized the need to reduce the cost of textbooks and have taken various approaches to solve the textbook affordability problem, including implementing OER initiatives to mitigate high textbook costs. After surveying more than 2,700 faculty, Seaman and Seaman (2018) discovered that the use of OER at two- and four-year institutions nearly doubled between 2016 and 2017. According to the Connect

OER report published by the Scholarly Publishing and Academic Resources Coalition (SPARC, 2019), a nonprofit advocacy organization that supports systems for research and education that are open by default and equitable by design, more than 132 major colleges and universities have launched initiatives to support the adoption, adaptation, creation, and awareness of OER. These initiatives seek to improve educational opportunities by providing course materials at no or low cost to students to help ease the financial burden placed upon them.

OER has gained popularity, and the literature has also demonstrated the potential of OER to improve student success through affordability and customizability. Even though OER offers benefits to students and educators, sustainability of OER has been a known global issue. The United Nations Educational, Scientific, and Cultural Organization (UNESCO) earnestly called for more research on OER sustainability models in its 2019 OER recommendation (UNESCO, 2019). The current literature and discussions mainly focus on how to sustain OER in terms of a distributed learning ecosystem: the cycle of creation, distribution, use, and revision (Eaton et al., 2022; Otto & Kerres, 2022; Redstone Strategy Group, 2018). While there are topics of OER initiatives emerging in recent research with focus on institutions outside of the United States or teaching institutions (Hodgkinson-Williams & Donnelly, 2010; Schleicher et al., 2020; Zaid & Alabi, 2021), the sustainability issue of OER initiatives, particularly for public research institutions, is not a topic that is commonly explored. This research explores the OER sustainability issue in the U.S. higher education setting, particularly focusing on inter-institutional initiatives in the context of public research institutions.

## **Disruptive Innovation**

Disruptive innovation, a business theory popularized by Clayton Christensen, is defined as a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves upmarket, eventually displacing established competitors (Christensen Institute, n.d.). The spirit of the OER movement is in line with the core concept of disruptive innovation theory. The ultimate goal of the OER movement is to enhance student success through affordable and accessible education. Disruptive innovation involves transferring an expensive and complicated product into something much more affordable and accessible to allow many people to use the product (Bower & Christensen, 1995). OER can be viewed as an innovation filled with tremendous possibilities to reduce the cost of education, especially for less privileged students.

Bower and Christensen (1995) indicate that disruptive innovation always starts with a small and emerging market. Leading companies are constantly improving the performance of existing products and helping firms to sustain existing customers. In contrast, disruptive innovation offers a different value proposition than existing products, allowing expansion of the market boundaries by increasing access to the products and thereby creating new customers (Rasool et al., 2018). For example, when personal computers (PCs) moved into the mainstream, customer access to the products (PCs) increased as the price decreased. Then, when mobile phones became mainstream products, more new customers were created.

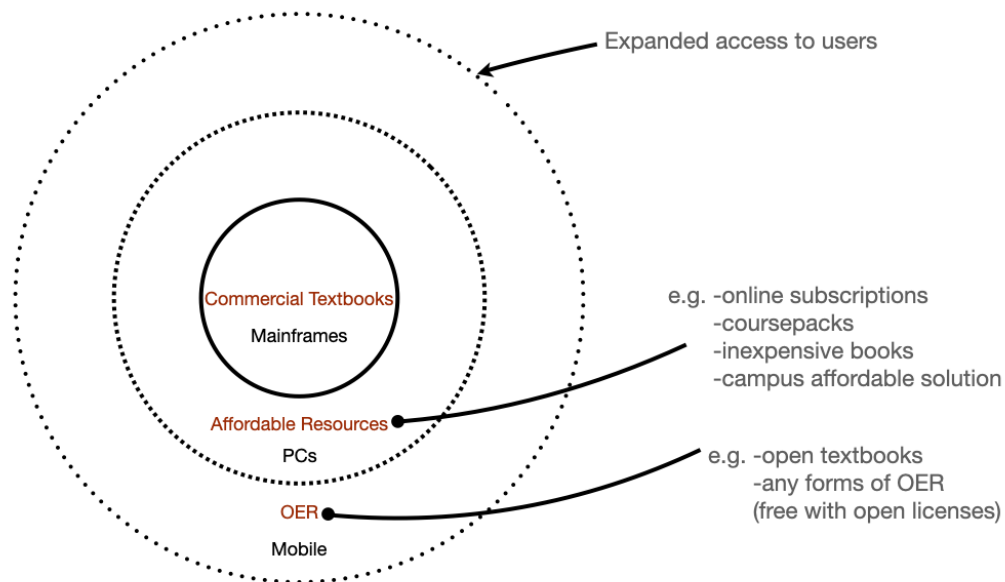
With this theoretical model, traditional educational resources, including commercial textbooks, can be analogous to the computer industry's mainframes. When affordable resources such as online subscriptions, coursepacks, and inexpensive books



are implemented by more institutions and prices decrease, access to resources increases. OER adoption and use are disruptors that can dramatically reduce the costs of textbooks and expand access for students to learning content, and the cost for students is totally free. When OER moves into the mainstream, access will be expanded to even more users. The following analogy illustration is based on Clayton Christensen’s basic disruptive innovation framework. This theory asserts that a disruptive innovation disrupts the bigger-and-better cycle by bringing to market a product or service that is not as good as the best traditional offerings but is more affordable and easier to use (Christensen & Eyring, 2011).

**Figure 1**

*The Basic Framework of Disruptive Innovation (Bower & Christensen, 1995)*



**OER as Disruptive Innovation**

Before diving into OER, it is important to mention that the modality of instruction has changed in many universities, especially since digital and online learning has become more prominent due to the COVID-19 pandemic pushing many educational activities into

remote online formats. OER is made possible by online learning and enhanced by well-performed Learning Management Systems (LMS), and free online resources are becoming more of a norm than an exception.

With the concept of open and free in OER, traditional commercial textbook publishers are experiencing disruptive innovation even if professors are adopting OER piecemeal, such as including websites or other free materials as supplementary readings within their course sites. OER differs from other web or publisher-created educational resources in their licensing and permissions. The resources, which are either in the public domain or have open licenses, allow professors to engage in 5R activities: retain, reuse, revise, remix, and redistribute (Wiley, 2014). Anyone can create an open textbook or resource through a self-publishing model with limited professional graphic design and copyediting support, whereas publishers have the financial capacity to produce beautiful textbooks with high-resolution graphics. The commercial textbooks are also appealing to professors because of convenience and time-saving content they can use to teach, such as instructor resources, slides, videos, simulations, auto-graded quizzes, and test banks. All the educational content is usually provided on publishers' courseware platforms or homework systems.

Like a disruptive technology in the hard-disk-drive industry (Bower & Christensen, 1995), the established textbook publishers stayed focused on sustaining technologies to meet their mainstream customers' needs by offering various textbook bundles and improving courseware or homework systems' functionality. These technology enhancements make the professors' work easier, but they also contribute to a textbook's cost for students. According to the Student Public Interest Research Groups'

report about textbook price, the average cost for a textbook bundle in the report sample was \$157, versus \$134 for a new textbook from the college bookstore (McKenzie, 2018). Textbook bundles provide students a print book or eBook, plus an access code to use the online homework systems that provide case studies, quizzes, exams, or other learning resources. More and more publishers developed their platforms using the standard Learning Tools Interoperability (LTI) protocol, which allows courseware, a third-party tool from a vendor, to be launched within an LMS (1EdTech Consortium, 2022). The LTI integration allows instructors and students to access the third-party tools directly from the LMS without creating new usernames and passwords. The advantage this provides is seamless navigation between LMS and the tool platforms. There are also risks of using LTI tools without institutional approval if the tools do not comply with the university's standards around data security, privacy, and accessibility. When professors want to use third-party tools from publishers, they need to consider involving campus teams who have the expertise of LMS and data management to ensure the security of user data and tool accessibility.

OER can take on many forms, and not all OER are initially designed with beautiful layouts and high-resolution visuals. However, because of the iterative and collaborative nature of OER, open textbooks can be improved by users from year to year or course to course. According to disruptive innovation theory, a disruptive innovation is typically inferior in performance initially, but it dramatically improves over time (Christensen et al., 2015). The OER movement has received increased support from OER funders, including the William and Flora Hewlett Foundation, which is a key supporter. More and more universities have participated in developing platforms and repositories to

host peer-reviewed OER and in creating open textbooks. OER and open textbooks' quality continually improves in terms of graphic design, content, and ease of use because OER development is always iterative, active, collaborative, and dynamic.

As Bower and Christensen (1995) explain, established companies traditionally sustain innovation based on their mainstream customers' evolving needs. Companies tend to focus on enhancing high-demand customer experience, with the product eventually improving low-demand customers' needs. As a result, most publishers end up producing textbooks that are too expensive and too complicated for a large number of customers in their market. The over-development of selected features to satisfy mainstream customers may leave less demanding customers unsatisfied with these products, as they pay high prices for product features they do not require (Assink, 2006).

In the instance of OER, early OER adopters include college professors (e.g., faculty, department chairpersons) who have concerns about the affordability of adopting commercial textbooks, as well as concerns about access and learning curves or complications to learn new platforms. As an example of disruptive innovation, OER appears to be simpler, cheaper, and sufficient to meet professors' needs (Kohlbacher & Hang, 2010). OER, including open textbooks, were initially viewed as inferior to commercial textbooks. However, disruptive innovation theory predicts that the OER, as a novel model, will improve over time. In theory, it should surpass the capability of the established traditional textbook model because it will intersect with the performance demanded by the established market (Bower & Christensen, 1995). Eventually, it will move into the mainstream and upmarket to challenge the dominance of textbook publishers. In fact, this process is already taking place. The 2022 report regarding

awareness, adoption, use, and attitudes toward OER in U.S. higher education described next will demonstrate that OER is becoming mainstream now.

In 2020, institutions of higher education had to quickly pivot to remote instruction to respond to the threat of the fast spread of COVID-19. As a result, many more faculty now have experience with digital teaching and learning than they did pre-pandemic. Faculty attitudes toward digital materials improved post-pivot, and the range of digital options expanded substantially (Seaman & Seaman, 2021). In a 2022 research report, Bay View Analytics also compared the awareness, adoption, use, and attitudes toward OER in U.S. higher education between 2009 and 2022. The findings of that report, which follow here, indicate that the awareness and attitude toward OER has changed and OER is becoming mainstream (Seaman & Seaman, 2022):

- OER awareness amongst U.S. higher education faculty and administrators went from almost nonexistent in 2009 to 57% “Somewhat Aware,” “Aware,” or “Very Aware” in 2022.
- The number of respondents who use OER materials as required courseware lags behind the metric for OER awareness, but these levels also grew year over year.
- OpenStax has become a viable alternative to commercial publishers.
- Faculty give OER materials higher marks for quality than they do for commercial alternatives.

## **Driving Forces for OER Development**

### ***The User Demand for Affordable Textbooks***

The driving force for disruptive innovation is generated from the customers' demands from low-end markets (Bower & Christensen, 1995). As discussed earlier, the initial customers are usually OER early adopters or advocates, who may be unsatisfied with the high price of commercial textbooks. Based on disruptive innovation theory, the users' demands for affordable and accessible materials (e.g., textbooks) are the driving forces for OER development.

The Florida Virtual Campus, which combines 12 public universities and 28 public colleges across Florida, conducted a survey (2019) of more than 21,000 university students and found the following:

- 64% of students reported not purchasing the required textbook due to cost
- 43% reported taking fewer courses because of the financial impact of high textbook costs
- 41% reported not registering for a specific course because of the financial impact of high textbook costs
- 36% reported earning a poor grade because they could not afford to buy the textbook
- 23% reported dropping a course because of the financial impact of high textbook costs

A 2018 survey of 4,000 faculty and department chairpersons on educational resources in U.S. higher education, conducted by Babson Survey Research Group, also revealed that some faculty and department chairpersons shared frustrations with the high costs of course material (Seaman & Seaman, 2018).

### ***The User Demand for Access***

The 2018 Babson Research Group U.S. higher education survey highlights one particular concern from faculty and department chairpersons: course materials' high cost impedes student access. The report found that online homework systems (e.g., publishers' courseware) and inclusive access subscriptions (e.g., textbook bundles) are popular among faculty. Online homework systems were a course requirement in 37% of all faculty's courses. This rate rose to nearly one-half (48%) among faculty teaching large-enrollment introductory-level undergraduate courses (Seaman & Seaman, 2018). Inclusive access subscriptions are "all in one" systems in which students have online access to all of the course materials. This subscription might be bundled into tuition, or a separate purchase by the student may be required for the course (Seaman & Seaman, 2018). Online homework systems and inclusive access subscriptions are part of the new business model that textbook publishers are using in an attempt to sustain their hold on the market.

In the inclusive access model, students access the publisher's courseware or e-textbooks through access codes. However, students will often lose access after the course ends (depending on the licensing agreement between the university and the publisher). What if students need to retake a course, use the textbook as a reference for advanced courses, or study for certification exams? To regain access to course content, students will have to purchase another access code. Bower and Christensen (1995) indicate that disruptive innovation introduces a very different package of attributes. One of the different attributes for OER is the "open access" offered to students. When professors use OER or open textbooks as course requirements, their students have instant access to their learning content on the first day of class, possibly without any purchase delay issues that

they may experience with commercial textbooks. Also, they have unlimited access to the content after the course ends.

### ***Equity***

The main concept of disruptive innovation is to transfer an expensive and complicated product into something much more affordable and accessible to allow many more people to use it (Christensen Institute, n.d.). At the micro level, the demands of affordable and accessible resources from end-users naturally become the primary motivators for OER development in higher education. At the macro level, issues of inequity are the driving force. The cost of education continues to rise, and student debt in the United States is at an all-time high. More than 44 million Americans have outstanding student loan debt, which has become one of the most significant consumer debt categories; the total student debt in the United States is more than \$1.5 trillion (Warner & Thune, 2019).

OER activists and leaders see that OER development can create a more equitable learning experience for all students, including the less economically privileged. OER cannot address or ameliorate all of the inequities related to educational access, but with careful and sustained attention, some may be lessened (Bliss & Smith, 2017).

### **Products that Enable OER Development**

Si and Chen (2020) synthesized a central perspective of disruptive innovation based on the relevant literature: the disruptively innovative products or services are initially inferior in performance attributes valued by the current mainstream customers, but they gradually improve over time.



According to Bliss and Smith (2017), the OER movement started in 2002. Before the birth of OER development platforms, the content creator would typically develop online materials using Microsoft Word or other word processing systems. They would then format the documents as a website or PDFs for distribution. If they collaborated with colleagues, they would send a copy back and forth and eventually create multiple copies of the same document. The collaborative process was cumbersome.

The first OER products' features focused on knowledge dissemination rather than content development and adaptation, including MERLOT, OpenStax, Open Textbook Library, MIT OpenCourseWare, OER Commons, LMS, Khan Academy, PhET Simulations, and more. If an OER was shared as a PDF or a web-based object in the repositories, it was quite difficult for a user to alter or adapt it. Even though an OER was openly licensed, it was not technologically open. During the recent years of the OER movement, the effectiveness and inherent connection between open and adaptation gradually became evident. The performance of OER development products has been improved to allow collaboration among multiple creators to adapt and improve content. For example, in recent years MERLOT improved their Content Builder tool's functionality, allowing content creators to assign multiple MERLOT members to work on the same site. Canvas, one of the major LMS in the United States, created Commons in 2015 as a learning object repository for Canvas users to find, share, and create OER within the system. OER Commons, namely a public digital library of OER, launched its new authoring tool for members in January 2020. The tool was enhanced by consolidating the main functions of three other utilities: Resource Builder, Lesson Builder, and Module Builder (Schaffhauser, 2020). OpenStax partnered with Google to

make OER adaptation easier for instructors. According to Williamson (2020), OpenStax retired CNX, formerly called Connexions, and integrated Google Docs to house customizable versions of their open textbooks that instructors can edit and adapt. Nyland (2018) explored how higher education institutions select technology platforms for OER development; the survey results from representatives of 33 institutions suggest that schools are most commonly using word processing tools such as Microsoft Word and Google Docs, LMS, and Pressbooks. Pressbooks is a relatively new but rising OER development tool that is built on the WordPress publishing platform. OER development products enable users to collaborate on open textbooks creation and adaptation in ways traditional textbooks do not provide.

Based on disruptive innovation theory, the products that enable OER development can be identified as a disruptive technology, which means they were initially inferior in performance but have dramatically improved over time (Bower & Christensen, 1995). The first OER development products focused on disseminating resources, and the innovation was extended from content sharing to content creating and adapting. The quality of OER was also improved because of the peer-review process incorporated into iterative OER development.

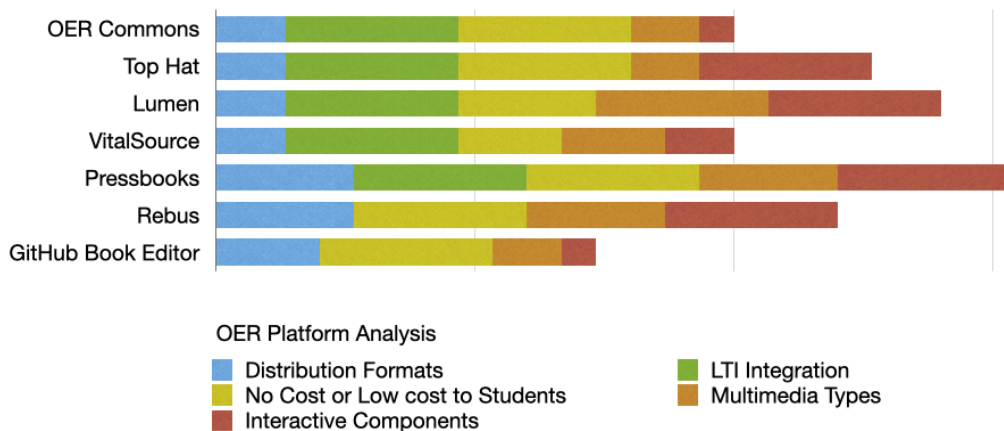
Seo et al. (2019) discussed seven commonly-used English-language OER development platforms to inform faculty's creation and adaptation of OER. As Figure 2 and Table 1 indicate, an analysis of seven top OER platforms (i.e., OER Commons, Top Hat, Lumen, VitalSource, Pressbooks, GitHub Book Editor, and Rebus) was conducted in 2018–2019. Data was collected on distribution formats; whether it was possible to edit existing OERs already in the platform; whether it was freely available or low cost, and if

it was low cost, what that cost was; the kinds of multimedia permitted in the platform; and the interactive aspects available.

Results show all of the platforms allowed for authoring content, and five allowed existing OER to be edited. Distribution formats for OER content included PDF, HTML, EPUB, proprietary formats, and others. In terms of cost, four platforms allowed for freely available open access resources. Three platforms included mechanisms for charging students, and costs ranged anywhere from \$5 to about \$90 USD. Multimedia varied by platform, with images being allowed in all seven platforms. Video and links to video-sharing sites were also prevalent. VitalSource permitted slideshows and audio as well. Interactive components included the ability to post questions in a discussion forum and quiz functionalities or surveys.

**Figure 2**

*OER Platform Analysis (Seo et al., 2019)*



*Note.* Figure developed from Dr. Guy Wilson’s OER platform table.

**Table 1**

*OER Platform Analysis in Detail (Seo et al., 2019)*

Platforms	Distribution Formats	LTI	Cost to Students	Multimedia	Interactive Components
OER Commons	HTML, PDF	Blackboard Canvas EdX Moodle Schoology	None	Images and video	Definitions
Top Hat	Proprietary, EPUB	Blackboard Brightspace Canvas Moodle Sakai	None to about \$90	Images and links to YouTube or Vimeo	Discussions and questions (MC, word answer, numeric answer, formula, fill in the blank, matching, click on target [hotspot], sorting, chemistry response, math response, graphing response)
Lumen	Proprietary, some HTML	Blackboard Brightspace Canvas Moodle	\$5–\$25	Yes	Various question types, with a strong WebWorks/ WebAssign type tool as well
VitalSource	Proprietary, EPUB	Blackboard Brightspace Canvas Moodle	\$5–\$15	Images, audio, video, slide shows	Quiz and survey questions

Pressbooks	PDF for Print (for print on demand), PDF for Digital Distribution, EPUB, EPUB 3 (beta), MOBI (Kindle), XHTML (web)	Blackboard Brightspace Canvas Moodle	None	Images (natively) and video (through H5P)	Yes (H5P enabled)
Rebus	PDF for Print (for print on demand), PDF for Digital Distribution, EPUB, MOBI (Kindle), HTML, ODT	N/A	None	Dependent on Pressbooks tools	Dependent on Pressbooks tools
GitHub Book Editor	HTML, PDF, EPUB	N/A	None	Images and video	Possible with JavaScript programming

*Note.* Due to updates and upgrades, some data in this table may be out of date by the time of publication.

### ***Ongoing Technological Need for OER Development***

Even though there are many OER platforms for users to create or author OER, there is still a technological need to have a useful and intuitive platform to create quality textbooks. Good collaborations can happen between OER organizations and companies who strive to provide improved technology for content creators to develop open textbooks. For example, OpenStax integrated Google Docs to house customizable versions of their open textbooks and provide convenience for users to edit and adapt content. According to Caldwell (2019), there were 33 OpenStax textbooks from

BCcampus added into the Pressbooks library, making it easier for instructors to adapt or customize OpenStax books. OpenStax also provided course cartridges available on Canvas Commons, an open learning object repository that can be accessed by all the institutions using Canvas (Raymond, 2018). Across-platform collaboration through different OER organizations and companies will make adaptation more accessible to users and remove the barriers between platforms or systems, which will improve content discoverability for adaptation.

Another ongoing technological need is data tracking to determine OER usage and impact. Many institutions have started providing metrics on their institutional repositories, in which professors and students can share their creative and scholarly works. Creative and scholarly works can be deposited into the OER repository, including open textbooks, modular materials, and standalone resources. All submitted OER collects statistics such as number of views and downloads are collected on all submitted OER. The content creators can then track their OER usage through the metrics services. One of the important ways to incentivize faculty for OER creation and authoring besides financial support is to recognize faculty by factoring faculty OER activities into tenure and promotion (Belikov & Bodily, 2016). An OER system that enables analytics will help faculty collect and track the OER statistics for their career advancement.

Even though a number of resources are growing, one perceived barrier to OER adoption is lack of discoverability (Belikov & Bodily, 2016). As mentioned earlier, metadata is essential to make resources findable and usable. Like the other publishing systems, the OER system enables metadata tagging by asking content creators to provide the keywords, file types, subjects, and intended learning outcomes for their resources. It

also includes the social metadata feature for a resource, including reviews and user comments related to what students are supposed to learn from this resource to increase discoverability. To curb the misguided notion that OER might be lower in quality than commercially published works (OER quality concern), faculty are encouraged to work with librarians who have the expertise to curate an OER collection within the library and promote high-quality OER resources for the campus community (Sobotka et al., 2019).

With LMS integration, professors can deploy a full open textbook (e.g., OpenStax textbook), an individual book chapter, or a standalone OER from the OER platform into any part of a LMS course. From an instructional design perspective, the ability to bring “chunkable” materials (e.g., modular and chapter materials, standalone materials) into an LMS course is also an ongoing need for instructional designers or professors when designing a course. Those “chunkable” materials allow professors or course designers to organize the content into meaningful segments to accommodate students’ memory processing (Mayer, 2017).

### **Significance of the Study**

While OER has begun to receive more awareness, the topic of OER became more important than ever during the COVID-19 pandemic. In September 2020, more than 5,000 college students participated in a national survey that built on similar surveys from 2013 and 2019 (Nagle & Vitez, 2021). The survey provided a snapshot in time of student experiences during the first full semester of the pandemic, especially for those attending four-year institutions. The survey highlighted more long-term issues that institutions and national leaders must address:

1. Students continue to skip purchasing assigned textbooks in spite of concerns it will impact their grades.
2. More students skipped purchasing access codes during the pandemic.
3. COVID-19 negatively impacted students and their affordability of course materials.
4. Lack of reliable internet correlated with significant problems in accessing course materials and student success.
5. Students experiencing substantial food insecurity more frequently skipped purchasing course materials.

The COVID-19 pandemic highlighted that OER matters now more than ever and that there is an unprecedented need for institutions to provide students access to affordable digital resources.

For instance, there was a concern about health and safety during the COVID-19 pandemic regarding students sharing books and borrowing books from the library, due to the possible transmission of the COVID-19 virus. Academic libraries followed the Centers for Disease Control and Prevention (CDC) recommendations to standardize their approach to quarantining books based on the local pandemic situation (McKenzie, 2020b). Open textbooks, as one form of OER, all use a digital format. Therefore, the use of open textbooks in place of physical books preemptively addresses health and safety concerns if there were to be another public health emergency such as the COVID pandemic.

Additionally, unemployment levels reached historic highs during and following the pandemic. Families are often caught off guard by out-of-pocket costs associated with



textbooks, access codes, etc. (DeRosa et al., 2020), and the suffering national economy during the pandemic time period increased the pressure caused by the high cost of learning materials. OER ensures free and immediate access to required learning materials. Access to resources does not expire, and there are no restrictions on printing.

Many research articles highlight perceived barriers to OER adoption, such as the increased preparation time for selecting, revising, or developing OER (Belikov & Bodily, 2016; Chatlani, 2018). Though the complex issue of sustainability is not limited to OER, many grant-funded initiatives do fall by the wayside because they are not sustainable. However, studies on the sustainability of OER initiatives are still emerging. This study seeks to explore sustainability issues to grow the body of literature on the effectiveness of sustaining OER initiatives in higher education, particularly focusing on the context of inter-institutional initiatives at research institutions.

OER has encountered some resistance from faculty and academic units in educational institutions because it takes time and effort to adopt, adapt, and create OER. The results of this study will help OER leaders and workers in higher education institutions gain a deeper understanding of how to effectively sustain OER initiatives long-term. It also informs administrators and staff, who are highly involved with leading OER initiatives, to help them develop sustainable models to increase faculty engagement in OER. The key players in OER implementation for an educational institution usually consist of a library, instructional design staff, the technology department, the bookstore, academic units, and faculty development departments (e.g., teaching and learning centers). The results of this study will also empower all of these key players to better support OER initiatives in order to increase faculty engagement with OER.

## ***Research Questions***

The purpose of this study is to explore how higher education institutions sustain OER initiatives by examining the experiences and perspectives of the stakeholders or key players—faculty, administrators, librarians, instructional designers, and other support staff who work on the front lines of the initiatives as OER users, educators, and advocates. The following research questions guide this study:

1. How do higher education institutions make decisions regarding starting and implementing OER initiatives?
2. How do higher education institutions make OER initiatives sustainable?
3. What are the successes and challenges when sustaining OER initiatives in higher education institutions?

## **Definition of Terms**

### ***Open Education***

Open education encompasses the myriad of learning resources, teaching practices, and education policies that use the flexibility of OER to provide learners with high-quality educational experiences (William and Flora Hewlett Foundation, 2022).

### ***Open Educational Resources (OER)***

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—retaining, remixing, revising, reusing, and redistributing the resources (Creative Commons, n.d.).

### ***Open Educational Resources Initiative***

One type of funded university initiative, with the purpose of supporting and encouraging the adoption, adaptation, and creation of alternatives to traditional textbooks that lead to student success and enhanced teaching and learning (Kirkpatrick & Van Natta, 1999).

### ***OER Sustainability***

OER initiatives' ongoing ability to meet established goals (Wiley, 2007). Sustainability does not require additional funding to keep the initiative going (Grove & Pugh, 2017).

### ***Disruptive Innovation***

A process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves upmarket, eventually displacing established competitors (Christensen Institute, n.d.).

### ***Open Access (OA)***

In the context of scholarly publishing, this term is widely used to refer to unrestricted online access to articles published in scholarly journals (Laakso et. al, 2011).

### ***Inclusive Access***

An e-text-based program that is developed by commercial textbook publishers, bundled within a course, and offered at a reduced price over their traditional textbook sales (Hurley & Hallmark, 2020).

## CHAPTER 2: LITERATURE REVIEW

This chapter includes different sections of the literature review that informs the study. This study aims to discover how the institutions sustain OER initiatives by examining the experiences and perspectives of the stakeholders or key players—faculty, administrators, librarians, instructional designers, and other support staff who work on the front lines of the initiatives as OER users, educators, and advocates. Given the purpose of the study, the literature review is organized in five sections: background, general institutional OER initiative practices, controversies surrounding OER, benefits of using OER, and barriers to sustaining OER initiatives.

### **Background**

Over the past decade, the OER movement has rapidly gained momentum across higher education in the United States. According to the U.S. Bureau of Labor Statistics (2021), consumer prices for college textbooks increased 40.6 percent from July 2011 to March 2018. After steadily decreasing from March 2018 to January 2020, prices for college textbooks have increased since January 2020 but remain well below March 2018 levels (U.S. Bureau of Labor Statistics, 2011). To mitigate high textbook costs, many higher education institutions lowered college costs by reducing textbook prices through OER initiatives.

At the national level, OER expansion has also received tremendous governmental support. The federal government involvement resulted in profound policy changes that led to stimulating OER growth. With SPARC and Creative Commons' leadership in encouraging governmental support, the U.S. Department of Education and the White House Office of Science and Technology Policy announced new open policies supporting

OER's development for states, school districts, and educators. At the end of 2015, the U.S. Department of Labor announced a policy requiring all intellectual property developed under a competitive Labor Department grant to be released with a CC BY license, which allows users to distribute, remix, adapt, and build upon the material in any medium or format, so long as attribution is given to the creator (Green, 2016). On March 23, 2018, the U.S. Congress passed a \$5 million pilot program to support OER textbooks, spurred by a multi-year effort led by the Scholarly Publishing and Academic Resources Coalition (SPARC) and the U.S. Public Interest Research Group (PIRG) (Allen, 2018). Governmental adoption of OER has subsequently helped OER practice in higher education to flourish.

The growth of open access initiatives and policies set the stage for the rise of OER. Open access allows for faster and broader research sharing, leading to further advances (Zhou, 2016). Public and fair access to scientific findings is also an increasingly influential movement for scientists, researchers, and knowledge workers who can put the findings to good use and build upon the scholarly research to innovate. To increase access to the results of federally funded scientific research, U.S. legislators have been committed to the proposition that taxpayers deserve easy access to the results of scientific findings that their tax dollars funded. In August, 2022, the White House Office of Science and Technology Policy (OSTP) issued new guidance to all federal agencies that taxpayer-funded research will be immediately available for the public to freely access and fully use, which will eliminate the current 12-month waiting period for access to research outputs, including articles and data (SPARC, 2022).

In the early stages of the OER movement, it quickly became common practice for educational institutions to develop initiatives for OER. There are some classic examples of higher education institutions that implemented OER initiatives. In 1997, for instance, California State University established Multimedia Educational Resources for Learning and Online Teaching (MERLOT) to provide the early means for college professors to share intellectual content focused on teaching and learning (Bliss & Smith, 2017). At that time, MERLOT only provided access to mostly free online materials. As of 2022, MERLOT had more than 100,000 curated and peer-reviewed learning resources available and also provided a content/website builder tool for users to create OER (MERLOT, n.d.).

California State University was not the only one attempting to help create open access to free online materials. The Massachusetts Institute of Technology (MIT) used \$8 million from its general institution budget to support an OER initiative called OpenCourseWare (OCW) (Hodgkinson-Williams & Donnelly, 2010). At Rice University, an electrical engineering professor built Connexions, a web-based platform to facilitate the development and sharing of open-source educational content by university professors worldwide (Bliss & Smith, 2017). Connexions, which changed its name to OpenStax, has published 57 books since 2012, and its materials have been used by more than 6 million students, saving them more than \$1 billion (SPARC, 2022).

How does an educational institution support faculty in publishing an open textbook and sustaining the open publication system? One difference between the traditional and open publication systems in the United States is who pays for textbook production. Suppose Professor X publishes his or her textbook with an academic

publisher. In that case, he or she can use all the services that the publisher provided: designing, editing, publishing, marketing, distribution, and warehousing for the book. The publisher will receive the profits from the sales and pay Professor X royalties. The business model sustains the traditional publication system. In contrast, the OER publication system is sustained by different funding models.

## **General Institutional OER Initiative Practices**

### ***Funding Models and Incentives***

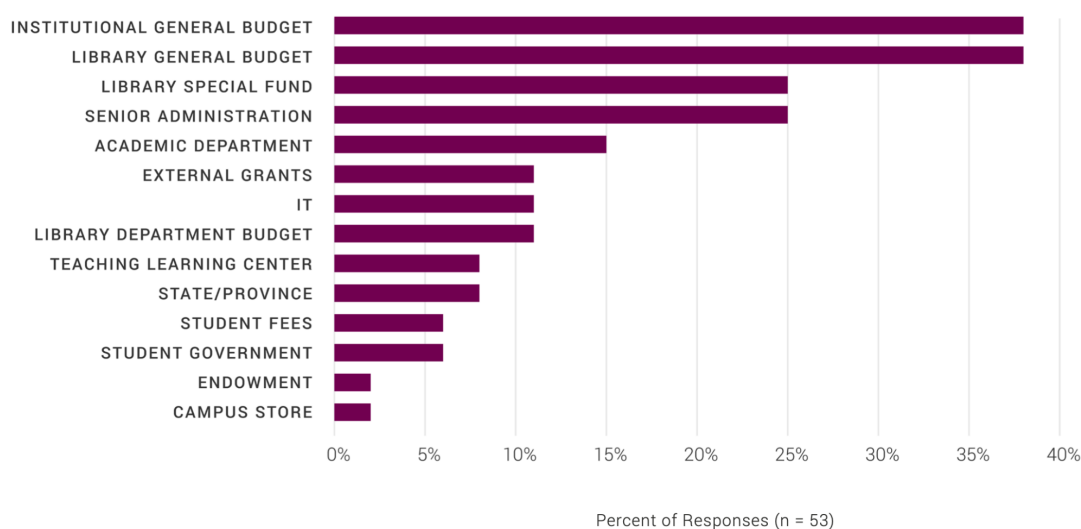
Downes (2007) summarized eight funding models used by an OER initiative: endowment model, membership model, donations model, conversion model, contributor-pay model, sponsorship model, institutional model, and governmental model. Use of a governmental model such as state-level funding for OER has increased in recent years (Wesolek et al., 2018). Many institutions within the states that have not adopted legislation launched their initiatives and provided funding for faculty to adopt OER (SPARC, 2019). It is common for open textbook publishers and organizations to receive private funds from philanthropic foundations such as the Bill & Melinda Gates Foundation, the Hewlett Foundation, and others (e.g., OpenStax).

What is the state of OER funding resources at the educational institutions in the United States? SPARC (2019) provides a snapshot of the answer in its 2018–2019 annual report: survey results of OER program funding show that the majority of institutions ( $n = 50$ ) typically use institutional general budget, library general budget, and library special funds as funding sources for OER programs.

### **Figure 3**

*SPARC 2018–2019 Annual Report: Program Funding Resources*

# PROGRAM FUNDING SOURCES



## ***Faculty and Recognition***

Recognizing innovation and valuing faculty's effort to tailor learning to reduce barriers for students encourages faculty's continued effort to engage in OER activities. Besides financial incentives, another important way to incentivize faculty for OER creation and authoring is to recognize faculty by including OER-related activities in the tenure and promotion process (Belikov & Bodily, 2016). OER-related activities are considered forms of research, teaching, and service because faculty who engage in OER activities show their expertise in their field, their commitment to supporting their students, and their dedication to advancing their institution (McKinney & Coolidge, 2021). The Driving OER Sustainability for Student Success (DOERS3) collaborative, a group of 25 public higher education systems and statewide/provincewide organizations that are committed to supporting student success by promoting OER, has developed a tool to help tenure-track faculty include OER work in their tenure and promotion portfolios (Coolidge et. al, n.d.). The openly licensed matrix offers suggestions for how



different types of OER work can apply to research, teaching, and service, and it provides examples of how those contributions can be framed.

### ***Institutional Open Publishing Entities VS. Traditional Publishing Teams***

What does an OER publication system look like for Professor X if his or her institution provides funding and publishing services for him or her? In a traditional publisher's company, the publishing departments have defined roles for book production. All the services (e.g., designing, editing, publishing, marketing, and distributing) are offered to the book authors in one package. An OER publication system in an educational institution may vary based on different situations. However, the similarity is that the system is created based on a joint team effort from multiple independent entities on campus. Each entity brings their respective expertise and skills to the table, and they work together to provide services similar to those offered by traditional publishers. The entities, for example, could include professors, the library, digital teaching and learning groups, the university press, and the campus bookstore. Professors are the book authors who have subject matter expertise. The libraries bring their expertise in content and collection, the value of open access, and library publishing. Digital teaching and learning departments can provide expertise and skills in instructional and media design and technology support essential to OER textbooks. The university press provides knowledge and skills in book production, such as copyediting and proofreading. The campus bookstore has experts on textbooks required for the institution's courses and offers low cost print-on-demand copies of open textbooks.

So, in comparing publishing companies with campus entities that play key roles in OER publication, it is clear they can provide similar book production services. Table 2 is

an adapted comparison chart based on general institutional OER practice as well as case studies literature (Lowe-Wincentsen et al., 2019; Rodés et al., 2013; Sutton & Chadwell, 2014). Some institutions also use paid services of OER communities or consortiums, such as OER training and initiative strategies, project management, copyediting, proofreading, and distributing. Example OER communities include Rebus Community, Open Textbook Network, and ISKME.

**Table 2**

*Key Roles in Traditional and Open Publication Systems (Institutional)*

Key roles in traditional publication system	Traditional publication system: Departments that play key roles	Open publication system: Possible campus entities that play key roles	Open publication system: Possible entities that play key roles (with outside support)
Acquisition	Editorial department	OER committee	OER committee
Planning	Publisher	Library, Faculty, Digital teaching and learning	Library, Faculty, Digital teaching and learning
Editing	Editorial department, Production team	University press	OER community
Designing	Creative department	Digital teaching and learning	Digital teaching and learning
Art direction	Creative department	Digital teaching and learning	Digital teaching and learning
Copyediting	Editorial department	University press	OER community
Production management	Managing editorial and production	Library, Faculty	OER community, Library, and Faculty/book author

Distribution	Sales department	Bookstore, Faculty	OER community, Bookstore, Faculty
Selling	Sales department	Library, Faculty, Bookstore	Library, OER community, Faculty, Bookstore
Accounting	Finance, Accounting	Bookstore, Library (tracking usages of the books)	OER community, Bookstore, Library (tracking usages of the books)
Marketing/ Promotion	Marketing, advertising, sales	Library, Faculty, Bookstore	OER community, Library, Faculty, Bookstore

*Note.* Institutions may have different forms of campus engagement with OER initiatives.

The table is adapted from Underdown (2018).

## **Controversies Surrounding OER**

### ***The Quality of OER***

While OER brings tremendous benefits to educators and students, there have been many controversial discussions about the quality of OER, especially when OER were first introduced to educational institutions. Institutional stakeholders have concerns that OER adoption may result in lower quality or outcomes (Nyland, 2018). Research regarding student learning outcomes by students using OER and commercial textbooks have varied results. While professors have their doubts on quality, many studies have shown that students perceive OER's quality as comparable to commercial materials (Bliss et al., 2013; Hilton et al., 2013; Ozdemir & Hendricks, 2017).

The controversy about the quality of OER may stem from a lack of awareness and understanding of OER. The Babson Survey Research Group at Babson College investigates the attitudes, opinions, and use of OER among teaching faculty in the United States higher education field. Results from a survey of 3,288 faculty indicated that only a

small percentage (31%) of professors are aware of OER even if they use open materials (Lieberman, 2019). However, once professors understand the use of OER, they appreciate the concept and find that OER is roughly equivalent to traditional resources (Doan, 2017). One year later, the Babson Survey Research Group surveyed 4,339 faculty on OER awareness. For the first time, the majority of faculty reported that they were aware of OER. Their awareness and attitudes toward digital materials were improved. Faculty who had adopted OER rated its quality as equal to that of commercial alternatives (McKenzie, 2020a). Clearly, an increasing number of educators have been paying attention to OER use and adoption, as they see improved quality and performance brought to their teaching and student learning.

### ***Controversial Form of License***

The Hewlett Foundation envisions OER to be openly licensed (under a Creative Commons attribution license that includes the 5R activities—retain, revise, remix, reuse and redistribute), technologically accessible, editable using commonly available tools, and designed with diverse learners in mind (Bliss & Smith, 2017). Deviation from any of these characteristics reduces the relative “openness” of an educational resource. However, many resources now called OER deviate from these criteria, which reduces the openness of an educational resource. For example, the Creative Commons provides licenses with different level restrictions for an educational resource. CC BY-ND is a fairly restrictive license that requires all users to acknowledge the author and does not allow derivative works. In other words, an OER with a CC BY-ND license allows users to apply only some of the 5R activities. Users can retain, reuse, and redistribute the original content, but they cannot revise or remix the content or redistribute it as a

modified resource. An ND clause on the license is somewhat controversial to many OER funders and activists because it restricts users from adapting resources to improve the usefulness for new users. However, some people upload their resources with a mind toward openness but have difficulty relinquishing control over their original work (Bliss & Smith, 2017). One legitimate concern they have is, how can new users validate that adapted content is still truthful, especially if the original contained factual information within the discipline? It is suggested that OER creators and users keep a record of all changes and additions like Wikipedia. All the OER provenance and revision information relies on a good faith self-report process and less on data-driven, cross-platform analytics to track content revisions.

### ***Controversies About Affordable Resources Provided by Publishers***

As the use of OER continues to grow, publishers are experiencing a decline in the sale of textbooks, and college textbooks use has been declining in recent years (Rosen, 2019). To compete with OER, mainly high-quality open textbooks with ancillary materials such as OpenStax textbooks, publishers have attempted to sustain their business model by developing new platforms to host OER and lower-cost content. Some leading publishers launched new courseware platforms that blend open and closed content to provide affordable educational resources. Students only need to pay an affordable (<\$40) course fee to access the course materials hosted in the platforms. Some publishers indicate that the course fee is not for the OER material, which is still free and open, but for technologies and services that help deliver the content (Nyland, 2018). Locking down OER in a closed platform caused controversial discussions related to the stewardship and use of OER. A few OER advocates acknowledge that the publishers' courseware

platforms appeal to faculty and that some learning features are beneficial to students, but they also question whether OER hosted in closed commercial platforms still count as “open.” Many institutions partnered with campus bookstores and started the affordable textbook movement as an alternative to provide students low cost options for use of commercial textbooks.

### **Benefits of Using OER**

All students, especially the less economically privileged, are the beneficiaries in OER growth. In addition to the benefit of saving costs, many OER studies have shown that student success can be achieved or enhanced through OER use and adoption. Colvard et al. (2018) conducted a large-scale study (21,822 students) on the impact of course-level faculty adoption of OER; the result indicates that OER use and adoption improved end-of-course grades and decreased DFW rates for all students, including Pell Grant recipient students, part-time students, and historically underserved students. Some other studies found that students who saved money with OER reinvested those funds in their education by enrolling in additional courses (Fischer et al., 2015; Ikahihifo et al., 2017). Weller et al. (2015) discovered that OER use also increases student satisfaction and engagement with learning and has the potential to improve retention and recruitment. All these benefits of OER also result in student success that is advantageous to the educational institutions.

Growing OER use and adoption also increases pedagogical flexibility by promoting academic freedom for faculty, whereas the partnership and solutions offered by textbook publishers may negatively affect academic freedom (Bossaller & Kammer, 2014). Foote (2005) defines four freedoms of OER:

- freedom to copy;
- freedom to modify;
- freedom to distribute; and
- freedom to redistribute modified versions.

With the advantages of the flexibility and freedom that OER can provide, faculty can adopt or adapt the teaching materials to fit into individual teaching practices and make learning more personalized for students.

In 2020, the COVID-19 pandemic pushed university courses into remote or online instruction. The rapid rise in online instruction during the pandemic has resulted in the adoption of more online resources than ever before (Schaffhauser, 2020). Most OER comes in digital and online formats, so professors find it convenient to plug them into the institutional LMS. During the pandemic, many educators experienced disruptions in their teaching. With open licensing, OER gives faculty the advantage of customizing course content, so they can design lessons, assignments, and assessments to be as resistant to disruption as possible (i.e., resilient pedagogy) (Thurston et al., 2021). Faculty can tailor OER to respond to students' needs and interests within a changing learning environment.

OER also allows professors to adapt the content to contextualize teaching concepts related to current global or local issues. When major events occur in the global or local community, it often takes years for commercial textbooks to reflect the event (Van Allen & Katz, 2020). When professors can immediately revise the content, students are potentially more engaged with customized learning content because learning is personalized, timely, and more relevant to their lives.

The rise of OER creates or enriches job opportunities for librarians, instructional designers, academic technologists, and campus bookstore staff, who are some of the key players of OER adoption in educational institutions. Librarians play an essential role with OER. They help professors decide on resources, curate materials, and find new content for the curriculum. Instructional designers stand at the forefront with librarians and help professors select, adapt, and create OER that align with the course learning objectives and integrate into campus LMS. Academic technologists engage in every step of the OER technology integration process. They work with the Information Technology (IT) department to address accessibility and security issues and integrate OER platforms into campus LMS. Many university bookstores have also made arrangements with publishers to license content and make affordable educational resources available to students. The use of OER increases the demand for more human resources to help professors integrate OER into their curriculum in educational institutions.

### **Barriers to Sustaining OER Initiatives**

While OER can bring tremendous benefits to educators and students, there are many concerns around sustaining OER initiatives. OER is not “free” for faculty as it is defined for students. It takes a significant amount of time and effort for faculty to go through different stages of pedagogical decision-making to adopt OER: selecting, adapting, and creating (Seo et al., 2019). Lack of time and discoverability also play a role in the process (Belikov & Bodily, 2016). Essmiller et al. (2020) also indicate that OER initiatives could initially inspire faculty to create and use OER in their courses, but the effort proved difficult to sustain. Common barriers to sustaining OER are those related to funding instructional support and technology, such as continuing faculty incentives when



OER grants run out; how existing teaching materials will be updated; and how a resource can be shared in a format that performs well across different platforms.

A survey of 2,711 instructors across U.S. higher education institutions by the Babson Survey Research Group identified one significant challenge for OER use and creation: a lack of knowledge about where to find materials that allow instructors to share, remix, and redistribute as well as how to determine which technology platform will fit with the OER project scope (Chatlani, 2018). A professor's internal motivations and understanding of OER also play a part in using and creating OER. Additionally, professors need technical skills and information knowledge to efficiently and effectively develop OER. Requisite knowledge and skills include distinguishing OER from other digital content, understanding copyright to use and remix OER, understanding digital accessibility standards, and metadata tagging to develop OER (Seo et al., 2019).

Because of the collaborative nature of OER, collaborative platforms are critical. OER creators need a platform to effectively work together on authoring and publishing content that is easily delivered to, and reused by, end users. As mentioned earlier, there are many different OER platforms, but determining which platform is the right fit for the project scope, such as writing an open textbook, can be difficult for multiple collaborators.

## **Summary**

A review of the literature shows that much current research focuses on the benefits and barriers of OER use for faculty and students. However, the sustainability issue of OER initiatives, particularly for public research institutions, is not a topic that is commonly explored in research. Even though the topic of sustaining OER initiatives is

still emerging in recent research, the focus is primarily on international and private institutions. (Hodgkinson-Williams & Donnelly, 2014; Schleicher et al., 2020; Zaid & Alabi, 2021).

The literature review discussed the general practices of institutional OER initiatives, how the presence of OER growth threatens book publishers, the controversies surrounding OER, the benefits of using OER, and the barriers to sustaining OER initiatives. This research contributes to the existing literature by exploring the OER initiative sustainability issue in the U.S. higher education setting, particularly focusing on the context of public research institutions. The next chapter (Chapter 3: Methodology) describes the research method and design used for this study.

## CHAPTER 3: METHODOLOGY

### Introduction

The purpose of the study is to discover how institutions sustain OER initiatives by examining the experiences and perspectives of stakeholders or key players—faculty, administrators, librarians, instructional designers, and other support staff who work on the front lines of the initiatives as OER users, educators, and advocates. This chapter presents the methods used to investigate the phenomenon of OER sustainability in higher education. First, the research method and design for this study are discussed. Then, details about case sampling and selection, data collection protocols, and data analysis processes and considerations are provided. Finally, I address how my role as a researcher might have shaped the study design, the potential impact of researcher bias, and minimization of researcher bias through methodological approaches.

### Research Method

The two primary types of social science research methods are qualitative and quantitative research studies (Yilmaz, 2013). Qualitative research can reveal a deeper understanding of people's perceptions regarding a particular phenomenon (Merriam & Tisdell, 2016). Qualitative research is socially constructed and used to explore and understand the meaning individuals or groups ascribe to a social or human problem (Creswell, 2014). Quantitative research, on the other hand, focuses on testing objective theories and variables using statistics and methods (Creswell, 2014; Yilmaz, 2013).

Qualitative research methods, including interviews, focus groups, and documents, were the most appropriate way to study this problem because of the need to examine different perspectives of insiders' experiences of higher education institutions related to

OER practice. A purposeful sample of knowledgeable participants afforded the opportunity to demonstrate their varied expertise and experience through interviews and focus groups. The documents from public websites and resources shared by the participants serve as another data source to support a comprehensive understanding of the phenomenon of implementing and sustaining OER initiatives.

### **The Research Design**

The most appropriate method to explore the sustainability of OER initiatives in higher education was case studies. Merriam (2009) defines a case study as an in-depth description and analysis of a bounded system. Yin (2018) states three conditions for use of a case study: the purpose of the study must be to answer “how” or “why” questions; a researcher has little or no control over events; and the focus of the research is a contemporary set of events within a real-life context, especially when boundaries between phenomenon and context may not be clearly evident. Creswell (2013) also describes a case study as exploring a “real-life, contemporary bounded system (a case) or multiple bounded system (cases) over time, through detailed, in-depth data collection involving multiple sources of information.”

Creswell (2013), Merriam (2009), and Yin (2018) refer to a case being bound by time and place when speaking about bounded systems. The real-life contemporary bounded system in this study was sustaining OER initiatives of higher education institutions. To gain an in-depth understanding of the phenomenon of OER sustainability in higher education, I used a two-case study design to look at how two different institutions implemented and sustained OER initiatives.

Yin (2018) described three types of case studies used for research purposes: exploratory case studies, descriptive case studies, and explanatory case studies. The exploratory case study investigates distinct phenomena characterized by a lack of detailed preliminary research (Mills et al., 2010). The explanatory case study is used to explain presumed causal links that are too complex for a survey or experiment (Yin, 2014). A descriptive case study is an attempt to describe what happens to a product when it is launched (Noor, 2008). According to Yin (2014), exploratory case studies are appropriate when asking “what” and “how” questions when a researcher wishes to gain an extensive and in-depth description of a social phenomenon. This study chose multiple exploratory case studies to focus mainly on answering the questions “what” and “how,” specifically:

- *What* are the driving forces behind OER initiatives?
- *What* are the successful practices used to sustain OER initiatives?
- *What* are the successes and challenges for higher education institutions in sustaining OER initiatives?
- *Why* and *How* do higher education institutions start OER initiatives?
- *How* do institutions sustain their OER initiatives?

Given the questions to explore, this study uses triangulation as a strategy to get a full, rich description of the phenomenon of OER sustainability in higher education. Patton (1999) defines triangulation as the use of multiple methods or data sources in qualitative research to develop a comprehensive understanding of phenomena. The different data sources for this study include interviews, focus groups, and documents.

In-depth interviews were conducted with different individuals who work on the front lines of OER initiatives as OER users, educators, and advocates. Their roles were

faculty, administrators, and support staff who led, actively participated in, and sustained the university's OER initiatives. There were 14 interviews of 45–60 minutes duration conducted for the study.

Focus groups followed after interviews. Three types of focus groups were conducted: those consisting of faculty, administrators, and support staff. In total, there were five focus groups conducted, with each group's discussion lasting 45–60 minutes long.

Document analysis is often used in combination with other qualitative research methods as a means of triangulation (Bowen, 2009). In this study, public records documents were used to provide a different data source. Some example documents include institutional public OER initiative websites, webinars/video presentations, and public resources shared by the participants during the interviews.

### **Research Questions**

The research questions in this study indicated the need for an exploratory case study approach in order to answer the “what” and how” questions discussed above. The following three research questions guide this study:

1. How do higher education institutions make decisions regarding starting and implementing OER initiatives?
2. How do higher education institutions make OER initiatives sustainable?
3. What are the successes and challenges when sustaining OER initiatives in higher education institutions?

### **Table 3**

*Research Matrix*

Sub-research questions	Purposes	Data sources	Date of data collection
1. How do higher education institutions make decisions regarding starting and implementing OER initiatives?	To discover the driving force of OER initiatives, the main reasons for the institutions to start the initiatives, and how the initiatives got started	Interviews, Focus groups, Documents	September 2021–February 2022
2. How do higher education institutions make OER initiatives sustainable?	To discover the successful practices used to sustain OER initiatives	Interviews, Focus groups, Documents	September 2021–February 2022
3. What are the benefits and challenges when sustaining OER initiatives in higher education institutions?	To identify the successes and challenges of sustaining OER initiatives through key players' experiences and expertise	Interviews, Focus groups	September 2021–February 2022

### Case Selection and Sampling

The research cases for this study were higher education institutions which have OER initiatives. Specifically, the study looked at four-year public institutions within a university system. There are several reasons to study four-year public institutions specifically. Based on the SPARC Connect OER, a platform to search OER activities at campuses across North America, 75% (99 out of 132) of U.S. higher education institutions that maintain profile pages about local OER activities are four-year public institutions. The National Center for Education Statistics (NCES) defined a public institution as an educational institution whose programs and activities are operated by publicly elected or appointed school officials and which is supported primarily by public funds (Powers & Schloss, 2017). Four-year public institutions usually have big student

populations and sometimes are well-funded. The public nature, size, and funding model of these institutions make them easy to research. Four-year public institutions would benefit from this study if qualitative research findings could be generalized across groups.

According to Yin (2018), the cases need to present something unique or worth studying. Seawright and Gerring (2008) suggest seven case selection procedures, each of which facilitates a different strategy for within-case analysis: typical, diverse, extreme, deviant, influential, most similar, and most different cases. This study focuses on influential cases that involve successful practices in sustaining OER initiatives.

### **Sample Criteria**

To screen the qualified candidate cases for the study, I used a two-phased procedure to determine final cases based on a quantitative data pool from the Scholarly Publishing and Academic Resources Coalition (SPARC) membership list. SPARC maintains a Connect OER Directory that includes OER activities at campuses across North America. I first used a search to identify higher education institutions that have OER initiatives. Specifically, I used the filter to search institutions with the following characteristics: public institutions, four or more years at institution level, and enrollment size 20,000 or greater. The search list showed the public institutions that have local OER activities. Then, I added criteria to search the institutions within university systems and ensure the institutions have OER activities as a focus. This further reduced the number of candidate institutions that fulfill the study criteria. Finally, as a second phase of selection intended to pare down the number of candidates and identify influential or successful cases, I reviewed institutions' websites. This helped me to identify potential cases, which



are institutions that have dedicated OER teams and have had ongoing OER initiatives for more than five years. I sent participation requests to OER contacts of those institutions that met all the criteria mentioned previously, and I ultimately selected the two institutions who first responded to that request as the cases to examine for this study.

### **Sampling Technique and Size**

After selecting the two cases, I used the snowball or network sampling approach to recruit participants for focus groups. Snowball sampling is a strategy that involves locating a few key participants who easily meet the criteria and then asking those individuals to refer other participants (Merriam & Tisdell, 2016). The researcher is outside of the research sites, and data about all appropriate participants at the institution was not readily available. Therefore, snowball sampling is an appropriate technique to use to identify other participants that fit the criteria and recruit participants for this study. To gather initial participants, I performed an online search of potential OER primary contacts to identify individuals from the selected institutions to contact. I then reached out to these individuals to request their participation in an online interview regarding how their institutions are sustaining OER initiatives. I emailed these primary contacts, who then helped me gain entry to recruit more participants. The participants were faculty members, OER librarians, instructional designers, directors or managers of OER offices, etc. For ethical consideration, the participants were provided a consent form (Appendix A) to agree to participate in the study. I first conducted individual interviews with those who were interested in the study. After the individual interviews were complete, I asked the participants to make referrals for additional participants within their institutions to

interview. I then communicated with the referred individuals and recruited them as participants if they were interested and willing to be part of the study.

Focus groups were conducted after the individual interviews. The same participants were invited to the focus groups. Based on the categories of the participants, there were three types of focus groups formed for this study: faculty, administrator, and support staff groups. The principle of homogeneity was considered for group composition. This principle is viewed as a common strategy for generating active exchanges if participants in a group share a similar perspective toward the topic (Given, 2008). The participants in the faculty group are OER users who are experienced in adopting, adapting, and creating OER for their classes. The participants in the administrator group served in leadership roles in OER initiatives. The participants in the support group directly assist faculty in effectively using OER for their classes.

### **Research Protocol and Procedures**

As discussed earlier, I collected data from three sources: interviews, focus groups, and documents from the public websites. Yin (2014) pointed out that the research protocol is important for conducting a case study and increases the reliability of the research. I created a case study protocol that includes four sections (Yin, 2018):

- Section A: an overview of the case study (objective and auspices, case study issues, and relevant reading about the topic being investigated)
- Section B: data collection procedures (procedures for protecting human subjects, identification of likely sources of data, presentation of credentials to field contacts, and other logistical reminders)

- Section C: protocol questions as shown in Appendix B (the specific questions that the case study research must keep in mind in collecting data and the potential sources of evidence for addressing each question)
- Section D: a tentative outline for the case study report (e.g., format for the data, use and presentation of other documentation)

Creswell (2014) described several methods for data collection in qualitative research: documents, interviews, artifacts, and observations for case studies. This study used three different data collection methods: interviews, focus groups, and documents to triangulate data. Merriam and Tisdell (2016) suggested different types of interviews emanating from different theoretical stances. This study used a semistructured format for the interview process, because it allows the researcher to respond to the situation at hand, to the emerging worldview of the respondent, and to new ideas on the topic (Merriam & Tisdell, 2016). The semistructured interview is appropriate because the more open-ended and less structured format aligns with the study's goal to obtain the understanding of experiences with OER initiatives related to sustainability. The interviews and focus group discussions were conducted via Zoom due to the travel restrictions of the researcher, especially during the pandemic. All interviews and focus groups were recorded with the questions provided (Appendix C and Appendix D) and were transcribed. There were no identifiable names on the Zoom recording or on the transcript. I assigned identifiers to each participant and kept them in an Excel file.

Yin (2018) suggests that a good study utilizes as many sources as possible because the various sources are highly complementary. In addition to individual interviews and focus group discussions, this study also used documentation as another

source of evidence. Yin also states that the most important use of documentation for case study research is to corroborate and augment evidence from other sources. I collected written materials and webinars/video presentations from the public websites because they provided specific details to corroborate information from interviews and focus groups.

### **Data Analysis Procedure**

Table 4 shows the data analysis procedure aligned with each research phase. NVivo analysis software was used to code the qualitative data for a thematic analysis. Cross-case synthesis was applied to the analysis of multiple case studies in order to identify common themes that demonstrate the successful practices in OER initiative sustainability. The technique is especially relevant even if a case study consists of only two cases (Yin, 2018).

**Table 4**

*Data Analysis Procedure Aligned with the Research Phase*

Phase	Procedure	Product
Data collection from the first and second case	<p>Conducting individual interviews from the two case sites with administrators who lead the OER initiative; librarians, instructional designers, or other staff who directly support faculty to use OER; and faculty who use or create OER</p> <p>Collecting documents from the public websites about the OER initiatives of each institution</p>	<p>Interview protocol</p> <p>Transcripts</p> <p>The number of participants:            Administrators (<math>n = 2</math>)            Support Staff (<math>n = 6</math>)            Faculty (<math>n = 6</math>)</p>
Qualitative data analysis	Analyzing data using NVivo	Codes and themes

Connecting to the second phase: Focus group interview protocol creation	Using qualitative interview analysis results to create the qualitative focus group questions	Protocols for focus group discussions
Qualitative data collection	Conducting focus group interviews: Group 1: Administrators who lead the OER initiative Group 2: Staff who support OER initiatives (e.g., librarians, instructional designers, instructional technologists, bookstore staff) Group 3: Faculty who participated in the institution's OER initiatives	Data from five focus groups (of three different types)
Qualitative data analysis	Use NVivo for thematic analysis	Codes and themes
Interpreting and comparing the connected results	Continually interpret, compare, and triangulate the results	Discussion, implications, and future directions about OER sustainability improvement

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*Note.* Adapted from Creswell (2014)

### **Ethical Considerations**

The study was approved by the University of Missouri-Columbia Institutional Review Board (IRB) office. To address ethical considerations, documents from the OER initiative websites and interview recordings in this study were collected, de-identified, and saved to the University of Missouri's Microsoft OneDrive folders in a password-protected space. Before the individual and focus group interviews were recorded, participants were given a consent form that included the researcher introduction, research purposes, length of time each study participant would spend in research activities, the potential risks of participating, and the potential benefits of participating. The researcher

also clearly explained that no identifiable data would be shared; that participants might withdraw from the study at any time; and that interviews would be recorded for the study via Zoom. The recordings and interview data were securely stored in folders in a password-protected space. A copy of the informed consent appears in Appendix A.

## **Validity and Reliability**

### ***Triangulation***

As mentioned in earlier sections, this study uses triangulation as a strategy to test validity through the convergence of information from different sources (Carter et al., 2014). Patton (1999) indicates four types of triangulation: (a) method triangulation; (b) investigator triangulation; (c) theory triangulation; and (d) data source triangulation. The data source triangulation is used to enhance the credibility of the study. The triangulation involves examining data from interviews, focus groups, and documents.

### ***Member Checking***

The trustworthiness of findings is the bedrock of high-quality qualitative research (Birt et. al, 2016). Member checking, also known as participant or respondent validation, is one way of validating analysis practices in qualitative research (Creswell, 2014). There are different methods of member checking, and the synthesized member checking method was used for this study. This method addresses the co-constructed nature of knowledge by providing participants with the opportunity to engage with, and add to, interview data and interpreted data, several months after the interviews or focus groups (Birt et. al, 2016). Member-checking emails were sent to all the participants (Appendix E). Those available or willing to participate responded to the email and provided their feedback on

the synthesized themes. The feedback was integrated into quotes and findings of this study to improve the accuracy.

### ***Reflexivity***

At the time of this study, I had worked in the instructional design and learning technology field in U.S. higher education institutions for 15 years. I entered into this study with prior experience working in other U.S. public institutions' OER initiative processes. I worked closely with many faculty on OER projects and experienced commonly expressed concerns about sustaining OER from faculty members. My role inspired my direction for this study and motivated me to discover the best practices to sustain OER initiatives.

As a researcher, I understand reflexivity is an important process for qualitative research. I am aware that my experience can become part of the research as I engage with the participants through data collection and analysis. My preconceived biases could easily influence the research process. To mitigate this concern, I thought critically in a particular way about what I believe and why I believe it. Probst and Berenson (2014) describe reflexivity as awareness of the influence the research has on what is being studied and, simultaneously, of how the research process affects the researcher. Reflexivity promotes the integrity of the research process, so I constantly reflect on my own subjectivities or potential bias as a researcher and take action to minimize their effects. To work with participants such as instructional designers who worked in the same field as me, I might bring assumptions from my experiences and knowledge in the field. However, I adopted a reflexive attitude through the research process to keep the work authentic and transparent to my readers. Transparency helps my readers know what can

and cannot be observed in the study. The reflexivity process also improves my credibility. Tufford and Newman (2012) suggested several approaches to ensure my biases will not interfere with the research including collecting data from an outside source. To mitigate and overcome the problem of potential bias or preconceived notions, I conducted interviews with outside institutions of which I was unfamiliar.

### **Timeline and Cost**

Time was allocated based on the research phase and procedures that were discussed previously. In addition to the time used for obtaining IRB approval, it took three months to finish the first and second steps, including recruitment, data collection, data analysis, and refining qualitative data collection protocols. Steps three and four regarding conducting focus groups took another four months for data collection, data analysis, and two-phase results integration. The total time spent on the data collection and analysis was seven months.

Gift cards were used to compensate participants for their time and also were used as an incentive to increase participation. Gift cards of \$40 value were given to participants partaking in both the individual interviews and focus group discussions. A \$20 gift card was given to participants who participated in the individual interviews but not focus groups.

### **Summary**

Chapter three presented the qualitative methods that were used to investigate the phenomenon of OER sustainability in higher education. An exploratory two-case study design provides a framework for looking at two institutions and their implementation and sustaining of OER initiatives. In this study, the thematic analysis process was conducted



to discover findings. The next chapter describes the specific findings that emerged during analysis.

## CHAPTER 4: ANALYSIS

This study aims to explore how institutions sustain OER initiatives by examining the experiences and perspectives of the stakeholders or key players including faculty, administrators, librarians, instructional designers, and other support staff who work on the front lines of OER initiatives as OER users, educators, and advocates. As discussed in Chapter 3, I used an exploratory two-case study design to examine two four-year public institutions that have sustained OER initiatives for more than five years. The study focuses on influential cases that involve successful practices in sustaining OER. This chapter presents the research findings of data collected from the two institutions through 14 individual interviews, five focus groups, and document analysis of information available on public websites about the institutions.

### **Description of Cases**

The first case (C1) was a four-year public institution and started its OER initiative, led by a dedicated OER team, through libraries in collaboration with the office of digital learning/academic technology. The initiative provides grants and ongoing support for faculty to adopt, adapt, or create OER or low cost alternatives to expensive textbooks. Besides grants, the initiative includes a set of programs designed to incentivize faculty to go beyond adopting OER or free resources. The university started its OER initiative with the intention to remove barriers around cost, access, and technology for students.

The second case (C2) was also a four-year public institution and started its OER initiative led by a dedicated OER team through the university system office. The goal of the initiative was student success through equality in educational resource access. The

initiative provides program funding to reduce the costs of textbooks for all the students in the university system. It also provides a set of programs to support the implementation of OER, library resources, and low-cost commercial resources.

### **Participants in the Cases**

As discussed in Chapter 3, I used the snowball sampling approach to recruit participants from the two case sites and conducted 45–60 minute interviews with 14 participants in total. Their roles were faculty, administrators, and support staff who led, actively participated in, and sustained the universities' OER initiatives. The faculty participants were actively involved with OER initiatives. Three faculty members from C1 teach a four-year curriculum in the discipline of Science, Technology, Engineering, and Mathematics (STEM). Three faculty members from C2 are from the Humanities discipline.

The C1 administrator interviewed for this study serves in a senior leadership role for the academic technology unit. The administrator at C2 who was interviewed for this study serves as a program director for the system-wide OER initiative. The OER staff from both universities are instructional designers and librarians who actively support faculty in designing courses and teaching with OER. They worked at libraries, academic technology, digital learning, and the center for teaching and learning in the universities.

To keep data confidential and to protect participants' privacy, codes were used for case and participant identifiers. C1 and C2 represent the first and second case sites. Faculty participants' names were replaced with "P#." For administrator participants, "A#" was used. Support staff appear as "S#."

### **Table 5**

*All Participants from the Two Case Sites (C1 and C2)*

Participant code	Role	Discipline or college	Case sites
P1	Associate Teaching Professor	STEM	C1
P2	Assistant Teaching Professor	STEM	C1
P3	Teaching Professor	STEM	C1
P4	Associate Professor	Humanities	C2
P5	Associate Professor	Humanities	C2
P6	Associate Professor	Humanities	C2
A1	Administrator	Senior Leadership - Academic Technology	C1
A2	Administrator	Program Director - University System	C2
S1	Support Staff (Librarian)	Libraries	C1
S2	Support Staff (Librarian)	Libraries	C1
S3	Support Staff (Instructional Designer)	Digital Learning	C1
S4	Support Staff (Librarian)	Libraries	C2
S5	Support Staff (Librarian)	Libraries	C2
S6	Support Staff (Instructional Designer)	Center for Teaching and Learning	C2

*Note.* Participants  $n = 14$

There were three types of focus groups: faculty, administrator, and support staff groups. I conducted 45–60 minute interviews with five focus groups in total. As shown in the tables that follow, there were two groups for faculty, one group for administrators, and two groups for support staff. Each group consisted of participants from both case sites and from different disciplines. With diverse perspectives from different disciplines, participants in focus groups discussed their experiences in sustaining OER projects and initiatives in their institutional context based on the guided questions.

**Table 6***Faculty Focus Group #1*

Participant code	Discipline	Case sites
P1	STEM	C1
P3	STEM	C1
P4	Humanities	C2

**Table 7***Faculty Focus Group #2*

Participant code	Discipline	Case sites
P2	STEM	C1
P5	Humanities	C2

**Table 8***Administrator Group*

Participant code	Role - department	Case sites
A1	Senior Leadership - Academic Technology	C1
A2	Program Director - University System	C2

**Table 9***Support Group #1*

Participant code	Support role - department	Case sites
S1	Librarian - Libraries	C1
S6	Instructional Designer - Center for Teaching and Learning	C2

**Table 10**

*Support Group #2*

Participant code	Support role - department	Case sites
S3	Instructional Designer - Digital Learning	C1
S4	Librarian - Libraries	C2

### **Types of Documents**

Bowen (2009) defined document analysis as a form of qualitative research in which documents are interpreted by the researcher to give voice and meaning around an assessment topic. There are three primary types of documents used in document analysis: public records, personal documents, and physical evidence. In this study, public records documents were used to provide a different data source.

#### ***Institutional Public OER Initiative Website***

Both universities host a public-facing website about their OER initiatives. The websites include the goals of the initiatives, the official past and ongoing records of the activities that contain grants and proposal information, and data reports that show the impact of OER initiatives through savings for their students.

#### ***Webinars/Video Presentations***

Both universities have webinars and video presentations publicly online, some of which include the topic of the OER initiatives. One of the universities also posted some recorded webinar events on its website.

#### ***Other***

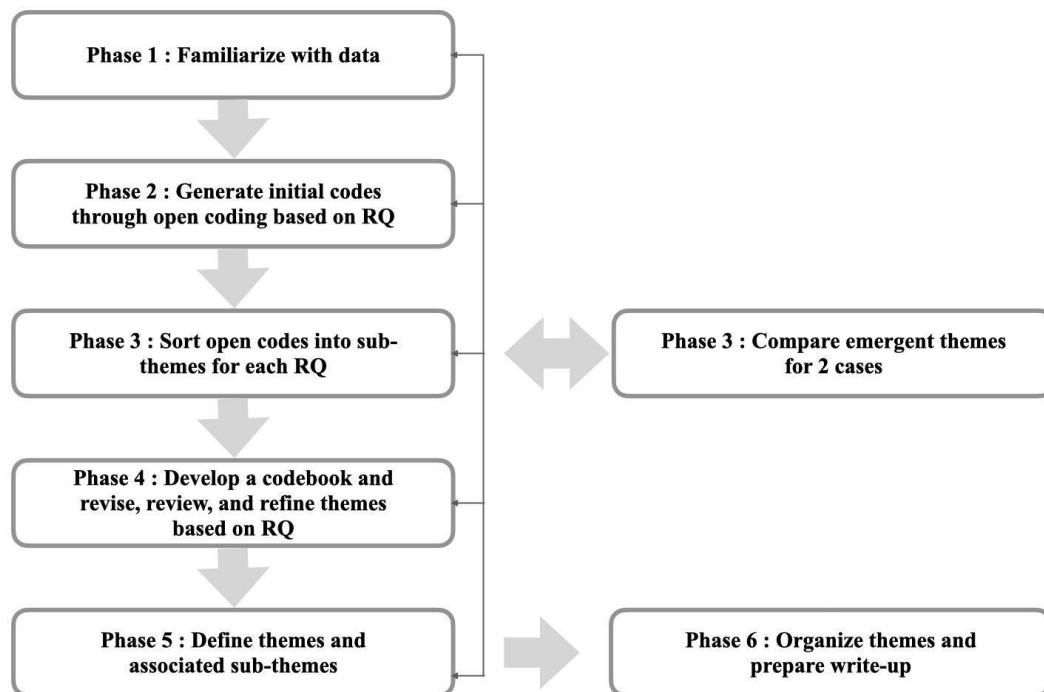
The participants also shared resources such as OER examples, blogs, and websites during the interviews and focus groups. Those documents also enriched the data and provided helpful context.

### **Data Analysis Procedures**

As discussed in Chapter 3, a thematic analysis approach was used for data analysis, guided by the research questions. The approach was adapted from Braun and Clark's (2006) six-phase guide, illustrated in Figure 4. In phase 1, I familiarized myself with the data by categorizing the documents, listening to the Zoom recordings, and reading the transcripts in NVivo 12. After correcting the errors in the transcripts from the recordings, I immersed myself in the data again by reading and taking notes on ideas and topics. In phase 2, the initial codes were generated through open coding based on the research questions; 392 initial codes were created, guided by the research questions. In phase 3, I defined 60 specific codes by sorting the codes into sub-themes based on the research questions and the interview guide. I also compared the emergent themes for two cases by marking the codes that applied (C1, C2, or both). In phase 4, I developed a codebook to review all the codes, and to revise and refine themes, as applied to the research questions. In phase 5, I defined the themes and associated sub-themes to organize them in preparation for the write-up in phase 6.

### **Figure 4**

*Data Analysis Process*



*Note.* Thematic Analysis Flowchart, which represents the six steps of the thematic data analysis implemented in this study. The process was adapted from Braun and Clarke's (2006) six phases of thematic analysis.

## **Themes**

This section presents findings from the data analysis for the study. The defined themes are discussed as they relate to each research question.

### ***Research Question 1***

Research question 1 was, “How do higher education institutions make decisions about starting and implementing OER initiatives?” This question focuses on the main reasons for the institution to start the OER initiative and how it got started. Analysis of documents, interviews, and focus groups identified three common themes:

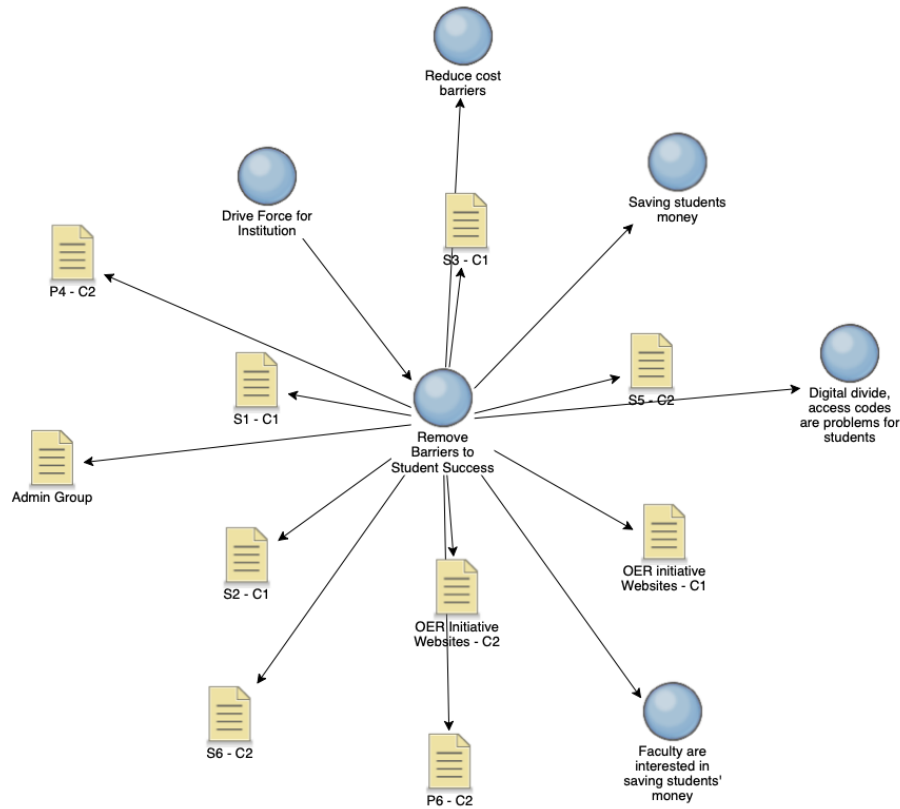


1. *(Why it got started)* To remove barriers to student success
2. *(How it got started)* Some mixture of top-down and grassroots efforts
3. *(How it got started)* People's ideology and interest in OER

**Theme 1: Remove Barriers to Student Success.** Transcripts and documents were entered into NVivo 12. The codes developed were entered as nodes in the software. During the coding process (phase 3), I sorted the open codes into sub-themes based on the research questions and compared the emergent themes for the two cases by marking the codes that applied. In NVivo 12, five defined codes were assigned to segments of data (10 sources of data files) that described this theme, which was identified across the three sets of data (i.e., interviews, focus groups, and documents), as shown in Figure 5.

**Figure 5**

*NVivo Analysis Diagram 1*



*Note.* An NVivo Analysis Diagram shows connected data sources and themes.

Of 24 data sources across the three sets of data (i.e., interviews, focus groups, and documents), 10 indicated one of the main reasons for the institutions to start the OER initiatives was to remove barriers around the digital divide, cost, and access for student success. This thematic analysis is presented visually in Figure 5. Participant A2 was a program director of the OER and affordable textbook initiative for C2. He indicated that the main reason for beginning the OER initiative is that it, “all comes back to student success.” Participant S1, who was a librarian at C1 and also holds a leadership role for open projects, open access to scholarship, and OER at the university, shared the following:

Open education has really been on the radar for the [libraries] for a long time...Open education was a natural fit for that work. We know textbooks are expensive. We know students face the digital divide, and a lot of these models of access codes are a problem for students, even above finances. So, what can we do to open up education? And open education is sort of the place where that lives.

Participant S2 was an OER library champion at C2. In addition to helping faculty members locate OER to meet course learning outcomes, she had a particular role in directing faculty outreach. She also spoke on access issues that the students were facing, saying:

A lot of publishers are taking their content online. There's things like access codes... like inclusive access programs...So one of our strategies to try and mitigate against that is through incentivizing and working with faculty to adopt or

create OER. The expensive textbooks [sic] cost students money. And our goal there is, you know, to ensure that every student has access.

Participant S5 from C2 explained that the main reason for her institution to start the initiative is affordability. The initiative not only supports OER but also supports low cost materials through the libraries:

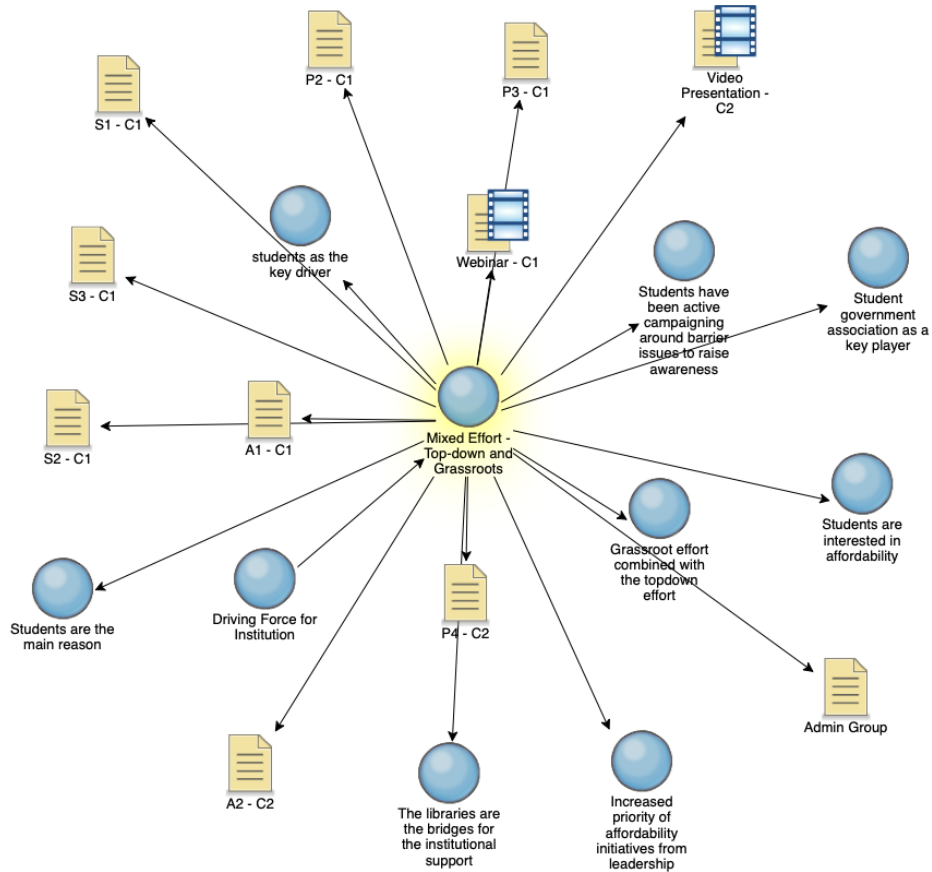
All the data point to the fact that students really were struggling to afford their [textbook] in many ways. The course materials and the cost of course materials were becoming a true barrier to students, so of course [the OER initiative] is one of those initiatives [to address the issue]. They support OER but they have also supported faculty who have simply wanted to use free and low cost materials, and this has included materials that are often held through subscriptions in their library.

On their public websites and webinars, both universities say the main purpose of their OER initiatives was to reduce costs for students. The university system of C1 stated the goal of the initiative is to reduce the cost of higher education for the system students. The library's website stated that the OER initiative removes "cost barriers for students" and also "allows unrestricted, immediate access to learning materials, increasing the likelihood for students to complete their courses successfully." C2's university system initiative also expressed goals of reducing the cost of course materials for students, enhancing the discovery of library materials, and continuing to address affordability in alignment with the university system's strategic plan. Removing those barriers around the digital divide, cost, and access contributes to student success.

**Theme 2: Mixed Effort: Top-Down and Grassroots.** The second theme that emerged for this research question was that the OER initiative was a mix of both top-down and grassroots efforts. Eleven references across the three sets of data (i.e., interviews, focus groups, and documents) were coded to identify this theme. Figure 6 shows each data group cluster. Common themes were identified between the responses of participants, focus groups, and documents.

**Figure 6**

*NVivo Analysis Diagram 2*



*Note.* An NVivo Analysis Diagram shows connected data sources and themes.

Of 24 data sources across the three sets of data (i.e., interviews, focus groups, and documents), 11 from both case sites indicated the push to start the OER initiative

involved mixed efforts: both top-down administration and grassroots activity from faculty, staff, and students. The sub-themes presented in Figure 6 identify students as the key driver to begin the OER initiatives; the librarians and faculty members started the grassroots effort to address the affordability issue for students; the leadership also increased priority of affordability initiatives from the university system level.

One librarian (S2) from C1 shared the following:

I've encountered sort of top-down support in some of the colleges and not so much in the other ones. So it is a little bit of a mixed bag. I certainly feel there's a lot of momentum lower down the chain at, well, certainly, you know, people like myself but also my faculty members...becoming sort of champions in speaking to their colleagues, and [trying to] sort of build something within their own departments. And then at the student level as well, I sense, like, a real appetite for embracing OER... Yeah, they're very much a sort of a mixed bag, in terms of the university level from our own sort of provost and everything else.

The faculty participant (P4) from the Humanities discipline in C2 indicated that the initiative in her department came from an administrator who was a professor in the same discipline. By the time the administrator mandated the initiative, the faculty members in the department had already started the grassroot effort to create open textbooks for their students to address the affordability issue. As a result, they quickly got on board with the initiative. As P4 stated:

I think it is interesting that ours did come from an administrator because, in many cases, it is grassroots, and my eyes were opened at that point to the many instructors who were already doing this. You had already sort of tuned into this as

an option. Because when that first committee came together to work on that first textbook mandated by the President, so many of the people who volunteered to be on that committee were already doing some version of our creation on their own. And they brought that to the table and gave us all of their expertise, and that's when they share their ideology.... For me, it came from a top-down mandate, but I would say that most of the people... I know, I think it comes from a shared sense of this ideology and along with a pressing need that they see in their students. So I would say it often is more grassroots.

The discussions from the administrator focus group also reflects the combination of grassroots efforts from the library and faculty members and having senior leadership on board to keep the initiative alive and sustainable. The administrator participant A2, who is the program manager for the university system initiative, spoke on the effort from both administration and libraries:

I did mention that the region's academic committee on libraries was talking about open resources quite a bit before that. Also, we just got, at the time, a new Executive Vice Chancellor for Academic Affairs. And that's the person who is over the Executive Director...which is our library services department.... So, you had librarians over here, especially the scholarly communications folks, but also just the deans and the leaders. And then you had leadership at the system level that was fully aware of exactly how we could address affordability, and it just kind of came together.

In a cross-comparison between institutions, it is interesting to note that each institution is unique in the manner of grassroots and top-down mixed efforts that started

their OER initiatives. The participants from C1 indicated there was more grassroots movement in the institution; they had been very successful with the grassroots effort from the libraries and the faculty level. The libraries identified the need of the students and faculty and provided financial incentives through grant programs to support faculty to adopt, adapt, or create OER. The faculty who were interested in saving students money and sharing resources freely considered the incentive from the library as a “seed” to help their projects keep going. The instructional designer participant (S3) also described a successful OER project that was initiated by the university system office. It was an OER collection project that was funded during the COVID pandemic to support the most high-demand courses offered across the system institutions. Near 100 faculty and staff across the university system, including librarians and instructional designers, had collaborated to develop the OER collections. According to the system office’s website, the funding for this initiative was allocated by the state legislature from federal relief funds. The faculty received a stipend to create and curate the collection. C1 successfully worked with five different instructors from five different institutions within the university system and created an OER collection for a discipline within an aggressive timeline during the summer.

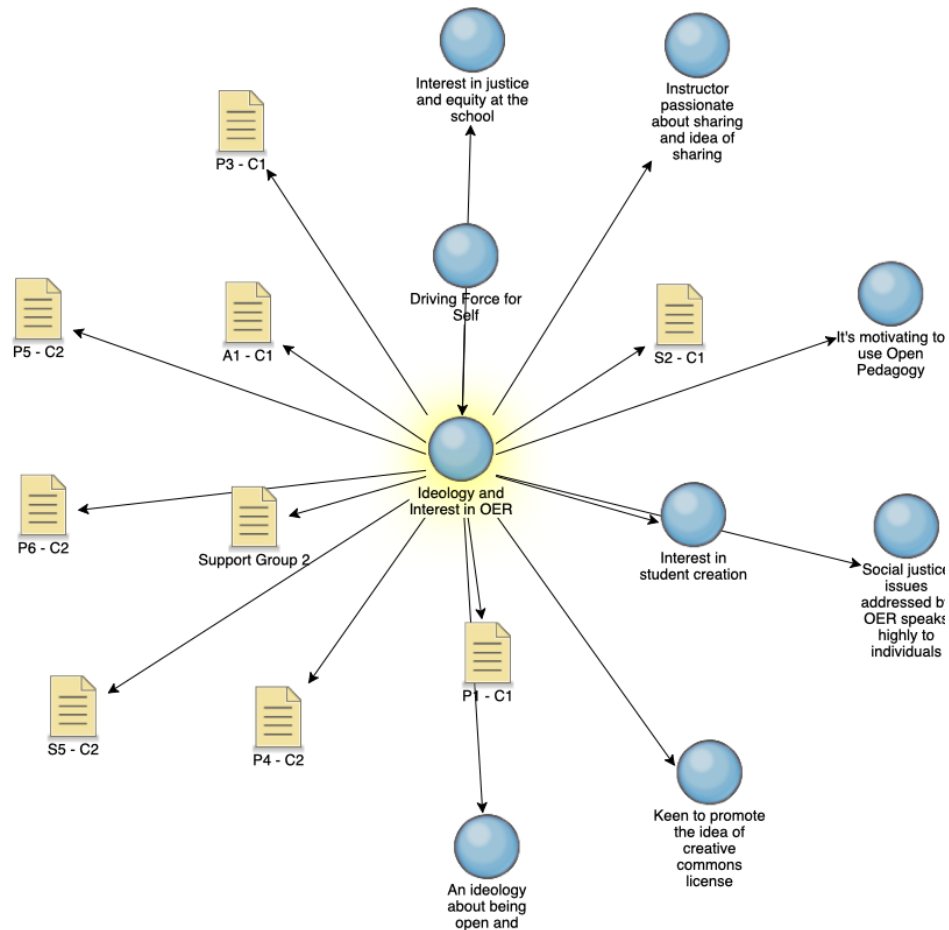
Meanwhile, the participants from C2 acknowledged the role that the administration played in the OER initiatives from the system level. In the focus group, the administrator participant (A2) particularly discussed the importance of having upper administrative support for the institutions in the system. When the initiative was included in the strategic plan and made a strategic priority of the university, it helped get through to faculty and sustain the initiative. Before the initiative was brought to the system level,

there were librarians who were heavily engaged in OER projects with a pre-existing set of grants. Meanwhile, there were faculty who were using OER for their courses. The university had a “combined” passion for making learning more affordable across the board.

**Theme 3: Ideology and Interest in OER.** The third theme that emerged for this research question was people's ideology and interest in OER. Figure 7 shows the common theme identified from the 9 sources of responses from participants and focus groups.

**Figure 7**

*NVivo Analysis Diagram 3*





*Note.* An NVivo Analysis Diagram shows connected data sources and themes.

The theme patterns presented in Figure 7 identify that ideology and interest drove people to start the grassroots effort for OER projects. The participants were interested in OER and passionate about sharing, helping students, and enhancing student success. Faculty participant P1 (from C1) stated that he is, “passionate about sharing.” He also indicated that the primary reason he started his own OER initiative for his class was to involve students in creating materials as part of the learning process.

[The main reason] is to have students solidify their knowledge by creating something they are proud of... It’s a very good activity, and for me, it’s invigorating to see what we learn together.

P5 from C2 stated that, “I’m really interested in OER. I’ve always been interested in OER. I’m kind of a sharing person, so I like to have an opportunity to share what I know...why would you learn something if you’re not going to share?”

The administrator from C1 had the following to say regarding his ideology about OER:

I like the idea of the educational resources that we create. When we create [educational resources], they should be open and shareable. And it makes sense to me that we would also be taking advantage of open resources. In some ways, it seems to echo what we want, when we do research at a higher education institution, where we believe that research should go out there, it should be accessible and shared, and something that others build off. And I think that that same thing can apply to the resources that we use to teach.

The librarian participant from C1 indicated that OER was a good sell to “everybody at all levels” because the “big-hearted” benefits are “easy and obvious”—the immediate benefit is to reduce the cost to students, but ultimately, the benefit is to help students progress on their path toward graduation. He indicated that the idea easily resonated with everyone. He also described the experience as “spiritual” because OER was also something that people felt good doing and were excited to be involved in.

**Research Question 1 Summary.** There were three themes that emerged from data analysis to answer the first research question. Both institutions started their OER initiatives to remove barriers to student success. There were mixed efforts from the administration, faculty, staff, and students in the process of starting initiatives, but each institution was unique in terms of the efforts from top-down and grassroots. The analysis also indicates that people’s ideology and interest in OER are a driver to initiating OER practice.

### ***Research Question 2***

Research Question 2 was, “How do higher education institutions make OER initiatives sustainable?” The purpose of the second research question is to discover the sustainability model and successful practices for the institutions to sustain their OER initiatives, through individuals’ roles and experience. The analysis identified three common themes:

1. Provide a combination of institutional incentives and support
  - a. Sub-theme: Course release as compensation
  - b. Sub-theme: Nonfinancial incentives
2. Connect and partner with key players

3. Implement faculty outreach strategies

**Theme 1: Provide a Combination of Institutional Incentives and Support.**

Across the analysis, a combination of institutional incentives and support was identified as a successful practice of sustaining OER initiatives. At C1 (website), the university libraries award grants to faculty to adopt, adapt, or create free or low cost alternatives to expensive textbooks. There are four types of grants for which instructors can apply: review an open textbook; develop innovative teaching and learning via open pedagogy grants; redesign a course to incorporate an open textbook; and adopt an open textbook for a department or a group.

At C2 (website), grants were provided by the system office’s affordable materials initiative. There are two types of grants available at C2: transformation grants and continuous improvement grants. The transformation grants provide financial support to individual instructors, teams of instructors, and entire departments to replace existing commercial textbooks and materials in a specific course with no- or low-cost-to-students learning materials. The continuous improvement grants support projects that increase the sustainability of open educational resources through substantial revisions and the creation of new materials. Table 11 lays out the different types of grants provided from the two institutions.

**Table 11**

*Grants Provided from Two Institutions (Websites)*

Institution code	Types of grants	Potential grantees	Descriptions	Led by
C1	Textbook review	Individual instructors	Review an appropriate open textbook for the	The libraries (in collaboration with the office of digital

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			class or a class in the department	learning/academic technology)
C1	Innovative teaching and learning with open pedagogy	Individual instructors	Incorporate open pedagogy to enhance learning in which students actively contribute to open knowledge; cohort-based	The libraries (in collaboration with the office of digital learning/academic technology)
C1	Adopt, adapt, or create a textbook	Individual Instructors	Redesign a course to incorporate an open textbook to replace the required textbook -OR- redesign the course so there is no required textbook (and the redesign must be used for at least three semesters)	The libraries (in collaboration with the office of digital learning/academic technology)
C1	Department or group adoption	Teams of instructors / entire departments	Adopt at least one open textbook to replace the assigned textbook(s) for two or more classes for one calendar year	The libraries (in collaboration with the office of digital learning/academic technology)
C2	Adopt, adapt, and/or create OER grants (including no cost and low cost materials)	Individual instructors /teams of instructors / entire departments	Adopt, adapt, and/or create OER, such as open textbooks and ancillary materials, and also adopt library materials, no cost materials, and low cost materials that do not exceed \$40 total per student	The university system office

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C2	Continuous Revision grants	Individual instructors /teams of instructors / entire departments	Revise OER used in existing courses, create ancillary materials for existing OER courses, and/or replace current OER in courses with new/improved OER	The university system office
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At C1, the libraries started out with a grant-funded model through successfully seeking funding from internal and external grants. The libraries also collaborated with the office of digital learning/academic technology to provide funds and support for faculty to adopt, adapt, or create free or low cost alternatives to expensive textbooks. The combination of incentives includes four different types of grants, as mentioned above. The administrator participant A1 shared the following:

The best thing that has worked for us is a combination of incentives... The textbook grants that the library has been offering for a long time, and open textbook grants... There are also support programs to help with finding and creating materials as necessary. So, a combination of incentive and support—I think that's the critical thing now.

The librarian participant S2 (from C1) also spoke on successful practice relating to the textbook and pedagogy programs:

[There are] a few different ways [to create a sustainable OER initiative]. Certainly one of them is that we keep seeing applications for our [textbook grants]. You know, that's one of the key ways that we can measure our impact is by the

number of professors that are applying to that program... I'll kick myself if I didn't mention this, but we have this program called [pedagogy program]. It's really cool, so I work with a few others in that. That's been a really amazing program... It's less perhaps, in some ways, about replacing the textbook and more about bringing in those sort of, you know, those open, like, student-centered practices into teaching and learning. And yeah, that's another thing whereby we can measure our impact: via the number of applications that we've received for that program, and so on.

At the focus group, the faculty participant P2 from C1 shared how she benefited from the two combined grants. The textbook grant was the first step for her to save students money by adopting OER, and the cohort-based pedagogy program brought her to the next level of understanding OER and how it could impact her teaching. Regarding the pedagogy program, she said:

[It] was really beneficial that I was just kind of starting, whereas other faculty members were kind of deeper into the process and [had] different knowledge and levels of experience with OER. It was a place for us to all come together. There was support from the folks at the library, who kind of led it and had a topic that we would cover for each meeting. There'd be some readings, and they introduced us to Hypothes.is, so that we could annotate the readings together [and] how to learn from each other that way, as well. And it really opened my mind. It was like the great next step after the textbook grant..., but then it really opened my eyes and my mind in terms of the other types of OER, like creating reusable

assignments, and these types of things that I hadn't been aware of. So, it was a really great flow in my learning process.

***Sub-theme: Course Release as Compensation.*** In comparison to C1's libraries-led incentives and support, C2's grants came from the university system office. Both institutions provide combined incentives through different types of grants to support faculty to adopt, adapt, or create OER. They also support faculty to use other no cost and low cost materials through libraries. It is interesting to note the positive experience that the faculty participant P4 (from C2) shared. She received good support through textbook grants that combined with course release, which was listed on the grant proposal as part of the budget plan. She taught in the two-year community college program at the university and stated the following at the faculty focus group:

We do have a very robust support system from our system level. We actually have an organization, which is part of the university system...and they started doing what they call textbook transformation grants that were available to anybody within the [university] system. I was actually on a team that got one of those early grants.... Five or six faculty members get a course release and that, for us, was the biggest need.

P5 from C2 also shared the benefits received through textbook grants with course release:

The thing about me is—as I work for basically a community college version of the university—we don't have a lot of time to do...research and grants. And we're not really paid to do research and grants. [The course release] is always really wonderful, so instead of teaching five classes in a semester, I'll teach four and have one of them, one of those classes, [written off] for doing the OER resource.

One member checker indicated that it is worthwhile to address in this study that course release is an important incentive for faculty to develop OER. When she worked at another institution, she found that, “faculty did not participate in OER [activities] unless they got an [grant name] or a course release from their dean.” Part of the reason for such trends is that faculty salaries are very low at some institutions, so grants are the only way some faculty can “make ends meet.” Meanwhile, faculty at other institutions who are receiving adequate financial compensation may still be strapped for time to pursue any professional endeavors that are not strictly “have to” status due to high teaching and advising loads combined with expectations for conducting research, publishing, and more. In those instances, a course release can be even more valuable than additional monetary compensation, as it affords faculty time on the job to explore, learn, and practice new skills in creating course content, which they would not have ability to do otherwise.

***Sub-theme: Provide Nonfinancial Incentives.*** Another sub-theme that emerged for this research question is the need to provide nonfinancial incentives. The participants from the two universities discussed how the nonfinancial incentives helped the initiative keep going. The administrator participant A1 (from C1) emphasized that the nonfinancial incentive also contributed to sustaining the OER initiative as an extrinsic award to incentivize faculty. He provided some examples that had been done successfully at the institution: “having an award program,” “doing a spotlight series in the library,” providing a plaque and commendation, and finding different ways to reward faculty.



The administrator participant A2 (from C2) spoke on tenure and promotion as nonfinancial incentives that the university started looking into and how it could be included in the policy:

We have been looking at [tenure and promotion] for a while. We had created a framework for putting tenure and promotion into your guidelines as a committee, or as a faculty member putting it into your application for tenure, which, you know, which qualifies as service, which qualifies as teaching, that type of thing... We had to wait for it to be approved, and it got approved, and now there's a lot of discussions going on about the merits of that policy. So we've done a lot of waiting trying to get those guidelines out there, but we really hope to release them soon.

The librarian participant S1 (from C1) also introduced other ways of incentivizing faculty for OER engagement, through recognizing faculty in important promotional materials, providing scholarship and public opportunities, and sending faculty to a conference to share their work.

**Theme 2: Connect and Partner with Key Players.** The second theme that emerged from the data analysis was connecting and partnering with key players. Key players are the people who have a significant role in supporting and sustaining an OER initiative in an institution. In a cross-comparison between institutions involving all three types of collected data (i.e., interviews, focus groups, and documents), 11 key players were identified (See Table 12). It is worth noting that the faculty participants from C2 also identified the grant office as a key player who provided training and support to faculty with writing the proposals for a grant application.

**Table 12***Key Players in OER Initiatives*

Key players	Case sites	Quotes about the role of support
Administrators	C1, C2	“chancellor;” “president;” “provost;” “vice presidents for academic affairs;” “the department chair/head;” “associate dean for academic affairs;” “vice president for ancillary services;” “enabler”
Bookstore	C1, C2	“not a profit center;” “completely happy for faculty to adopt OER;” “fantastic partners;” “help break down barriers”
Digital learning/academic technology/center for teaching and learning	C1, C2	“LMS expertise;” “video production;” “instructional design;” “faculty training;” “provides funding;” “make VR simulations”
Faculty and fellow faculty	C1, C2	“subject matter experts;” “move the needle;” “impactful” to peers; decision makers on “whether they use or not use OER;” share “equal commitment” on OER projects
Grant office	C2	“provide trainings;” “pretty well versed in helping people go through that process;” “really helpful”
Instructional designer	C1, C2	“faculty training;” “pedagogical use of OER;” course alignment; improving accessibility of OER
Library	C1, C2	“specialize in OER;” “providing fundings;” “legal role” (copyright, license expertise); “disseminating OER”
Marketing person	C1, C2	“sales expertise;” “getting the word out”
Project manager	C1, C2	“make sure you have a schedule;” “make you accountable”
Students/student government association	C1, C2	“come in with great ideas;” “student perspective has been really useful”

System office

C1, C2

“Providing grants;” “provide institutional repository;” “cheerleader”

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*Note.* Data were derived from a combination of participant responses and institutions’ public websites.

Participants from both universities identified 11 common key players to support their OER projects: administrators, bookstore, digital learning/academic technology or center for teaching and learning, faculty/fellow faculty, grant office, instructional designer, library, marketing person, project manager, students/student government association, and system office. In the administrator focus group, the participants particularly discussed the importance of getting senior administrators on board because they “play a huge role” in the OER initiatives. If the OER initiative can be part of the strategic plan, it makes OER a strategic priority for the institution. In the two faculty focus groups, all the faculty participants from C1 recognized the libraries and digital learning/academic technology department or center for teaching and learning as their key players who were crucial to the success of their OER projects. All the faculty participants from C2 mentioned the system grant office as a key player that provided them with helpful support to write grants. The faculty participants from both C1 and C2 discussed their fellow faculty/professors as key players to work on the same OER project; they felt that without collaboration and shared equal commitment from their fellow faculty, it would not have been possible to finish their projects.

The two staff focus groups indicated the faculty members, the digital learning/academic technology department/center for teaching and learning groups, the marketing person, and the system office are all key players in their OER initiatives. The focus group data complement the results from the individual interviews. It is interesting

to note that the administrator participant A2 (from C2) indicated that it was particularly effective to include instructional design support in the OER initiative because, “it will immediately boost all of [faculty training], boost the institutional knowledge of accessibility, and it will also boost your institutional knowledge of pedagogy in general.” The instructional designer S3 (from C2) described one of her roles to support the OER initiative was to help instructors effectively use OER through redesigning courses. She indicated that it did not simply consist of replacing a textbook but that redesign projects also “use the flipped approach to support active learning.”

Although all key players have different roles to fulfill in supporting OER initiatives, they also have varied expertise and can lean on one another for support. Most participants indicated that key players need to connect and work together. The partnership model makes sustaining OER initiatives more likely. They commented that it was not a one-person job, and it is not possible to work solo when it came to the use of OER. To that end, the faculty participant from C1 shared these comments:

You cannot make OERs by yourself. It’s not a one-person job. I may be the one that has the chemistry ideas...but the team developed this, [which] is enormous.... Whenever I acknowledge my collaborators, it is usually a list of at least 10 people that “I couldn’t have done any of this if they weren’t there.”

Because it does take a village, and it takes a village of grownups and kids. You have to have the students.... Students come in with great ideas.

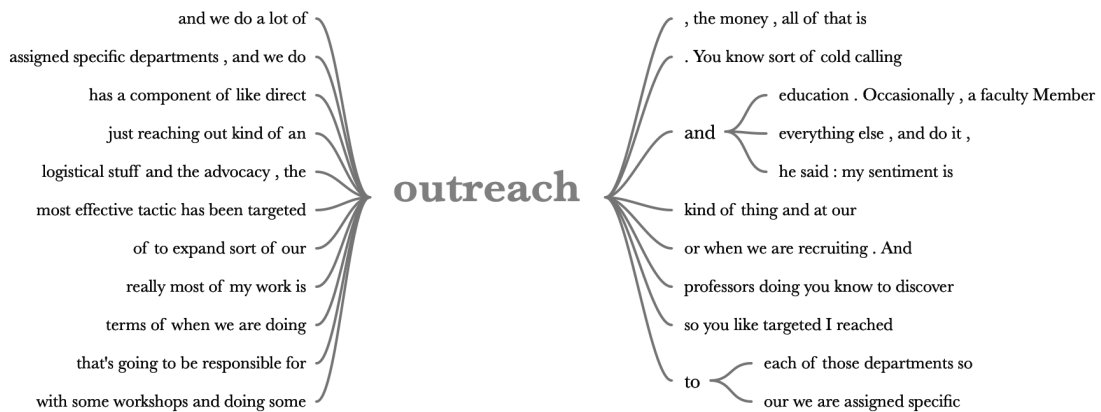
The library participant from C1 indicated that OER is something that needs to be, “taken really seriously in the sense that open education is something that no one person can do. Everybody has to do it together.” Another library participant from C1 made a

similar point by saying, “trying to work solo is just not possible, absolutely not possible; you have got to pull other folks on board.”

**Theme 3: Implement Faculty Outreach Strategies.** The third theme that emerged from the data analysis was regarding faculty outreach strategies, as a successful practice from both universities. In NVivo 12, the key word “outreach” appeared in 11 references across the three sets of data (i.e., interviews, focus groups, and documents), as shown in Figure 8.

**Figure 8**

*NVivo Analysis Word Tree*



*Note.* An NVivo analysis word tree shows the results as a tree representing the contexts in which the word “outreach” occurs from the data sets.

C2 has a unique system-wide champion model to target faculty outreach. A champion serves as an OER specialist and an advocate at each institution of the university system. The champions work together to inform the institution about OER and affordable resources. There are three OER champion roles in C2: a faculty champion, a library champion, and a design champion. Data from the OER initiative website indicates

that all the champions are volunteers. They serve as champions “out of the goodness of their hearts.” The faculty champions from C2 were also grantees from the OER initiative. They used no or low cost materials in their courses with OER. The library champion has the OER expertise and works together with the faculty champion to identify, evaluate, and provide access to affordable, library-subscribed, and open educational resources. The design champion is an expert at open and OER-enabled pedagogy and also works with faculty to help identify ways in which these can be implemented in courses using OER. The three champions form an advocacy team to inform faculty, staff, and students about the OER initiatives. The administrator participant from C2 spoke on how faculty outreach was achieved through OER champions on each campus:

It all starts with the champions. I can't get through to anybody at [the university] unless the champions are getting the word out.... They get the word out to their institutions about the grants that we can provide. They'll also bring back feedback for us on what's happening at [the university]; what's going through; why [things] are doing well over here and not over there.

The C2 librarian participant, who was also a library champion, spoke further on how the library champions support OER initiatives and target faculty for outreach. At C2, librarians were assigned to specific departments. Each librarian can be the sole person for OER for their department. She served as an OER trainer for all the librarians, hosted panels, and planned events for open access week and open education week in an attempt to reach out to faculty. She shared the experience of hosting panels and working with the center for teaching and learning to facilitate a faculty learning community about OER:

I think sometimes faculty want to hear from other faculty. So, a lot of the time I'm the trainer but other times I also host panel presentations so that they can hear the most powerful thing [i.e., perspective from other faculty]. That gets them motivated.

The faculty participant who is a faculty champion from C2 also shared how she supported the initiative and made it sustainable through faculty outreach and education:

The main thing that I do is try to just spread the word, so we offer several workshops a year. Usually, I collaborate with the OER librarian, who is very proactive about this.... We have organized workshops for faculty, discussing how to get started, every year. There are sessions run by the grants office on how to apply for the [university system] grants. There are sessions on the idea of what materials you can use; understanding copyright;... That's really [what] most of my work is, outreach and education.

C1 uses very different but successful strategies for faculty outreach. The models C1 uses are one-on-one and community-based outreach through the programs provided by the libraries. The library participants in C1 discussed targeting faculty to reach out to as an “effective tactic” to keep the initiative going and to bring new people to the program. The library receives a book list from the bookstore with faculty reports on textbooks for their classes. They identify specific courses that have a high impact or a high enrollment and then reach out to the faculty members to offer a conversation about the use of OER for their classes. The library participant describes the role as being “a salesperson” for OER.

In addition to one-on-one faculty outreach, another effective strategy shared by the other librarian from C1 was community-based outreach through the programs. He acknowledged the “door knocking” salesman approach and also spoke on the strategy of “developing communities of practice.” One of the examples he shared was to provide a program that focuses on creating “a genuine, open, no-agenda community.” Faculty can come and talk about “what they are doing, what is exciting, and what challenges they are feeling.” Another example was to create a more targeted program in which they can “talk about everything, from access and digital equity, to why they should try out the grant program, to privacy and security and online resources.” The participant described the way they have made the initiative sustainable is to provide “easy points of entry” for faculty, such as letting them sign into a webinar to hang out and chat with the librarians and enabling them to “go all the way up” to apply for the grant programs to “do something really big and powerful.” He indicates that this model has worked very well by “having a lot of points of entry that feed into each other.”

**Research Question 2 Summary.** Both institutions provided a combination of institutional incentives and support to sustain their OER initiatives. They both provide grant programs for faculty to adopt, adapt, and create OER. C1 features a cohort-based program that focuses on enhancing learning through open pedagogy practice. C2 provides continuous improvement grants to support faculty revising OER in existing courses. In addition to monetary incentives, the two institutions provide nonfinancial incentives as extrinsic motivators to faculty. The key players in the OER initiatives play a significant role in supporting faculty in the use of OER. All the participants indicate that connecting key players to work together is crucial in order to leverage the expertise and experience



in support of the initiative goals. However, the institutions use different strategies to target faculty for outreach. C1 provided multiple points of entry to help faculty become aware of and understand OER practice. In addition to a one-on-one sales approach to target high-impact courses, C1 also implements community-based programs to provide connection, education, and outreach. The system office, which C2 is part of, uses a champions approach for faculty outreach. They identified champions that represent different key players: faculty, librarians, and instructional designers. The champions spread the word about the OER grants programs to the institution and bring back helpful feedback to the office to continually improve the initiatives.

***Research Question 3***

Research Question 3 was, “What are the successes and challenges when sustaining OER initiatives in higher education institutions?” The purpose of the third research question is to identify the successes and challenges when sustaining OER initiatives based on the individuals’ experience. The six themes presented in Table 13 summarize three common themes for success that the institutions achieved as well as three common themes for challenges that were identified during data analysis.

**Table 13**

*Summary of Themes for Research Question #3*

Common themes	Summary
Success: reducing costs for students	Of 70 references across the data regarding the success codes, 28 indicate the cost-saving benefit impacted students. Responses from both institutions’ participants indicate the success of cost-saving for students in the institutions. The document analysis also indicates millions of dollars in cost savings in the two

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	institutions.
Success: helping faculty rethink the course and seek new ways of teaching	Of 70 references across the data regarding the success codes, 27 indicate OER practices helped faculty rethink how to teach their courses by using OER.
Success: providing faculty freedom to customize for teaching as they desire	Of 70 references across the data regarding the success codes, 12 indicate OER practice allows faculty to customize resources for teaching.
Challenge: experiencing difficulty in getting faculty on board	Of 105 references across the data regarding the challenge codes, 66 indicate the challenge of getting faculty on board due to time and effort, inertia, and continual outreach efforts.
Challenge: needing a master database to increase OER discoverability	Of 105 references across the data regarding the challenge codes, 16 identified the need to have an all-encompassing repository to allow OER users to search and distribute OER.
Challenge: experiencing personnel turnover	Of 105 references across the data regarding the challenge codes, 10 identified personnel turnover as a difficulty.

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**Theme 1 Regarding Success: Reducing Costs for Students.** The first theme regarding the benefits of OER initiatives was cost-savings for students. As the administrator participant A1 (from C1) stated, “mostly, the benefit is cost.” The faculty participants P2 and P3 from C1 shared that “cost saving” to students is one of the OER benefits that they had seen positively impact their institution. It was also “the immediate need that OER meets” for the institution, as the librarian participant from C1 shared. The faculty participant P4 (from C2) described the cost-saving benefit that impacted her students. She said that she “never gets tired of telling my students that they don’t have to

buy a textbook.” The students are “usually very excited and very happy and very surprised” to learn they do not need to purchase a textbook.

Responses from both institutions also indicate the success of cost-savings for students in the institutions. The total savings is uncertain for C1, but the institution’s website included a general report that millions of dollars in textbook cost savings are in process. The annual amount saved at C2—more than \$5 million—was reported on its website, as well.

**Theme 2 Regarding Success: Helping Faculty Rethink the Course and Seek New Ways of Teaching.** The majority of participants spoke on how OER engagement helped faculty rethink their courses. The experience of using OER fulfilled faculty and motivated them to seek new ways of teaching to help students learn better. The administrator participant A2 (from C2) shared that the benefit of using OER is to “give people the opportunity to take a look at their resources...take a look at their entire course.” The faculty members may have been teaching in a certain way for a long time, but selecting or creating OER to use in their courses will provide “the opportunity to take a look at all the learning outcomes through the lens of affordability and see what they can do.” He also shared his observation that a lot of faculty members “restructured their entire courses, based on what they want their students to learn,” and he has seen “a lot of transformational efforts and pedagogy as a result.”

Faculty participant P2 (from C1) indicated the use of OER helped her get creative for teaching, and she realized that there are new ways of doing things:

I think learning as faculty, like learning new [ways]...maybe it’s not really new but new to us, [a] new way of pedagogy.... Just realizing that there were different

ways to do things, and you can get creative and... use these different resources....

The main takeaway is that you can provide these authentic assignments, authentic projects for students to engage with, and also at the same time, the students are saving money and resources.

Both instructional designer participants (S3 and S6) from the two universities said the benefit of OER initiatives was to help faculty rethink how to teach their courses by using OER. S3 conveyed what she heard from an instructor who talked about the benefit of using OER: “What I heard from the instructor is that the course is much more organized after, like, revamping everything [to use OER].” S6 shared, “I think the benefit for faculty is they get to rethink how they teach, whether it’s in a psychology class or a constitutional law class.”

The librarian participant from C2 also told a success story about a group of chemistry faculty using OER to “overhaul” their classes. The positive experience in using OER made them overhaul the class. “They started with one class, and they liked it so much,” that they overhauled the lab for that class as a result and began working on the next one. After a couple of semesters, the faculty members will be using OER across the board in the curriculum.

**Theme 3 Regarding Success: Providing Faculty Freedom to Customize for Teaching as They Desire.** The third theme relating to the benefits of using OER was the affordance of freedom to customize resources for teaching. The librarian participant S2 (from C1) spoke on the “freedom benefit” that came from the Creative Commons license, which enables faculty to “customize something so it makes sense for their pedagogy, for

how they want to teach it.” OER has the advantage of allowing faculty to “remix a chapter or add content to make it more engaging.”

The faculty participant P5 (from C2) shared her experience of transferring an open textbook that she created into online templates in the Learning Management System (LMS). The Creative Commons license on each page also helped other instructors know how to use the resources and permitted them to modularly grab chapters and put them into their courses:

I worked on a textbook, and then I worked on the template, and I had created the textbook in [a Learning Management System] design template.... We could seamlessly integrate chapters from the textbook into the online template that we had created. So my dream of having something that I could modularly grab and put into a class came true.... I also was the one who said, we need to put Creative Commons [licensing] on so that everybody knows how to use this. Creative Commons was amazing and great for us... and because we have the Creative Commons template, it allows us to use that seamlessly.

**Theme 1 Regarding Challenge: Experiencing Difficulty in Getting Faculty on Board.** The first theme about the challenges of sustaining OER initiatives was the difficulty in getting faculty on board. There are several factors discussed among the participants relating to this challenge: time and effort, inertia, and continual faculty outreach.

***Time and Effort.*** The faculty participant P2 (from C1) indicated that time was an even bigger challenge for faculty than having an interest in OER, because OER need constant updates to keep them current and relevant:

I think the even bigger challenge is the time that's found to redesign your class, so that OER are able to fit in there, because it is a time-consuming process—and it's not something that you do once, and then you're done. I'm constantly looking for new resources, or you have to update them to fit.

Another faculty participant P3 (from C1) shared her observation that very few instructors who were early in their careers as faculty could afford to create OER because of effort-related factors:

If it's not going to advance your career, very few people are going to be able to afford doing something like [creating OER]. I mean, if you look at those big OER repositories, a lot of materials that are in there are published by older faculty or faculty that have tenure, that are full professors [and] that don't care anymore about what anybody else might think.... So that needs to be factored in. Why is it that this is being driven by late-career/late-stage career faculty? And I think the reason for that is you can't afford to do it in the beginning because you don't know if it's going to be effective.

*Inertia.* This challenge is correlated with time and effort. The administrator participant A1 (from C1) shared that adopting a textbook is hard because of the idea of change. Adopting an open textbook means faculty have to change many things and get out of the comfort zone of how they “used to know how to teach.”

The faculty participant P2 (from C1) spoke on her motivation and willingness to learn about different ways of teaching as a teaching professor. She indicated that it would be a challenge for faculty members who have a research appointment to find time to try something new because teaching is “not their main focus.” Changing a textbook was even

challenging for her at the beginning because it was hard to move away from the idea of a required book and “let go of that textbook.” It would be easier for people to “just continue to do things the way they were doing [them] rather than try something new.”

The administrator participants from C2 also shared a similar challenge for faculty members to engage with OER, “if it is not something that can be mandated.” This concern was especially relevant during the COVID-19 pandemic. He also explained that the role of the system office is to “provide support” for faculty instead of prescriptively telling faculty, “teach with this OpenStax textbook.” The instructional designer participant S6 (from C2) said that the greatest challenge she experienced in supporting the OER initiative was “getting faculty outside the idea that ‘I’ve been doing this for 10, 15, 20 years or more.’” It was “by far the greatest challenge” that she had experienced when working with faculty on redesigning courses.

***Continual effort in faculty outreach.*** Another challenge to getting faculty on board for the OER initiative is faculty outreach. Even though the two institutions had successful practices in faculty outreach, participants also perceived faculty outreach as a challenge. The librarian participant S1 (from C1) shared a barrier to bringing in new people and getting people excited to build up a new program after the first couple of years. He indicated that any new program would deal with this challenge after the first year and would struggle to find ways to make the program fresh, find ways to bring in new audiences, and find ways to amplify the voices of existing champions:

There’s an initial set of low-hanging fruit. People who were already excited will do this work, and so you have this sugar high in your first year or two where, like, everything's really cool and the campus newspaper’s writing stories about it and,

like, it's all going great. At some point, after your first couple of years, you have picked the low-hanging fruit and it can be easy to hit a wall.

The administrator participant A2 (from C2) shared the challenge of communicating across the board among many other institutional initiatives to get the word out to faculty. He particularly spoke on “a huge barrier” around faculty outreach. The university system had many great initiatives going on, but it might cause a phenomenon known as “initiative fatigue.”

[Faculty] are getting bombarded with different requests, and they're getting bombarded with sales pitches.... Like, there are so many different things that will kind of monopolize faculty's time. So, communication across the board has been really tough. We feel like we get to the folks who are heavily engaged in teaching and learning quite a bit. We probably do not reach new faculty very well at all.

**Theme 2 Regarding Challenge: Needing a Master Database to Increase OER Discoverability.** The third theme that emerged around the challenge of sustaining OER initiatives was about OER discoverability. One of the challenges that prevent adoption of OER in the literature is the difficulty of finding appropriate OER for specific learning objectives. The faculty participant P5 (from C2) spoke on the need to have a “platform” or database to increase OER's discoverability. He shared that people can “create beautiful OER projects,” but that they are not useful if they cannot be found when needed.

The faculty participant P1 (from C1) also shared his need to have an open platform. Even though he uses WordPress and Google Sites for hosting OER, they are not “a common system that was really open.”



One of the member checkers indicated that there are lots of platforms in which to discover OER, but the challenge as he views it is, “there is not one ‘mothership’ or, when compared to a web search engine, a ‘Google.’” He also commented that “the absence of an all-encompassing repository” caused OER users to search in many different databases to “feel satisfied that they have conducted a thorough enough search of available OER in their particular topic. This challenge is also correlated to the time and effort challenge of sustaining OER initiatives, in that it takes time and effort for people to discover appropriate OER.

**Theme 3 Regarding Challenge: Experiencing Personnel Turnover.** The second theme that emerged from the data analysis about the challenges of sustaining OER initiatives was personnel turnover. Turnover could happen for full-time OER staff positions or any other key players who support OER initiatives (e.g., librarians, instructional designers, administrators, etc.), and even student workers who co-created OER with the faculty members.

The administrator participant A1 (from C2) shared a story about getting the marketing office on board, but then the key player retired and now they “lost that voice, and things have sort of sputtered a little bit.” The administrator participant A2 (from C2) spoke on the challenge of turnover in leadership that occurs in many institutions:

One of the things that I will say is that a lot of OER programs get started, and they think ‘okay, these grantees are going to be saving students this much a year— imagine what that means for five years! Imagine what that means for 10 years! And the tough thing about that is that turnover occurs a lot at institutions, and we have had so many projects leads that blaze the trail on OER for their

department...because they have that linchpin that leads on OER ... then that person leaves or...giant budget cuts from COVID occur. And suddenly, they are not here. When the leadership changes over, there's a really big void.

The faculty participant P3 (from C1) also shared the challenge of the constant turnover of student workers. It was one of the factors for her to consider every semester when sustaining her OER practice:

Right now, I have a student who is really, really good.... When she graduates in May, I'm going to be a little lonely unless I recruit a couple of other students to pick up. You know that there's constant turnover of students. There's all kinds of factors that you have to consider. Do you know who is going to be doing the work next semester? Is this one going to leave me with projects that are unfinished?  
[Etc.]

The document analysis from video presentations and webinars reflected on the challenges of time and effort when sustaining OER initiatives, especially during the COVID-19 pandemic. Recent media indicated that people are all overworked and need support in the form of extra time to adopt, adapt, and create OER. It is interesting that “structural silos” was identified as a challenge from the document data source. The presenter of a video presentation, who was also the administrator participant from C2, indicated that an amazing initiative could be stuck in the place where it started without strong partners.

## **Summary**

This chapter presents the research findings of different data collected from two institutions (C1 and C2) through 14 individual interviews, five focus groups, and

documents pulled from the institutions' public websites. Data analysis revealed the main reason that the two institutions started OER initiatives was to remove barriers around the digital divide, cost, and access for student success. The participants from the two institutions shared that the initiatives started with mixed efforts consisting of both top-down and grassroots approaches. Ideology and interest in OER drove individuals to start grassroots efforts to initiate OER practice.

Data analysis also illustrated the sustainability models and successful practices for the two institutions to sustain their OER initiatives. Both institutions provided a combination of institutional incentives and support to the faculty members. The participants identified key players in each institution and indicated that OER adoption and creation was not a one-person job. Key players need to be connected and work together for OER sustainability.

Both institutions had been successful in faculty outreach, albeit with different approaches. The effective tactic from C1 had been implementing faculty outreach strategies. The courses that were targeted were specific ones that have high impact and high enrollment. In addition to the door-to-door and one-on-one approach, the libraries in C1 also focused on developing community through different programs, to provide faculty multiple points of entry to the OER initiatives. C2 achieved faculty outreach through OER champions who got the word out to each campus about OER initiatives. The champions also provided education through workshops and sessions to help people understand OER as well as promote the initiatives.

OER initiatives reduced costs for students and provided faculty opportunities to rethink and customize their teaching, to make learning more authentic to students. One of

the identified challenges was the difficulty of getting faculty on board with OER initiatives due to time, effort, inertia, and continual effort in faculty outreach. Personnel turnover was also a challenging factor in sustaining OER initiatives. Furthermore, to sustain the OER ecosystem, there is also a need to have a master database for faculty to easily search OER appropriate to their courses and make their OER discoverable to others.

## CHAPTER 5: DISCUSSION AND CONCLUSION

The purpose of the study is to understand how institutions sustain OER initiatives by examining the experiences and perspectives of stakeholders or key players—faculty, administrators, librarians, instructional designers, and other support staff who work on the front lines of the OER initiatives as OER users, educators, and advocates. OER adoption, adaptation, and creation require many types of support—administrative, technological, instructional design, and librarian—to provide faculty with a solid foundation for the effective use of OER in the institutions.

OER is free to students or users, but it costs time and effort to produce. In addition to time and effort, OER development also requires technical ability, open licensing, and instructional design expertise to increase the effectiveness and usability of the content. Higher education institutions that are successful in sustaining OER initiatives recognize the importance of incentives that empower educators to create high-quality OER through institutional support, funding, and other means of compensation (e.g., course release/time). They have allocated funds and established OER initiatives to encourage educators to invest in OER development. For the initiatives to be sustainable, to realize the potential impact of OER, and to meet the strategic goals for student success, institutions must make a continued effort to provide faculty incentives, target faculty for outreach, and provide a stable support infrastructure.

Besides being a driver of student success for the institutions to start OER initiatives, people's ideology and values (i.e., a belief that OER can positively impact students' learning, a willingness to share knowledge, a desire to help students, and an enthusiasm for supporting the open education community) also contribute to

sustainability. When individuals within the institutions have ideologies and values aligned with OER, it increases institutional buy-in from key players such as students, administrators, faculty members, and support staff who could lead the top-down and grassroots effort to increase the use of OER in the institutions. Ultimately, this has the potential to increase the number of students who could benefit from OER. Sustaining OER initiatives also requires partnership and connection among key players, who serve crucial roles by leveraging their various types of expertise: subject matter, technology, instructional design, copyright, open licensing, direct faculty outreach, etc.

This chapter presents the interpretation of findings from the research and discusses each theme based on each research question through the thematic analysis. Future research directions are also discussed to provide insights into new areas of interest for researchers to explore.

### **Discussion of Findings**

There are many intriguing findings that are in line with the current literature and also shed some light on how to sustain OER initiatives in higher education institutions. The findings were tied back to the goal of the study by answering the research questions:

1. How do higher education institutions make decisions regarding starting and implementing OER initiatives?
2. How do higher education institutions make OER initiatives sustainable?
3. What are the successes and challenges when sustaining OER initiatives in higher education institutions?

### ***Driving Force Behind the OER Initiatives***

The literature indicates that the driving force for disruptive innovation is generated from the customer's demands from low-end markets (Bower & Christensen, 1995). As discussed in Chapter 1, OER is identified as a disruptive innovation and has the potential to impact education by significantly lowering student costs, stimulating pedagogical innovation, and meeting the needs of diverse learners. The first research question was posed to discover what the selected institutions' driving force was, in the decision to start OER initiatives. Findings indicate that student success is the key driver for institutions to start OER initiatives. As demands grow to reduce the cost of education and remove barriers around student success, two selected institutions shared the same vision and goals to increase student success through OER initiatives.

A commonality across the universities in this study is that a combination of efforts was needed to start OER initiatives. First, there was a grassroots effort from faculty and staff. The participants in C1 indicated a successful grassroots movement to make OER sustainable, which refers to a community-based effort from OER users and advocates who come together of their own accord to start the OER initiatives from the bottom up. The libraries collaborate with the digital education and academic technology office (commonly known as the Center for Teaching and Learning) to provide incentives and support meant to encourage faculty members to adopt, adapt, and create OER. Faculty and support staff who are engaged in OER initiatives are fully aware of the potential benefits of OER besides affordability. They engage students with open pedagogy, which allows students to take ownership of content, and involve them in creating OER that improves the next iteration of the course. Additional top-down efforts from the system office were based on the identified need to reduce the cost of higher

education for students system-wide, especially during the COVID pandemic. This top-down effort took the form of starting system-wide OER collections for high-demand courses.

Participants from C2 had a slightly different experience but also acknowledged the combined top-down and grassroots movements to start OER initiatives. The C2 university leadership provides incentives and support for faculty who adopt, adapt, and create OER. The OER initiative was part of the university's broader strategic plan, which in effect, made OER a priority of the university. When an OER initiative became mandated in a certain department, the faculty members who had already started grassroots efforts responded quickly and volunteered to be on the initiative committees.

Grassroots efforts are driven by individuals' ideologies and interests in OER. The faculty, administrators, libraries, instructional designers, and other support staff who are in the OER trenches by creating OER, using OER, teaching others about it, and advocating for it, tend to share a common ideology and belief in OER. They are passionate about sharing knowledge, helping students, and acknowledging the community of practice outside of institutions. Those motivators relating to ideology and interest are important factors in sustaining OER initiatives. Findings reveal that intrinsic motivation and ideology in OER is the primary driver of individuals' effort in OER practice. People who share a common belief in the potential impact of OER to increase student success are usually the ones who start grassroots movements.

It is also important to note that a shared vision or ideology between administrators and faculty regarding the value of OER and its potential impact on student learning likely leads to a smooth launch and more faculty buy-in to participate in OER initiatives. A



faculty participant from C2 indicated a top-down decision came from the administrator who mandated the department to create an open textbook for a high-enrollment course. Since the faculty members had already started grassroots efforts to address the affordability issue for their students, many people were already on board and volunteered to participate in the initiatives. Findings indicate that it is important to have a grassroots effort from the bottom up, but effort from the top down is also needed to sustain grassroots efforts in OER initiatives.

### ***Unpacking Successful Practices in Sustaining OER Initiatives***

**Funding.** The literature suggests that OER initiatives were sustained by funding models, as discussed in Chapter 2. The 2018–2019 Connect OER annual report from SPARC (2019), which includes data from 132 institutions in the United States and Canada, reveals that a majority of institutions ( $n = 50$ ) use institutional general budget, library general budget, and library special funds as the common funding sources for OER programs. The selected institutions in this study have their own funding models to support faculty in adopting, adapting, and creating OER.

C1 features a library-led OER initiative that collaborates with the Digital Education and Academic Technology Office, which is commonly known as the Center for Teaching and Learning. According to the participants, C1 has a sustainable funding model, including successfully seeking both internal funds from the campus level and external grants such as from the Institute of Museum and Library Services. C2's OER initiative is funded by the system office. The participants from C2 indicate that the startup funding was from the state government, which initially focused on reducing the cost of textbooks for students across the system. Because of the successful outcomes of

implementing OER, the initiative received funding year after year. Sustaining funding is important for C2, as it ensures the institution is a good steward of the resources. They also consistently share its outcomes data with the public.

**Incentive-Based Practice: Financial and Nonfinancial Incentives.** As

discussed earlier in this chapter, OER is free to students or users, but it is expensive to produce because it takes time and effort. Even though an individual's intrinsic motivation can spark the movement because key players are driven to engage in OER by ideology and interest in OER, extrinsic incentives such as financial and nonfinancial motivators can keep the effort going. Both institutions provide incentives to support faculty through different grant programs. C1 provides multiple entries into OER engagement through incentive grants: textbook review, pedagogical practice on OER, and open textbook adoption, adaptation, and creation. The potential grantees include individual faculty members, a team of faculty members, or an entire department. C2 also provides varied financial incentives to support faculty adopting, adapting, and/or creating OER, such as textbook grants and OER-based course revision grants. Faculty participants acknowledged the helpfulness of the financial incentives to allow them to use the funds to fulfill their teaching goals.

**Course Release.** Through member checking and data analysis, it became clear that participants feel course release is an important incentive and worth being addressed in the study. Course release permits faculty to have a reduced teaching load under their normal appointments when engaging in OER projects. When the money runs out, or there is no financial incentive to provide at the institutions, course release is a helpful way to

support faculty to develop OER. It also helps faculty to invest the time needed to achieve higher levels of OER quality.

***Faculty Recognition through Professional and Scholarship Opportunities for Career Advancement.*** When discussing with participants what had worked well when implementing OER initiatives at the institutions, one common finding was that the universities provided multiple recognition opportunities in addition to their grants/awards programs. The participants identified the following recognition ideas that worked well in their institutions. The first two can contribute to the faculty's tenure, promotion, and career advancement.

- Take the redesigned course with OER and turn it into a publication.
- Provide opportunities for professional development, particularly participating in conferences to present their OER projects.
- Feature faculty's standout projects in the featured speaker series and share out the success with the institution or even system-wide audiences.
- Recognize faculty in important promotional materials.

It is interesting to note that one faculty indicates many OER published in the repositories were created by late-career faculty or faculty who had tenure. Because OER adoption and development requires much time and knowledge to accomplish well, early-career faculty may not be able to afford investing the requisite amount of time and effort or may hesitate to participate in OER initiatives if the project does not help them with career advancement. Providing professional and scholarship opportunities will also encourage early-career faculty to engage with the initiatives for their career advancement.

**Institutional Support.** OER adoption and development require institutional support to help faculty successfully use OER to achieve their instructional goals, which ultimately will benefit student learning. Two selected institutions identified 11 key players or partners who fulfilled significant functions in implementing and sustaining OER initiatives (listed alphabetically): administrators, bookstore, digital learning/academic technology or center for teaching and learning, faculty/fellow faculty, grant office, instructional designer, libraries, marketing person, project manager, students/student government association, and system office.

**Key Player: Administrators.** The findings reveal the importance of receiving buy-in or support from administrators. Faculty and OER advocates can lead successful grassroots efforts to increase student success. With support from upper administrators, the initiatives can be taken to the next level through an implementation team and all-campus/system roll-out. The faculty will receive more support from an implementation team who can provide OER, technical, and course design expertise.

**Key Player: Bookstore.** Participants from the two institutions acknowledged the partnership and positive experience working with campus bookstores. Campus bookstores also work on the front lines with the students. They have a common goal with the OER initiatives: provide students with affordable access to materials. A librarian participant provided an example of a working relationship with the campus bookstore and library. The library receives a book list from the bookstore about reported textbooks from all the classes. The libraries can target faculty outreach based on the list to identify high-enrollment courses that may benefit from open textbook adoption. Bookstores also can support low cost printing to meet the needs of students who want to have a print copy of

open textbooks. If faculty members report the textbook information to the bookstore, the bookstore can label the open textbook on the book list to help with marketing and promotion.

**Key Player: Digital Learning/Academic Technology or Center for Teaching and Learning.** Participants from both universities identified the crucial role of the Digital Learning/Academic Technology Office in supporting faculty's use and development of OER. Depending on each university, this type of office may also be named the Center for Teaching and Learning. Some research universities may also call it the Center for Teaching Innovation. The office usually provides faculty support and development through instructional technology, course design and development, and pedagogies. They can supply a team of experts to help faculty design and develop OER. The faculty participants from both universities also indicated that the office provided technical, instructional design, and development services such as virtual reality (VR) simulation development, integrating an open textbook into an LMS, making the OER content more engaging and interactive, etc. The participant from C1 associated with the office also described their participation in running an open-source homework system to help students. The participants from C2 who work at the office also described their role in moving courses online to be designed and structured to promote student learning during the pandemic.

**Key Player: Faculty/Fellow Faculty.** Faculty are OER users who control the decision on what textbook will be used for their classes. The role of faculty is essential in OER initiatives. Multiple participants, including administrators, librarians, and instructional designers, indicate that their common role is to support faculty but not to be

decision-makers for OER adoption. Continuing to have new faculty's buy-in for OER adoption is another important factor in sustaining OER initiatives. Both faculty participants from the two institutions commented on the crucial role of fellow faculty when developing OER projects. The collaboration and shared commitment made the projects successful.

**Key Player: Grant Office.** It is interesting to note that the faculty in C2 also identified their grant office as a key player who provided grant application training and assisted them with grant applications. The participants shared their positive experiences working with the grant office and acknowledged their expertise. At C2, the grant office is built into the grant application process. Faculty go through the grant office to submit the application. It shows the importance of working with the grant office in the process for C2.

**Key Player: Instructional Designer.** Based on the data analysis, the role of an instructional designer is perceived as informing/advocating, educating, and assisting faculty in integrating OER into their courses. Informing includes advocacy to faculty members who are interested in OER. Quality OER on its own does not necessarily lead to improved learning outcomes. Educating includes assisting faculty to use OER effectively or with appropriate pedagogical intent through individual consultations or training (e.g., how to use OER to achieve the learning outcomes of a particular course; encouraging a shift in pedagogy from traditional practice to student-centered pedagogy; how to improve the accessibility of OER). Some participants also indicate that instructional designers understand faculty's needs because they work closely with faculty, so the instructional

designer's perspectives are helpful to be considered in the institutional OER committee's decision-making process.

**Key Player: Librarians.** Librarians are OER advocates and have expertise in the best practices of OER. Their knowledge of resources, databases, open licensing, attribution, and tools to share OER can help faculty identify and share quality materials and engage effectively. In many universities, librarians lead OER initiatives and advocate the value of helping students make course materials more affordable. The librarians in both selected institutions are leaders and champions who have everyone's ear in supporting OER initiatives with various key players. They provide workshops and organize panel discussions, engage in faculty outreach, work with bookstores, and collaborate with the office of digital education/academic technology to get faculty the support needed to use OER effectively in their courses. They play a critical role in sustaining OER initiatives.

**Key Player: Marketing Person.** The librarian focus group from the two institutions discussed the need to have a specific role in marketing to promote the OER initiative in order to reach out to more faculty. They indicated the challenge of "getting the word out", especially in large research institutions. Without the upper administrators' support or having the initiative as a strategic institutional priority, it would be more challenging to get the OER initiatives through to faculty. A marketing person who focuses on strategic communication will help promote events and initiatives, for example, contributing to program newsletters or promoting the program through social media such as tweets and Facebook mentions.

**Key Player: Project Manager.** An OER project can be massive, especially for OER development, such as writing an open textbook. The project manager role came up multiple times in data analysis. In C1's OER grant proposal, the project manager is named as the project lead by the OER grants applicant. The instructional designer participant from C1 also described her role as an instructional designer and project manager in one as she created an OER collection for a system initiative. Assigning a project manager role in an OER development team would help to communicate with stakeholders in a project and hold people accountable.

**Key Player: Students/Student Government Association.** The common goal of OER initiatives is student success. Including students in OER initiatives is therefore essential. C1's student engagement in the OER initiative focuses on teaching innovation with open pedagogy. Faculty can also involve students in creating OER. They not only use OER as resources but also develop OER in the process. One example from the faculty participants is to co-create authentic renewable assignments for future students to use. The administrator participant from C2 spoke on the power of involving students in the conversation. One story he shared was that students were able to bring the administration on board to get the OER initiative started in another land grant university in the system. The two examples demonstrate the importance of involving students in OER practice and conversation.

**Key Player: System Office.** Based on the discussions from the administrator focus group, the system offices in the two selected institutions have very different efforts in support of OER initiatives. Even though there is no system-level funding for C1, the system started the effort to create curated OER collections for the most frequently-taught



courses across the system's colleges and universities right after the pandemic. The administrator participant indicated that the initiative made a big and successful impact in reducing the cost for the system students. Without sufficient resources, the system office took the strategy to pull together task forces across institutions to provide instructional support. C1 was one of the institutions that provided instructional design and library services. The administrator and instructional designer participants indicated the project was a successful one. The system office of C2 provides funding for faculty to adopt, adapt, and create OER. It also implements the concept of OER champions at each university to advocate for OER and promote grant opportunities. The common effort from the two university systems is to pull together resources across institutions to form impactful teams to achieve the goal of the initiatives.

**Faculty Outreach Strategies.** Faculty outreach is important but always challenging for a large research institution because there are many different departments and colleges. The librarian participants from C1 discussed effective faculty outreach strategies to keep their initiative going and to bring new faculty to the programs. Strategies include targeting high-enrollment courses, as well as instructors who are interested in OER, and offering a one-on-one conversation; creating community-based outreach through informal group conversations; reaching out to faculty who are interested in OER; and providing structured programs for faculty who are ready to use OER. All the programs work together to reach the goals of increasing the number of faculty who use OER and eventually increasing the number of students who benefit from the programs. The system office, which C2 is part of, uses a champion strategy in its outreach effort. They seek out and form champions from among the key players (e.g., faculty, librarians,

and instructional designers) at each institution. The champions spread the word to the institution about OER grants programs and bring back helpful feedback to the office that helps to continually improve the initiatives. All the strategies are quite successful, but participants from the two institutions also voiced some challenges of continued effort for faculty outreach. The land grant research institutions are big and sometimes well-funded. The effort to continue to bring awareness to faculty about OER initiatives is a challenge. Even though a successful faculty champion of OER adoption can amplify the voice of the OER rallying cry, getting the message through to faculty throughout different departments is sometimes difficult. Partnerships and coordinated efforts among key players are needed to expand outreach for OER through word of mouth, newsletters, and other media channels.

Effective sustainability practices were discussed in this section. Analysis of the role of key players in OER initiatives reveals that each key player has different expertise and plays an integral part in sustaining OER initiatives. Participants indicate that sustaining OER initiatives requires partnership and connection among key players to ensure faculty access to appropriate resources and support. Intentional partnerships also break the structural silos and increase awareness and understanding of the values and potential impact of OER on teaching and learning. The power of incentives (financial and nonfinancial), combined with institutional support from the connected key players, will likely create a sustainable OER initiative. Faculty outreach efforts also help facilitate the university community's understanding of the OER initiative. They also increase awareness about OER incentives, programs and impact. Faculty outreach efforts should eventually increase OER adoptions and keep the initiatives going.

## **Limitations and Future Directions**

This study focuses on sustaining OER initiatives in land grant research institutions. The findings may provide insight into the issue of sustainability at the research institutions, but they may not be generalizable to all universities, such as colleges and teaching institutions. The challenges in sustaining OER initiatives revealed from this research were in line with the current literature, such as difficulty in getting faculty on board due to the time and effort they would need to invest in OER practice to engage in OER use effectively. The successful practices unpacked from the findings may shed some light on how to address implementing and sustaining OER initiatives in other types of universities. However, research institutions also face significant challenges in sustaining OER initiatives, such as faculty outreach. Research institutions usually have larger faculty populations, different departments, and colleagues, which may require more investment in faculty outreach efforts. As indicated by one of the administrator participants, faculty may also experience “initiative fatigue” since faculty in research institutions that are well-funded with lots of resources will likely be asked to learn about and participate in many other initiatives that would occupy their time and energy.

While this research explored how institutions sustained their OER initiatives and unpacked the successful sustainability practices from the two selected institutions, there are other important issues that can be further investigated. Those individuals identified as key players in sustaining OER initiatives work within the institutional context to serve the goals of the universities and their initiatives, including OER initiatives. But there are also other important players outside of institutions who could potentially impact the sustainability of institutional OER initiatives, such as government and organizations.

Government agents who could impact OER sustainability include policymakers who may pass legislation that supports OER development for statewide OER initiatives.

Organization players could include nonprofit and profit companies that create OER and help to create services and technology tools to host or distribute OER. Engaging external key players could also help institutions seek out funding opportunities, tools, and resources to support OER creation and practice. Exploring the roles of external key players for institutional OER initiatives would be interesting and valuable.

Toward the end of the writing process for this study, a participant and member checker provided an update on the shift of the OER initiative at C2. She indicates that the OER initiative will be even more sustainable through its integration with other initiatives, such as using OER as evidence of supporting student equity in Diversity, Equity, and Inclusion (DEI) initiatives for low Education and Socioeconomic Status (ESS) students. Another example she provides is to use open pedagogy to improve student learning outcomes as evidence of supporting student success. As higher education institutions move forward in merging initiatives, researchers have an opportunity to explore the topic of OER sustainability as it connects to other initiatives that drive OER.

There are also challenges of sustaining OER initiatives that were raised in this research but left unanswered. The discussion of successful faculty outreach strategies and incentive-based practices addresses some of the questions about how to get faculty on board with OER initiatives, but other challenges, such as the absence of a master database to increase OER discoverability, warrants further investigation. Two member checkers especially commented on this absence of “an all-encompassing” database. Most OER users currently have to conduct a thorough search in many different OER repositories to

find an appropriate OER for their particular topic or to find necessary resources to create their own OER. Investigating ways to increase OER discoverability would be an interesting and important topic to investigate in future research.

## **Conclusion**

This study explored how institutions sustain OER initiatives by examining the experiences and perspectives of stakeholders or key players—faculty, administrators, librarians, instructional designers, and other support staff who work on the front lines of OER initiatives as OER users, educators, and advocates. Textbooks are a significant portion of the education costs for students. Many institutions have recognized the need to reduce the cost of textbooks and seek internal and external funds to implement OER initiatives to mitigate the issue. The number and scope of OER initiatives are growing in U.S. higher education institutions. However, even when OER initiatives are well funded and OER adoptions are taking place within the institutions, it does not mean the initiatives will be self-sustaining. What will happen if funds and grants run out? Many grant-funded initiatives end up falling by the wayside, and the challenge of sustaining OER initiatives in U.S. higher education persists.

The findings of this study indicate that individuals' ideology and belief in OER drive them to lead grassroots OER efforts in their institutions. Top-down support from administrators also contributes to the effort of starting and sustaining OER initiatives. One implication is that administrators' buy-in is very important and support from upper-level administration can help initiatives grow and reach more faculty. Those faculty who are interested in OER and are ready to adopt OER will be on board. They likely will

become champions and ambassadors to promote the initiatives and explain the value of OER to their departments and colleges.

This study also analyzed the experiences and perspectives of faculty, administrators, librarians, instructional designers, and other support staff in sustaining OER initiatives from two public, land grant institutions. The two institutions have used influential practices to sustain their OER initiatives. By examining their successful practices and publicly sharing the findings, this study provides implications for many other institutions to grow their OER initiatives. Cross-comparison between the institutions found common themes as well. The findings indicate that a continued effort to provide faculty incentives (financial and nonfinancial) is important. Targeting faculty for outreach is a helpful strategy for land grant research institutions. The office that starts the initiatives can allocate resources across the campus to support sustainability and outreach. Key players in the initiatives need to work together to leverage expertise and resources to continue the initiative programs in order to provide stable infrastructure support. U.S. higher education institutions continue to face challenges in sustaining OER initiatives within this changing world. Budget cuts from the COVID-19 pandemic and personnel turnover can lead to unavoidable sustainability issues. The absence of a master database for users to find or distribute OER is also an ongoing obstacle for people to discover, share, and use OER.

This research contributes to the body of OER initiative sustainability literature for future research in higher education. While the findings of the research on particular sustainability practices may not be generalizable to all universities such as teaching

universities and colleges, it offers insight into the sustainability issue of OER initiatives for research institutions overall.

## REFERENCES

- Allen, N. (2018, March 23). *Congress funds \$5 million open textbook grant program in 2018 spending bill*. SPARC. <https://sparcopen.org/news/2018/open-textbooks-fy18/>
- Assink, M. (2006). Inhibitors of disruptive innovation capability: A conceptual model. *European Journal of Innovation Management*, 9(2), 215–233.  
<https://doi.org/10.1108/14601060610663587>
- Belikov, O. M., & Bodily, R. (2016). Incentives and barriers to OER adoption: A qualitative analysis of faculty perceptions. *Open Praxis*, 8(3).  
<https://doi.org/10.5944/openpraxis.8.3.308>
- Birt, L., Scott, S., Cavers, D., Campbell, C., & Walter, F. (2016). Member checking: A tool to enhance trustworthiness or merely a nod to validation? *Qualitative Health Research*, 26(13), 1802–1811. <https://doi.org/10.1177/1049732316654870>
- Bliss, T. J., Hilton, J., Wiley, D. A., & Thanos, K. (2013). The cost and quality of online open textbooks: Perceptions of community college faculty and students. *First Monday*, 18(1), <https://doi.org/10.5210/fm.v18i1.3972>
- Bliss, T. J., & Smith, M. (2017). A brief history of open educational resources. In R. S. Jhangiani & R. Biswas-Diener (Eds.), *Open: The philosophy and practices that are revolutionizing education and science* (pp. 9–27). Ubiquity Press.  
<https://doi.org/10.5334/bbc.b>
- Bossaller, J. S., & Kammer, J. (2014). On the pros and cons of being a faculty member at an e-text university. *AAUP Journal of Academic Freedom*, 5, 1–13.



<https://www.aaup.org/JAF5/pros-and-cons-being-faculty-member-e-text-university#.X6kEjvhKhTZ>

- Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2), 27–40. <https://doi.org/10.3316/qrj0902027>
- Bower, J. L., & Christensen, C. M. (1995, January/February). Disruptive technologies: Catching the wave. *Harvard Business Review*. <https://hbr.org/1995/01/disruptive-technologies-catching-the-wave>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Caldwell, J. (2019). *Easier customization: 33 OpenStax textbooks now in Pressbooks*. BCcampus.
- Carter, N., Bryant-Lukosius, D., DiCenso, A., Blythe, J., & Neville, A. J. (2014). The use of triangulation in qualitative research. *Oncology Nursing Forum*, 41(5), 545–547. <https://doi.org/10.1188/14.onf.545-547>
- Chatlani, S. (2018, January 17). *Survey: OER adoption in higher ed still slow*. Higher Ed Dive. <https://www.educationdive.com/news/survey-oer-adoption-in-higher-ed-still-slow/514978/>
- Christensen, C., & Eyring, H. (2011). *The innovative university: Changing the DNA of higher education from the inside out*. Jossey-Bass.
- Christensen, C., Raynor, M., & McDonald, R. (2015, December). What is disruptive innovation? *Harvard Business Review*. <https://hbr.org/2015/12/what-is-disruptive-innovation>

- Christensen Institute. (n.d.). *Disruptive innovation*. Retrieved October 10, 2022, from <https://www.christenseninstitute.org/disruptive-innovations/>
- Creative Commons. (n.d.). *Open education*. Retrieved December 1, 2022, from <https://creativecommons.org/about/program-areas/education-oer/>
- Creswell, J. W. (2014). *Research design: qualitative, quantitative and mixed methods approaches* (4th ed.). SAGE Publications.
- Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five Approaches*. (3rd ed.) SAGE Publications.
- Colvard, N. B., Watson, C. E., & Park, H. (2018). The impact of open educational resources on various student success metrics. *International Journal of Teaching and Learning in Higher Education*, 30(2), 262–276.  
<https://files.eric.ed.gov/fulltext/EJ1184998.pdf>
- Coolidge, A., McKinney, A., & Shenoy, D. (n.d.). *OER in tenure and promotion*. Driving OER Sustainability for Student Success (DOERS3). Retrieved October 10, 2022, from <https://www.doers3.org/tenure-and-promotion.html>
- DeRosa, R., Newton, C., & Gumb, L. (2020, June 22). *Leveraging OER during COVID-19: Helping students, faculty and institutions navigate the potential challenges and burdens imposed by traditional learning resources in a global pandemic* [Webinar]. New England Board of Higher Education.  
<https://nebhe.org/webinars/leveraging-oer-webinar/>
- Doan, T. (2017). Why not OER? *Portal: Libraries and the Academy*, 17(4), 665–669.  
<https://doi.org/10.1353/pla.2017.0039>

- Downes, S. (2007). Models for sustainable open educational resources. *Interdisciplinary Journal of E-Learning and Learning Objects*, 3(1), 29–44. Informing Science Institute. <https://www.learntechlib.org/p/44796/>
- Eaton, C. D., Bonner, K., Cangialosi, K., Dewsbury, B., Diamond-Stanic, M., Douma, J., Smith, M., Taylor, R., Wojdak, J., & Wilfong, K. (2022, September). Sustainability and justice: Challenges and opportunities for an open STEM education. *CBE—Life Sciences Education*, 21(3). <https://doi.org/10.1187/cbe.20-08-0180>
- Essmiller, K., Thompson, P. & Alvarado-Albertorio, F. (2020). Performance improvement technology for building a sustainable OER initiative in an academic library. *TechTrends*, 64, 265–274. <https://doi.org/10.1007/s11528-019-00467-2>
- Fischer, L., Hilton III, J., Robinson, T. J., & Wiley, D. A. (2015). A multi-institutional study of the impact of open textbook adoption on the learning outcomes of post-secondary students. *Journal of Computing in Higher Education*, 27(3), 159–172. <https://doi.org/10.1007/s12528-015-9101-x>
- Florida Virtual Campus. (2019, March 8). *2018 Student textbook and course materials survey: Results and findings*. <https://dlss.flvc.org/documents/210036/1314923/2018+Student+Textbook+and+Course+Materials+Survey+Report+--+FINAL+VERSION+--+20190308.pdf/07478d85-89c2-3742-209a-9cc5df8cd7ea>
- Foote, T. (2005) Wikipedia. Utah: *Open Education Conference*.

- Given, L. M. (2008). Focus groups. In *The SAGE encyclopedia of qualitative research methods* (Vol. 1, pp. 353–354). SAGE Publications.  
<https://dx.doi.org/10.4135/9781412963909.n178>
- Green, C. (2016, February 1). *U.S. Department of Labor adopts CC BY licensing policy department-wide*. Creative Commons. <https://creativecommons.org/2016/02/01/u-s-department-labor-adopts-cc-licensing-policy-department-wide/#:%7E:text=In%20addition%20to%20the%20guidance,a%20Creative%20Commons%20Attribution%20license.>
- Grove, M., & Pugh, S. (2017). Defining ‘sustainability indicators’ for higher education teaching and learning innovations. *Education in Practice*, 3(1), 13–18.
- Hilton III, J. L., Gaudet, D., Clark, P., Robinson, J., & Wiley, D. (2013). The adoption of open educational resources by one community college math department. *The International Review of Research in Open and Distributed Learning*, 14(4), 37–50. <https://doi.org/10.19173/irrodl.v14i4.1523>
- Hurley, T. A., & Hallmark, J. R. (2020). Inclusive access and open educational resource programs: A system perspective. In T. A. Hurley (Ed.), *Inclusive access and open educational resources: E-text programs in higher education* (pp. 3–13). Springer, Cham. [https://doi.org/10.1007/978-3-030-45730-3\\_1](https://doi.org/10.1007/978-3-030-45730-3_1).
- Hodgkinson-Williams, C. & Donnelly, S. (2010). Sustaining OER at the University of Cape Town: Free, but not cheap. In *Open Ed 2010 Proceedings*. Barcelona: UOC, OU, BYU. <http://hdl.handle.net/10609/4843>
- Ikahihifo, T. K., Spring, K. J., Rosecrans, J., & Watson, J. (2017). Assessing the Savings from Open Educational Resources on Student Academic Goals. *The International*

*Review of Research in Open and Distributed Learning*, 18(7), 126–140.

<https://doi.org/10.19173/irrodl.v18i7.2754>

Jenkins, J. J., Sánchez, L. A., Schraedley, M. A. K., Hannans, J., Navick, N., & Young, J.

(2020). Textbook broke: Textbook affordability as a social justice issue. *Journal of Interactive Media in Education*, 1, Article 3. <https://doi.org/10.5334/jime.549>

Kirkpatrick, S. A., & Van Natta, C. (1999). Institutionalizing diversity initiatives.

*Metropolitan Universities: An International Forum*, 9(4), 61–68.

<https://eric.ed.gov/?id=EJ584061>

Kohlbacher, F., & Hang, C. C. (2011). Applying the disruptive innovation framework to the silver market. *Ageing International*, 36, 82–101.

<https://doi.org/10.1007/s12126-010-9076-x>

Laakso, M., Welling, P., Bukvova, H., Nyman, L., Björk, B.-C., & Hedlund, T. (2011).

The development of open access journal publishing from 1993 to 2009. *PLOS ONE*, 6(6), e20961. <https://doi.org/10.1371/journal.pone.0020961>

Lieberman, M. (2019, January 9). Slow burn for OER adoption, awareness. *Inside Higher Ed*.

<https://www.insidehighered.com/digital-learning/article/2019/01/09/oer-adoptions-awareness-continue-grow-many-faculty-members-still>

Lowe-Wincentsen, D., Chu, H. Y., Kunda, S., Trunnell, C., & Gayton, J. (2019). A

community-based collaborative of OER programs: A case study of university initiatives tied together by Open Oregon Educational Resources. *International Journal of Open Educational Resources*, 2(1), 137–156.

<https://doi.org/10.18278/ijoe.2.1.9>

- Martin, M. T., Belikov, O. M., Hilton III, J., Wiley, D., & Fischer, L. (2017). Analysis of student and faculty perceptions of textbook costs in higher education. *Open Praxis*, 9(1), 79–91. <https://doi.org/10.5944/openpraxis.9.1.432>
- Mayer, R. E. (2017). Using multimedia for e-learning. *Journal of Computer Assisted Learning*, 33(5), 403–423. <https://doi.org/10.1111/jcal.12197>
- McKenzie, L. (2018, January 26). Report: Bundled textbooks a bad deal for students. *Inside Higher Ed*. <https://www.insidehighered.com/news/2018/01/26/report-asserts-bundled-textbooks-cost-students-too-much-publishers-dispute-findings>
- McKenzie, L. (2020a, March 10). A looming challenge for OER? *Inside Higher Ed*. <https://www.insidehighered.com/news/2020/03/10/survey-suggests-challenges-open-textbooks-ahead>
- McKenzie, L. (2020b, October 13). Textbooks in short supply amid COVID quarantines. *Inside Higher Ed*. <https://www.insidehighered.com/news/2020/10/13/covid-19-forces-college-libraries-quarantine-textbooks-hitting-low-income-students>
- McKinney, A., & Coolidge, A. (2021, August 10). The tenure review process must evolve. *Inside Higher Ed*. <https://www.insidehighered.com/advice/2021/08/10/work-open-educational-resources-should-be-valued-tenure-review-opinion>
- Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. Jossey-Bass.
- Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative Research: A Guide to Design and Implementation* (4th ed.). Jossey-Bass.

- Mills, A. J., Durepos, G., & Wiebe, E. (2010). Exploratory case study. In *Encyclopedia of case study research* (Vol. 1, pp. 373–374). SAGE Publications, <https://www-doi-org.proxy.mul.missouri.edu/10.4135/9781412957397.n139>
- Multimedia Education Resource for Learning and Online Teaching. (n.d.). *Content Builder*.  
[https://info.merlot.org/merlothelp/Content\\_Builder\\_Welcome.htm](https://info.merlot.org/merlothelp/Content_Builder_Welcome.htm)
- Nyland, R. (2018). The infrastructure of openness: Results from a multi-institutional survey on OER platforms. *International Journal of Open Educational Resources*, 1(1), 11–30. <https://doi.org/10.18278/ijoe.1.1.3>
- Noor, K. B. M. (2008). Case study: A strategic research methodology. *American Journal of Applied Sciences*, 5(11), 1602–1604.
- 1EdTech Consortium. (2022). *LTI Fundamentals FAQ*. LTI Fundamentals FAQ.  
<http://www.imsglobal.org/lti-fundamentals-faq>
- Otto, D., & Kerres, M. (2022, May 9). Increasing sustainability in open learning: Prospects of a distributed learning ecosystem for open educational resources. *Frontiers in Education*, 7:866917. <https://doi.org/10.3389/educ.2022.866917>
- Ozdemir, O., & Hendricks, C. (2017). Instructor and student experiences with open textbooks, from the California open online library for education (Cool4Ed). *Journal of Computing in Higher Education*, 29, 98–113.  
<https://doi.org/10.1007/s12528-017-9138-0>
- Patton M. Q. (1999). Enhancing the quality and credibility of qualitative analysis. *Health Services Research*, 34(5 Pt 2), 1189–1208.

- Powers, K., & Schloss, P. J. (2017). *Organization and administration in higher education* (2nd ed.). Routledge. <https://doi.org/10.4324/9781315630656>
- Probst, B., Berenson, L. (2014). The double arrow: How qualitative social work researchers use reflexivity. *Qualitative Social Work, 13*(6), 813–827.  
<https://doi.org/10.1177/1473325013506248>
- Rasool, F., Koomsap, P., Afsar, B., & Panezai, B. A. (2018). A framework for disruptive innovation. *Foresight, 20*(3), 252–270. <https://doi.org/10.1108/fs-10-2017-0057>
- Raymond, C. (2018, May 31). *OpenStax books are now available in Canvas course shells*. OpenStax. <https://openstax.org/blog/openstax-books-are-now-available-canvas-course-shells>
- Redstone Strategy Group. (2018, August 28). *Seeking a sustainable OER ecosystem*. William and Flora Hewlett Foundation. <https://hewlett.org/library/seeking-a-sustainable-oer-ecosystem/>
- Rodés, V., Rodríguez-Solano, C., Maturana, J., Bielukas, Y. H., Cuadros-Vargas, E., & Podetti, M. (2013). Strategies for implementing the adoption of open textbooks initiatives: State of the art review. *International Journal of e-Education, e-Business, e-Management and e-Learning, 3*(192), 51–56.  
<https://doi.org/10.7763/ijeeee.2013.v3.192>
- Rosen, S. (2019, August 2). College textbook prices going down. *Chicago Tribune*. <https://www.chicagotribune.com/business/success/sns-201908011732--tms--kidmoneyctnsr-a20190802-20190802-story.html>
- Schaffhauser, D. (2020, March 13). Updated: Free resources for schools during COVID-19 outbreak. *Technological Horizons in Education Journal*.



<https://thejournal.com/articles/2020/03/13/free-resources-ed-tech-companies-step-up-during-coronavirus-outbreak.aspx>

Schleicher, C. A., Barnes, C. A., & Joslin, R. A. (2020) OER initiatives at liberal arts colleges: Building support at three small, private institutions. *Journal of Librarianship and Scholarly Communication*, 8(1), eP2301.

<https://doi.org/10.7710/2162-3309.2301>

Seaman, J. E., & Seaman, J. (2018). *Freeing the textbook: Educational resources in U.S. higher education, 2018*. Babson Survey Research Group.

<https://www.onlinelearningsurvey.com/reports/freeingthetextbook2018.pdf>

Seaman, J. E., & Seaman, J. (2021). *Digital texts in the time of COVID: Educational resources in U.S. higher education, 2020*. Bay View Analytics.

<https://www.bayviewanalytics.com/reports/digitaltextsintimeofcovid.pdf>

Seaman, J. E., & Seaman, J. (2022). *Open educational resources: Becoming mainstream* [Research Brief]. Bay View Analytics.

[https://www.bayviewanalytics.com/reports/researchbrief\\_becomingmainstream.pdf](https://www.bayviewanalytics.com/reports/researchbrief_becomingmainstream.pdf)

Seawright, J., & Gerring, J. (2008). Case selection techniques in case study research: A menu of qualitative and quantitative options. *Political Research Quarterly*, 61(2), 294–308. <http://www.jstor.org/stable/20299733>

Seo, G., Moulaison-Sandy, H., & Wilson, G. (2019). Open educational resources: Barriers and benefits in LIS education. In *Proceedings of the Association of Library and Information Science Education Annual Conference: ALISE 2019* (pp. 96–100). ALISE.

- Si, S., & Chen, H. (2020). A literature review of disruptive innovation: What it is, how it works and where it goes. *Journal of Engineering and Technology Management*, 56, 101568. <https://doi.org/10.1016/j.jengtecman.2020.101568>
- Scholarly Publishing and Academic Resources Coalition. (2019). *2018–2019 Connect OER report*. SPARC. <https://sparcopen.org/our-work/connect-oer/reports/>
- Scholarly Publishing and Academic Resources Coalition. (2022a, August 25). *Taxpayers to get immediate access to publicly funded research*. SPARC. <https://sparcopen.org/news/2022/taxpayers-to-get-immediate-access-to-publicly-funded-research/>
- Scholarly Publishing and Academic Resources Coalition. (n). *Top organic chemistry author “goes open” with bestselling textbook*. SPARC. <https://sparcopen.org/impact-story/top-organic-chemistry-author-goes-open-with-bestselling-textbook/>
- Thurston, T. N., Lundstrom, K., & González, C. (Eds.) (2021). *Resilient pedagogy: Practical teaching strategies to overcome distance, disruption, and distraction*. Utah State University. <https://doi.org/10.26079/a516-fb24>
- Sobotka, C., Wheeler, H., & White, H. (2019). Leveraging cataloging and collection development expertise to improve OER discovery. *OLA Quarterly*, 25(1), 17–24. <https://doi.org/10.7710/1093-7374.1971>
- Sutton, S. C., & Chadwell, F. A. (2014). *Open textbooks at Oregon State University: A case study of new opportunities for academic libraries and university presses*.

*Journal of Librarianship and Scholarly Communication*, 2(4), eP1174.

<https://doi.org/10.7710/2162-3309.1174>

Tufford, L., & Newman, P. (2012). Bracketing in qualitative research. *Qualitative Social Work*, 11(1), 80–96. <https://doi.org/10.1177/1473325010368316>

Underdown, H. (2018). *What a publisher does: Key roles*. Underdown.Org.  
<https://www.underdown.org/publisher-expertise.htm>

United Nations Educational, Scientific, and Cultural Organization. (2019, November 25). *Recommendation on open educational resources (OER)*. UNESCO.  
<https://www.unesco.org/en/legal-affairs/recommendation-open-educational-resources-oer>

U.S. Bureau of Labor Statistics. (2016, August 30). College tuition and fees increase 63 percent since January 2006. *The Economics Daily*.  
<https://www.bls.gov/opub/ted/2016/college-tuition-and-fees-increase-63-percent-since-january-2006.htm>

Nagle, C., & Vitez, K. (2021, February 23). *Fixing the broken textbook market* (3rd ed.). U.S. PIRG Education Fund. <https://uspig.org/reports/usp/fixing-broken-textbook-market-third-edition>

Van Allen, J., & Katz, S. (2020). Teaching with OER during pandemics and beyond. *Journal for Multicultural Education*, 14(3/4), 209–218.  
<https://doi.org/10.1108/jme-04-2020-0027>

Warner, M. R., & Thune, J. (2019). *TIME Op-Ed: Americans are drowning in \$1.5 trillion of student loan debt. There's one easy way Congress could help*. Mark R. Warner. <https://www.warner.senate.gov/public/index.cfm/2019/8/timel>

- Weller, M., de los Arcos, B., Farrow, R., Pitt, B., & McAndrew, P. (2015). The impact of OER on teaching and learning practice. *Open Praxis*, 7(4), 351–361.  
<https://doi.org/10.5944/openpraxis.7.4.227>
- Wesolek, A., Lashley, J., & Langley, A. (2018). *OER: a field guide for academic librarians*. Boise State University ScholarWorks.  
[https://scholarworks.boisestate.edu/cgi/viewcontent.cgi?article=1510&context=fac\\_books](https://scholarworks.boisestate.edu/cgi/viewcontent.cgi?article=1510&context=fac_books)
- Wiley, D. (2007). On the sustainability of open educational resource initiatives in higher education. OECD’s Centre for Educational Research and Innovation (CERI).  
<https://www.oecd.org/education/ceri/38645447.pdf>
- Wiley, D. (2014, March 5). The access compromise and the 5th R. *Improving Learning*.  
<https://opencontent.org/blog/archives/3221>
- William and Flora Hewlett Foundation. (n.d.). *Open education*.  
<https://hewlett.org/strategy/open-education/>
- Williamson, D. (2020). *Saying goodbye to CNX and hello to the next chapter! x*. OpenStax. <https://openstax.org/blog/saying-goodbye-cnx>
- Yilmaz, K. (2013). Comparison of quantitative and qualitative research traditions: epistemological, theoretical, and methodological differences. *European Journal of Education*, 48(2), 311–325. <https://doi.org/10.1111/ejed.12014>
- Yin, R. K. (2014). *Case study research and applications: Design and methods* (5th ed.). SAGE Publications.
- Yin, R. K. (2018). *Case study research and applications: design and methods* (6th ed.). SAGE Publications.

Zaid, Y.A., & Alabi, A. O. (2021). Sustaining open educational resources (OER) initiatives in Nigerian universities. *Open Learning: The Journal of Open, Distance and e-Learning*, 36(2), 181–197.

<https://doi.org/10.1080/02680513.2020.1713738>

Zhou, S. (2016). Increasing public and fair access to scientific findings. In *iConference 2016 Proceedings*. iConference. <https://doi.org/10.9776/16456>

## APPENDIX A

### Informed Consent



University of Missouri

### **Sustaining Open Educational Resources (OER) Initiatives in Higher Education: Case Studies and Analysis**

Dear OER Champions, Leaders, and Supporters,

I am a Ph.D. candidate in the School of Information Science & Learning Technologies at the University of Missouri-Columbia. I warmly invite you to participate in my dissertation research: Sustaining Open Educational Resources (OER) Initiatives in Higher Education: Case Studies and Analysis. The purpose of this study is to understand how individuals (e.g., administrators, faculty, librarians, instructional designers, and other support staff) in higher education institutions sustain Open Education Resources initiatives. You are being asked to participate in this research because your institution has an influential or exemplary case on sustaining OER initiatives.

Your participation in this study is voluntary, and you may withdraw your participation at any time for any reason. If you take part in this study, you will be asked to complete a Zoom interview and a focus group. Either interview or focus group should take 45-60 minutes. Although you will not directly benefit from this study, it has been designed to learn more about the best practice for sustaining OER initiatives in higher education.

I understand you are busy, so as a token of appreciation for your time, I would like to offer you a \$20 digital gift card for participating in an interview and another \$20 digital gift card if you are willing to participating in the focus group after the interview. Upon the completion of the interview and focus group, you will be emailed a link with instructions.

Every effort will be made to ensure the information you provided remains confidential. Your personal information and interview data will be securely stored in a restricted-access folder on Microsoft OneDrive, an encrypted, cloud-based storage system. Any identifiable information obtained in connection with this study will remain confidential. Per University of Missouri policy, the research records must be retained by the investigator for at least seven years after completion of the study. Your data will be kept for seven years and destroyed from the storage system after the study is complete. The de-identified transcripts will be uploaded for public sharing in a data repository. The de-identified data can be discovered and used by other researchers and any member of the public for any reason. The purpose of sharing the data publicly is to promote the transparency of research and reduce the costs associated with future research.

You can decline to participate in any part of this study of any reason and can end your participation at any time. If you have questions about the research study itself, please contact the Principle Investigator Grace Zhou Seo at [zhousi@missouri.edu](mailto:zhousi@missouri.edu). If you have questions about your rights or would simply like to speak with someone other than the research team about questions or concerns, please contact the Campus Institutional Review Board Office of Research University of Missouri (482 McReynolds Hall University of Missouri Columbia, MO 65211) at 573-882-3181 or [UMCRESEARCHCIRB@missouri.edu](mailto:UMCRESEARCHCIRB@missouri.edu).

I appreciate your consideration of this invitation to participate in my research on OER initiative sustainability!

By signing below, you agree to participate in this study. You indicate that you will participate in the study described above. Its general purposes, the particulars of involvement, and possible risks have been explained to my satisfaction. Please be sure to retain a copy of this form for your records. A PDF version will be available to download after submission.

To sign, please type your full name into the text below. If you do not wish to participate, please close this browser window.



Please also sign using your signature.

<span>×</span> <b>SIGN HERE</b> <hr/> <span>clear</span>
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Today's Date:

	Month	Day	Year
Please Select:	<input type="text"/>	<input type="text"/>	<input type="text"/>



## APPENDIX B

### Recruitment Email

Hello,

I'm writing to warmly invite you to participate in my dissertation study-- Sustaining Open Educational Resources (OER) Initiatives in Higher Education: Case Studies and Analysis through a one-hour interview and a one-hour focus group. Your participation is completely voluntary. As a researcher, I respect your knowledge and experience on OER, and I hope to learn more about them.

I understand you are busy, so as a token of appreciation for your time, I would like to offer you a \$20 digital gift card for participating in an interview and another \$20 digital gift card if you are willing to participate in the focus group after the interview. Upon the completion of the interview and focus group, you will be emailed a link with instructions.

By following the link below, you will be able to access the consent form for the study approved by the MU IRB office (#2072563). The form also provides more information about the study.

Follow this link to the Consent Form:

[Take the Survey](#)

Or copy and paste the URL below into your internet browser:

[https://missouri.qualtrics.com/jfe/form/SV\\_a9pKV04n2Kwnplk](https://missouri.qualtrics.com/jfe/form/SV_a9pKV04n2Kwnplk)

If you have any questions or concerns, please do not hesitate to contact me at [zhousi@missouri.edu](mailto:zhousi@missouri.edu).

I appreciate your consideration of this invitation to participate in my research on the OER initiative sustainability!

Respectfully,

Grace Z. Seo  
Doctoral Candidate  
University of Missouri

## APPENDIX C

### Interview Questions

1. Would you share a little bit yourself and how did you become interested in involving in Open Educational Resources initiative at your institution?
2. What are the main reasons for your institution to start the initiative?
3. Would you like to share your experience with OER initiative overall?
4. What are the benefits and challenges that you have seen OER have impact for your institution?
5. What are the barriers that you have seen to sustain OER initiatives?
6. What have worked very well when implementing OER initiatives at your institution?
7. What else have you experienced when sustaining OER initiatives?
8. How do you define a successful sustainable OER initiatives?

## APPENDIX D

### Focus Group Questions

#### Faculty Group

1. Would you share a little bit yourself including your names and disciplines in your institution?
2. We have a diversity of professors who teach in different disciplines here. Would you provide your insights on how and why you have participated in the OER initiative in your institution?
3. Both of your universities have received some level of University System support to help faculty implement OER. Would you describe this type of support?
4. Who are the key players to support your OER projects in your institution? How did they successfully support your OER projects?
5. As a faculty member, what do you think are the critical factors that lead to a successful OER initiative?
6. How do you ensure the quality of OER in your classes and how do you maintain the quality for future semesters?
7. As an OER veteran or OER champion, what is your advice to your fellow professors who just started or are going to start implementing OER in their courses? How to help them sustain their OER practice?

#### Support Group

1. Would you share a little bit yourself including your names and your roles in your institution?
2. Would you provide your insights on how and why you have participated in the OER initiative in your institution?
3. Both of your universities have received some level of University System support to help faculty implement OER. Would you describe this type of support?
4. Who are the key players to support your OER projects in your institution? How did they successfully support your OER projects?
5. What do you think are the critical factors that lead to a successful OER initiative?
6. How do you ensure the quality of OER in your classes and how do you maintain the quality for future semesters?
7. As an OER veteran or OER champion, what is your advice to your fellow professors who just started or are going to start implementing OER in their courses? How to help them sustain their OER practice?

#### Admin Group

8. Would you share a little bit yourself including your names and your roles in your institution?
9. Would you provide your insights on how and why you have participated in the OER initiative in your institution?
10. Both of your universities have received some level of University System support to help faculty implement OER. Would you describe this type of support?
11. Who are the key players to support your OER projects in your institution? How did they successfully support your OER projects?
12. What resources do you use for adopting, adapting, or creating OER content for your courses?
13. What do you think are the critical factors that lead to a successful OER initiative?
14. How do you ensure the quality of OER in your classes and how do you maintain the quality for future semesters?
15. As an OER veteran or OER champion, what is your advice to your fellow professors who just started or are going to start implementing OER in their courses? How to help them sustain their OER practice?

## APPENDIX E

### Email and Questions for Member Checking

Dear [Participant Name],

I hope this email finds you well! In January, you participated in my dissertation study entitled *Sustaining Open Educational Resources initiatives in Higher Education: Case Studies and Analysis* through an interview and a focus group. I have now completed the data analysis for the study, and I want to reconnect with you to make sure that the synthesized themes from your interview and focus group make sense to you.

Attached please find the analysis report that lists the synthesized analyzed themes for the study. Would you mind reading over it and considering whether it accurately reflects the discussion? It is important to note that the interviews and focus groups involved multiple participants from two institutions. I also realize that it has been a few months since the interview and focus group took place. I'm hopeful that the attached report can be a refresher, but please feel free to let me know if a follow-up Zoom discussion would benefit the process. I would be happy to set this up.

I would like to ask you the following questions about the attached analysis:

- Is there anything you think is inaccurate? If so, would you explain?
- Do the themes make sense to you? If not, would you explain?
- Is there anything you would suggest that I change?

If it's possible, would you mind sending your answer to me by November 10, 2022? I also have some flexibility if the time doesn't work for you. I'm sincerely thankful for your participation and time! If you have any questions or concerns, please don't hesitate to contact me at [zhousi@missouri.edu](mailto:zhousi@missouri.edu).

Sincerely,

Grace Z. Seo  
Doctoral Candidate  
University of Missouri

## APPENDIX F

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## VITA

I received my undergraduate degree at Sias University (formerly known as Sias International University) in Xinzheng, Henan province, China. Sias is a private university in Central China and grants both Chinese and American bachelor's degrees through cross-border programs offered by Fort Hays State University (FHSU) in Hays, Kansas in the United States. My majors were English (the Chinese associate's degree through Sias) and Business Management (the American bachelor's degree in general studies through FHSU). I took U.S.-based courses and earned credits through a blended learning model (i.e., online instructions from U.S. professors via Blackboard blended with face-to-face instructions via local cooperative teachers on campus) in China.

After graduation, I worked at Sias as a faculty member and taught English Intensive Reading to undergraduate students. Since I was passionate about teaching and learning technologies, I chose to study abroad at the partner school, FHSU. I earned a Master of Science in Instructional Technology from FHSU in Hays, Kansas. Upon completion of this degree, I accepted a job offer at FHSU as an Integrated Learning Technologies Specialist at the Center for Teaching Excellence and Learning Technologies (CTELT).

As I developed a love for instructional design and pedagogical technology integration, I changed my role to work as an Instructional Designer at FHSU's CTELT. I then worked as an Instructional Designer at the University of Missouri in Columbia, Missouri for more than seven years. I am also an adjunct instructor for FHSU, and have taught online courses (i.e., Beginning Chinese I & II and Electronic Media in Instruction) since 2010. At the time of publishing this dissertation, I serve as the Associate Director of



Educational Technology and Media (ETM) at Seattle Pacific University (SPU), a private Christian liberal arts university in Seattle, Washington. The Office of ETM is part of the SPU Library and supports the digital side of teaching and learning at SPU. My personal experience with OER, coupled with my interest in instructional design, learning technology, and information science and more than a decade of practitioner experience in these fields, guided my research as a doctoral candidate in the School of Information Science and Learning Technologies at the University of Missouri.

### **Research Interests**

- Open Educational Resources (OER) - OER Sustainability, Open Education, Open Educational Practice (OEP), Open Access
- Instructional Design (ID) - ID skills and competency
- Technology-enabled active learning
- Online learning