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ADOPTING AND ADAPTING:

HOW FACULTY REUSE, REVISE, AND REMIX OPEN EDUCATIONAL RESOURCES

BY

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Abstract

This dissertation research consists of a case study of how Open Educational Resources (OER) are revised and reused in online courses by faculty at Georgia State University (GSU). GSU is an institution of higher education which promotes OER use and which has access to a repository of OER.

This research examined a related set of issues for OER reuse. One concern was how revisable the materials in an OER repository affiliated with GSU are. Another concern was to examine how faculty actually reuse, revise, and remix OER in their online courses. A final concern was to look at whether the Community of Practice model describes this context in which OER are reused.

Data collection followed a mixed-methods approach. A questionnaire regarding practices with OER reuse and revision was circulated to faculty teaching online and using OER. Furthermore, nine faculty were interviewed regarding their practices reusing OER in their online courses. The third method assessed the revisability of objects in the OER repository itself. Finally, this investigation examined the affordances of the organization maintaining the repository as well as related documentation to assess whether it can be described as a community of practice.

This research found that while a plurality of the contents of the repository were scored as Mostly Revisable, a majority of the contents included elements that marked them as only Somewhat or Not Revisable. From the questionnaire and interviews it was found that faculty take diverse strategies to include OER in their online courses. Faculty find and remix open resources from a variety of sources. Some generate and share their own OER. Links to open web

resources were a significant component of OER for most questionnaire and interview respondents and about half (52.5%) of the materials in the repository. Faculty also took a variety of different approaches to revising and remixing resources and scaffolding them in their courses. On the final question, about the context in which collaboration occurs, it was found that there is evidence that at least some departments can be described as functioning as a community of practice when it comes to using OER.

Keywords: Open Educational Resources, revision, reuse, revisability, Community of Practice, OER repositories, Georgia State University

Preface

I began teaching online courses in world religions and mythology at Perimeter College in 2012. One of my courses on mythology was using a textbook that, when new, cost students over $100 USD. This was more than in-state students were paying per credit hour and the cost was a stumbling block for some students taking the course. I assigned about two-thirds of the book in the course and while it addressed some topics quite well, other topics need to be supplemented with additional online sourcing. By 2014 I decided to get rid of the textbook entirely. Readings were replaced with online equivalents. I also worked to integrate all resources into the course, by providing additional comments and guidance for each resource and specifically calling out resources in discussions and other assignments. Informal measures of student grades showed that after updating the course in this way, student scores were consistent with their performance before replacing the textbook. This project to turn my mythology course into a no-cost/low-cost course led me into this project on Open Educational Resources.

As a subject of study, religion and mythology has many primary and secondary source readings online. Compared with some other fields, however, it does not have as many well-developed OER for teaching these subjects in an organized and systematic fashion. I do believe education in itself is a public good, and OER are part of an approach to making education available to all. It is my hope to be able to develop more shareable course materials, possibly including an open textbook, following completion of this dissertation.

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List of Abbreviations

5 Rs	Reuse, Revise, Remix, Redistribute, and Retain
ADDIE	Analyze, Design, Develop, Implement, Evaluate
ALG	Affordable Learning Georgia
ALMS	Access to editing tools, Level of expertise, Meaningful edits, Source file access
CC	Creative Commons
CoP	Community of Practice
FTU	Free-to-use
GALILEO	GeorgiA LIbrary LEarning Online
GSU	Georgia State University
IRB	Institutional Review Board
LO	Learning Object
MOOC	Massively Open Online Course
NCLC	No-Cost/Low-Cost
OEP	Open Educational Practices
OER	Open Educational Resources
ROER	Repository of Open Educational Resources
USG	University System of Georgia

Definitions

ADDIE	ADDIE refers to an iterative model of course design in which one studies educational needs before designing and developing the course, and then evaluating the course after it has been implemented. ADDIE stands for Analysis, Design, Development, Implementation, Evaluation.
Adoption as is	Reusing OER in a course without revising the OER.
Affordable Learning Georgia (ALG)	ALG is an initiative of the state of Georgia to promote the creation, maintenance, and use of OER in the state's public higher educational institutions and which maintains an OER repository for use by these institutions.
AGILE	A course design method relying on reusable components which can be adapted easily to facilitate reusability. AGILE stands for Align, Get Set, Iterate and Implement, and Evaluate.
ALMS Analysis	ALMS analysis is a set of questions to determine whether and to what extent an instructional designer can make meaningful revisions to a digital learning object. ALMS stands for Access, Level of Expertise, Meaningful edits, and Source files.
Community of Practice (CoP)	A CoP is a group that shares knowledge and methods about a common interest and thereby keeps members current and/or improves skills in that shared interest.
Course creators	Educators involved in designing, developing, and revising online courses. This may include faculty, library staff, and instructional designers.
Five R's	Referring to adapting OER to new contexts, this refers to reusing, redistributing, revising, and remixing OER (Hilton et al., 2010) as well as the idea that OER are retained for future use (Wiley, 2014).
FTU	Free-to-use web resources linked to or adapted into online courses.

GALILEO	GeorgiA LIbrary LEarning Online, the university library system which also serves as a portal to the ALG OER repository.
Georgia State University (GSU)	A public university in Georgia, the site of this study.
iCollege	The learning management system used for courses at GSU.
Learning Object (LO)	A learning object is a reusable digital creation intended for education. This can be as simple as a single content page or assignment or as complex as a module with content and assessment.
LibGuide	A library guide, web pages produced and hosted by a library involving information, instruction, and resources on a topic such as OER.
Massive Open Online Course (MOOC)	MOOCs are courses offered online available for anyone to enroll in for no cost, or for a minimal cost, such as might be associated with a credential.
No-Cost/Low-Cost (NCLC)	The term used at GSU to designate courses which either do not require students to purchase textbooks and other course materials or for which total course expenditures on learning materials is less than $40 (US).
Open Educational Practices (OEP)	An approach which looks at how people reuse and revise open educational resources. The difference is that in OER, the basic unit of analysis are the learning materials, whereas for OEP the basic units of analysis are the methods employed to manage and use OER.
Open Educational Resources (OER)	Digital resources intended for educational purposes offered with minimal or no barriers to using and reusing across different learning contexts.
OER Repository (ROER)	A digital repository for OER materials and/or courses.
Redistribute	The degree to which an OER can be shared for reuse in different educational contexts.
Remix	The degree to which an OER can be combined with other educational materials when reused in different contexts.

Retain	The need for OER to be stored in useful ways to be reused in different educational contexts.
Reuse	The degree to which an OER can be incorporated into different educational contexts.
Revise	The degree to which an OER can be edited or changed when reused in different educational contexts.
Scaffolding	An instructional design method in which a subject-matter expert provides explanation of a resource's significance, meaning, or use in the current educational context. This involves more than simply adding a citation for a resource. Sometimes also referred to as curation.
University System of Georgia (USG)	The statewide consortium of public colleges and universities in Georgia.

Chapter 1: Introduction

Introduction

The promise of Open Educational Resources (OER) is predicated on their degree of openness. Openness exists on a spectrum and various factors like restrictive licensing inhibit the ability to share, reuse, and remix OER. This research project proposes to study how OER are reused, what barriers hinder reuse, and how an academic community can facilitate the use and reuse of OER.

This project is a case study of how faculty teaching online courses at Georgia State University (GSU) reuse, revise, and remix materials from a repository of OER affiliated with the university. This project researched both how revisable materials in the repository are as well as the measures course creators employ to reuse these and other open materials in their online courses. An additional consideration that informed this project is that there is some research emphasizing that barriers to reuse are minimized in the context of a Community of Practice (CoP). Authors such as Blyth (2014), Sapire and Lee (2017), and Kleinschmit et al. (2023) have argued that cultivating a CoP can be important for effective reuse of OER. Given the importance attached to collaboration for effective OER reuse and sharing, this investigation also examined whether the context of OER use at GSU can be considered a CoP.

This research project developed a mixed-methods approach to study these issues. A questionnaire was circulated at GSU to gauge faculty use of and familiarity with OER in their online courses. Second, faculty teaching online were interviewed regarding their practices integrating OER into the online courses they teach. This included learning about what problems they encountered reusing OER and how they resolved these problems. There was also an

examination of the content in the repository to assess how revisable these materials are. This method was a form of document analysis of digital content, but one which is informed by methods of web historiography to assess the components of digital documents. The materials in the repository were assessed using a revisability scale designed for this research project. This project also looked for evidence from these methods as well as an examination of the documentation of OER grant projects to assess whether the idea of a CoP applies to GSU's approach to reusing OER.

The resulting data presents a case study of the lived practices of using and reusing OER repository materials for online courses in a higher education setting. The project will be useful for further research and recommendations for improving the revisability and reusability of OER materials in repositories and incorporating open resources in online college-level courses.

Significance of the Study

There are several ethical rationales that shape our evolving understanding of the nature, practice, and value of OER. The first is the fundamental recognition that OER as an ethical good requires that OER be open, accessible, and reusable. As OER Commons puts it, "the worldwide OER movement is rooted in the human right to access high-quality education" (2019, para. 1). A second reason is that there may be various challenges to the ability of OER to be reused in different contexts. The corollary of this premise is that barriers to reuse constitute a diminution of the OER to function as an educational good. Finally, OER use and reuse often occurs in the context of a community in which various members alternately generate, share, and reuse OER as well as facilitate each of these processes. Authors such as Blyth (2014), Sapire and Lee (2017),

and Kleinschmit et al. (2023) describe a CoP as being ideal for the maintenance of a repository of OER.

OER are often considered an ethical good and this feature of OER is tied into their definition. Downes (2007) emphasized the practical desirability of OER and tied it to the sustainability of OER practices. Open resources are understood in this context as promoting freedom of use. In their review of the history of OER Katz and Van Allen (2022) note that OER is predicated on calls for social justice and for pedagogy that reflects concerns for equity. Moreover, UNESCO promotes OER to improve education throughout the world and to advance economic development (UNESCO, 2012). UNESCO frames the role of education as an important component for achieving its Sustainable Development Goals (SDG). These goals "are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including those related to poverty, inequality, climate change, environmental degradation, peace and justice" (United Nations, n.d., para. 1). Education is named as the fourth of UNESCO's seventeen Sustainable Development Goals (SDGs) and OER have been identified as an important catalyst for meeting SDG 4: Quality Education (Maio et al., 2019, p. 1). UNESCO also advances OER as important "to the building of open and inclusive knowledge societies" which enhance additional SDGs of promoting social and gender equality (SDG 10 and 5, respectively) as well as supporting "industry, innovation, and infrastructure" (SDG 9) and "peace, justice, and strong institutions" (SDG 16) (UNESCO, 2023, para. 4).

This view of the benefits of promoting OER use for sustainable development coheres with Amartya Sen's Capabilities Approach. This economic development model promotes the idea that development should be measured in terms of increasing the capability of people to act, to have greater agency and autonomy in participation in the economic life of society (Walker,

2006). Tuomi (2013) argued that OER are significant not only for the ability of learners to access learning materials but also for the social and economic basis of society as societies shift their economies from being industry-based to more knowledge-based. The argument rests on the recognition that "OER facilitates distributed learning processes where resources can be dynamically adapted according to specific learner requirements and where learners can efficiently borrow cognitive capabilities from their social and technical environment" (p.71). The digital nature of OER means that education can be more personalized and responsive to societal needs.

This perception of OER as an ethical good is one that is borne out in the way higher education supporters have advocated for increased reliance on OER. For example, the Affordable Learning Georgia program offers grants to educators to develop OER materials for use in the University System of Georgia. As part of their rationale, they argue that grants for OER will "[l]ower the cost of college for students and contribute to their retention, progression, and graduation" (University System of Georgia, 2019). Similar initiatives to lower student costs through promoting OER are sponsored by state or provincial institutions such as BC Campus (n.d.), Affordable Learning Ohio (2020), and the California Open Education Resources Council (ICAS, 2020) as well as organizations such as the Hewlett Foundation (2020) and Creative Commons (n.d. -d).

Studies show that there is a positive link between OER adoption and student success. Feldstein et al. (2012) showed a correlation between higher student grades and the use of open textbooks in courses as well as lower rates of course failure and withdrawal. A large study comparing the differences between open textbooks and commercial textbooks on student success

measures found that engagement intensity was much higher for students enrolled in courses using OER; and that there were moderate improvements in completion rates and final grades (Fischer et al., 2015). Hilton et al. (2016) also found that course throughput rates correlated positively with OER use. Magro and Tabaei (2019) found no significant difference in student grades between sections of the same course using traditional commercial textbooks vs. open textbooks. Cozart, Horan, and Frome (2021) found "that student outcomes in the OER condition, as measured by grades and withdrawal rates, were not negatively affected using OER, thus supporting the equal quality of OER to traditional textbooks" (p. 8).

OER is a part of the strategy for student success at GSU, the site of this study. According to GSU's website, their primary strategies focus on predictive analytics for early intervention, individualized academic support, and financial support to promote student success (Georgia State University, 2021). Part of this strategy includes promotion of the use of OER. Measures to do this include advertising in the course catalog which courses are considered No-Cost or Low-Cost, providing library support for OER, and promoting faculty grants to develop OER.

Finally, part of the intent behind this research was to understand the use of OER among online GSU faculty, of which this researcher is a member. This research does not just help to understand OER use at GSU but also to potentially make recommendations for how to improve the use of OER in online courses.

Statement of the Problem

Reducing barriers to the reuse of OER makes them more open. A considerable amount of research on OER has addressed the benefits of Creative Commons licenses (for examples, see Hilton & Wiley, 2010; Hilton, 2016; and Seaman & Seaman, 2017). There has been

comparatively less research on the technical issues that may help or hinder reusing OER. The revisability of OER has received comparatively less study than the role of licensing in facilitating OER. The ALMS analysis refers to Access, Level of Expertise, Meaningful Edits, and Source Files and is a tool to assess the revisability of OER (Hilton, et al. 2010). As the ALMS analysis tells us, the degree to which OER are revisable is another potential challenge that reduces the reusability of OER. Ovadia (2019) identifies the problem of "file formats that impact access, the ability to edit, or both" (p.84) as a significant challenge to revising and reusing OER. Garcia et. al. (2020) likewise recommended using interoperable file formats to facilitate revision when reusing and updating training materials. The ALMS analysis will be discussed further in Chapter 3.

It is also important to examine the design practices around reusing OER to understand how course creators revise OER or alternately what revisions they may make to their courses to integrate unrevised OER. In addition to recognizing that OER themselves may be more or less open, it should be recognized that an online course creator has agency in how to use that OER and that these design choices may mitigate potential limitations in the resources used. Beaven (2018) noted that there is a dearth of empirical research on the practices of educators using OER. To study the phenomenon, she adopted Wiley's (2009) term "dark reuse" to characterize how educators use OER in ways that are expected but have not yet been observed. For Beaven (2018) dark reuse can involve practices of sharing, remixing, and reusing OER outside the context of a repository. These practices "are invisible if looking the data available through the repository's analytics" (p.386). Her study of OER reuse among language educators showed that a considerable amount of sharing occurred outside the context of a repository, where OER sharing is more visible. This may involve OER that is shared privately among colleagues, or produced,

retained, and adapted into courses from an instructor's private collection. Along these lines, Pulker (2020) argued that there are different kinds of OER reusers: some who are passive users who make few or no changes to OER, and some who are more active, making updates and revisions to improve the resources. The issue of how often OER are revised when remixed, however, needs further study.

The degree of intentionality in the community may have an explanatory role for interpreting how materials in the repository are maintained, revised, and reused. The CoP model has been invoked to describe a robust community for OER generation and reuse, but it is far from clear whether this model does represent the way in which many institutions make use of OER, as discussed in preceding sections. While there may be evidence that in some contexts a robust collaborative community is useful for generating, maintaining, and reusing quality OER, it is not a given that this is necessary.

GSU has been chosen as a site to study these issues because it is a reasonable representative of American public institutions of higher education which promote the use of OER. It also makes use of a repository of OER affiliated with its university system. Studying OER in a repository offers a case example of how revisable a set of OER are and the affiliation with the university offers a window into studying the Open Educational Practices (OEP) around using these materials.

Research Questions

This study asks how revisable OER are based on their file formats as well as how course designers reuse OER given these concerns about revisability. This research was conducted in the context of how faculty at GSU make use of OER, both those OER from the repository the

University System of Georgia (USG) maintains as well as other sources of OER. Three important issues for understanding this process are (a) the extent to which OER are revised when they are reused, (b) how courses accommodate OER when they are reused, and (c) whether there are institutional features at GSU to facilitate this reuse. These three issues are related because they speak not just to how revisable OER are but what methods course creators employ to reuse OER in their courses.

The first question that this research will consider is based on the consideration that file formats may hinder the revisability of OER in the repository:

RQ1: How revisable are OER in the USG repository?

The ALMS analysis provides a rubric for assessing how revisable file formats are, as will be discussed in the Theoretical Framework. One way to look at the revisability of OER is to look at the contents of a repository and examine how revisable these items are using the ALMS analysis as a basis for evaluating these components. This step is important for understanding whether revisability is a potential barrier to reuse.

As the Review of the Literature explains there are studies on good design principles for reusable learning objects (LOs). There is also a recent trend toward seeing the place of OER in course design as part of a range of OEP. There remains more work to be done to look at the extent to which educators revise OER to use them in course contexts. What has been studied less is how often OER are adapted to a new context and how often OER objects are reused without adaptation.

Further empirical study is also needed to examine how educators may need to adapt courses to accommodate OER in terms of scaffolding, curation, rewriting of assessments, and so forth. The second question looks at the course into which OER are adopted:

RQ2: How do faculty integrate OER into their online courses at GSU?

This question looks at the ways course creators adopt OER. This question encompasses the instructional design concerns of the overall course which adopts OER. This includes how often and when course creators revise OER, and the challenges they face in finding and reusing OER. This question also examines whether faculty employ additional scaffolding to guide students, or curate OER content, or change assignments to accommodate the OER. Whereas RQ1 asks how revisable OER are, RQ2 asks how the OER is revised and remixed when adopted. This issue is especially significant considering the issue of "dark reuse" (Beaven, 2018; p. 377) outlined above.

Hilton and Wiley (2012) defined remixing as taking "two or more existing resources and combine them to create a new resource" (47) and use the example of combining audio and slides from two separate sources "to create a new derivative work" (47). The best place to capture this process, when it occurs, is in the data collected for RQ2, which looks at the practices of course creators with OER.

Finally, the third question this research will consider is the role of the institutional context involved in maintaining a repository and reusing OER:

RQ3: Does the context of OER reuse at GSU represent a CoP?

The conceptual framework in this study looks at the extent that collaboration facilitates shared goals and a sense of shared community. Studies of OER in an institutional context sometimes also characterize the context of OER generation and reuse as taking place in Communities of Practice (e.g., Wills & Pegler, 2016; Murphy, 2013). This last question then seeks to examine the characteristics of that community and the repository for the OER it uses. It is narrowly construed to test whether the community at GSU using the repository, or segments of that community, constitutes a CoP. The intent is to look at the extent that collaboration facilitates shared goals and a sense of shared community around OER use at GSU. The "community" here refers to the institution of GSU broadly, although it could also have a narrower meaning to refer to specific academic disciplines or colleges.

Studying whether the context of GSU is a CoP sheds light on the first two research questions as well. Collaborative activity on OER in the repository may lead to content creators generating more revisable items in the repository, for example. The role of the community could also factor in encouraging and guiding some of the OEP in evidence among course creators, which the second research question will examine.

Definitions

For this project Open Educational Resources (OER) are defined as digital educational materials created with minimal barriers for redistribution and reuse in different courses or contexts. This definition is in keeping with the ways that key organizations define OER as being freely available for reuse. For example, UNESCO (2019) defined OER as:

> Open Educational Resources (OER) are teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released

> under an open license that permits no-cost access, use, adaptation, and redistribution by others with no or limited restrictions. (para. 1)

Similarly, Creative Commons identified OER as "teaching, learning, and research materials that reside in the public domain or have been released under an open license that permits their free use and re-purposing by others" (Creative Commons, n.d. -c, para. 3). The Open Education Consortium (n.d.) defined open education, of which OER are a significant part, as follows:

> Open Education seeks to scale educational opportunities by taking advantage of the power of the internet, allowing rapid and essentially free dissemination, and enabling people around the world to access knowledge, connect and collaborate. Open is key; open allows not just access, but the ability to modify and use materials, information, and networks so education can be personalized to individual users or woven together in new ways for large and diverse audiences. (para. 6)

The challenge to making effective OER involves developing educational formats, open licensing, and networks for distribution to facilitate the creation and reuse of OER, as well as promoting the use of file formats that facilitate meaningful revision and remixing.

OER encompass a range of types of educational materials. OER can be individual components of a course: readings, media, and interactive web pages to support learning, or assignments, test questions, or other forms of course assessment, as well as the rubrics used to evaluate assessments. They can include entire learning modules that build on these components, as well as entire courses or program curricula. OER include open textbooks as well (Creative Commons, 2016). According to the Centre for Educational Research and Innovation (2007), the concept of OER encompasses open educational (a) content, such as learning objects, textbooks, tutorials, and so on; and (b) implementation resources, such as licensing and methods for

generating and storing OER. They delineate a third category of (c) open software tools, though these sometimes belong to the open-source software movement, which advocates for free and open distribution, modification, and licensing of software in a manner that is similar to the OER movement (Open Source Initiative, 2007).

OER Repositories

Repositories of OER (ROER) are sometimes also referred to as institutional repositories (e.g., Brush & Jiras, 2018; Kipnis et al., 2019) or learning object repositories (e.g., Clements et al., 2016; Cohen et al., 2016). The acronym ROER will be used for consistency in this project. This also follows the nomenclature used in studies such as Atenas and Havemann (2014) and Santos-Hermosa et al. (2017).

McGreal (2011) defined OER repositories as "digital databases that house learning content, applications and tools such as texts, papers, videos, audio recordings, multimedia applications and social networking tools. Through these repositories, they are rendered accessible to learners and instructors on the World Wide Web" (p. 1). Atenas and Havemann (2013) built on this definition to add that the purpose of ROER is to provide support to educators in finding OER for reuse, sharing OER they generate, and reviewing OER to facilitate sharing and reuse (p. 23). Along these lines they identified four properties that ROER should exhibit. ROER should include the ability to search for OER, should facilitate sharing OER, should permit reuse of OER, and finally should include affordances for collaboration to reflect on OER in the repository (p. 25). Collaboration includes features to provide metadata about OER in the repository or social media related to discussing the contents of a repository.

McGreal (2011) also identified three types of ROER. Type 1 ROER are "Content OER Repositories" (p. 2), defined as those like MIT's Open CourseWare which primarily host their own content. Type 2 are "Portal OER Repositories" (p. 2) which primarily offer links to resources on other sites. Finally, Type 3 repositories, "Content and Portal Repositories" (p. 3), provide a mix of each type: they host some of their own content as well as links to other sites.

Atenas and Havemann (2013) broke down the types of ROER by the organizations that host them. These categories of repositories are based on whether they are national, institutional, hosted by an institutional consortium, regional, or international.

A short overview of other OER repositories affiliated with state university systems in the United States shows that there is diversity among the offerings in these repositories. Often these repositories will maintain links to or collections of courses or course lectures, syllabi, and textbooks.

For example, the University of Michigan (UM) system maintains the Open Michigan repository. This repository hosts numerous resources generated by UM faculty, such as lectures and syllabi, as well as links to outside resources, such as open publications, making it a Type 3 repository. Like some other institutional repositories, it promotes OER use and creation by giving guidance to instructors to create their own OER with CC licensing.

The University of California, Irvine repository primarily offers links to open courses, consisting of lectures and syllabi, as well as hosts collections of lectures delivered outside of course contexts. This repository is Type 1 since it primarily hosts content.

OER at the State University of New York (SUNY) are housed under the institutional umbrella of Open SUNY which maintains a variety of offerings. Full courses are available in

partnership with Lumen Learning under the Candela, Waymaker, Online Homework Manager, and Open Learning Initiative imprints. Open SUNY also links to open textbooks by SUNY faculty. Like UM Open SUNY also offers extensive resources for faculty who wish to find, use, or generate their own OER and offers tutorials on these subjects and links to reference materials. The library of one of its member institutions, SUNY Geneseo, hosts an OER search engine called Oasis. This search engine links to other repositories outside of the SUNY system in a user-friendly format. The Open SUNY system is an institutional consortium and a Type 3 repository since it both hosts materials and links to other repositories.

Affordable Learning Ohio is an intra-state OER repository maintained by a library system for the benefit of Ohio's institutions of higher learning and offers grants to develop OER materials for its member institutions. The repository contains open college courses and open textbooks. At least some of these courses are comprehensive, containing not just lecture content but also the scaffolding that accompanies a course and facilitates and assesses student learning. For example, a lesson from a U.S. History course shows a lecture as well as assigned textbook readings, learning outcomes, activities and discussion topics, a glossary, supplemental reading, and notes to instructors how to teach these materials (OhioLink, 2020). The assigned readings are from the OpenStax textbook *U.S. History*, meaning that an instructor can adopt resources and teach in an entirely open manner. Since it primarily maintains materials whose creation it sponsors it is a Type 1 hosted by an institutional consortium.

As these examples show, there is no single model for what an OER repository maintained by and for a particular university or university system will contain in terms of content. These examples all contain links to course content at a minimum, though the comprehensiveness of the

courses maintained varies. One would expect that the lectures and syllabi at the University of California, Irvine, would be one of several components in a course if reused for a live course. On the other hand, the U.S. History course at Affordable Learning Ohio could be adopted in its entirety and reused without change if an instructor needed. Open SUNY's offerings include materials developed by or in partnership with Lumen Learning, while most (if not all) of Open Michigan's courses and data sets were generated by UM instructors.

Summary

This project studied the course design practices involved in revising and reusing OER in online courses at GSU. This site was chosen because the university promotes OER use in its courses and the university system maintains a repository of OER. The research aims were first to study how revisable the contents of the repository are and second, to study the practices faculty employ to revise, remix, and reuse these OER. Finally, it assessed whether the community can be considered a CoP, which some studies suggested is beneficial for generating, maintaining, and reusing a body of open educational materials.

These research concerns are important for several reasons. For one, the openness of OER depends in part on the degree to which OER are revisable. Moreover, study of practices of revision and reuse of OER at GSU potentially also helps point out ways that this institution can improve its open educational practices in online courses.

The revisability of OER is based on the ALMS analysis, which states that the revisability of materials is based on whether faculty have the skill and access to make meaningful edits to files. The first research question thus asked how revisable the materials in the repository are.

Since course creators may not always revise OER, it is also worth asking how they integrate OER into their courses. This is what the second research question sought to address, including what revisions they may make to OER, or even whether they adopt OER as is.

The third research question used the concept of a community of practice to examine the intentionality of the community at GSU using the OER repository and whether this is a factor in shaping course creators' practices with OER.

Chapter 2: Review of the Literature

Introduction

OER promise to provide free, quality educational materials for anyone to adopt and adapt. This literature review will examine the scholarship on some of the key issues related to designing, maintaining, and reusing OER effectively, while focusing on challenges to generating and maintaining OER.

The first of these key issues involves the design of OER. The first section in this literature review will examine other instructional design considerations for OER as reusable learning objects. The literature review will then shift to considering the problems and barriers to OER reuse. This leads to a consideration of the role of context on the reusability of OER. Included in these considerations is a review of studies on the application of the CoP model to OER generation and reuse, though this will also be addressed further in the Theoretical Framework. Discussion of the ALMS framework, which addresses how file formats of OER facilitate reuse, will also be reserved for the Theoretical Framework.

Finally, the literature review considers how OER are integrated into new course contexts, as well as a discussion of instructional design concerns for reusing OER, such as AGILE design methods, and the role of open pedagogies on OER reuse.

Instructional Design for Learning Objects

The OER movement succeeded efforts to design and distribute learning objects (LOs), according to Nkuyubwatsi (2018) and Weller (2014). For example, OER and LOs follow similar life cycles of generation, redistribution, editing, reuse, retention, and maintaining metadata for

future reuse (Collis & Strijker, 2004). This description of the LO life cycle anticipated the later Five Rs to retain, reuse, revise, remix, and redistribute OER. Collis and Strijker (2004) focused on OER reuse within a given organizational context, too, so that learning objects were presumed to be more likely reused within a single institutional context rather than across contexts (e.g., a LO produced in a corporate setting is less likely to be reused in a university setting). As will be addressed below changes in context often present significant problems for OER reuse.

Effective reuse begins with good design at the point of creation. Studies on repurposed LOs revealed that good design incorporates several primary design principles. First among these was the idea that a learning object should be "coherent" (Boyle, 2003, p. 48) or "granular" (Windle et al., 2010, p. 2). It should teach or do one and only one thing. In addition, one should be able to decouple the LO from its context to facilitate reuse in other contexts (Boyle, 2003, p. 48). The resulting picture was one in which reusable educational resources are like bricks which can be stacked and used in different educational curricula. Moreover each "brick" should have a degree of "pedagogical richness" (Boyle, 2003, p. 49) so that despite its nature as a building block it nevertheless deals with a topic in enough detail to make it useful as a teaching instrument. Additionally, it helps to have a "wrapper" for this pedagogical brick consisting of metadata about the software used in its design, a description of the resource, and the context of its creation to facilitate its discovery and reuse by others (Tate & Hoshek, 2009; Boyle, 2003; Moisey et al., 2006).

The brick model for designing learning objects leads to the question: How effectively can a designer or instructor revise the contents of a reusable learning object to meet the needs of a new educational context? Hilton, et. al. (2010) noted that some OER are more easily edited than

others. An OER such as a media file may not be editable at all, while for other learning objects editing may require more skill than the instructor or designer can bring to bear on the task.

This also prompts the question of what design measures should be employed when an object cannot be easily revised to integrate it into a new course context. In a case study of how learning objects are reused Ilomäki et al. (2006) demonstrated that in some cases the pedagogical approach of the LOs used did not match the pedagogical objectives of the instructor. Building on this issue McCormick and Li (2006) argued that since learning objects can be experienced in different contexts in different ways, and that many learning objects took a "drill and practice" approach rather than the constructivist approach, that the students' experience of pedagogy was at the higher level of the course context rather than the level of the individual learning object (p. 228). What these studies point to is that there may be a sense of a mismatch between the objects and the course context, necessitating additional course scaffolding to integrate the learning materials.

In a test of some of these principles Mosely's (2013) dissertation on the design of learning objects used a case study method to examine the instructional design procedures employed to create reusable learning objects in three different contexts. However, while each of these contexts emphasized some of the general principles of good design such as granularity and an inclusion of metadata, these contexts were also relatively insular. They were designing objects for use and reuse in different educational programs within their institutions. The designers who reused these objects may have been the same designers who created them.

Challenges to Reusing OER

Distributing OER for reuse in new contexts reveals several potential problems. Larson and Murray (2008) indicated that intellectual property rights, institutional barriers, and the usefulness of OER to a given context were potential problems for the generation, sustainability, and transferability of OER. Attwell and Pumilia (2007) also expressed concern about the barrier that copyright and intellectual property rights represent but also added concerns about varying levels of quality of OER, the degree to which the context or purpose of a resource is transferable to other contexts, and the degree to which established taxonomies of knowledge can adequately facilitate access to the range of the content available. In other words, the context of the repurposing shapes the effectiveness with which OER can be reused. The subsequent development of Creative Commons licensing mitigated concerns about intellectual property and copyright expressed in these early studies, though the other problems they identified persisted in other forms. Despite the growing prevalence of CC licensing for OER, more recent studies such as Atenas et al. (2014) showed that concerns over copyright persist. Pounds and Bostock (2019) and Rodés et al. (2019) suggested that this may be due to users being unfamiliar with both copyright and the CC licensing system.

Another potential barrier to OER reuse includes concerns over OER quality. Atenas et al. (2014) identified finding quality OER as a significant problem, as well as the time it takes users to locate and review quality OER as problems for OER reuse. Pounds and Bostock (2019) specifically identified the issue as a lack of trust in the quality of OER and indicated that educators may be unaware of the distinction between OER and more general online resources. Mays (2017) specifically identified assurance over the quality of OER as a central problem to OER reuse. Similarly, Hassall and Lewis (2016) noted that a significant barrier to reuse involved difficulties in finding and reviewing OER for suitability and quality.

Adapting OER to different cultural contexts compounds the challenges to their reuse. Hatakka (2009) enumerated eleven areas of concern representing a range of technical, procedural, and cultural challenges to reusing OER across cultures. These potential problems included the rules and regulations of educational institutions, the language used in the resources, the relevance of the materials to the specific scope of the course, issues of access and availability, a lack of technical resources and infrastructure, the quality of materials, intellectual property concerns, awareness of the existence of resources, problems stemming from the computer literacy of learners, concerns that use of open resources inhibits the instructor from updating skills, and finally, the barriers created by traditional or habitual teaching patterns that do not incorporate OER. More recently Orwenjo and Erastus (2018) found a lack of awareness of OER and negative attitudes toward OER as significant barriers to reuse. In this study, set in Kenya, the authors also identified as problems administrative and pedagogical hurdles, such as educators being unable to reconcile their curricula with OER, as well as problems with local infrastructure, such as lack of appropriate electronic equipment to use digital materials and other electronic media or the unreliability of the electric power grid and internet connections. Luo et al. (2020) grouped barriers to OER adoption under three categories: difficulties in discoverability of OER, continued and consistent access to resources, and sustainability and support for OER. These findings were closely related to institutional support for OER, especially OER housed in an institutional repository or library.

Some studies also indicated that transferring OER from one context to another replicated social and economic inequalities between contexts. In an examination of the history of MOOCs, Rhoads (2015) argued that simply turning content into reusable objects runs the risk of reinforcing a two-tiered educational system. He illustrated this point by contrasting how students

at elite universities interact with "rock star" instructors while students at other institutions receive these stars' canned lectures (p. 105). This indicates a problem of customization: divorcing students from the instructor deprives them of instruction which is embedded in a local context and the chance to interact with the instructor in question. Similarly, Richter and McPherson (2012) argued that the use of OER in developing countries may perpetuate the inequalities between wealthier countries and poorer, with efforts by institutions in the former to develop OER for the latter representing the educational analog to attempted transfers of wealth.

Along these lines Czerniewicz and Rother (2018) conducted a study of digital technology policy documents at eight postsecondary learning institutions to examine concerns with inequality. These digital policies included OER policies among other educational technology policies. Following Therborn's (2013) delineation of inequality into the categories of vital inequality, resource inequality, and existential inequality they distinguished which kinds of inequality these institutions were addressing with policies on digital technology. One key finding of the Czerniewicz and Rother (2018) study was the emphasis on using technology to facilitate educational access but not to promote educational success. A second key finding was that institutions relied on the "debunked" (p. 43) notion that students are digital natives who can capably employ technology in their education instead of providing resources to train students who have varying levels of digital fluency. These articles both argued broadly that OER reuse can sometimes underscore economic and social disparities rather than ameliorate them.

Instructors thus may need to undertake additional efforts to adapt OER to respond to local educational needs. Engaging local educators to adapt OER to local needs and contexts was an important component of the Teacher Education for Sub-Saharan Africa (TESSA) project. The

TESSA model developed its materials as a collaborative effort between teams of educational coordinators who work with local institutions to develop materials in different languages and for different settings. In this way content and curricula that may be useful across different contexts were adapted to suit the needs of local contexts. Local educators selected from highly structured content and curricula, or mix-and-match content and activities that met their needs, or even acted as collaborators to adopt, adapt, and reuse educational resources (Thakrar et al., 2009).

Ivins (2011) dubbed this process "localization" in her dissertation on meeting local cultural needs for education in Nepal. Ivins' research focused on a rural, village economy in a developing country and dealt with important but broad cross-cultural concerns. It encompassed the concerns that this study proposes, namely what pedagogy and design concerns are involved in the transfer of OER from one course to another course and context. Her findings emphasized the principles that localization must involve locals (p. 176) who are involved in a community of practice (p. 177), and in which educational resources are delivered in appropriate local formats (p. 180) which reflect an understanding of that local context (p. 182). For example, in rural Nepal this meant less reliance on digital technologies for content and interaction, but instead emphasized translating learning materials not only into local language and idiom, but into print materials, as well as relying on local social hierarchies to reinforce lessons, rather than remote co-participants.

Wolfenden and Adinolfi (2019) defined localization as encompassing both the customization of educational materials to local cultural needs as well as the process of translating materials into local languages (p. 327). They further suggested that in developing contexts there are significant constraints to localization and that local educators typically made few revisions to

existing OER. These constraints included copyright concerns but also involved unfamiliarity with the materials themselves and attitudes that discouraged changes to materials.

Pegler (2011) called the relational distance between the creator of an OER with the context in which it is shared and reused a "zone of reuse" (p. 306). The idea is that reuse can be mapped as a relational distance with the creator of an OER reusing his or her own materials being the closest zone of reuse, leading outward through reusing in different programs, in different institutions, through different communities, different nations, and finally reuse through sharing in an international context being the zone with the least proximity to an OER's origin. His research "suggested that different issues arose when moving from close proximity (where the creator and user may be the same person) to lower proximity, where participants are less likely to be familiar with the same work or contexts" (Pegler, 2011, p. 309). This mapping also suggested that as OER is shared with greater zones of reuse, representing wider relational distances, there are greater motivational tensions and difficulties in finding OER of suitable quality. Sharing in closer zones of reuse tend to be easier because of shared vocabulary and similar systems (Wills & Pegler, 2015, p. 9).

It is worth taking a moment to distinguish zones of reuse from CoP. The zones of reuse construct is organizational in nature: closer zones of reuse tend to be in the same institution or program. By contrast, a CoP can exist across institutional boundaries and does not distinguish closer or further relationships. There is no specific requirement that a CoP should be understood as existing in an institution. The defining characteristics of a CoP suggest that it can be an organic community defined by shared practices and a domain of interest. Smith and Lee (2017) described how an institution can foster a CoP for OER reuse. But it is not clear that a repository

needs a CoP, nor that a CoP involving shared OER needs to be anchored to a particular repository or institution.

OER Repositories

OER are often found in repositories of educational materials. Some large and well-known repositories include MERLOT or OpenStax, although individual institutions sometimes develop their own in-house repositories, such as the one this study examined. OER retained and maintained by an institution serve the narrowly tailored needs of the institution itself and provide a locus for members of an institution's online community.

In an early article arguing for the importance of collaboration in OER use Petrides et al. (2008) raised an argument for reuse of OER within a collaborative community. They posed a contradiction in the reusability of OER: if a resource is granular and localized, it is hard to reuse, but if it is void of contextual details, it may lack elements of specificity, clarity, or usefulness for others to modify and repurpose. The authors concluded that an active group of collaborators over a long period of time is the most salient factor in reinforcing the sustainability of an OER repository. Having motivated users of the repository engage with both the resources and each other improves the reusefulness of the repository contents. A more recent study of the MERLOT repository reinforced this conclusion and noted that personal spaces "enhanced the reuse of OER" and improved feedback for resources, trust of these resources, and overall quality of resources shared between active members of a collaborative community within MERLOT (Cohen et al., 2015, p. 172).

In a literature review on OER repositories Clements et al. (2015) proposed a Learning Object Repository Quality Assurance Framework (LORQAF). The LORQAF measures quality

in LOs from the pedagogy and design elements involved in their generation, including technological specifications, to feedback from through ratings, comments, reporting broken links, tagging, favoriting, and subscriptions (p. 1102). This underscores the importance of the social component of repositories for ensuring continued quality of the OER in the repository. Santos-Hermosa et al. (2017) found that open licensing and social media are the two most significant factors in promoting reuse of OER from repositories. Other factors, such as statements about the intention of an OER for reuse, storing different versions of the same material, the granularity of the resource, and ratings of quality were less indicative of OER reuse from a repository. The authors concluded "that repositories focus more specifically on [Open Access] licensing for OER and on taking care of or facilitating the creation of communities of users, who, in turn, could offer additional bottom-up quality criteria for deposited content" (p. 112).

College libraries occupy a key role in the process of developing OER repositories for hosting educational materials and have an important role in facilitating collaboration in an institution or community using OER. Authors such as Blick and Marcus (2017) and Suhr (2016) saw a role for libraries as educating faculty about OER: what they are and how to find them, as well as how to provide resources to create and maintain OER. Smith and Lee (2017) expanded on these functions to include the role of libraries in providing advocacy for using OER, helping faculty find and evaluate quality OER, maintaining OER repositories, maintaining OER metadata and subject guides, and providing expertise in copyright, curation, and creation of OER (p. 109). Some libraries have experimented with various approaches to hosting OER repositories to support their mission to access knowledge. For example, O'Neill (2017) described how to develop a repository using WordPress easily and inexpensively to manage library training

materials. Hess et al. (2016) found that, after several failed attempts to generate faculty interest in OER, they successfully broke ground by persuading their college provost to offer a small sum of grant money to motivate faculty to develop OER. Members of the British Columbia OER community organized a "hackfest" to bring together librarians and MLIS students to brainstorm methods to facilitate OER at their campuses (Smith & Lee, 2017, p. 114). Brush and Jiras (2018) made a case that for smaller college libraries using the platform bepress [sic] from Digital Commons to develop an in-house OER repository is ideal to allow librarians and educators to add materials as needed while saving resources on repository development and maintenance. Ferguson (2017) reviewed the growth of ROER at colleges and universities through their respective libraries and noted that a significant problem is sustainable funding to ensure the continued growth, maintenance, and updates of institutional OER repositories. Hare and Sullivan (2020) argued that in order to have a robust ROER librarians have a role in setting guidelines for OER content creators, maintaining metadata, ensuring OER are ADA-compliant, and ensuring that preservation experts have a say in OER promotion initiatives. They also note that librarians should ensure that OER are preserved in file formats that facilitate revisability.

Several models for libraries' role in design and reuse are based on iterative approaches. Building on a suggestion by Davis (2013), Bergstrom-Lynch (2019) argued that libraries should use iterative designs in developing reusable materials, and pointed specifically to the Analysis, Design, Development, Implementation, and Evaluation (ADDIE) model for this process. The use of the ADDIE model for iterative improvements should promote more user- and learner-centered designs by being responsive to the needs of learners. This also suggests that materials need a high degree of revisability to implement necessary changes. Meadows and Carlson (2020) observed that educators unfamiliar with OER are more likely to use Google searches to find

OER rather than search different repositories like MERLOT and OER Commons. For this reason, they argued that libraries have a role in teacher training to find and use OER.

Walz (2015) offered advice for libraries wishing to facilitate OER repositories which respects both the context-dependent view of OER reuse as practice and the more granular view of OER in terms of discrete resources. Building on the role for libraries in supporting faculty to design OER Walz' (2015) model was the "User/Re-purposer Cycle" for libraries to reference in aiding OER design. This iterative cycle outlined the following roles for libraries in the design and reuse of OER:

- Assessing one's audience to identify needs.
- Analyzing and finding resources to meet the needs of one's audience.
- Reviewing, Redesigning/Redeveloping and Adopting, in which the library has a role evaluating quality resources and aiding faculty in design choices to use these resources.
- Implementing design builds.
- Evaluating builds and promoting sharing in open repositories.

Throughout these recommendations Walz offered design guidelines which echo other sources, such as improving faculty awareness of OER and open licensing, as well as promoting sharing of the resources generated to facilitate communities of practice.

Another iterative model that paid close attention to the generation and design of OER before repurposing was the CORRE ("Content-Openness-Reuse/Repurpose-Evidence") framework (Nikoi et al., 2011, p. 194). This framework described an arc for transforming content into OER in a way that facilitated reuse. The content used must first be gathered and screened for suitability and revised as necessary. The second step, Openness, involved several steps for

making materials useful for adapting: clearing copyright and intellectual property issues, transforming and decoupling content from its context, and clarifying jargon or language which might make the OER less reusable. On the technical side it is useful to put the resource into a standard format that allows it to be revised and remixed when it is reused across different platforms. The stage of Openness in this model dealt with norms associated with the generation of OER. The Reuse/Repurpose stage dealt with the needs of the adopting institution and context: checking legal and technical requirements, adapting OER to pedagogical needs, and revising the OER content as needed. The last step of the CORRE model was Evidence, in which one evaluated the effectiveness and suitability of the OER to its context.

Amiel and Soares (2016) noted the importance of developing a practice of creating and reusing OER, especially a practice that "promotes the sorts of ecosystems that will allow local groups to create, remix, and share resources" (p. 140). This ecosystem model aims at mitigating problems associated with issues of licensing and attribution, technical problems, and differences in language and context.

Finally, Walton (2020) argued that libraries and information technology departments on campuses should collaborate to support OER use and reuse with faculty, and that this collaboration should take the form of a community of practice. This approach, they argued, would improve OER awareness among faculty and improve the ease of finding and accessing OER.

Online Communities of Practice

As discussed above, several studies described the institutional culture around an OER repository as a community of practice (CoP). This section will identify what characteristics one

would expect to see in an online CoP. Wenger et al. (2002) addressed the issue of how to maintain a CoP in a distributed or online context. They defined a distributed community as one "which cannot rely on face-to-face meetings and interactions as its primary vehicle for connecting members" (p. 115). They recommended the following measures to facilitate an online community:

- Align stakeholder interests through measures such as setting and aligning priorities among participants.
- Connect people in a way that allows for localization of knowledge and responsibility. This should avoid hierarchy and permit diverse talents and viewpoints, and should utilize connective technology such as email, phone conferences, meetings, etc.
- Arrange regular communication to continue to promote the community and its purpose. This can be done through broadcasting information regularly, as well as the use of different modes of communication such as asynchronous threaded discussions, emails, and purposeful in-person meetings.
- Develop and personalize the community through measures such as creating memberships, holding smaller breakout meetings, and the development of longer-lasting connections among the community's members.

In practice these recommendations take different forms. Ho et al. (2010) argued that electronic CoPs should exhibit the features of voluntary involvement, be problem-focused, have distributed leadership, be accessible to all members, offer a sense of shared identity, and be sustainable (p. 141). They also suggested that a successful online CoP will need a facilitator (p. 141).

Methods used to maintain an online CoP included maintaining learning management software with asynchronous threaded discussions (Clarke, 2009, and Evans et. al., 2014), as well communicating via Twitter (Lewis & Rush, 2013). Urquhart et. al. (2013) described a variety of additional measures to facilitate a CoP. These measures included social practices such as annual face-to-face meetings, regular teleconferences, a mentorship program, and virtual seminars, as well as knowledge-building activities such as creation of annotated bibliographies, a newsletter, collaborative research, and professional development opportunities.

Some authors addressed cautions when applying the concept of a CoP. Smith et al. (2017) sounded a reminder that technological affordances alone do not constitute a CoP (p. 222). Developing an email listserv, for example, or providing an online forum to discuss OER, in themselves do not constitute a CoP if there is no evidence that these devices are being used by members. Henri and Pudelko (2003) pointed out that online communities can follow models other than the CoP. A CoP is the most intentional and engaged of online communities, whereas less cohesive and intentional online organizations are better characterized as communities of interest (p. 476).

To summarize, if an online community is a CoP, it will likely exhibit many of the following features related to the field of practice:

- Active use of social media among community members
- Use of email or discussion boards for dissemination of news and information
- A facilitator for communications among the community but otherwise a lack of hierarchy or a leadership that is distributed
- A fostered sense of identity or membership in the community

- Opportunities for learning, such as through webinars, professional development opportunities, and training
- A sense that information-sharing is multidirectional between members in the community.

It also bears repeating that these measures are only evidence of a CoP if they are actively used. A community Twitter account that is not being used, or is not engaging users, does not in itself represent evidence of an active CoP.

Some recent examples from implementing CoPs sheds light on how this concept enhances effective OER use in educational settings. Vera et al. (2021) found that developing a CoP with an education and training program enhanced several of the objectives of the program. Specifically, they found that fostering a CoP led to greater student initiative in their education as well as increased awareness of and commitment to using OER, including contributions to a "professional commons" (p.18). Wake, Hu, and Shaw (2022) distinguished between formal and informal CoP networks among school librarians providing open resources to instructors and noted that during the Covid-19 pandemic many school librarian networks functioned as informal CoPs. Kleinschmit et al. (2023) described a CoP model to enhance the use of OER in STEM education. In this model there are three related ways in which CoPs interacted with OER. Some communities, dubbed "incubators" (para. 13) generate, find, or validate OER; a second type was a "faculty mentoring network" (para. 16) and provided training, advocacy, and support for using OER; while the third phase of their model was an educational research community geared toward evaluating and improving the implementation of OER.

Open Educational Practices

Whereas these views of reuse emphasized the communal context of OER reuse, other studies emphasized the practice or the process of OER reuse. Ehlers (2011) proposed looking at

the Open Education movement not in terms of resources so much as practice. He referred to OER generation and reuse collectively as a process of OEP. This definition aligns with a view that OEP is primarily concerned with patterns of reuse of OER. However, as Cronin (2018) pointed out, different studies rely on different understandings of what is meant by OEP. There is not a single definition of OEP, but rather a range of practices hinging on the idea of openness in education. Definitions of OEP emphasize different components of the term. For example, OEP can refer to and emphasize how students create and modify resources, or the practices surrounding how OER are shared. OEP can also refer to how OER are created to be reusable, and other types of OEP include the "openness" of educational practices, broadly construed (p. 132). OEP can variously refer some or all the practices of open pedagogy, the generation and reuse of OER, practices of participatory learning, and distributed or open scholarship (Cronin, 2018).

OEP can also be employed to contribute to epistemic justice (Wallace & Rocha, 2022). Epistemic justice as a concept is a species of social justice, one which seeks equity in knowledge construction in cultural contexts of hegemonic epistemic structures. The focus on epistemic justice is predicated on Bali, Cronin, and Jhangiani's (2020) work organizing OEP into dimensions which shift education from focus on content to focus on the process of learning, from the instructor to the learner, and from an emphasis on pedagogy to an emphasis on social justice. These social justice concerns are predicated on the participatory models of open education that OEP advocates describe (Brandenburger, 2022), which is an essential consideration missing from critiques of OER that it replicates inequalities, such as those described in Richter and MacPherson (2013). Tualaulelei and Green (2022) note that participatory OEP approaches can

enhance the approach of equity pedagogy as learners apply their learning to professional development opportunities.

The landscape of OEP is different from that of OER. OEP encompasses the ways by which openness is materialized in education, which may or may not include OER. Cronin (2017) teased out the distinction in her definition of OEP as

> collaborative practices that include the creation, use, and reuse of OER, as well as pedagogical practices employing participatory technologies and social networks for interaction, peer-learning, knowledge creation, and empowerment of learners. (p. 18)

OEP can include OER as part of its range of practices, but there can be open practices which do not incorporate OER. Speaking to the breadth by which one can understand OEP Hodgkinson-Williams (2014) described the field of OEP as encompassing the range of technical, legal, cultural, financial, and pedagogical practices which facilitate openness in education.

This is not to say that OER are not a valuable part of OEP. For example, Wiley and Hilton (2018) defined "OER-enabled pedagogy" as "the set of teaching and learning practices that are only possible or practical in the context of the 5R permissions which are characteristic of OER" (p. 135). This definition of a set of practices rests on other affordances of OER, though the authors went on to describe practices that emphasized the importance of student-generated and modified learning content. OEP in this example appeared as a set of interlinking principles which related the openness of OER to the ownership of learning by students. Building on these points Al Abri, Bannan, and Dabbagh (2022) argued that OER-enabled pedagogy should be considered a form of Constructivist pedagogy. Students engaged in OER-enabled pedagogy are constructing knowledge, rather than consuming it, and facilitating the capacity for other students to build on

that knowledge through sharing the results. Hallam, Willingham, and Baranovic (2021) similarly describe a process of using OER-enabled pedagogy for knowledge construction, though they place greater emphasis on the process of critically assessing potential resources as a foundational component of creating a narrative with those sources.

The idea of OER as "practice" rather than as objects opened a new line of analysis. White et al. (2011) developed a "landscape of reuse," to evaluate OER on the dimensions of the degree of integration within a curriculum (from "discovered by students" to "embedded in curriculum") and the degree to which a resource is revised (p. 6). Against this landscape of open practices, one finds examples of adoption of OER "as is." Armellini and Nie (2013) defined adoption "as is" as occurring when

> The course team [building a course] identify suitable resources, which they incorporate unchanged into the curriculum as it is being designed. These resources, which are licensed for reuse, are integrated in a planned and structured way, but undergo no adaptation. (p. 15)

Examples of adoption "as is" include writing samples intended to illustrate good writing to learners and links in a course to additional resources. "As is" adoption can occur during the course planning phase, in which reusing OER without change "maintains the integrity and authenticity of the resources" (p. 15) and which necessitates that other course elements be adapted to incorporate the OER. Alternately, OER can be incorporated "as is" because it "adds variety" and can be an "opportunity to plug emerging gaps during delivery, at a marginal cost" (p. 16). However, the authors also suggested that normative practices involve remixing and

revising OER rather than simply linking "as is," that OER reuse is framed in such a way that high levels of OER engagement correspond to revision and remixing (p. 11).

"As is" adoption of OER proved to be a common practice among many contexts in the Global South. Arinto et al. (2017) note that adopting OER "as is" was a more common practice attested in ROER4D studies than adapting OER or creating OER (p. 580-1). In these studies, adoption "as is" is associated with copying OER without change, especially copying printed materials (Hodgkinson-Williams et al., 2017, p. 44).

OER Selection Criteria

What do designers and faculty consider when selecting OER? A qualitative study of faculty in different cultural contexts suggested that four key properties governed OER selection and implementation. These properties were identified as the effectiveness of OER to meet objectives, the efficiency with which the OER could be adopted, the appeal the OER held for learners, and how well the resource extended learners' ability to access more resources or skills in the future (Jung & Hong, 2016). One caveat with these results is that the study in question was based on interviews and responses from ten interviewees, a relatively small data set on which to build broad design rules.

In another study, Pegler (2012) argued that personal motivation to use OER governs the reuse process as much as technical issues and perceptions of quality. This study showed that these three factors (technical issues, quality perception, and personal motivation) are three key and independent dimensions governing the reuse of OER, and that effective motivating factors themselves are a mix of intrinsic and extrinsic factors. These factors may be social in nature, suggesting that collaboration or community may serve to motivate designers to repurpose OER.

According to the ADDIE design model it is important to consider learner characteristics before designing an educational system (Richey et al., 2011, p. 21). The needs of learners are important in design considerations for using OER. When designing within a course context one generally has an idea who the intended learners are. The problem is that OER are sometimes divorced from their educational context. Emerson (2013) identified this problem as one of finding solid design principles in the absence of knowing the characteristics of the intended learners. Her dissertation asked instructional design experts what strategies were needed for designing quality multimedia as OER. Her project reaffirmed several universal design principles already present in the literature for developing quality educational multimedia. However, the study also found that the designers believed that several principles were qualified or situational, adding the words "where appropriate" for principles such as "When appropriate, design OERs with consideration of cultural differences of potential users" (p. 207).

One model that makes use of these design principles is the Align, Get Set, Iterate and Implement, and Evaluate (AGILE) learning design method. AGILE draws from the experience of problems in software development projects and emphasizes the idea that teams often need to be adaptable in developing software or designing learning curricula. AGILE design concerns keep usability at the forefront, and development proceeds in a parallel or organic fashion rather than linearly according to a plan (Adnan & Ritzhaupt, 2017). This is similar to the design principles of LOs, which aimed to design components of a learning program at a more modular or granular level, rather than from a top-down approach, and with greater regard to the needs of end users (Pappas, 2015). This approach to projects developed out of a set of values which reject following a rigid development plan. It instead adheres to a set of principles that recognizes that the judgment of stakeholders is important, emphasizes a decentralized development team,

responds and adapts to needs as they arise, reflects on the process, and measures success by usability (Twidale & Hansen, 2019). Arimoto et al. (2016) argued that the AGILE model is ideal for developing OER, since the decentralized and flexible approach to OER generation lends itself to collaboration and future repurposing.

Course Integration

The issue of whether one can revise or remix an OER is a factor in how well it can be reused in a new context. Barriers to reuse include not just technical issues but also issues of repurposing and adapting content to the needs of different contexts. A study of OER generation suggested that good design principles (as discussed above), coupled with institutional support and a robust community of practice, led to the effective reuse and revision of quality OER (Sapire & Reed, 2011). This study added that the materials judged as being the best quality and most reusable were those developed with Constructivist principles in mind. Revision within a local context led to scaffolding which was responsive to the local context. This scaffolding, however, was grounded in an understanding of the local context and purposes for which the OER were being used.

Multimedia developed as LOs provide a practical and common instance of LOs which are not generally editable, and which require different design principles. A study of student engagement as a function of multimedia content design yielded a number of useful production recommendations, such as keeping videos relatively short (i.e., <6 minutes), interspersing a "talking head" approach with images and slides, and addressing students in a more personal and enthusiastic manner (Guo et al., 2014, p. 42). But whereas these make for good design principles for the object itself, they do not lend themselves to editability.

One practical method of integrating resources into a new course context is curation. Curation shortcuts problems that may come with revising or remixing content in that it takes content of interest and scaffolds it to the needs of the new context. Ball (2010) defined curation as

> The activity of managing and promoting the use of data from its point of creation, to ensure it is fit for contemporary purpose, and available for discovery and re-use. For dynamic datasets this may mean continuous enrichment or updating to keep it fit for purpose. Higher levels of curation will also involve maintaining links with annotation and with other published materials. (p. 5)

This source defined curation in the context of data and digital repositories. However, Ball also noted that the terms and methods used for curating data apply as well to media and other content objects (p. 5). Herther identified digital content curation as a process of providing expertise in selecting significant examples and identifying important features and context to enhance the end user's experience of the phenomenon (2012). Weisgerber and Butler (2015) saw digital content curation in an educational context as a form of learning by reflection. Content curation involved a process of collection of resources, of annotating them, and selecting those which are worth remembering; it was thus a process of subjecting information to critical scrutiny and analysis. In a presentation to SXSWedu in 2012 Weisgerber argued that the educator's role is as a curator of content. She argued that the "educator as curator" (Funk, 2012) has a responsibility to use content to make a point, and to invite learners to engage in analysis and discussion about that content. This makes curated digital content part of the instructor's personal learning network (Weisgerber, 2012).

In practical terms curation serves as a method for integrating disparate resources into a single educational context. Guidelines from the University of Wisconsin suggested that OER curation should identify the title of the resource, provide a citation, link to the resource, summarize the resource, and indicate what learning activities are involved in the resource (UW-Extension, 2015). Such curation represented a form of scaffolding within the online classroom. Laurillard's (2009) "Conversational Framework" approach to technology-assisted education was also based on a model of curation. Situated within Constructivist pedagogical principles, Laurillard's framework took various and sometimes disparate content as objects of examination within the classroom. Content was framed, so to speak, by learners who engaged critically with the content and with each other as well as with the instructor who should offer feedback and guidance on learners' explorations.

Beyond these sources, however, there is comparatively little study of the role of curation and scaffolding in instructional design with OER. This is a significant oversight as in practical terms, from personal experience, it appears that curation is a widespread instructional design practice generally.

Conclusion

What is often lacking in many of these studies is an examination of what measures designers and instructors undertake to integrate OER into their courses. The recognition that reuse best occurs within a CoP is an indication of the belief that a shared context makes for easier reuse, but this recognition does not detail how OER are reused, revised, and remixed. Given the promise of OER as a means of offering quality education to widely varying cultural and developmental contexts it is necessary to look at methods of repurposing. The suggestion

that methods of curation and annotation of OER may be a viable direction to take is one approach to integrating OER in new contexts, but it is one that is not yet tested by an examination of OER repurposing in practice. This research proposes to fill this gap in order to examine how instructors and designers incorporate OER into their online course materials. What has been under-studied at this point are what accommodations instructors and designers make to reuse OER, or even whether instructors and designers make accommodations beyond linking to OER in a course. This research project collected data on the ways in which course creators found, revised, and integrated open resources into their online courses to examine the role of many of these issues.

Chapter 3: Theoretical Framework

There are two theoretical frameworks informing the construction of this study. The first is the ALMS analysis framework to assess whether an OER can be easily and meaningfully revised based on its technical factors (Hilton et al., 2010). The second framework is the CoP model, which is employed here to examine how the community around an OER repository can shape how well the repository is maintained and its materials reused. Both frameworks are important for understanding processes that lend themselves to revising and reusing OER. Each of these will be considered separately below. The quality of openness in educational materials will also be addressed to preface the importance of revisability in OER.

Openness

The key characteristic of these educational materials is their "openness." The concept of "openness" in OER is an important one to examine because of its centrality to understanding OER. As Tur et al. (2020) argued, openness is a threshold concept facilitating new approaches to education such as choosing to use OER and engaging in related open educational practices (OEP). Openness refers to the degree to which a resource is available to a user to access, adapt, repurpose, and (re)use. Downes (2006) argued that "[t]he concept of 'open' entails, it seems, at a minimum, no cost to the consumer or user of the resource" (p. 4), with the emphasis being on the non-commercial nature of open resources. This makes OER an attractive alternative in cost-conscious educational settings. However, there are also non-monetary barriers to openness which require us to consider openness as being on a spectrum. The easier a resource is to find, access, and repurpose the more open it is.

The openness of OER exists on a "continuum" (Hilton et al., 2010, p. 43), meaning that something is not simply open or closed, but exhibits degrees of openness. Conrad and Prinsloo (2020) located the idea of openness in opposition to and in relation to the construct of closed educational spaces. Closed spaces represent "nuances of oppression; of hierarchy; of tradition, often unhappy; of hegemony and power; boundaries" (p. 2). On the other hand, openness involves "inclusivity," "sharing," and "collaboration" (p. 3).

Considerations of different kinds of licensing suggest, for example, that some materials may be more open than others. A Creative Commons attribution license (CC BY) allows anyone to revise and reuse materials, as long as they acknowledge ownership, whereas a CC BY-ND (No Derivatives) license allows anyone to reuse the materials with attribution, so long as they do not change the materials in any way (n.d. -a). Tuomi (2013) underscored the point that openness is a continuous variable for OER. The more one can alter and redistribute an open resource the more "open" it really is. Potential barriers to reusing OER, such as restrictive licensing, uneditable file formats, and institutional or cultural barriers to reusing OER, constitute conditions placed on the openness of OER.

Open licensing protocols have an important role in facilitating the openness of OER and are typically included in the definition of OER. The Creative Commons (2016) definition identifies OER as being either openly licensed or in the public domain: "Open Educational Resources (OER) are teaching, learning and research materials in any medium that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others" (para. 1). As this definition shows, the purpose of licensing is to permit degrees of open sharing and reuse of OER. Creative Commons offers licenses that allow the author or generating institution to specify the extent to which materials

may be distributed, remixed, and/or used for non-commercial purposes with the NC (Non-Commercial) designation. This issue of open licensing also distinguishes OER from broader categories of "educational digital resources" (Xie et al., 2018, p. 90). Several features help distinguish OER from related features of openness, such as the infrastructure of open licensing, repositories for OER maintenance and redistribution, and secondary mechanisms of collaboration. The concept of OEP collectively includes these broader practices involving openness in education. OEP represent a shift in the understanding of openness as being centered on resources to openness being located in how educators and learners both share in the process of learning and constructing knowledge (Cronin, 2017).

OER Revisability

The ability to reuse OER in different learning contexts is an essential part of the nature of OER. The ability to repurpose an OER encompasses five qualities of openness, sometimes called the "Five R's" (or 5Rs) of openness (Wiley, n.d.). To quote Wiley (n.d.), these qualities are the ability to:

1. Retain, which is to make, own, and control a copy of the resource (e.g., download and keep your own copy)
2. Revise, which is to edit, adapt, and modify your copy of the resource (e.g., translate into another language)
3. Remix, which is to combine your original or revised copy of the resource with other existing material to create something new (e.g., make a mashup)
4. Reuse, which is to use your original, revised, or remixed copy of the resource publicly (e.g., on a website, in a presentation, in a class)

5. Redistribute, which is to share copies of your original, revised, or remixed copy of the resource with others (e.g., post a copy online or give one to a colleague) (para. 1).

Ensuring that OER are genuinely open means taking steps to facilitate each of these qualities. Appropriate licensing can facilitate each of these qualities to differing degrees. As described in Chapter 1, repositories of OER can be developed to retain OER and facilitate their redistribution and reuse.

As part of their analysis of the openness of OER Hilton et al. (2010) developed the ALMS analysis as a framework to emphasize the idea that the adaptability of OER relies at least in part on the technical specifications of the OER used and the ability of an educator to meaningfully alter the OER. This analysis asks whether the instructor or designer planning to repurpose OER:

- Has access to editing tools?
- Has the level of expertise required to revise or remix?
- Can make meaningful edits to the OER?
- Has access to the OER source files? (Hilton et al., 2010, p.8)

These terms (Access, Level of Expertise, Meaningful Edits, and Source Files) form the acronym ALMS (Hilton, et al. 2010). The presumption here is that editing OER to adapt it is an important dimension of OER repurposing. The validity of the ALMS analysis is in part supported by a dissertation studying how reliable each of its dimensions are. Gurell (2012) used a Delphi study in his dissertation to rate the revisability of different file types according to the dimensions of the ALMS analysis. The researcher recruited participants who were recognized as having expertise

at developing OER; these participants were given OER samples to rate for revisability using a rubric based on the ALMS analysis. The raters engaged in successive rounds of scoring OER revisability and conclusions were drawn from the similarities among raters' evaluations. This dissertation found generally that the ALMS analysis was a reliable measure for assessing the revisability of OER. It also found that situational issues are a factor in how to use its categories to evaluate the revisability of file types. These issues include the needs of users for revision, their respective level of expertise, and the availability of software to edit files. They are a reminder that the levels of the ALMS analysis are not absolute, fixed values, but relative to the context.

In defining openness Wiley (n.d.) emphasized the point that choices about copyright and technical affordances both contribute to how open OER are or not. He argued that adopting Creative Commons licenses as well as following the ALMS analysis both contribute to meeting the 5Rs.

An ALMS analysis can be used to determine whether file formats are a significant challenge to revising OER. Ovadia (2019) identified several common but problematic file formats for use as OER, including PDFs, audiovisual media, and charts embedded in documents. The ability to adapt OER such as these to a new context depends on the software underlying the OER that faculty use, such as PDFs, Word documents, HTML, or even multimedia such as video file formats or interactive software. Some file formats are easier to revise than others. For example, an educator can reword a lesson or assignment accessible in a Word document more easily than one available on a PDF. Media files can be particularly difficult to edit. Consider, for example, a lecture which has been shared as an OER which refers to local events, or which has a "Local Town College" logo stamped in the corner. An adopting educator who otherwise finds the file useful may not be able to edit the file to remove the logo or to substitute more relevant

examples. McNally and Christiansen (2019) call these “closed” file formats because of the relative difficulty most educators would have in editing them, as opposed to more open file formats like .html files.

As a rubric the ALMS analysis relies on a number of contextual factors, as Gurell’s (2012) dissertation argued. These contextual factors are worth examining further. For one, software may emerge over time that makes some file types easier to edit. Hilton, et al. (2010) used PDF as an example of an uneditable file type. In the past decade commercial and open software have emerged to facilitate editing PDFs, such as Libre Office which allows anyone to edit PDFs for free. Access to editing tools may also vary by institution. Some institutions offer free or discounted downloads of software for faculty use, though the types of access are not uniform across institutions. At GSU, the site of this research, faculty have access to an institutional Adobe Acrobat account allowing users to edit PDFs. These considerations affect the Access to Editing Tools and Meaningful Edits components of the ALMS analysis.

Another way that the context matters for interpreting the ALMS analysis is in the level of expertise needed to edit files. Training for faculty to edit files may be more readily available at one institution than another. Professional development opportunities in online teaching at GSU, for example, emphasize the design and delivery of online courses and lack training modules in more specialized topics like video editing. On the other hand, GSU formerly had a subscription to Lynda.com (now LinkedIn Learning) which does offer more specialized training in skills like editing media files. The point is that choices an institution makes about investing in faculty skills impact how to read the ALMS analysis as it applies in each setting.

For the sake of this project, the following interpretations will be adopted to facilitate analysis of the revisability of file formats:

- Access to editing tools: Several file types can be edited with software either commonly available on computers or freely available to faculty and staff at GSU. File formats such as these include .odt, .docx, .html, and .pptx files. File formats for which one would need to acquire software would be considered as facilitating less access, since purchasing software represents a barrier to editing. File types that require additional software include .pdf files as well as audio and video file formats.
- Level of Expertise: File formats that are commonly used without extensive training require a lower required level of expertise. Open Office, Libre Office, MS Word, and PowerPoint files fall into this category. File formats such as .html that take additional skill or training to edit are harder to revise and so are considered less revisable.
- Meaningful edits: Hilton et al. (2010) used PDF as an example of a file that cannot be meaningfully edited. This is less true today, given that there are open-source software options for editing PDFs readily available online, such as Libre Office. For meaningful edits, the content of the file itself should be editable, which means that audio, image, and video files are all examples of files that cannot be meaningfully edited.
- Source-file access: The last category rates the revisability of materials on whether one can access their source code. Hilton et al. (2010) identified .html as an example where not only is the code available but readily editable on different browsers. Source file access is less important for revising many common file types, however, such as Word documents or PowerPoint presentations.

Table 1 summarizes how these categories apply to some common file types based on the rationale presented above.

Table 1

Application of ALMS Analysis to Some Common File Types

File types	Access to editing tools	Level of expertise	Meaningful edits	Source file access
Audio files (.mp3, .wav)	No	No	No	No
Video file formats (.mpg, .wmv)	No	No	No	No
Image files (.jpg, .png)	Yes	No	Yes	No
Hypertext Markup Language (.html)	Yes	No	Yes	Yes
Portable Document Format (.pdf)	Yes	Yes	Yes	No
PowerPoint Presentations (.pptx)	Yes	Yes	Yes	No
Word documents (.docx)	Yes	Yes	Yes	No
Libre Office (.odt, .odp)	Yes	Yes	Yes	Yes
Open Office (.odt, .odp)	Yes	Yes	Yes	Yes
Text (.txt)	Yes	Yes	Yes	Yes

Note: File types are listed from least revisable to most revisable, according to the number of Yeses in the ALMS Analysis.

One result that stands out from this table is that text-based file types are relatively more easily revisable, while audio and video files are generally less revisable.

Community of Practice

OER repositories are sometimes described as examples of communities of practice (CoP) to be retained by institutions (Sapire & Reed, 2011; Blyth, 2014; Wills & Pegler, 2016; Smith & Lee, 2017; Kleinschmit et al., 2023). More generally, collaboration in some form is sometimes taken as useful for the generation, reuse, and preservation of OER. Petrides et al. (2008) argued that OER is most sustainable in a collaborative community. More recently Cohen et al. (2015) argued that collaborative features of the MERLOT repository helped improve the quality of its resources. Pegler (2011) argued that OER reuse is facilitated through shorter relational distances between the creator of an OER and the community members using it. Wills and Pegler (2016) explained this as a function of shared systems and terminology in closer "zones of reuse" (p. 306).

However, there are good reasons to question whether this concept is the best way to describe interactions involving these repositories. Some OER-using communities appear to lack features which would support the view that they are best understood as a CoP. This section will address the CoP as a framework for understanding how an institutional community reuses OER maintained in a repository.

A CoP is a group of people who engage in shared practices with similar interests, and who alternately contribute to, and learn from the group's collected perspectives on practice (Wenger & Wenger-Traynor, 2015). It is a model to use to describe collaborations among people with similar roles, occupations, or interests. Wenger and Wenger-Traynor (2015) described a community of practice as having three components:

1. Domain: A shared interest or subject to which members apply their skills and knowledge;

2. Community: The set of relationships which tie members together and enable them to share skills, to communicate, and to collaborate; and

3. Practice: The ways in which members of the community share their skills, how their activities contribute to a collection of methods and practices within the given domain (p. 2).

Members of the CoP may not have the same or shared goals, but they may have similar goals. For example, a group of math teachers might have as their purposes teaching trigonometry, or algebra, or geometry, etc. but may find common ground in trading advice for assigning and giving feedback on math problems generally.

Collaboration is a key idea for understanding CoP. Wenger and Traynor-Wenger (2015) described members of the community as developing "a shared repertoire of resources: experiences, stories, tools, ways of addressing recurring problems—in short a shared practice" (p. 2). The digital equivalent for sharing a repertoire of practices would be the online mechanisms for sharing knowledge and resources and communicating perspectives: a repository for collecting documents, forums for discussing mutual concerns, perhaps feedback mechanisms to review items in a collection. Social media is also used in other contemporary contexts to mediate communications in a CoP. Gannon-Leary and Fontainha (2007) explained that among the factors that contribute to the success of a virtual CoP include such features as a shared sense of purpose, a sense of membership in the community, the ease of communications mechanisms to build the community, and the durability of the community over time. For a few examples, Johnston (2017) explained how Twitter and other social media were employed by public information officers attached to courts in Victoria, Australia, to keep abreast of developments

and communicate to each other as part of a CoP. Rosell-Aguilar (2018) described as a CoP a group of teachers who use Twitter to share teaching advice and methods. Liberatore et al. (2018) related how Facebook groups support a CoP of crowdsourced citizen science for the New Zealand Garden Bird Survey. Social media features attached to OER repositories facilitate the sharing of common interests in developing, sharing, and improving open access materials.

Some scholarship suggested that developing a CoP is a normative practice for maintaining an OER repository. Blyth (2014) wrote that open education involves "a belief that knowledge is best understood as a creative process of co-constructed meaning within a community of practice" (p. 663). Smith and Lee (2017) used the concept of CoP to make recommendations to enhance the role of British Columbian librarians in facilitating OER access and maintenance. Their recommendations included advocating for OER use, helping users find and evaluate OER, maintaining OER repositories, including maintaining OER metadata, providing guidance on copyright, and in promoting the creation of OER (p. 109). Similarly, Sapire and Reed (2011) argued that collaborative activity as described by a CoP was effective for creating OER among a group of mathematics teachers at different institutions in South Africa.

Sharing OER within a similar context, and even more so within a like-minded community, can mitigate some of the challenges with reusing OER. It is in this connection that several studies applied the concept of a CoP to practices of OER sharing. Wills and Pegler (2016) reinforced the notion that, aside from technical issues, reuse occurred most easily within a CoP, though they noted that further study was needed on the way community serves as a motivational factor in OER reuse. Similarly, Murphy (2013) concluded that collaboration between participants encourages OER use generation and reuse, though a lack of committed

institutional resources, such as trained staff, as well as the cost of developing open materials, significantly inhibited OER use and reuse.

To summarize the forgoing, the reasons why OER reuse is sometimes considered in conjunction with a CoP is that in a collaborative community, there is increased support for using OER (Gannon-Leary & Fontainha, 2007; Smith & Lee, 2017; Kleinschmit et al., 2023). This may include fostering awareness of where to find OER (Smith & Lee, 2017), identifying educational needs (Wake, Hu, & Shaw, 2022), sharing methods for reusing OER (Sapire & Reed, 2011; Wills & Pegler, 2016), and providing supportive tools and training for reusing OER (Vera et al., 2021; Kleinschmit et al., 2023).

How collaboration relates to the use of OER is a topic that is complicated by two related issues. The first issue is that a lack of a CoP does not imply that OER cannot be used effectively. OER may be generated, reused, revised, and so on in the absence of other features of a CoP. Second, the studies cited above do not often address how it is that a CoP leads to better OER reuse. While effective reuse with minimal barriers to reusing and revising OER may be found in contexts which can be described as a CoP, it may also be a case of correlation, not causation. Assuming that there are quality OER being reused in an institutional context, there may be reasons other than a CoP responsible for maintaining the quality of the OER used.

For example, consider a faculty member who, on their own, wishes to replace the physical textbook in their course with an OpenStax textbook. One can recognize an OpenStax textbook as a quality OER (Watson et al., 2017; Jung et al., 2017), but it can hardly be said that this lone instructor is acting as part of a CoP at their institution.

So it is worth exploring whether robust use of OER is best described in terms of a context of a CoP, or whether we should consider alternative model for how users of OER interact with others in their institution or outside of it.

Chapter 4: Methodology

Research Setting

This study examined OER use and reuse in online courses at Georgia State University (GSU). GSU is a public research university located in Atlanta, Georgia. In 2016 GSU merged with Georgia Perimeter College, a community college which also served the Atlanta area. This merger dramatically expanded GSU's faculty pool, student population, and degree offerings. While numbers vary by semester, in the Fall 2021 semester GSU and Perimeter College combined had a total of 1478 full-time faculty and enrolled approximately 52,300 students (Navarra et al., n.d., p. 2), over a third of whom were enrolled in courses through Perimeter College (Georgia State University, 2018, p. 4). This merger also means that GSU offers degree programs from two-year associate degrees through doctoral degrees.

Beginning in 2018 GSU joined other member institutions in the University System of Georgia (USG) to advocate for and publicize the use of no-cost and low-cost materials in their courses. Courses labeled no-cost are those for which students do not pay anything for required course materials, while low-cost courses cap the cost for required course materials at $40 USD (Affordable Learning Georgia, 2020a, para. 1). Courses meeting the no-cost/low-cost (hereafter, NCLC) designation are marked in the course catalog for students to consider when they choose courses. This designation also makes it easier to find course instructors who use OER, as will be discussed below.

As a member of the USG network GSU also shares resources with other colleges and universities in Georgia. These features make GSU a good site for this research. Its institutional structure is similar to the structure of other state universities in the US, in that it shares library

resources with other campuses in the wider system. This is significant because the USG promotes a program called Affordable Learning Georgia (ALG). ALG promotes the use of OER at USG colleges, including open textbooks and the development of open courses. The organization began with funding from the state of Georgia to promote open learning through grants to develop open materials for use by USG member institutions (Affordable Learning Georgia, 2020b, para. 1).

A key project of ALG is the development of a repository of open learning materials. This repository was developed as part of GALILEO, a digital library initiative sponsored by USG. The GALILEO open repository houses links to open textbooks as well as a variety of open educational materials from video and slideshow lectures intended to supplement courses to entire courses. Because the materials in the repository are largely content generated by and for educators with USG, it is a Type 1: Content repository using McGreal's (2011) typology. Using Atenas and Havemann's (2013) typology this is an institutional consortium repository because it is supported by and functions in tandem with the USG member institutions.

Since OER repositories are often maintained by library facilities it is worth briefly describing the GALILEO system. GALILEO is an acronym for GeorgiA LIbrary LEarning Online (GALILEO, 2019, para. 1). Although it is sponsored by USG, GALILEO has a mission offering access to quality information for all citizens of Georgia through its partnerships with various institutions (GALILEO, 2019, para. 3). Many of these resources are subscription-access resources typically available only to college students, faculty, and staff, but which are accessible to anyone in Georgia through local libraries. Through library access anyone can also access the resources in the ALG repository of OER.

The repository is monitored by library staff. Faculty cannot simply add educational materials without administrative approval. Nearly all the materials in the repository use Creative Commons licenses, though the FAQ notes that some of the resources developed in the initial round of grants did not use open licensing (GALILEO Open Learning Materials, 2019, para. 5).

The generalizability of results of examining GSU's use of the ALG repository in part depends on how typical or representative it is of how other institutions of higher education use or maintain OER repositories. Since it primarily hosts content, it is Type 1, like the collections at the University of California, Irvine, as discussed in Chapter 1. It is an institutional consortium like Affordable Learning Ohio and Open SUNY. It shares other similarities with these two repositories, for that matter, in that it sponsors faculty efforts to develop and share OER materials for use by others. The argument here is that the ALG repository should be considered representative of repositories of OER at other institutions of higher learning in the United States. There is no single model for a higher educational OER repository, but the ALG repository shares overlapping characteristics with other repositories. This makes it a reasonably representative repository to study.

Materials in the ALG Repository

The ALG repository contains several different types of materials, as shown in Table 2. As of 2022 the repository listed 490 items in various categories. The largest category of items in the repository are material types listed under the heading "Course Syllabus/Schedule," with 262 items listed (GALILEO Open Learning Materials, n.d.). This set in the collection consists not just of course syllabi and schedules, but also links to grant applications to develop these OER

materials, lists of resources used for these courses, and summary assessments of the implementation of each resource.

Table 2

Number and Type of OER in ALG Repository (2022)

Listed Material Type	Number of Items
Assessment	11
Audio	0
Course Syllabus/Schedule	262
Homework	26
Lecture Slides	27
Open Courses	74
Open Textbook	82
Photograph/Image	0
Video	8
Total	490

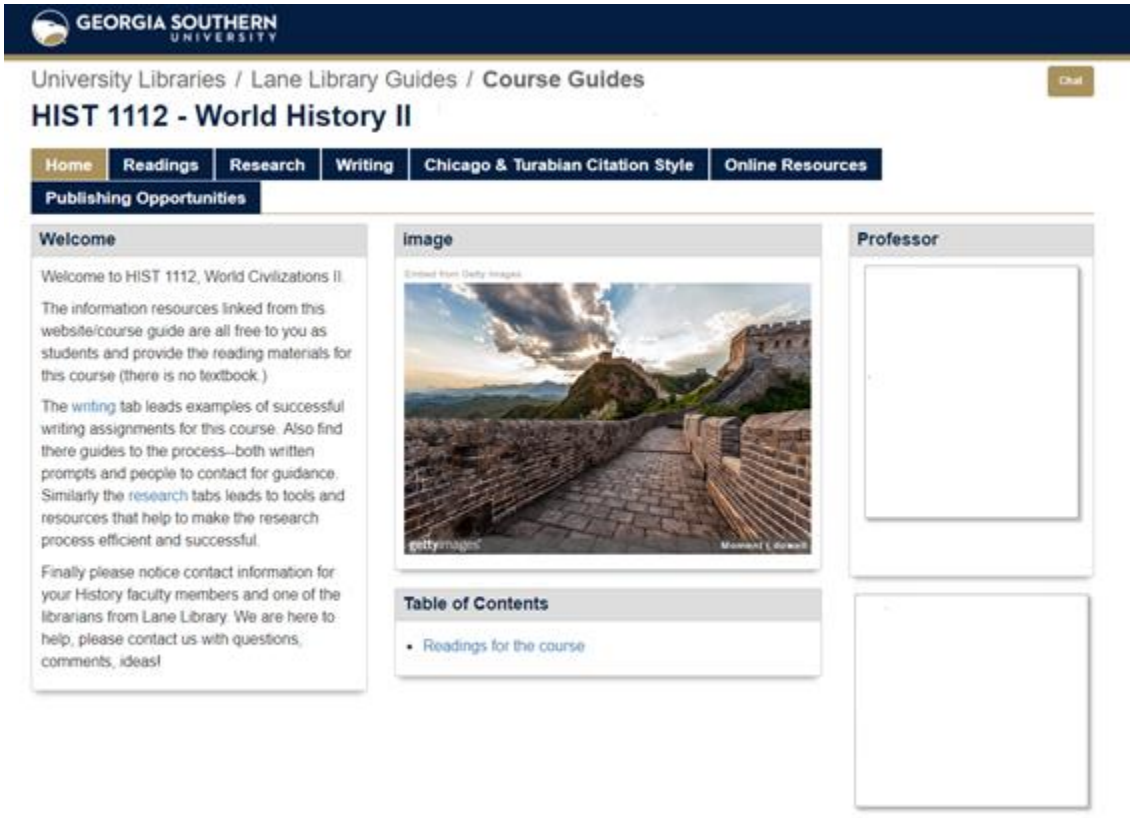
The second largest category are course textbooks, with eighty-two items. Most of these textbooks are in PDF form and hosted by ALG, though a significant fraction of these listings are links to textbooks in HTML file formats hosted on different websites. Many of the open textbooks in PDF format are also available in Word file formats for accessibility reasons.

Open courses constitute the third-largest category, with seventy-four items. These materials are quite varied in terms of style, format, and content. For example, contrast the open course sites for HIST 1111: World History II with the site for Principles of Chemistry. HIST 1112: World History II shows us an inviting homepage with profile pictures of the designing faculty (Georgia Southern University, n.d.; faculty pictures have been removed for privacy). The course pages offer a set of readings for students and resources to support their writing. The links

to these readings replace a physical textbook. By contrast, the companion open course, HIST 1111: World History I, does include a link to an open history textbook in the ALG repository, in addition to links to various readings (Georgia Southern University, n.d.). It does not appear that these pages alone are a full course as there is no schedule nor are there any assignments on the course site. On the other hand, there is a syllabus with assignments available for download as part of the "Course Syllabus/Schedule" collection (Peng & Wang, 2018), though there is no corresponding Syllabus for HIST 1111: World History I.

Figure 1

Homepage for HIST 1112

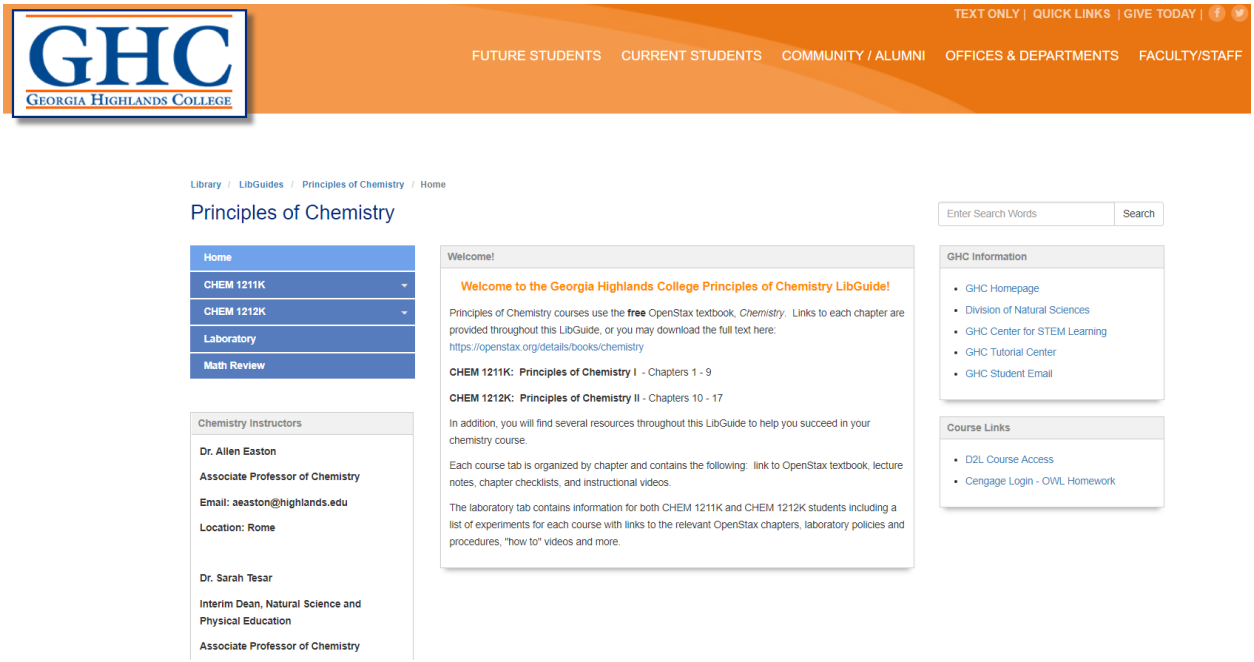


Note. Homepage for HIST 1112: World History II open course page (Georgia Southern University, n.d.). (Image has been altered to remove personally identifiable information.)

The "Principles of Chemistry" course page is a two-course sequence pack consisting of CHEM 1211K and CHEM 1212K (Georgia Highlands College, 2019). It uses an OpenStax textbook to assign readings and divides the learning content into clear and distinct learning modules (Figure 3). Each module includes lectures on course topics. These are hosted on a YouTube channel maintained by course authors, the Georgia Highlands College Chemistry Department. The course includes homework assignments for an instructor to adopt and assign. Instructor information is available in the Principles of Chemistry course, though these do not have accompanying photos.

Figure 2

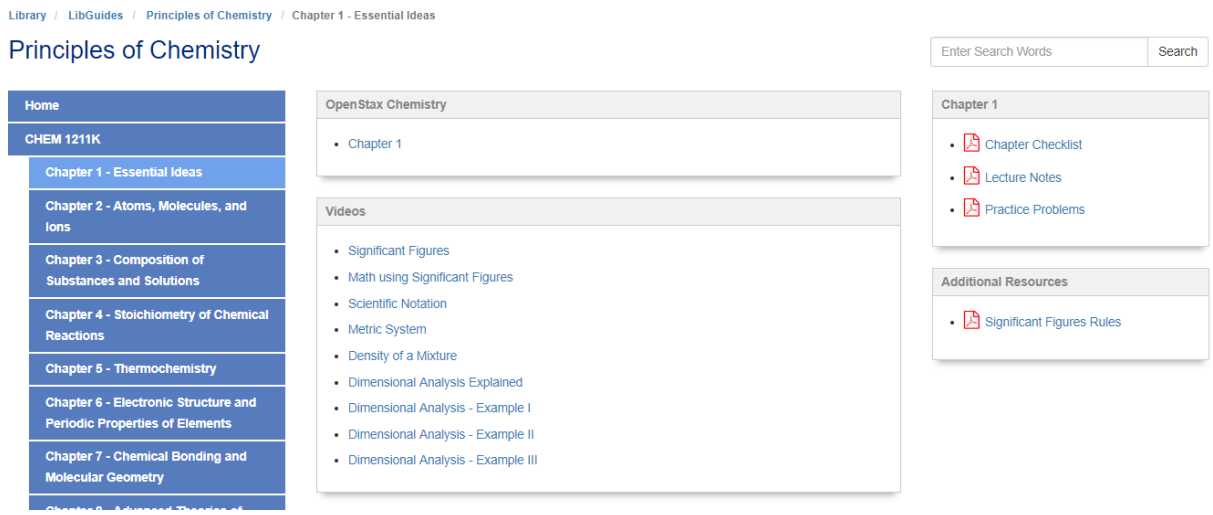
Homepage for CHEM 1211K



Note. Homepage for CHEM 1211K: Principles of Chemistry open course (Georgia Highlands College, 2019).

Figure 3

Sample Open Textbook



Note. Open textbook, *Principles of Chemistry*, to be used with CHEM 1211K (Georgia Highlands College, 2019).

This short introduction to the ALG repository introduces several concerns relevant to examining the contents of the repository. First, while the access page on GALILEO in 2022 identified 490 materials in the repository, some materials included multiple types of resources. A course page often included lectures, or homework, or other category types, for example. Another distinction that was made was between the syllabi in the repository and non-syllabi content. This distinction is important because nearly all of the content items also pair to a syllabus in the repository. This caused duplication for some assessed items when analyzing the repository. Finally, as the examples above show, links to both other OER and to open web resources are a

significant part of many of the items in the repository, so assessing the repository includes recognition of these elements.

Epistemological Considerations

This project situates itself within the Pragmatic epistemological paradigm. Pragmatism looks at problems within a given situation and seeks solutions that are anticipated to solve this problem (Morgan, 2014). It is "a practical and outcome-oriented method of inquiry that is based on action and leads" (Johnson & Onwuegbuzie, 2004, p. 17). It is an empirical approach which emphasizes that understanding the workings of the world is not based on a rigid or absolute ontology but rather occurs as a function of observation and consideration. In this Pragmatism differs from positivist methods which base truth on an objective ontological foundation, and it differs from subjective methods which emphasize the constructed nature of meaning (Cohen et al., 2011, p. 7). Since this research examined how course creators solve design problems in practice this project did not primarily look at how faculty give meaning to their classes nor did it primarily aim at discerning immutable design truths. Rather it sought to understand how course creators resolve design problems within this given context at GSU. It is empirical and practical in its aims: two watchwords which feature prominently in a Pragmatic epistemological approach. Moreover, the research was conducted at this author's own institution, with the potential to better understand how OER are reused at GSU and for this researcher to make recommendations for future OER use at GSU.

Research Design

This study developed a case study approach to examine the practice of OER reuse. Merriam (2009) argued that having a defined boundary of a system or phenomenon as the

ground for study is what constitutes a case (p. 41). This case study design involved a single source case based on OER use in online courses at Georgia State University. The rationale for examining a single example is that it better shed light on the dynamics involved between OER reuse and how the context facilitates that reuse. Yin (2003) argued that case studies should be considered in light of their theoretical considerations (p. 28). Case studies are not simply an exploration without a connection to theory, he argues. Rather, case studies may be descriptive in nature, illustrating dimensions of a theoretical concern (pp. 29-30). Yazan (2015) noted that Yin's approach here is distinguished by its commitment to framing case study as a method to address theoretical issues. Ridder (2017) characterized Yin's approach to case study as one that "can also aim at specifying gaps or holes in existing theory with the ultimate goal of advancing theoretical explanations" (p. 287). More than simply investigating a phenomenon, a case study seeks to analyze a phenomenon as it is situated in its context and interpreted by theory.

There are several theoretical concerns which this research addressed as a case study. The first addressed practices around OER revision and reuse and the extent to which OER in the context of the ALG repository can be revised when reused. Second, it looked at design practices surrounding OER reuse and how other components of a course accommodate incorporation of OER. A final, related, theoretical dimension involved whether to consider the context of OER reuse at GSU to be a community of practice in order to examine how collaboration in the community potentially facilitates OER reuse. The case study in this instance illustrates potential new avenues of analysis for the effective reuse of OER.

Data Collection

The basic unit of analysis in this study was OER reuse itself, though this involved several dimensions as suggested by the research questions:

RQ1: How revisable are OER in the USG repository?

RQ2: How do faculty integrate OER into their online courses at GSU?

RQ3: Does the context of OER reuse at GSU represent a CoP?

To address these research questions this project studied how OER are integrated into online courses, including looking at whether the OER are revised, or whether the course is revised to accommodate the OER, or whether both processes occur, or even if OER are adopted wholesale without revision or significant remixing. This was done by asking faculty who served as online course creators as well as by looking at course design itself. To understand the community context better this study examined how faculty as course creators interact with each other and their departments to generate and reuse OER as well as what measures GSU has taken to provide a collaborative environment around OER reuse.

This project addressed these questions by collecting data through a mixed methods approach. The methods used were a questionnaire, interviews, document analysis of open courses in the ALG repository, and examination of GSU and the repository for evidence of social media and other indications of community collaboration. There are several reasons why a mixed methods approach was suitable for this research. First, it is reasonable to use different methods to collect data on the different but related aspects of OER reuse that this research addresses. Furthermore, each of these methods addressed aspects of each of the research questions, with the hope that different but overlapping methods reinforce the results from each other through a process of triangulation. This form of methodological triangulation aims to get more breadth and

depth than a single method alone will yield and provide more confidence in results substantiated by more than one method (Cohen et al., 2011, pp. 195-6).

However, when using a mixed methods approach it is important to ensure that consistent terminology is used across methods, especially when methods used overlap on the research questions. ALG uses the term OER while GSU uses the broader designation of NCLC. Questionnaire and interview questions used both terms to accommodate faculty who may be familiar with OER in practice if not in name. Interviewees were also asked how they understand the concept of OER.

Another potential weakness of a mixed-methods approach is that it increases the complexity of the research, especially when different methods overlap on a question. A remedy to this concern is to be clear when reporting the result which streams of data support the resulting discussion.

These methods of data collection are consistent with the epistemological approach of Pragmatism. As a lecturer at GSU the data collected and analyzed will be used to understand OER use in this context and potentially make recommendations for improvement in the OER community at GSU.

Questionnaire

The questionnaire aimed to acquire survey data on whether faculty adapt OER or adopt as-is as well as where they find OER. The questions used in the questionnaire are included in Appendix A. To facilitate response rates, the questionnaire was short and asked respondents to check off answers from fixed choices. These multiple-choice questions were designed to capture the anticipated range of responses and facilitate data analysis, though Cohen et al. (2011) note

that multiple-choice questions can be sensitive to wording (pp. 384-5). The questionnaire should be viewed as one leg of data collection methods, as another angle on the same set of issues and allowing a richer picture of this context of OER reuse.

The use of the NCLC terminology at GSU means that some course creators might not recognize that they are using OER, even when the materials they use fit the definition of OER. A definition of OER was included in the questionnaire to minimize ambiguity.

The purpose of circulating the questionnaire was to get broad data addressing RQ2 and RQ3. The questionnaire responded to RQ2 by aiming to take a snapshot of how course creators adopt and/or adapt OER and whether they make course changes to accommodate OER. It also addressed RQ3 by identifying the departmental areas of respondents and with whom they discuss or collaborate when using OER, if anyone.

The questionnaire was aimed at faculty who were identified as teaching online courses that use OER and/or are identified as using NCLC materials during the 2021-2022 academic year. It did not address how many or what percentage of course creators at GSU use OER overall, as some who teach NCLC courses may teach in-person courses only. The questionnaire was administered concurrently with the other data collection methods. A question was added asking for volunteers for the interview component.

Recruitment. For this project, a questionnaire was circulated to potential faculty respondents at GSU who met the criteria of having (a) taught online during the 2021-2022 academic year and (b) whose courses were marked as NCLC in the course catalog, suggesting they may be good candidates for studying OER use in their online classes. The questionnaire was

circulated using SurveyMonkey. Three rounds of invitations were sent two weeks apart, on 3/31/2022, 4/14/2022, and 5/4/2022.

Sample Size. A count of the number of faculty on GSU's course schedules indicates there were 221 faculty in total whose courses are both NCLC and taught online in the 2021-2022 academic year. These were the potential pool of faculty for the questionnaire. Of the potential respondents invited to complete the questionnaire, 52 began the questionnaire and 48 faculty respondents completed it.

Interviews

For this project nine interviews were conducted with faculty identified as having taught online during the 2021-2022 academic year and who used OER in their online courses. Interviews ranged in duration from a half hour to over ninety minutes in length. The interviews were conducted online using Webex and were recorded for transcription and reference.

The interview format was semi-structured. It was not a conversational interview, in that it was not entirely unstructured, nor was it a rigid or highly structured interview format, such as would be needed to ensure consistency among different interview contexts (Cohen et al., 2011, p. 413). The interviews benefitted from an interview guide to direct the topic toward what measures instructors took to find and integrate OER in their online courses. The interviews did not address sensitive material. Questions were asked in a neutral fashion to minimize the sense that there were expected or normative responses. The interview question script can be found in Appendix B. The interview aimed at more depth in answering RQ2 and RQ3 than the questionnaire and sought to uncover patterns of OER use in practice at GSU.

The interviews were recorded and transcribed for accuracy. Since all interviews were at a distance, Webex was used to conduct the interviews. Webex also allowed recording of meetings for the sake of transcription and record-keeping. Interviewee permission was sought for recording interviews. Webex also allowed screen sharing which was an important quality for discussing and examining course design. With interviewee permission, screenshots were taken of course features that were of interest to the research questions and to verify some aspects of how interview participants described their OER use. This method thus utilized elements of document analysis (i.e., assessing revisions in the OER) with interview techniques to point out revisions and their rationale.

In the interviews, faculty were willing to identify and describe specific examples of OER adaptation and integration with their courses, and at times walked the researcher through these examples in their courses. This facilitated the research collection by (a) providing specific examples of OER reuse coupled with (b) faculty explaining how they adapted the OER into their course. Another concern that the interviews captured is the extent to which faculty revise OER or whether they adopt OER as-is, and the sources where faculty found their OER. Faculty also discussed ways in which they shared OER or used OER shared with them.

The interviews focus on RQ2 because they address the practices faculty engage in to adapt OER to their courses. To a lesser extent, since it addresses how faculty collaborate to use OER in their courses, this method addresses RQ3.

Recruitment. Two methods were used to reach out to faculty to recruit volunteers. The first method was to ask in the questionnaire if a respondent would be willing to participate in an interview. The second method was to solicit recommendations from interviewees about other

faculty who might potentially be interviewed, an approach known as a chain-referral or snowball method. As an incentive, interview participants were offered a $15 USD Amazon Gift Card for their participation.

Sample Size. A count of the number of faculty on GSU's course schedules indicates there are 221 faculty in total whose courses are both NCLC and taught online during the 2021-2022 academic year. These were the potential pool of faculty for the interviews. Of the 52 respondents who started the questionnaire, sixteen indicated interest in completing an interview. From this set nine faculty scheduled and completed an interview. The remaining seven potential interviewees later did not respond or could not find a time to meet for an interview. None of the referrals by faculty led to additional interviews.

Document Analysis

The third method of data collection was a document analysis. More so than the other two methods this method focused on the revisability of OER as asked in RQ1. The documents analyzed were the materials themselves in the ALG repository. The procedure was to examine each resource in the ALG repository and, for each resource, note what file types the resource was composed of. A Google Form was used to tally the results for each resource (See Appendix C for the form used). The form used checkboxes and multiple-choice entries to facilitate uniformity of responses. For each resource, the form recorded the following:

1. Repository URL
2. Subject area
3. Document title
4. File URL

5. Year the resource was added
6. Number of contributors
7. Resource type(s)
8. File types present in the resource
9. Whether any external links are present
10. Whether the material incorporates other OER
11. Types of licenses for external OER
12. Notes (if needed)

Questions one, three, and four identified the resource in question and located it in the repository. Question two asked for the subject matter for additional analysis to consider whether there are differences among disciplines. Question five asked the year the resource was added for potential additional analysis for changes in the repository over time. The sixth question verified that items in the repository were generated by teams. Question seven identified what categories of resource were present in each repository entry, from the list of categories in Table 2. Some items contained resources from more than one category type, so for these entries, multiple categories were checked. Question eight identified the file types present in each resource and is the primary question related to the concerns of the ALMS analysis. Questions nine through eleven addressed whether there are additional elements in the course materials which may affect their reusability, such as external links to web resources, other OER, and licensing. An additional space was included for any notes about a repository resource.

This listing reflected an order that facilitated ease of checking each resource. For example, the subject matter is at the top of the repository resource page, so it was easier to capture this information before recording the URL of the resource itself.

Components were only recorded in the repository assessment if they appeared to be a meaningful part of the resource itself. This had several implications for the assessment and its analysis. For something to be meaningful, it had to contribute to the apparent pedagogical purpose of the resource. A decorative image would not count as part of the resource, but an image that was an object of study (such as a diagram of a chemical reaction, or an anatomical diagram, or a painting in an art textbook) then it counted.

Second, the consideration whether something was a meaningful part of the resource had implications for considering the difference between embedded resources and linked resources. A distinction was made between designs which included embedded components in low-revisable formats versus resources in which similar components were linked in the resource. Most often this distinction mattered for video files. If video files were embedded in the resource, they were considered part of the resource and were scored accordingly, but if the resource linked to external video files, then they were not scored as including video components, but as links to external resources. Many resources did include links to additional resources on the web. These links were noted in the assessment instrument for additional analysis but were not otherwise considered for revisability.

Finally, some resources that were offered as PDFs also included identical copies in Word format for accessibility. In these instances, the files were scored based on their versions in Word. Although recent developments in the availability of software to edit PDFs means that PDFs and

Word documents are equally revisable by the ALMS analysis, as a practical matter it is often much easier to revise a Word document than a PDF. It should also be noted that the Word versions might still have less revisable elements such as non-decorative images.

This data collection method did not address any potential iterations of resources. In the few instances where there were multiple editions of a resource present in the repository, only the latest version was assessed. Neither this study nor the repository were configured to facilitate an examination of earlier revision histories of individual objects. The ALG repository does not have a complete or clear record of the revision history of each object. Moreover, while some objects in the repository are also archived at the Internet Archive's Wayback Machine (https://web.archive.org), not all resources are archived.

Methodology. Document analysis as a method can involve either print or digital documents and is often used in tandem with other methods of data collection (Bowen, 2009). Assessing the resources in the ALG repository has much in common with the approach taken in web historiography, a methodology which informed this form of data collection. Brügger (2012) argued that web historiography as a method focuses primarily on digitally archived web materials and as such needs to respond to the particular characteristics of web archives. Web-archived materials should be considered as "versions and not copies" (p. 109). Brügger (2012) further suggested that when studying web archives, one should consider the limits to which they are consistent over time as well as how materials are maintained, updated, and structured for accessing content.

Foot and Schneider (2010) argued for a twofold consideration of the contents of web archives as objects. First, that the contents are "objects as motive" (p. 65). The contents of a web

archive should be viewed in terms of the reason for the creation of the web archive (p. 66). The motives for the objects in the ALG repository are that they are OER. They are an attempt to provide educational materials to students at no cost, through the efforts of instructional faculty and course developers. The other consideration for web objects is of the "object as artifact," which refers to the unit of analysis for study of web contents (p. 68). A page can be an artifact, for example. Artifacts are typically composite objects, consisting of code, text, hyperlinks, and so on (p. 70). In the current research project, the objects as artifacts in question were the contents of the ALG repository available for download and reuse. Each online textbook, homework assignment, and course page, for example, was an artifact for study. The course pages themselves were among the most complex artifacts within the ALG repository, since each consisted of a set of individual pages, with explanatory text, links to other resources, and/or additional resources embedded in each page.

The distinction between object-as-motive and object-as-artifact held additional significance for studying the ALG repository. The properties of the objects in the repository potentially help or hinder their reuse as OER to the extent that they are revisable. If an object is stored in PDF form, then in practical terms it is less revisable than if it is stored as a Word document. In this instance, the artifactual nature of the object interferes with the motive for storing the object.

Foot and Schneider (2010) pointed out that there are typically three methodological approaches to web historiography. The first is a content analysis of the text and media of web pages. The second method of web historiography is structural/feature analysis which looks at the ways in which web sources are composed. The structural/feature analysis uses individual web

pages or sites as the basic unit of analysis and downplays the role of the user experience of the page (p. 71-2). The third approach is a sociocultural analysis, which is used to look at how web sites are situated in relation to each other and to users (p. 72). The document analysis method employed in the present research resembles the structural/feature analysis in that it looks at the file formats and other aspects of revisability of the contents of the ALG repository.

Community of Practice Evaluation

As discussed in the Theoretical Framework, a CoP is a group within a field or discipline which invests effort in sharing and updating skills and knowledge related to their common domain. Some studies (such as Murphy, 2013; Blyth, 2014; Wills & Pegler, 2016; and Smith & Lee, 2017) have suggested that CoP are beneficial to maintaining ROER, as a motivated community will work to improve the OER therein and decrease barriers to reuse. As discussed in the Chapter 3, there are several characteristics that an online CoP exhibit, such as:

- Active use of social media among community members
- Use of email or discussion boards for dissemination of news and information
- A facilitator for communications among the community but otherwise a lack of hierarchy or a leadership that is distributed
- A fostered sense of identity or membership in the community
- Opportunities for learning, such as through webinars, professional development opportunities, and training
- A sense that information-sharing is multidirectional between members in the community.

With the above characteristics in mind the measures that were used to evaluate the degree to which it can be said there is a CoP associated with the ALG repository involved examining the

social media affordances of the repository itself as well as messaging within GSU regarding OER. This form of data collection looked for the following:

- Evidence of communications between individuals working on OER, such as meetings, social media, listservs, discussion boards, etc.
- Leadership engaged with the use of OER at GSU
- Evidence that producing or using OER is recognized in some form (awards, professional presentations, etc.)
- Faculty development opportunities for learning about or developing OER
- Evidence of multi-directional sharing of materials and methods

These measures were investigated by looking at the features of the repository itself, as well as seeking out messaging and documentation regarding OER at GSU as preserved on the university's websites. Effort was made to assess whether these affordances were actually used at GSU. Data from interviewing faculty also revealed whether those using OER were engaged with these or other features of the OER community.

In addition, the ALG repository archives the Final Reports from teams of grant recipients. These reports reflect on the aims of each project, the challenges teams faced, what lessons they learned, and how each team assessed their success. They also record how teams plan for the future sustainability of the OER they generated. A major component of each Final Report also included quantitative and qualitative assessments of how effective the OER were in courses that used them in the semester following completion of the OER materials. These Final Reports were an important source of information about how teams functioned and the role the OER creation process had in their pedagogy.

While this method of data collection was primarily responsible for addressing the CoP issue, it was supplemented in part by information collected in the questionnaire and interview methods.

Summary of Data Collection

This section will summarize how the methods of data collection addressed each of the research questions. The first research question addressed the revisability of OER in the ALG repository. The document analysis of the contents of the repository addressed this question.

The second research question addressed whether and how course designs are modified to include OER. This was addressed briefly in the questionnaire. The interviews addressed this more thoroughly with questions about the use of OER in given courses. The document analysis was not designed to address this question.

The third research question examined the collaborative context of OER use and revision at GSU. This included the question of whether the repository is best framed as an example of a CoP. The questionnaire gave an overview of how faculty use OER. The interviews addressed these issues in further detail. The interviews included asking where individuals find OER, asking if they collaborated with others such as colleagues, instructional designers, librarians, or other support staff in course design, and asking how they learned about and evaluate OER. It is an opportunity to examine how faculty collaborate to develop courses with OER. Finally, an examination of the affordances of the ALG repository for social media and feedback on materials, as well as reading through the final reports of grant recipients, also facilitated addressing whether we are justified in calling this setting a CoP and in what ways collaboration may have facilitated effective OER reuse at GSU.

Data Analysis

The general aim of this research project was to examine the patterns by which online course creators adopt OER in a single case study. More specifically this project sought to look at related questions such as the extent to which OER are revised, if at all, when they are reused, and what patterns of reuse faculty follow when integrating OER into their online courses. Finally, this project examined the community around this OER repository, and specifically it asked the question of whether we are justified in calling OER users at GSU a CoP.

Yin (2009) noted that analysis is an especially difficult aspect of case study design because the techniques involved in case studies are not always well-defined (p. 109). Rather than a descriptive analysis of the case he recommended building the analysis on the theoretical foundation motivating the study in the first place. Following this advice, we can link the analysis of data collected for this project to its theoretical foundations. Much of the theoretical conversation around OER reuse emphasizes the revisability of OER. The ALMS framework specifically defines the "openness" of OER as predicated on how readily one can revise OER when it is being reused (Wiley, n.d.). Analysis of the data collected here yielded examples in which OER may be revised or adopted as is, as well as examples in which the course structure has accommodated unrevised OER, and the methods applied to include those OER.

As a form of data analysis this case study was a form of analytic induction. Analytic induction is a process of identifying and defining categories that emerge from a qualitative study (Cohen et al., 2011, p. 473). This format dovetailed with the approach taken in the second and third research questions. The second research question sought to shed light on practices that have

not yet been well studied, whereas the third research question looked at whether the idea of a CoP has explanatory value for understanding the GSU context of OER use and reuse.

Finally, it bears mentioning that one of the purposes of studying OER use at GSU was to understand how OER are used and potentially to make improvements in how OER are used at GSU. This is consistent with the Pragmatic epistemological orientation of this research.

Revisability. One way to assess the revisability of the contents of the repository is to assign a score to the revisability of materials in the repository. The ALMS analysis serves as one source of guidance for what criteria on which to assess how revisable a material is. As a reminder, the ALMS analysis asks whether someone revising the materials:

- Needs access to specialized editing tools
- Needs a level of technical expertise to make meaningful revisions
- Can meaningfully edit the materials
- Has source-file access for editing (Hilton et. al., 2010)

The results of the document analysis of the contents of the repository will need to assess what file types are in each item in the repository. Documents that are in Text, Word, or HTML are formats for which one does not need specialized editing tools, which do not require expertise, which can be meaningfully edited, and which (in the case of HTML) one can easily access the source file. On the other hand, items such as media files do require editing tools to revise, may need some expertise to revise, and cannot be easily edited. Non-decorative image files, such as reproductions of famous art works, would also fall into this category, or other images which convey meaningful information for educational purposes. A summary of how these concerns apply to common file types is available in Table 1 in Chapter 3.

Licensing represents a second avenue to assess how revisable content is. Most Creative Commons license types permit revision, except the No Derivative (ND) designation. From a licensing standpoint this means there are two levels of revisability to consider: whether revisions are permitted or not.

This also means that in constructing a revisability score there are two separate dimensions along which to assess content. It may be possible to rate a component in the repository as "Revisable" from a file format perspective, but "Revision not permitted" from a licensing standpoint. However, one caveat is that only four items in the ALG repository are identified as holding No Derivative licenses as of 2022. These four items with CC BY-NC-ND licenses are two open textbooks and two sets of questions for physics courses. With this in mind the analysis of the repository will focus only on revisability by file format, and exceptions noted for these four works.

To analyze the degree of revisability of each item in the repository this project used a scale from Not Revisable to Fully Revisable (Table 3). Each resource in the repository was assigned a score depending on how revisable significant components of the resource were. Most resources included a mix of file types, such as HTML, images, PDF, video files, and so forth. The Revisability Scores on Table 3 below reflect the least revisable significant elements of each resource. For example, if a resource was an HTML file that included embedded images, then it would be scored as "Somewhat Revisable" because while the HTML could be easily revised, the images are not easily revisable. The ALMS analysis summary of file formats in Table 1 also factors into this analysis. The number of Yeses in each row for each file format represents a

numerical value from 0-4 which can be factored in to arrive at the Revisability Score identified in Table 3 below.

Table 3

Revisability Score Summarized

Score	# of ALMS analysis criteria met	Description
Fully Revisable	All four	The resource and its components are easily revisable without specialized software or training or fundamentally altering the items in question.
Mostly Revisable	Only three	The resource and its components include elements that do not meet one of the criteria for revisability in the ALMS analysis (i.e., they need specialized software, expertise, cannot be edited meaningfully, or source files are not accessible)
Somewhat Revisable	Only two	The resource and its components include elements that do not meet two of the criteria for revisability in the ALMS analysis (i.e., they need specialized software, expertise, cannot be edited meaningfully, or source files are not accessible)
Not Revisable	None or one	The resource and its components include elements that do not meet three of the criteria for revisability in the ALMS analysis (i.e., they need specialized software, expertise, cannot be edited meaningfully, or source files are not accessible)

In practical terms, this meant that if a file included meaningful audio or video files, it was typically rated as Not Revisable as these rows in Table 1 did not meet the criteria in the ALMS analysis. Resources with a significant number of images as part of their pedagogy were generally

scored as “Somewhat Revisable” since these met two of the criteria. Files such as Word documents, HTML, most PDFs, and PowerPoints meet three of the criteria and so met the Mostly Revisable category. Since most resources included a mix of resources, the lowest-scoring significant elements ended up shaping the final determination. In addition, there were some additional file types found in the repository that necessitated consideration on a case-by-case basis using the ALMS analysis criteria outlined above.

It is important to reiterate here that components of each resource were only counted and scored if they were a meaningful part of the educational purpose of each resource. This meant that non-educational components such as decorative images were not counted. Also, embedded resources were counted as components of a resource. If the resource linked to additional resources on another page outside of the repository then these external resources were not counted as part of the component but scored as an external link. Links to additional web resources were noted for further consideration of the use of free digital resources in an analogous fashion to the use of established OER.

Finally, when a resource provided identical components in multiple file formats, the least restrictive file format was counted. This was primarily attested in cases where a PDF resource was also offered in the less restrictive format of a Word document for accessibility reasons. Because the components were otherwise identical, a potential adopter could choose to use the less restrictive file format in their course and revise it as needed more easily.

OER Reuse. The second method of data collection, the interview, primarily addressed the second research question regarding practices of OER reuse and remixing. Data analysis for the interview was inductive analysis, a method that Cohen, et al. (2011) identified as a process of

identifying, defining, and refining categories that emerge from a qualitative study. Beaven (2018) has noted that the practices of educators with reuse are largely understudied, and this study helped to further shed light on this "dark reuse." Analytic induction is a more useful process for early examination of a phenomenon, when one is seeking to understand the processes involved. Cohen, et al. (2011) wrote that analytic induction is used to formulate categories or types of phenomena, and relationships between them, using the data. It is also important in analytic induction to seek out potentially disconfirming cases to refine an emerging hypothesis.

Some concerns that emerged from studying practices around reuse are first, whether course creators are using OER from the ALG repository or if they are acquiring OER from elsewhere and if so, where. Additionally, an important concern is whether course creators are revising the OER they acquire and if so, what steps they are taking to revise these OER. If they are not revising their OER, then this approach can also address why they are not revising, and what additional steps they might be taking to adopt OER in their courses as-is. While more study is needed on the practices of OER reuse among course creators, these are some of the dimensions that have been revealed as significant in previous studies (such as Weller, 2016 and Cox & Trotter, 2017). Pulker (2020) in particular highlighted some of the different approaches that faculty take toward reusing OER. While noting that all participants in her study made changes to the OER they reused, she found a division between passive and active reusers of OER. Passive reusers did not use many OER and made few changes to the OER they used, while active reusers made many changes and used OER more extensively. Moreover, data from the interview uncovered challenges faculty encountered in finding, revising, or reusing OER, and what strategies they employed to counter these issues.

Community of Practice. The third research question involved an examination of the community around this OER repository available to GSU and the role of collaboration in OER generation, sharing, and reuse. The data may substantiate the characterization of OER reuse as occurring in a CoP, though it may indicate we might better look at other community models for reuse. This approach followed Yin's (2009) argument that case study is also useful for illustrating deficiencies in fitting theory to phenomena. Data for addressing this question came from looking at the affordances of the repository, as well as from interviewing faculty about the degree to which they collaborate with other users of the repository. The affordances of the repository include some or all of the following:

- Email listservs for news and updates regarding OER
- Discussion boards or other forms of social media for sharing information about OER
- Professional development opportunities for faculty to generate or use OER
- Meetings for faculty to generate or use OER
- A sense of identity among educators involving OER reuse
- A sense that faculty learn from and share their experience with OER

Data to respond to the first four items was found by examining features associated with GSU and the ALG repository themselves. Interviews with faculty addressed the last two items and shed light on the first four as well. Finally, an examination of the Final Reports from ALG grant teams provided clues for how to consider the role of community among those involved in generating and using OER in connection with the repository.

The question of whether to call the GSU context a CoP is not a simple yes or no, especially if it shows some of these features but not all. There is not a clear-cut rule that defines a

CoP, so it is more likely that analyzing the data will show how well or not, or to what degree, the model of a CoP frames this particular community. This element of the data analysis focused on description of the features which exist that support the OER-using community and how they may feed into the practices attested in the data for the first two questions. Although the question calls for interpretation, it is reasonable to consider the question within the Pragmatic epistemological paradigm since of the goals of this research is understand and improve OER use at GSU.

Reliability and Validity

Reliability is a measure of the dependability of the research and its transferability to new contexts (Cohen et al., 2011, pp. 201-2). It is hoped that the results gleaned for how OER are adopted and adapted in online courses in higher education will be useful for understanding phenomena at other colleges and universities, especially those who have developed or are developing their own OER repositories. That is, a reliable study is one on which one can build recommendations for practice in other settings and advance theoretical research. Those contexts where these results will be most easily transferable are those which are like GSU in nature and mission, i.e., colleges who have developed or will be developing an OER repository and encourage faculty to incorporate OER into their online course offerings.

Concerns about reliability and transferability lead to the question of how generalizable findings from this study will be. Yin (2009) explains that case studies variously explain, describe, illustrate, and explore real-world applications of theories (p. 15). Cohen et al. (2011) describe this as an "analytical" rather than "statistical" forms of generalizability (p. 294). The purpose of a study such as this was to broaden and deepen the application of theory to this and similar contexts. To this end this present research sought to understand how faculty and staff do

make use of OER in an established repository. Moreover, the third research question examining the question of whether there is a CoP at GSU offers another model for the practices around using OER in a particular community.

Validity is a measure of how relevant the data collection is for responding accurately to the questions posed. In qualitative data features such as consistency, thoroughness of data, and the faithfulness by which the data represents reality supports the validity of the research. The research is valid if the methods used address and answer the research questions in a fair and authentic manner (Cohen et al., 2011, pp. 184-5). Validity is important for generalization to other contexts (Bogdan & Biklen, 1992, p. 45) so is an important measure of the ability of a research project to contribute to the larger body of knowledge. As noted above, this project used triangulation through a mixed methods approach to improve its validity. Individual interviews added depth and credibility to broader observations made through the questionnaire method.

Response Rates. This section will address some of the concerns about reliability based on response rates to the questionnaire and the interview forms of data collection.

***Questionnaire*.** Nulty (2008) recommended that in addition to keeping the question list short, additional means to improve response rates to the questionnaire included making the questionnaire available for a significant length of time and sending multiple reminders to potential participants to take the survey. In response to these concerns, the questionnaire was made available for 45 days and three reminders were circulated, on 3/31/2022, 4/14/2022, and 5/4/2022. Nulty (2008) also offered a reminder that there is no single ideal response rate, but that statistically speaking, the response rate affects the confidence level of the results and depends in part of the size of the population surveyed. Out of a population of 221 potential respondents, the

actual response rate of 48 who completed the study yields a margin of error of 10.5% for a 90% confidence level.

Interviews. Determining the appropriate sample size for the number of interviews in a qualitative research study is an ongoing area of debate. Discussion of the subject revolves around ascertaining the number of participants needed to attain saturation. Saturation is the point at which "the main ideas and variations relevant to the formulation of a theory have been identified" (Weller et al. 2018, p. 2) through qualitative research. Weller et al. (2018) added that the focus should be on uncovering the most salient responses. Saunders et al. (2018) also summarized the definition of saturation as the point at which one uncovers no new information through data collection and added that the theoretical approach and methods of the research define when this point is reached.

In an important work on the subject, Fugard and Potts (2015) attempted to provide a quantitative means for ascertaining saturation before commencing a study. Their formula accounted for how many themes one is analyzing and how prevalent one should expect this theme to be and from there calculated how many interviews one needs to conduct to be confident one will encounter the themes one is studying. For example, if one expects 30% of a population to exhibit a particular theme, and one wants to be 80% sure of encountering this theme, then it is likely that with nine interviews one would expect to encounter this theme twice (p. 674).

Criticism of Fugard and Potts (2015) focused on the inherent degree of uncertainty in qualitative research. Byrne (2015) argued that qualitative research is often complicated and that in their approach, Fugard and Potts (2015) mistook attributes under study for themes under study. Braun and Clarke (2016) argued that there is an essential role in qualitative study for

discovering themes apart from an a priori determination of the themes of interest in a research study, and that this discoverability function is not quantifiable. Sim et al. (2018) and Blaikie (2018) continued this line of criticism and argued that while it is often a practical necessity to identify a potential sample size for a study, one cannot absolutely determine an appropriate sample size a priori. Sim et al. (2018) argued that determining sample size is an iterative process guided by ongoing research.

Empirical studies of sample sizes for interview-based qualitative research suggested that most themes of interest to a study can be uncovered with sample sizes of eight interviews, though it takes more studies to treat these topics in depth. Namey et al. (2016) found that saturation occurs within a range of eight to sixteen interviews. Hennink et al. (2017) similarly found that most themes were identified by eight interviews, though it took sixteen interviews to address these themes in depth. Weller et al. (2018) found that the richness and depth of an interview matters considerably, that the most salient themes can be uncovered by sample sizes of ten participants. Guest et al. (2020) found that after six interviews most studies had reached a point of 80% saturation, with a drop off in uncovering new information with subsequent interviews.

Given the forgoing discussion it is reasonable to expect that the nine interviews conducted were sufficient to yield information about the range of practices involved in adoption and revision of OER. This figure also concurs with Fugard and Potts (2015) who suggested that a minimum of eight interviews are expected to yield an 80% likelihood of encountering a phenomenon that is seen in 20% of the population.

***Document Analysis*.** Response rates are not an issue for the document analysis as the repository contents are openly available. Links to three non-syllabus resources were missing or broken and links to six of the syllabi were broken. From the combined list this means that only 1.8% of items in the repository were unavailable for further study.

CoP Evaluation. Evaluating the evidence of whether there is evidence that the OER community at GSU is a CoP has some similarities with these other methods. Part of the evaluation of this question depends on feedback from interviews. Additionally, data for this method relied in large part on openly accessible features of the repository such as web pages and grant project Final Reports.

Repeatability. One way to further establish the reliability and transferability of these results will be to repeat this study at another institution. Similar results between how faculty reuse OER at two different institutions suggest that these results are more reliable and transferable to additional contexts. At this time there are no plans to examine another institution's repository, however information is being collected about potential candidate institutions and repositories to repeat this study at a future date, or to study issues that arise from this research. One candidate includes OhioLink, described above, which as a repository has an institutional relationship similar to that of the USG. Brightpoint Community College in Virginia is a potential candidate site for a more focused study on OEP by course creators.

Ethical Considerations

Ethical Guidelines. There are several policies that most clearly spell out the ethical obligations and procedural guidelines to meet ethical obligations of research involving human

participants. The first of these is the Canadian Tri-Council Policy Statement on ethical treatment of human participants. The Tri-Council Policy Statement emphasizes three principles:

1. Respect for Persons;
2. Concern for Welfare of research participants; and
3. Justice for all involved (Interagency Secretariat, 2010, pp. 8).

These concerns point to the need for practical measures such as seeking consent and informing participants of potential risks and maintaining the privacy of participants. (Interagency Secretariat, 2010, pp. 8-10). The risks to physical and mental well-being were minimal for this research on how instructors design courses. There was no intention to collect personally sensitive data. To guarantee privacy the questionnaire was collected anonymously. However, the interviews and the course analysis may be less private. Measures to maintain confidentiality such as not identifying respondents with specific details helped maintain anonymity. In practical terms this meant that interview participants were coded and referenced using these codes. Identifying information from the interviews, including any screenshots taken of course designs, were also redacted. Finally, respondents were asked to read and sign a consent form which identified the aims of this project, its methods of data collection, and efforts to ensure confidentiality.

The Family Educational Rights and Privacy Act (FERPA) is another guideline that must be considered for educational research in the United States. The interview was the only part of data collection where collection of personally identifiable information on students might occur. Specific students were not mentioned since the focus was on course design and delivery, not on the day-to-day operation of courses, and this study did not focus on student records specifically. As a precaution, however, the researcher asked interviewees not to identify students by name and

not to show the researcher course pages which might display and identify the work of specific students.

Ethical Review and Informed Consent. Conducting this research required Research Ethics Board (REB) approval from Athabasca University. With the concerns outlined above in mind, the REB application reflected ethical norms in human subjects research. In keeping with Cohen et al.'s (2011) list of ethical concerns with questionnaires (pp. 377-8), the informed consent made clear to participants that on the questionnaire and in the interview that:

1. They may withdraw from the study or choose not to answer questions;
2. This study is unlikely to cause harm;
3. The questionnaire will preserve their confidentiality and anonymity;
4. In any research write-up efforts will be made to preserve their confidentiality and anonymity; and
5. Any information about their students will remain confidential and anonymous.

Potential risks and harms to participants were minimal because the study did not address sensitive issues or ask about students.

The data collection methods of this project which involved human participants were the questionnaire and the interview. Since these asked about teaching practices with OER, and do not ask about sensitive subjects, there was minimal risk to participants. The study was also not designed to benefit participants individually but instead to contribute to generalizable knowledge. To address issues of confidentiality personally identifying information about the interviewees was removed and the interviewee identified by codes. A copy of Athabasca

University's Certificate of Ethical Approval is available in Appendix D. The informed consent letter for the questionnaire is included in Appendix F and the informed consent letter for the interviews is included in Appendix G.

A full IRB proposal was not required to be submitted to GSU, but the IRB committee was informed of the research and given the REB approval from Athabasca University for their records and review. The IRB Outcome Letter from GSU is included in Appendix E. GSU does require that researchers complete two courses in human subjects research training through the Collaborative Institutional Training Initiative (CITI) program. These two courses are a course in Responsible Conduct of Research and the Basic/Refresher Course in Human Subjects Research. This researcher completed both courses on 10/7/2019 and 10/11/2019, respectively.

Professional Roles. The dual role of this researcher as both an investigator and a faculty member at GSU, and what effect this may have had on this study, should receive some attention. For some context, this researcher teaches online courses through the Department of Humanities at GSU's Perimeter College. The researcher works fully remotely and has not met any colleagues in person, whether part of this study or not.

First, being a faculty member at GSU had little effect on access to the ALG repository or other ALG materials. While these can and were accessed through USG's library system, the repository and other ALG materials are also openly available through the ALG website.

Second, this dual role as GSU faculty and researcher may have had an effect on the participation rates in the questionnaire. Twenty-two of the forty-eight respondents who completed the questionnaire are from the Humanities department, which this researcher belongs to as well. This means that 45.8% of questionnaire responses come from the same department as

the researcher. Because other subject areas have comparatively lower response rates, it may be that respondents were more likely to respond to a colleague in the same department. As a result, questionnaire results were not analyzed further based on department affiliation because of the appearance of skewed results. For comparison, only thirty-one of the 261 items assessed in the ALG repository, or 11.9% of items, represent the disciplines that comprise the Humanities department.

Third, it should be considered whether the researcher's role influenced how interviews were conducted. Prior to this research, the interviewer had only briefly met one of the interviewees through serving on a committee together. This researcher had not met or worked directly with any of the other eight interviewees before conducting interviews.

In conclusion it may be inferred that the overall effect of being both a faculty member and a researcher at GSU likely left the greatest imprint on the response rates to the questionnaire.

Assumptions

This section will describe the assumptions that went into developing this research and identify its limitations and delimitations.

Limitations

There are several potential limitations to this study, which will be addressed in tandem with each form of data collection.

Questionnaire. Respondents to a questionnaire on OER may be limited to those who are already knowledgeable about OER or who use OER. This means the questionnaire will not be surveying OER use among all faculty but may be better understood as analyzing OER patterns of

use just among those who use OER. This is not a problem for this project, but it should be recognized as a limitation of the scope of the study.

Interviews. Another limitation is the possibility that the faculty who responded to the interview were among the most invested in or motivated to use OER. While this may have yielded rich information about OER use among faculty teaching online, it also means that the interviews were conducted with a self-selected group. To mitigate this concern a small reward in the form of a $15 USD Amazon gift card was offered as an incentive to interview participants, as well as to thank participants for their time. Another limitation was that more interviews may have yielded greater depth to the data analysis. Despite efforts to reach out through the questionnaire and through faculty recommendations, only nine interviews were conducted. As discussed above, this was sufficient to uncover significant issues in OER reuse in online courses.

Document Analysis. This research did not study licensing used in the ALG repository impacts the revisability of its content. The reason is that nearly all items in the repository have CC open licenses, except for the four items marked as No Derivative. In addition, some resources in the repository were no longer available at the time of study, due to broken links or, in some bases, because the member institution had merged or changed its domain and were no longer hosting resources.

Community of Practice Evaluation. There were two limitations on the data collected for the CoP evaluation. The first was that while there was a listserv for communications among ALG grant recipients, access was limited to grant recipients. This limited the ability of the researcher to evaluate how engaged grantees were in using it for communications. A second limitation was that while the final reports were a rich source of information on team perspectives on their grant projects, they did not always reflect on how each team functioned collaboratively.

While some reports may reflect engagement and collaboration that is akin to what one would expect in a CoP, other reports did not address team dynamics at all. The varied nature of the reports had to be considered when drawing conclusions based on these final reports.

Delimitations

There were also several delimitations for this study worth addressing. First, this study considered courses as objects in the document analysis, in accord with the methods of web historiography. Second, even though the repository is available to all the institutions in USG, this study focused on GSU. There were two reasons for this. The first is that it facilitated IRB approval to focus on a single institution. Second, this is the author's home institution, facilitating communication with contacts for the interviews.

Another assumption involved in developing this project is using NCLC educational materials to identify course creators who use OER. As it is framed in the GSU catalog these materials are intended to meet the intention of OER. Language in some places, such as choosing study participants and developing interview questions, was chosen to reflect this overlap in meaning. This was not an issue for the last two data collection methods which dealt with analysis of the repository and related documentation, contexts which used the nomenclature of OER.

Framing the third research question as whether the context represents a CoP was another delimitation of the study. The reason for this approach was to keep the focus narrow and testable through the data collection. There are other possibilities for how to characterize community use of the ALG repository at GSU. Henri and Pudelko (2003) identified different types of communities based on a common concern such as OER. Alternately, it is possible that a repository of OER could be examined through the lens of Learning as a Network (Chatti, Jarke, & Quix, 2010; Chatti, Jarke, & Specht, 2010). More recently, there has been discussion of open

educational practices as existing in ecologies of learning (see, for example, Rouleau & Kalir, 2020, p. 173). Finally, it may even be the case that there is no evidence that those involved in the ALG repository consider themselves members of a community.

The choice of a case study for how GSU uses the ALG repository materials represented another potential limitation. What was learned from this research may not be transferable to other institutions which do not share GSU's institutional characteristics as a research university within a larger state university framework, and one with a commitment to increasingly use low cost or no cost textbooks and course materials.

Summary

The methodology for this research was developed to consider how OER are used by faculty teaching online courses at GSU, especially in relation to an affiliated repository of OER. This included identifying potential barriers to reuse of OER and consideration of what strategies help resolve those potential barriers to reuse. To do so this research developed a mixed-methods approach to collect data. A pool of 221 potential faculty was identified and contacted based on the criteria that they taught online courses in the 2021-2022 academic year that were also marked as using NCLC materials. This research followed a Pragmatic epistemological approach with an eye toward assessing approaches to OER reuse that are appropriate for developing effective educational practices. Overall, the methods outlined in this chapter cohere to form a case study of OER reuse at GSU. GSU is a college that is a member of a public, state university system and one that promotes OER use and has access to a growing repository of OER materials.

Data Collection

To assess how faculty use OER, including what problems they may encounter and how they address these problems, this project circulated a questionnaire and conducted interviews. The questionnaire was short and aimed at getting a broad view of how faculty find and use OER, and forty-eight respondents completed the questionnaire. Nine interviews were conducted with faculty to collect data on what kinds of OER faculty used, what challenges they found in using OER, how they met those challenges, and other related issues. These questions addressed the second research question, which asked how faculty incorporate OER into their online courses.

To examine the ALG repository a document analysis method assessing the contents of the repository was developed. This document analysis focused on identifying the file types present in each item in the repository. This data collection method focused on the first research question, which asked how revisable the contents of the repository were.

The fourth method of data collection was to examine the affordances and related documentation of the ALG repository to ask whether this setting can be described as a CoP. This was to address the third research question. Additionally, some information from the interviews addressed this question as well.

Data Analysis

Data analysis similarly used different methods to assess the information collected. To address the first research question, the contents of the ALG repository were assessed by assigning a Revisability Score. This score was developed based on the ALMS analysis. The second research question developed conclusions based on results from the questionnaire and interviews to seek patterns in how faculty adopt and adapt OER into their online courses. Finally,

the setting was evaluated in terms of a CoP based on the affordances and documentation associated with the repository.

Chapter 5: Results

Introduction

This study involved a mixed-methods approach that included four streams of data collection: a questionnaire circulated to faculty teaching online courses marked as NCLC, interviews with faculty teaching online courses marked as NCLC, an analysis of a repository of OER, and studying evidence that could ascertain whether it is reasonable to use the concept of a community of practice to describe the context of OER use at GSU.

The analysis of the ALG repository addressed the first research question. Both the questionnaire and the interviews addressed the second research question. The third research question used information from an analysis of the affordances involved in maintaining the ALG repository as well as some information from the questionnaire and interviews. Table 4 summarizes the relationship between the data collection methods and the research questions. Results are presented here as they apply to and address each of the research questions.

Table 4

Data Collection Methods by Research Question

	Questionnaire	Interviews	ALG Repository Analysis	Community of Practice Evaluation
RQ1: How revisable are OER in the USG repository?	No	No	Yes	No
RQ2: How do faculty integrate OER into their online courses at GSU?	Yes	Yes	No	No

RQ3: Does the context of OER reuse at GSU represent a CoP?	Yes	Yes	No	Yes

Data was collected in several phases. The ALG repository was examined from December 2021 through June 2022 and reflects materials added to the repository through Spring 2022. The questionnaire was circulated from March to May 2022. Interviews were conducted in April and May 2022. The CoP evaluation was conducted from November 2022 through January 2023.

Research Question One: How revisable are OER in the USG repository?

The first research question asked, "How revisable are OER in the USG repository?" To answer this question the contents of the repository were catalogued, focusing on the file types of the items hosted by the repository. By the time the analysis was completed, there were a total of 521 items surveyed and catalogued. Of these, seven items were excluded from the assessment due to broken links or missing content yielding a total of 514 scorable items.

The GALILEO portal to the ALG repository organizes materials based on their type, such as Course Syllabus, Open Course, Open Textbook, and so on. However, many items appeared to contain components from more than one type. For example, many open courses included both lectures and homework. In these cases, the assessment form identified each type of content that was attested. This is important to note for some results where the total number of resources may appear to be greater than the number of resources in the repository.

Based on this concern, items identified as Course Syllabi were set aside. Of the 514 scorable items in the repository, nearly half (49.2% or 253 items) were the aforementioned

single-category Course Syllabi. Teams completing Transformation Grants are required to submit a syllabus with their final reports. Transformation Grant Final Report template is in Word format, though course syllabi were stored in both PDF and Word formats in the repository. Since having nearly half the repository in the more-revisable category of Word format would skew and obscure the analysis of the other 261 content items in the repository, these have been set aside from analysis using the Revisability Score.

These remaining 261 items in the repository include materials such as open textbooks, open courses, homework, lectures, and video materials. The Revisability Scores for materials in the repository are determined based on these materials.

Revisability Scoring

The revisability of materials in the repository was found by first assessing the contents of each item in the repository. Once the file types for each item in the repository were catalogued, among other data collected with the assessment instrument, then each item was analyzed according to a Revisability Score. The scale was constructed based on the number of Yeses for each file type according to Table 1 in Chapter 3. It depended on which file types were attested for each OER item in the repository. The number of Yeses in each row suggests that a given file type is more revisable. The Revisability Score is then found by identifying the most restrictive file formats preventing full revision in each material. This means that if a resource included recorded video lectures as well as text explanations in HTML, the video lectures would result in a lower score for the resource overall. The Revisability Scale was a measure of whether OER in the repository were “Fully Revisable”, “Mostly Revisable”, “Somewhat Revisable”, or “Not Revisable”. The definitions of Revisability Scores are summarized in Table 5. A numeric value

from one to four was assigned to each level of the Revisability Score for the sake of analysis and comparison.

Table 5

Revisability Score Summarized

Score	# of ALMS analysis criteria met	Numeric value assigned	Description
Fully Revisable	All four	4	The resource and its components are easily revisable without specialized software or training or fundamentally altering the items in question.
Mostly Revisable	Only three	3	The resource and its components include elements that do not meet one of the criteria for revisability in the ALMS analysis (i.e., they need specialized software, expertise, cannot be edited meaningfully, or source files are not accessible)
Somewhat Revisable	Only two	2	The resource and its components include elements that do not meet two of the criteria for revisability in the ALMS analysis (i.e., they need specialized software, expertise, cannot be edited meaningfully, or source files are not accessible)
Not Revisable	None or one	1	The resource and its components include elements that do not meet three of the criteria for revisability in the ALMS analysis (i.e., they need specialized software, expertise, cannot be edited meaningfully, or source files are not accessible)

One caveat is that some materials were offered in both PDF and Word format, with identical content in each format. The Word versions were typically identified as being made available for reasons of accessibility. However, given that they contained identical content, these materials were scored based on their Word format versions. The rule for scoring items in the repository was this: if there are identical copies of materials in different formats, the least restrictive format was used in scoring, but if there are essential elements in a resource across the offered formats, then those restrictive file types were factored into the final Revisability Score. In terms of PDF and Word formats, this leads to no significant difference in overall score. But it is noted here because until recently PDFs were largely uneditable without specialized software. Libre Office is open-source software that facilitates editing PDFs and moreover, faculty at GSU now have access to an institutional subscription to Adobe Acrobat. As a practical matter, however, Word documents are still more easily editable.

Another caveat is that file formats were only counted if they included clear pedagogical content. This was a concern primarily for images embedded in repository items. Images that were primarily decorative in nature were not counted.

Additionally, a few resources in the repository were miscellaneous file types and software applications that did not fit into the table of common file types. In some of these cases, the files could not be opened without downloading additional software to review these file types. These file types were handled on a case-by-case basis.

One final caveat is that a distinction was made between media that were embedded as part of an OER in the repository, as opposed to linked media hosted externally as a web resource

or other OER. The rationale for this is that the links for externally hosted media could be replaced or removed without requiring substantial alterations of the listed OER. On the other hand, if a media source was embedded in the OER, then it was being presented as a substantial component of the OER, even if the embed correlated to an external source. For example, a YouTube video embedded in an open course in the repository was counted as a video file, whereas if a course referred students to a YouTube video via a web link, then it was counted as an external link.

Revisability Results

The overall Revisability Score of these items in the repository is presented in Table 6 below. As suggested by these results, nearly three-fifths of the contents of the repository have elements that land them in the Somewhat Revisable or Not Revisable categories. Two-fifths of the items were scored as Mostly Revisable. Only one item was scored as Fully Revisable. This lone item was prepared using Google Open Documents and is fully revisable based on file formats alone. However, access to the files itself is restricted to users with a Google account and requires permission from their creator to revise them.

Table 6

Revisability Scores for Contents of the ALG Repository

Score	Number	%
1 (Not Revisable)	73	28.0
2 (Somewhat Revisable)	82	31.4
3 (Mostly Revisable)	105	40.2
4 (Fully Revisable)	1	0.4
Total	261	100.0

The mean revisability for the repository as a whole is 2.1, using the numeric values for each category, which is just above the Somewhat Revisable score.

Revisability by Year. When we break down these scores by year, we do not see any significant trendline toward greater revisability scores over time. Overall mean Revisability Scores fluctuate between 1.9 and 2.4, as presented in Table 7. A graphical representation of this data is presented in Figure 4.

Table 7

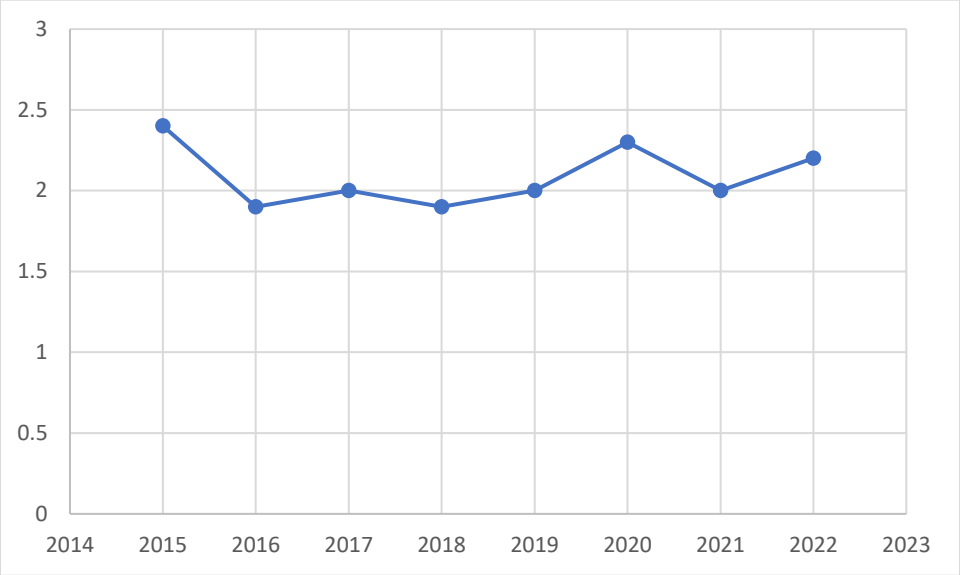
Revisability of Items Added to the ALG Repository by Year

Year	Not Revisable		Somewhat Revisable		Mostly Revisable		Fully Revisable		Mean ALMS Score	Totals
	#	%	#	%	#	%	#	%		
2015	6	19.4	6	19.4	19	61.3	0	0	2.4	31
2016	6	42.9	4	28.6	4	28.6	0	0	1.9	14
2017	8	30.8	9	34.6	9	34.6	0	0	2	26
2018	13	29.5	17	38.6	14	31.8	0	0	1.9	44
2019	16	34	13	27.7	18	38.3	0	0	2	47
2020	6	18.2	8	24.2	18	54.5	1	3	2.3	33
2021	15	34.1	15	34.1	14	31.8	0	0	2	44
2022	3	13.6	11	50	8	36.4	0	0	2.2	22

Note. The percentages in each row are based on the total number of OER added to the repository for that year. Figures in the Mean column are based on the numerical scores associated with each level in Table 5.

Figure 4

Mean Revisability of the Contents Added to the ALG Repository (2015-2022)



Note. Figure 4 visually represents the data from Table 7 using the numeric Mean scores for each level of the Revisability Scores.

Revisability by Subject. The following table also shows revisability scores broken down by subject. Subjects for repository materials are identified on the ALG page hosting each item in the repository and follow these categories. The sample sizes for most departments are too small to make robust conclusions about their revisability, though for departments contributing more than ten materials, English stands out has having a mean revisability of 2.9, or just under the Mostly Revisable category. This may be due to the materials being largely text-based in nature.

Table 8

Mean Revisability of ALG Repository Contents by Subject Area

Subject	Not Revisable (1)	Somewhat Revisable (2)	Mostly Revisable (3)	Fully Revisable (4)	Mean	Total
Biological Sciences	10	11	7	0	1.9	28
Business Administration, Management, and Economics	6	3	2	0	1.6	11
Chemistry	6	10	3	0	1.8	19

Communication	2	0	5	0	2.4	7
Computer Science and Information	11	12	26	0	2.3	49
Criminal Justice	1	0	2	0	2.3	3
Education	1	3	4	0	2.4	8
Engineering	2	0	0	0	1	2
English	1	1	14	0	2.9	16
Fine Arts	3	3	2	0	1.9	8
First-Year Experience	1	0	1	0	2	2
Foreign Languages	2	3	0	1	2	6
Geological Sciences and Geography	1	2	3	0	2.3	6
History	6	2	5	0	1.8	14
Information Literacy	1	0	0	0	1	1
Mathematics	11	8	10	0	2	30
Nursing and Health Sciences	4	3	0	0	1.4	7
Philosophy and Religion	1	1	0	0	1.5	2
Physics and Astronomy	3	7	5	0	2.1	15
Political Science	1	0	2	0	2.3	3
Psychology, Sociology, Anthropology, and Social Work	2	14	10	0	2.3	26

Note. The numbers in the heading row represent the numerical values of each level of Revisability Score (see Table 5), as do the results in the Mean column.

File Types in the Repository. Another pair of questions we can ask of this data set is, what kinds of file types are represented in the repository? And how many of each? Table 9 summarizes what kinds of file types are represented in the repository, as a function of the material types represented in the repository. Note that the total number of file types represented exceeds 261 items since many resources include multiple file types. Additional types of files that were not identified specifically in the assessment instrument are included in the "Other" category.

Table 9

Quantity of File Types Represented in ALG Repository Content Categories

File Types	Assessment	Homework	Lecture Slides	Open Course	Open Textbook	Video
HTML	2	12	11	70	50	4
PDF	0	18	15	46	66	0
PPT	0	0	21	45	8	1
Word	6	16	21	48	47	1
Audio	0	0	2	3	3	0
Video	0	3	6	37	21	12
Open Office	0	1	0	0	1	0
Images	0	4	16	55	46	0
ZIP	6	15	22	46	14	2
Other	1 (D2L, XML)	7 (.pg, .def, Kindle)	Kindle (1) Java (1), other software (1)	D2L (3), IPYNB (5), Excel (2), software files (5), Google Docs (2)	Kindle (1), .pg and .def (1), iBook (1), EPUB (1), Wolfram Mathematica (1)	0

Links to External Resources. The analysis also collected data on whether the contents of the repository included external links to online resources as well as whether contents included other OER. These were treated as distinct categories: items scored as containing external links were for free-to-use digital resources that were not designated as OER, while items scored as including OER were for materials specifically designated as OER and including appropriate licensing. The resources included here were treated separately from file types in the content itself since they are hosted outside of the repository and are merely linked to by the content items.

Table 10 shows how many materials included OER, external non-OER links, both, or neither. As the table shows, just over half of items in the repository include non-OER external links. Just under one-third of items include OER from other sources. This data is illustrated in Figure 5.

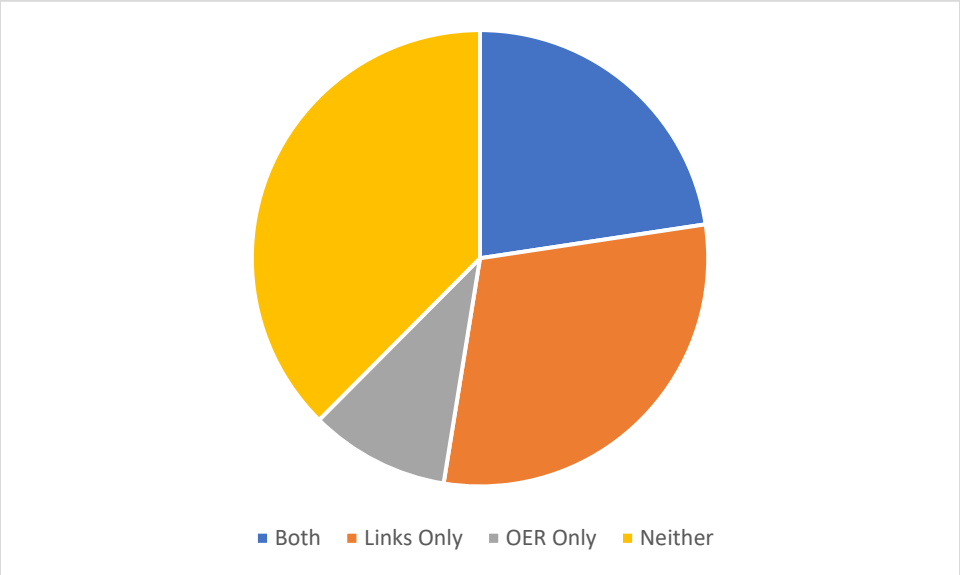
Table 10

Prevalence of Other OER and Web Resource Links in ALG Repository Contents

	Other OER					
	Present		Not Present		Totals	
External Links	#	%	#	%	#	%
Present	59	22.6	78	29.9	137	52.5
Not Present	26	9.9	98	37.5	124	47.5
Totals	85	32.6	176	67.4	261	100

Figure 5

Links to Other OER and Web Sources for ALG Repository Contents



Note. Figure 5 visually represents the four quadrants in Table 10.

Table 11 shows a breakdown of the use of external OER and non-OER web links by year to see whether there are trends in the use of additional OER or external links.

Table 11

Inclusion of Web Resource Links and Other OER for ALG Repository Contents by Year

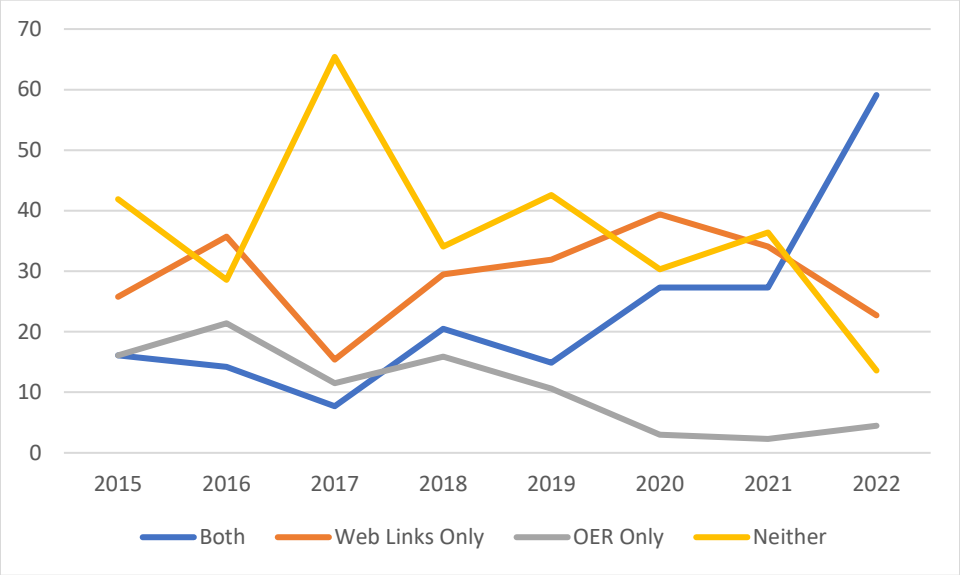
	Web Links Only		OER Links Only		Both		Neither		Totals
Year	#	%	#	%	#	%	#	%	
2015	8	25.8	5	16.1	5	16.1	13	41.9	31
2016	5	35.7	3	21.4	2	14.2	4	28.6	14
2017	4	15.4	3	11.5	2	7.7	17	65.4	26
2018	13	29.5	7	15.9	9	20.5	15	34.1	44
2019	15	31.9	5	10.6	7	14.9	20	42.6	47
2020	13	39.4	1	3	9	27.3	10	30.3	33
2021	15	34.1	1	2.3	12	27.3	16	36.4	44
2022	5	22.7	1	4.5	13	59.1	3	13.6	22

Note. Percentages in each column are calculated as a fraction of the totals for each year.

Representing this data in a chart shows a trend toward increased use of links to both OER and free-to-use digital sources, as seen in Figure 6. The most significant trendline this figure reveals is the increased use of both additional OER and external web links together over time. These are largely new additions to the repository. Until ALG added the Continuous Improvement grant process in 2022 to facilitate revisions to existing materials in the repository, there was no formal mechanism for revising ALG repository materials. Grants that existed prior to this were solely for the addition of new OER to the repository.

Figure 6

Percentage of ALG Repository Materials Using Web Links, External OER, Both, and Neither by Year



Note. Figure 6 shows trendlines for OER using free-to-use web links, additional OER, both and neither, based on the totals in Table 11.

Research Question Two: How do faculty integrate OER into their online courses at GSU?

Whereas the first research question asked how revisable the materials in the ALG repository were, this second question asked what faculty do to integrate OER into their online courses. A questionnaire was circulated and interviews were conducted to address this question.

Questionnaire

Respondents. Selection criteria for potential participants for the questionnaire were that the faculty needed to have taught at least one online course in the past year and that this course used OER. The course schedule for the 2021-2022 academic year was used to identify faculty who met these criteria. For the OER requirement, faculty who were included as potential participants were those whose courses were marked as NCLC in the course schedule. A total of 221 faculty were identified as potential participants based on these criteria and were invited to complete the questionnaire. Three rounds of invitations were circulated between 3/31/2022 and

5/4/2022. Of the 221 faculty who were invited to complete the questionnaire, fifty-two began the questionnaire. Two respondents did not respond to any questions, and two more did not reply to any questions about OER use, so the data represents forty-eight respondents after these four were removed from the data set. This yields a response rate of 21.7% who completed the questionnaire from the overall potential pool.

Characteristics of Respondents. The following three tables show a breakdown of characteristics of respondents to the questionnaire. Table 12 shows the position of respondents at the university, most of whom were tenured or tenure-track faculty. Table 13 shows a breakdown of how long respondents had been teaching online. A plurality of respondents had been teaching online for over a decade. Interestingly, despite the shift to remote teaching in 2020, only five respondents indicated that they had only started teaching within the previous two years, suggesting that most questionnaire respondents were experienced at delivering distance education. Finally, Table 14 shows the breakdown of respondents by subject area. For each of these three tables the two respondents who did not answer any further questions about OER were removed from the results.

Table 12

Roles of Questionnaire Respondents

Role	Respondents
Faculty (TT)	34
Faculty (NTT, full-time)	12
Faculty (NTT, part-time)	2
Staff or Other	0
Total	48

Table 13

Number of Years of Online Teaching for Questionnaire Respondents

Years Teaching Online	Respondents
0-2 years	5
3-4 years	8
5-6 years	6
7-8 years	5
9-10 years	4
11 or more years	20
Total	48

Table 14

Disciplines Represented by Questionnaire Respondents

Discipline	Respondents
Humanities (including English)	22
Natural Sciences	7
Social Sciences	6
Education	3
Kinesiology and Health	3
Mathematics	2
Language	2
Computer Science and Engineering	1
Fine Arts	1
Business Administration	1
Total	48

OER Adoption. Question 4 of the questionnaire asked what kinds of OER respondents used in their online courses. Respondents could check as many as applied. As Table 15 shows, two-thirds of respondents use open textbooks. Most respondents also link to external web pages and use online media (78% and 86% respectively). The respondents who marked "Other"

indicated a variety of other educational materials. One used audio recordings; two others identified news and journal articles as a distinct source of open resources. Three respondents indicated that they created their own OER and two respondents used materials shared within their own departments. Since these are both topics that arose in interviews with some subjects, these materials and their use will be discussed further under the interview results.

Table 15

Question 4: Types of OER Used

Responses	**#**	**%**
I have used online media (images or videos)	43	86
I have linked to web pages	39	78
I have used an open textbook	33	66
I have used open interactive learning materials	21	42
I have used one or more open assessments	10	20
I have used an open content module	9	18
Other	9	18
I have used entire open courses	8	16

Question 5 asked where respondents found their OER materials. Results are displayed in Table 16. Respondents could again indicate more than one option. For the respondents selecting "Other," there were two respondents who made their own materials, and two more who indicated they use in-house departmental materials. Five others indicated they found their materials through faculty referrals. Interestingly, a quarter of respondents used materials from the ALG repository. The majority (72%) indicated that they find at least some OER through online searches. Some of the free responses also indicated that sites like YouTube and Lumen Learning as well as the websites of their respective professional organizations are important for finding open resources.

Table 16

Question 5: Where Respondents Find OER

Responses	#	%
Through Online Searches	36	72
Creative Commons	18	36
Other	17	34
Affordable Learning Georgia	12	25
OpenStax	11	22
MERLOT	8	16
OER Commons	8	16

Question 6 asked respondents how they revise OER materials, as shown in Table 17. Respondents could check all that applied. Just over a quarter (28%) indicated that they did not revise OER at all. Nearly half (48%) indicated that they add curation of some sort. Over half (54%) indicated that they remix the resources with other OER or no-cost resources.

Table 17

Question 6: How Respondents Revise OER

Responses	#	%
Combined them with other OER or no-cost resources	27	54
Curated resources or added explanation	24	48
Changed file formats of a resource	18	36
Improved accessibility of resources	15	30
I did not revise OER or no-cost resources	14	28
Edited the text of the resources	13	26

Other	2	4

Question 7 asked respondents what changes they make to their course to accommodate the use of OER. Results are shown in Table 18. Over half indicated they make changes to content and/or course assessments to accommodate OER (58% and 52% respectively). Over a third (36%) added curation to their courses. Only 22% indicated that the addition of OER did not necessitate changes to their courses. Out of the five "Other" responses three indicated they overhauled their entire course to use only free or open resources. One indicated that they added new lectures to accompany OER.

Table 18

Question 7: How Respondents Modify Courses to Accommodate OER

Responses	#	%
I revised course content	29	58
I revised course assessments	26	52
I curated open or no-cost materials	18	36
I did not make changes to the course to add open or no-cost materials	11	22
Other	5	10

Question 8 from the questionnaire addressed how respondents discussed OER with others. Since it feeds into results for RQ3, it will be addressed in that section below.

Interviews

Participants. Interviews with faculty provided more granular and varied responses to the question of how faculty integrate OER into their online courses. Potential interviewees were identified through the questionnaire, as interviewees could identify whether they would be willing to be interviewed. Sixteen questionnaire participants expressed potential interest in sitting for an interview; of those, nine interviews were conducted. Interview participants were also asked to recommend other faculty who taught online with OER who could potentially be contacted for interviews. This question did not yield any new interviewees. Interview participants received a $15 USD Amazon gift certificate as an honorarium for their time.

Nine interviews were conducted with faculty who used OER in their online courses. Interviewees' experience with distance education ranged from two years of online teaching to twenty-seven years, with the median years of experience teaching online being five years. Participants represented a variety of disciplines. Identified broadly by their departments, two participants were from the Humanities, one from English, two from History and Political Science, two from Life and Earth Sciences, one from Cultural and Behavioral Sciences, and one from Health Professions. To protect the privacy of participants some identifying information has been redacted in reporting results. This redacted information includes gender pronouns, course designations, and the disciplines within their departments each interviewee is affiliated with. Letter codes from A to I have been used to refer to interview participants.

Defining OER. Before proceeding it is worth considering how the interview participants understood OER. Six of the nine participants identified OER as generally free materials with an intended educational purpose. Most (six of the nine participants) also included educational materials they produced themselves and intentionally shared with others, either formally or

informally. Nearly all (eight of the nine) used both OER and publicly available web materials as part of their no-cost approaches to courses.

Going forward, publicly available web materials will be identified as free-to-use (FTU) online materials as a category distinct from OER. The distinction here is that FTU materials are those which are publicly available on the web but are not primarily intended as educational in nature until a faculty member adapts them for use in their courses. Interviewee F illustrated the use of both OER and FTU materials as follows:

> I'm familiar with what I use, which is the OpenStax textbook. And then I don't know, it's, I don't know how you want to define this too, because I use other materials that I sort of scavenge off the web that are not officially educational resources.

For another example, Interviewee B described how OER and FTU materials from the web were both useful for their students. They expressed an awareness of the distinction, but also reasoned that both were useful for meeting the criteria of providing useful materials for students at no cost:

> I mean, I'm looking at it as my desire to use them comes from the standpoint of no- to low-cost, no-cost. And then I know that there are some things that are, you know, part of an OER project, specifically, maybe an open-source textbook or something. But there's a lot of other resources that maybe don't have that exact title, but that are free to use. No copyright or open copyright. And no cost.

When asked about the distinction, interviewee participants generally expressed an awareness of the distinction between OER as commonly construed and FTU materials adapted for educational purposes, as seen in the preceding examples. None of the interviewees explicitly mentioned academic fair use principles in discussing FTU materials, though Interviewees C and

F did mention fair use in the context of copying chapter or article pages from published sources to use in their courses.

Types of No-Cost Materials Used. The types of open materials interview participants described using are summarized below in Table 19. All participants used OER as it is commonly defined, and eight of the nine participants used FTU materials they put to an educational purpose. These FTU materials included YouTube videos, copied or linked web pages and blogs, government data sites, copied news articles, podcasts, images, and music.

Table 19

Types of Open Resources Used by Interview Participants

Interviewee	Types of open resources reported	Did they use an open textbook?	Did they generate their own OER?	Do they use FTU web resources?
A	Self-generated materials; PPTs; YouTube and other audio links	No	Yes	Yes
B	Open textbook; self-generated materials; government sources; built an open course template for the dept.	Yes	Yes	Yes
C	OpenStax textbook, uploads PDF copies of newspaper and journal articles and primary source docs; podcasts; scanned some pages from textbooks within Fair Use limits	Yes	No	Yes
D	Crowd-sourced open textbook; OpenStax textbook; supplemented with self-made lectures; primary-source documents found online	Yes	No	Yes

E	Open textbook through ALG, self-generated PPTs, library resources	Yes	Yes	No
F	OpenStax textbook; Wikipedia open text; FTU web materials; articles from New York Times and other news media; videos from professional organizations; self-generated resources	Yes	Yes	Yes
G	Free online Web resources such as media, recording, poetry, texts, PDFs, YouTube videos, music, blogs, and film; OER from another university's repository; self-generated materials	No	No	Yes
H	OER from a professional organization's repository; free online Web resources, images from Creative Commons, images from government websites; YouTube; found OER through online searches, professional websites, conferences, Twitter contacts	No	Yes	Yes
I	Uses open course and open textbook created with colleagues and hosted in ALG repository; YouTube videos; also used materials from Project Gutenberg and Annenberg Learner	Yes	Yes	No

Interviewees generally indicated that they tried to ensure that FTU materials they used were given an educational purpose. Interviewee A said that rather than simply linking to external resources, they embed links in their lessons:

> I use different links that I found on YouTube and I embed them in my materials because we used to list them in the content for them, but I wanted them on the page with the material that they were doing at that time.

Interviewee F used news articles and media off the web to supplement their use of an open textbook. Interviewee C used news articles, podcasts, and primary source materials. Interviewee G listed "different types of media, be it recordings, poetry, texts, PDFs, YouTube, videos, blogs, film, all available for free, online," adding "And if that for you fits into OER that's what I've been using." This interview participant did follow this up with a rationale for considering FTU materials as OER once they are integrated into a course and given an educational purpose. Interviewee I described using ALG OER as well as YouTube videos and materials from Project Gutenberg and Annenberg Learner. Interviewees B and H both mentioned governmental sources as well as open textbooks and other OER. Interviewee H also specifically mentioned finding materials to use from colleagues at other institutions through social media and professional organizations.

Of the materials interviewees identified explicitly as OER six participants indicated that they used open textbooks. Six participants also identified as OER materials that they themselves created and shared with others. Two of these self-produced materials included textbooks that had been produced collaboratively through an ALG grant and were stored in the ALG repository. One other participant (Interviewee H) created content and assessments as part of a team through a grant sponsored by a professional organization in their discipline. The other self-produced materials ranged from lectures in PowerPoint shared informally, to other types of content and assessments, to entire open courses.

Motivation to Use OER. Interviewees expressed a range of experiences that first interested them in using OER. Most learned about OER from colleagues, either in their own department or through professional conferences. In several cases, the interviewee was not sure of

how they first learned about OER but credited both. For example, Interviewee A described learning about OER at conferences as well as from advocacy by their department chair. Interviewee C learned about OER from a trade publication in their field. Interviewee F credited professional development through GSU's Center for Teaching, Learning, and Online Education as the impetus to start using OER. Interviewee H described formerly holding a position developing educational materials for a high school program that required them to utilize materials that were free and open. Interviewee G explained that they had already begun supplementing their teaching with open and FTU materials, and this was the motivation to self-educate about OER.

The most important factor motivating interviewees to use OER was the cost of textbooks. Seven of nine participants identified this as a key issue. Most explained that the use of OER was an issue of fairness to their students.

Some also recognized there were pragmatic dimensions to using OER that gives them a competitive advantage in terms of attracting and retaining learners. For example, Interviewee B described how when students are choosing between their course and a course in another department that meets the same requirement, having a free textbook is a competitive advantage:

> But you know, the textbook from Pearson, for a one semester course in [REDACTED] for non-majors is now like $180. And they can't use it for any other course. So that, you know, they're not going to sign up for our class, if they know it's going to cost that. And they can see that Astronomy is not going to use a book. And that's one of our main competitors. So I was looking at it from a competitive standpoint.

Similarly, Interviewee G reflected on how most of their students were not majors in their field, and non-majors are less likely to spend money on a textbook.

Grant money was another motivation to develop OER. Interviewee E explained that they and their colleagues received a grant to redesign their course using low-cost and no-cost materials. This also led them to incorporate more materials through the college library in their course. Interviewee H received a grant to develop materials for an OER repository in their professional organization. Interviewee I and their colleagues were awarded multiple grants to develop a textbook for the ALG repository as well as a two-course sequence to accompany it.

Others expressed disdain for publishers' textbooks as motivating them to adopt OER. Interviewee F expressed disdain for working with publishers and bookstores, and in particular, not subjecting students to their "games". Interviewee H stated they were "not a fan of the textbook industry."

Finally, several interview participants used open resources as a way to expand and diversify the curriculum in their courses. Interviewee A, who teaches in world languages, explained that they turned to open resources and creating their own materials because of the textbooks that were available,

> None of them were suitable to me because I was trying to get away from the typical [REDACTED] topics of clothing, colors, house, and teach them real, authentic things you might say. And get away from exercises so much and get away from lists of vocabulary, the traditional way of teaching language.

Interviewees C and F both supplemented their courses with a variety of materials to expand the scope of their courses. Being able to use open resources freed some of these

interviewees from being bound to an established curriculum. Finally, Interviewee H captured the tension between using the materials others have created versus altering materials to reflect an individual instructor's pedagogical preferences:

> If people are going to use a template it is, to me, it is to a certain extent important that everybody play by the same rules. So I feel I need to feel out how much reasonable freedom as an instructor I have, how much variance I can have from whatever the policy is.

Overall, while all the interview participants believed it was important to provide students with NCLC options in their courses, there were additional motivations that supplemented this concern and shaped their choices in adopting open resources.

Challenges in Finding OER. Most interviewees also described the challenges they had in finding OER. The most frequently voiced concern was about the quality of the OER they found. This was expressed by some as a tension involved in weighing the quality of OER against the benefit of offering students a free resource. As Interview D put it,

> I have found that the OER textbooks have been of slightly lower quality, I would say, than traditional textbooks. But I weigh that against the fact that it's free for students. And the fact that I can always supplement with other resources. And I use other freely available resources that I can provide students through iCollege. So for me, the tradeoff is that even though they're a lower quality, I figure I can always supplement and add and correct if I need to, through communications in the classes.

Another interviewee colorfully described hunting for good quality OER as "like going to a Goodwill store, you have to really dig through a lot of garbage before you even find something that's worth it" (Interviewee I). Interviewee H noted that it takes time to evaluate OER,

commenting that “You can't just trust that something was written and labeled appropriately”. This interviewee also noted that with digital resources they need to revisit and check the materials every time they use them to ensure links and resources in the OER are up to date.

Interviewee G identified representations of diversity as an issue for finding quality OER. They noted that most textbooks show speakers who appear white, but that finding depictions of non-white speakers in OER was an important concern for their world languages course. For some context, according to the GSU website, 77% of the student population at the university identifies as non-white (Georgia State University, n.d.).

Three interview participants had trouble finding OER that met their curriculum needs. Two respondents in particular noted that the OpenStax textbook for their subject was designed to be used in a two-semester sequence, whereas at GSU the course in question was taught as a one-semester course. Interviewee D explained that the GSU approach to teaching their subject as a one-semester course was “really unique across colleges”, and that this approach to the curriculum “makes it really hard to find textbooks that work for our classes, much less OER textbooks.” In this instance the interviewee noted that a colleague in their department had edited an open textbook in their field to reflect their department’s one-semester curriculum and shared it with members of their department.

Interviewee E noted having trouble finding OER for the content they teach. They stated that repositories like MERLOT and OpenStax “don't really offer things that are specific, because I teach very specific courses …. it's really challenging to find something in that subject area that's not from a main publisher.”

One final concern was localization. Interviewee B described how they used sections of a Canadian open textbook in their field. However, since this book used examples of their subject matter from Canada they had to supplement it with materials that more closely reflected the local context of Georgia. Interviewee F also noted that while there was a good Canadian open textbook in their field, "you cannot grab the Canadian chapter on race and ethnicity in Canada and assign it in the United States and have it make any sense." This required supplementing the textbook with additional materials, including remixing it with materials from another open textbook.

Revising OER. When asked about whether they revised OER, five of the respondents indicated that they often change file formats between HTML, Word, or PDF documents. These changes reflected the preferences of individual faculty. For example, some interview participants preferred using PDF files, while Interviewee I strongly disliked using PDFs. Of these five respondents, most also mentioned copying text from HTML to save pages in Word or PDF in their courses. Four of the respondents also indicated that they revise OER to meet accessibility needs for students.

Typical of the preference for PDF was Interviewee F who used PDF chiefly when making a copy of a web page of an article for use in their class, though they indicated they also provided a link to the original source. Interviewee G explained that using PDF means having control over the content provided to students in their language class:

> I tend to provide my students as regularly as possible with PDFs simply because then I can control the content. They can't go in and alter it and accidentally backspace over

> something and now create an illogical sentence or provide a question that when they answer it, it's correct.

On the other hand, Interviewee I expressed disdain for using PDFs for two reasons. First, they explained that PDFs are not always accessible to screen readers. Second, they noted that a lot of PDFs are simply scans of other documents and they go on to explain that "it looks like it was mimeographed and then copied 500 times and then put into a PDF scanner. And I can hardly read it. And it's terrible." Interviewee I also further described the efforts to change file formats of their OER textbook in the ALG repository to ensure that HTML and Word copies were available for download, accessibility, and LMS integration. Interviewee D preferred Word documents not only because they could add a few lines to introduce the document and to "explain what they should be looking at and looking for, particularly related to how they should be reading it" as well as to improve accessibility.

Scaffolding. Five of the faculty interviewed also used scaffolding as an intentional strategy for integrating OER into their courses. Scaffolding is "a process through which a teacher adds supports for students in order to enhance learning and aid in the mastery of tasks" (IRIS Center, n.d.). Most often participants indicated they added text to introduce and contextualize documents they pulled into their courses, as described by Interviewee D above. Four of those for whom scaffolding was attested added introductory text to the OER in their courses to guide the students and/or to integrate the materials with other content the students were learning. Three of these faculty also added scaffolding in the OER itself, using markup tools to guide students through the OER.

Interviewee C used a program called Perusall to engage students with resources in their class. Perusall is a curation program that allows students and the instructor to annotate particular passages in a text or audio file. This instructor described and demonstrated using Perusall to manage discussions on key texts, for example, and used both open textbook pages as well as web-accessible materials with this application. The application allows the students to comment on the text, and the instructor can add comments to the students' reflections.

Interviewee F described using articles or media off the web in their courses in a similar process. These resources were brought into their course without revision, but were then used as objects of discussion in the course:

> I'll have them watch a video, or I'll have them read a really short little article, or something like that. And I have some other little short articles sprinkled in, you know, to the, to the required readings, but especially for the discussions, like here, look at this, and then talk about [it].

In summary, the two main strategies faculty employed to scaffold open resources into their courses were firstly to add explanatory text explaining the context and how to use the materials and, second, to tie those materials to some form of activity or assessment.

Research Question Three: Does the context of OER reuse at GSU represent a CoP?

The third research question asked if there is evidence that OER was reused at GSU as part of a community of practice. Data for this was primarily collected through the interviews and by examining the affordances of the ALG repository and other measures GSU has implemented to promote OER use. The questionnaire also provided some broad data for consideration of this question. The characteristics of the questionnaire and the interviews have been described

previously. This study also examined the resources and affordances of the ALG repository and affiliated grant process, including grant proposals available through the repository. Final Reports submitted by teams reflecting on their experience making and using OER were also studied as part of the data collected for this question.

Questionnaire

For a broad look at whether faculty worked with others to use OER the questionnaire included a single question asking the following:

> Q8: Have you consulted with or discussed using OER or no-cost materials with others at GSU? (Check all that apply)

The majority of faculty did at least consult with others at the institution, as shown in Table 20, with only six "lone wolf" respondents who reported that they did not consult with anyone. The majority (thirty-eight or 79.2%) discussed OER use with other faculty, and nearly a quarter consulted with library staff or instructional support (22.9% and 25%, respectively).

Table 20

Question 8: Who Respondents Discussed OER With

Responses	#	%
Yes, with other faculty	38	79.2
Yes, with my department chair	17	35.4
Yes, with instructional support	12	25
Yes, with library staff	11	22.9
No, I did not consult with or discuss using OER or no-cost materials with anyone at GSU	6	12.5

Interviews

The interviews substantiated the view that faculty often do discuss OER with others, and often collaborate as well. All interviewees indicated that they had at least discussed OER with others.

Collaboration. Eight of the nine interviewees discussed active efforts to collaborate with colleagues and/or support staff to find, create, or revise OER materials. Two of the interviewees had collaborated to create open textbooks for the ALG repository and had worked with ALG staff. Three others worked with librarians to find and collect materials for their OER. Three faculty had worked with instructional designers at the college to put together their OER. And one faculty member did not actively develop OER with support staff but credited the college's professional development workshops with guidance that led to their efforts to develop and use OER. Eight of the nine interviewees also described efforts to actively collaborate with other faculty in their department. Two of the interviewees used OER that a departmental colleague shared with them, and one other interviewee shared their own OER with colleagues.

Three interviewees who received grants to develop OER materials described a complex and collaborative process with colleagues to create these materials. All three of these interviewees had an active process of discussion with colleagues in their department in the creation of OER as well as consultation with instructional designers to create these repository materials. As an example of this process Interviewee I described how they regularly consult with their colleagues to revise and update their OER textbook in the ALG repository. This participant offered an illustration of the collaborative process they were involved in to create an open textbook in the ALG repository. They described their experience of collaboration as:

> So I worked with a big committee when we created the [REDACTED] [open textbook]. And we were a very small committee to create the templates and we have this like incredible synergy, like we understand exactly what each person is supposed to be doing. And we just do it like we get this done so fast.

This interview participant further qualified their interactions as one in which they give each other feedback as they revise and edit their materials:

> We all work together to edit each other. We ask each other very serious questions, you know, is this one necessary? Can you make this more simple? Is there a way to do this?

Finally, this interviewee indicated that they have developed one open course template and are working on a second in a sequence. They stated that "it was my idea to create it in iCollege so that people could download it and make the modules for whatever they wanted. And they would all be interchangeable." Creating open course sections that used their own open textbook was part of a deliberate strategy to make a course that not only integrates the open textbook they had already created but would be customizable as faculty could remix different readings and modules as it suited them. This strategy also benefited students insofar as it streamlined their ability to access and use learning materials. As this interviewee put it,

> Everything is open educational resources, and I integrate them into iCollege because I don't want my students to be going outside of iCollege, because then they're going to face things, like things that are not accessible.

Collaboration among faculty on OER most often took place at the departmental level. Five of the faculty described how their respective departments maintain small repositories of shared materials and course templates, usually on a shared course page or within a departmental

LMS. Faculty within their department shared OER on these pages and/or collaborated to update course templates which anyone in their department could use for online teaching. Two of the interviewees mentioned that the motivation for creating these templates were for use by non-tenured faculty and adjunct faculty, and a third interviewee indicated that their shared course shells were initially intended for use by faculty who had not taught online before.

Interviewee F described a process by which they and another colleague decided to collaborate to share OER materials with their department. They decided to host a small repository of syllabi, assignments, and content resources in a departmental iCollege section with access restricted to faculty. This interviewee mentioned that a third colleague has joined their efforts, though they were not sure how many other faculty made use of the resources in this departmental repository. Interviewee B similarly described efforts to host OER on their department's webpage for other faculty to use in their courses. Interviewee H, who teaches in the same department as B, characterized this in-house repository as including individual pieces that might be useful, such as photos, lessons, components for labs, and quizzes, as well as links to useful external resources. This departmental collection had support and contributions from at least two department members.

Resistance from Colleagues. Three of the interviewees indicated that they encounter resistance from some departmental colleagues about using OER. All three interviewees felt that their colleagues were more comfortable using textbooks from traditional publishers and were resistant to efforts to make changes to their course. For example, Interviewee H described this resistance as follows:

> There is a somewhat more tenured group of people in the department we have here too who have functioned on a more traditional way of doing things that is more based around traditional textbooks and traditional lab manuals and they can be resistant to change.

Interviewee D similarly stated their impression that "There's people who've done their classes a certain way for a very long time and are just resistant to changing that." This participant similarly noted that as a contingent faculty member they had to defend their choice of using an open textbook.

Interdepartmental Discussions. Three of the interview participants also indicated that they discussed using OER with other faculty colleagues in different, but adjacent, disciplines. Interviewee G discussed OER with other faculty teaching other world languages because they shared pedagogical concerns with other language instructors. They also admitted, however, their colleagues in other languages did not or could not use the materials they shared. Interviewee F stated that they discussed OER more with members of another field because that other field had more high quality OER than their own field:

> So, you know, with our mixed discipline departments, I've actually probably had more discussions of OER with the psychologists down the hall than with the [REDACTED] who teach the same thing I do. And it made me sort of come to the conclusion that OER probably is very uneven in quality across different disciplines.

Summary. The interviews demonstrated active efforts by faculty to develop and share OER with colleagues, as well as to collaborate with colleagues in the development of OER. Some of these efforts involved informal sharing of OER between colleagues, either individually or through using a departmental website or LMS. Some described a more structured process of

collaboration through a grant process to develop OER. Most interviewees described advocating for OER in their department, though some also noted that they had colleagues who resisted using OER.

Community of Practice Evaluation

Introduction. The final method of data collection involved looking at the affordances and procedures used in tandem with the generation of OER at GSU and especially with regard to the ALG repository. Data collection for this section consisted of examining the ALG website as well as its procedures for implementing grants for OER generation. This included reading through and watching training for grant proposals to reading the grant proposal applications. Successful grant proposals are archived on the ALG website.

The ALG repository began distributing grants in Spring 2015 to generate OER. Calls for proposals have been announced three times each year since, in the Spring, Summer, and Fall terms. Each round asks for a one-year timeline from application to completion of an OER project. There were formerly three kinds of grants offered for OER generation: Standard-Scale Transformations, Large-Scale Transformations, and Mini-Grants for OER Revision and Ancillary Materials. As of Round 18 (Fall 2020-Fall 2021) ALG began offering grants for Continuous Improvement projects for existing OER as well (Grants Archive, n.d. -b).

Early rounds awarded grants to “projects with at least two team members” (Grants Archive, n.d. -c) for Standard-Scale and Large-Scale projects. Mini-grants could be awarded to either teams or individuals. More recently it was emphasized that teams were not required for all Standard- and Large-Scale Transformation grants, but team applications were given priority (Affordable Learning Georgia, 2022, 15:46). These collaborative teams were expected to include

non-course-instructors who could support learning and engagement design. The list of support roles potentially includes:

- instructional designers
- librarians
- OER publishers
- instructional technologists
- web designers
- programmers
- graphic designers (Grants Archive, n.d. -c)

The rationale given is that the inclusion of support staff such as instructional designers on teams can improve accessibility and yield high-quality resources (Affordable Learning Georgia, 2022, 16:05).

Professional Development. One characteristic of a CoP is that it promotes professional development in its domain. ALG offers a number of forms of professional development to educate those interested in using OER in their courses. These tutorials include publicly available web pages and LibGuides for understanding OER as well as producing or revising OER, and research on the effectiveness of OER. ALG further hosts workshops and speaker series on topics of interest for OER use. There is also more specific guidance aimed at faculty who are applying for or who have received grants to revise or create OER. Finally, there is also guidance for documenting OER use for faculty preparing for promotion and tenure.

Website. The ALG website hosts a variety of materials for those faculty interested in using OER in their classes. Education in OER begins with the ALG homepage which includes

tutorials on finding and generating OER as well as how to evaluate open textbooks for adoption. Of note for those getting started with OER are two tutorials, “Finding Free and Open Resources” and “Creating and Modifying Open Educational Resources” (Affordable Learning Georgia, n.d. -d). Both of these are built using discrete modules to guide faculty through the relevant topics. There is an Advocacy Kit on the ALG website with presentations and marketing resources for promoting OER. Other pages explain aspects of open licensing, making resources accessible, finding OER, and introduce the ALG repository.

There are also a number of library-related links on the ALG homepage. There are links to LibGuides hosted by the libraries of different USG institutions. These LibGuides offer faculty a variety of links and information. There is also guidance for working with libraries to find and use OER.

Communication and Social Media. An important characteristic of a CoP is the ability for members to collaborate and share information. In the digital context this includes social media and other communications between members of the community. ALG does maintain a Twitter account (@ALearningGA) and also circulates a digital newsletter for OER advocacy, news, and announcements of grant application rounds. ALG also maintains a listserv for use by grantees (Affordable Learning Georgia, n.d. -b). There is a separate listserv for the ALG Champions program across campuses (J. Gallant, personal communication, December 14, 2022). Both of these listservs are closed to non-members so could not be evaluated as part of this research.

ALG recommends joining the SPARC Libraries & OER Forum for broader discussions of OER use and news (J. Gallant, personal communication, December 14, 2022). This forum was

started by librarians in 2013 for sharing best practices, supporting librarians using OER, and to share news (Scholarly Publishing and Academic Resources Coalition, n.d. -b). The forum is open to anyone and uses Google Groups as a platform. It is not hosted in any USG institution, though GSU is a member institution (Scholarly Publishing and Academic Resources Coalition, n.d. -b). A check of activity on this forum shows that members at USG-based institutions posts in thirty-five of the 500 threads initiated over the year 2022, showing that people involved with ALG also participate in the wider OER community.

Events. ALG hosts and maintains archives of OER-related presentations. These have changed in form since 2015. There is a series of trainings on OER topics such as licensing, accessibility, library OER materials, and so on that were produced from 2015-2017 (Affordable Learning Georgia, n.d. -e; Affordable Learning Georgia, n.d. -f). In 2020 ALG launched a monthly Featured Speaker series on topics in OER. ALG also maintains a list of events, including news about grant deadlines as well as other events of interest to the open education community (Affordable Learning Georgia, n.d. -d).

Research. The ALG website also makes research on OER use available. One section directs readers to research reports and published journal articles written by members of the wider USG community. Another section includes summary reports for each year of ALG grants. These summary reports are based on the reporting required of collaborative teams of ALG grantees. Each report summarizes team reporting on the effect of OER implementation in USG courses in terms of course enrollment, student satisfaction with OER, and course retention. Each summary report includes a section on "Lessons Learned," suggesting that developments in the ALG grant program comes with reflection on the effectiveness of the grants.

Based on these reflections, several concerns emerge as potentially relevant to considering how OER are implemented as part of a CoP in this context. The 2016 report stated that "Faculty Attrition Is the Largest Disruptor of OER Projects" (Affordable Learning Georgia, 2017, p. 7). In the 2017 report, a similar concern with faculty and staff turnover due to consolidations was noted (Affordable Learning Georgia, 2020e, p. 6). The 2018 report notes that "Department-wide projects may encounter resistance during the project," leading to the suggestion that OER projects should facilitate "pedagogical freedom" and minimize standardization of content (Affordable Learning Georgia, 2022, p. 9). The 2020 report continued this theme with a recognition that some departments chose not to commit to using OER even after the materials were developed, possibly due to changes in departmental leadership (Affordable Learning Georgia, 2020c, p. 9).

The COVID-19 pandemic brought further challenges to a process envisioned as collaborative in nature. The 2020 report noted that "34 out of 57 teams reported encountering substantial barriers to a successful project" (Affordable Learning Georgia, 2020d, p. 4), though collaboration was only one area affected by the pandemic. Other areas affected by the pandemic were largely focused on measures to evaluate the success of the projects (Affordable Learning Georgia, 2020d). The 2021 report also recognized disruptions to OER work due to the ongoing pandemic. The report noted that in addition to difficulties in measuring the effectiveness of OER, team efforts were hindered by teams shifting their workflow from in-person meetings to online collaboration (Affordable Learning Georgia, 2021, p. 4).

Tenure and Promotion. The ALG site also includes guidance for faculty wishing to document their OER activities as part of their tenure and promotion portfolio. ALG recommends

following the Advisory Model for how to document OER-related activity for consideration for promotion. The argument they make us that effective use of OER contributes to the betterment of the university system as well as promotes student success (Affordable Learning Georgia, n.d. -a). These considerations are based on the DOERS3 model for framing OER use within the professional tenure and promotion system (DOERS3, n.d.). The ALG Advisory Model segments professional work with OER into the categories of Scholarship, Teaching, Student Success, and Professional Service, which are the relevant categories for promotion and tenure review at GSU. They recommend that adopting, adapting, and creation of OER, as well as engagement of students in OEP, should be identified as meeting both Teaching and Student Success categories of faculty review. Research in open education should be documented as part of a Scholarship portfolio. They recommend that participation in evaluating OER, receiving or evaluating grants, and other forms of leadership in promoting OER count toward service. Interestingly, "Contributing to Communities of Practice in Open Education" can count toward either Scholarship or Service, or both, depending on the nature of the contributions (Affordable Learning Georgia, n.d. -a).

However, the Advisory Model also notes that their model "is not a mandate for changes in local T&P policies, but it can serve as a guide for [Tenure and Promotion] committees who wish to add open education-related work into their standards" (Affordable Learning Georgia, n.d. -a, para. 2). The latest *Promotion and Tenure Manual for Tenured and Tenure-Track Professors*, approved in March 2022, does not specifically identify OER as a specific category for inclusion in the record of a faculty member's portfolio (Office of Faculty Affairs, 2022).

Final Reports. One additional source of information for this component of data collection were the Final Reports for the ALG grant projects. There were 281 reports available to review. These are accessible through the ALG repository together with the Course Syllabi for each project. The templates for these reports ask teams to provide an assessment of their project and its effectiveness for teaching. These Final Reports include a narrative summary of each project which included a description of the transformative impact of the grant as well as lessons learned and the challenges each team faced. The reports also include a plan for sustainability of the OER and a summary of future plans for using OER and/or presenting results. There is also a section to provide quantitative and qualitative results from using the created OER in classrooms, though the content of these sections of the reports was generally outside of the scope of this research.

These reports are important because they provide clues to how teams worked together and with others in their departments and institutions on developing OER for the repository. They are also a source of data for how faculty encountered OER during the project, and the effect of working on an OER project had on their development as teachers and scholars.

Because members of multiple institutions in the USG system contributed to the ALG repository many of these reports come from teams outside of GSU itself. Many of the themes found in these reports do parallel concerns also seen at GSU, however.

Challenges Teams Faced. Many of the reports identified the challenges teams had working together. The challenge most often noted by the reports was that teams often felt they did not have enough time to work on their OER project. Many teams felt that the timeline for

their grant project was too short for the amount of work involved in finding, adapting, and adopting open course materials. For example, one recent report described the issue as follows:

> The key take away is that transforming a course to no-cost open-source takes much more time than one might expect. We had four people involved. It was a challenge to stay on track, and we were all tech savvy with previous online teaching experience. (Ligon & Scott, 2022, p. 2)

Some of the Final Reports identify finding quality OER as a major challenge. Some teams found the quality of available OER to be lacking. For example, this team identified problems with the depth of content as well as errors in the material for an OpenStax textbook:

> The team overall was not pleased with the quality of the textbook adopted – the *OpenStax: Concepts of Biology*. After using the textbook for several course sections, many of the faculty felt the book was released prematurely. There were significant errors and overall many subject areas were not covered at the depth of the lectures. (Harvey et al., 2017, p. 20)

This finding was echoed in other Final Reports, such as a team that reported that "Much of the currently available open-source materials for economics is not rigorous and accurate enough and some of it is outright misleading" (Ogloblin et al., 2018, p. 23).

Another concern was that some teams lost members during the term of the grant. Often this was because of faculty leaving the institution (Graybeal et al., 2021; Kendrick, 2021), though in one case, one of the team members passed away (Tucker et al., 2016). In these cases the loss of a team member meant that the remaining team members had to shoulder more of the workload.

Reports from 2020 and 2021 identified the COVID-19 pandemic as a major obstacle to completing their work in a timely manner. This report reflected that the pandemic necessitated greater flexibility in meeting grant deadlines:

> Our primary challenge this year was the COVID-19 pandemic, which closed the University for half of the spring semester and interrupted the flow of instruction. While the pandemic was unforeseeable and very sudden, we learned that we must remain flexible and adapt to changes along the way. (Johnson & Johnson, 2021, p. 3)

Some reports did indicate that that the period of the grants was extended in response to the pandemic.

Professional Development. Many of the reports indicate that professional development was an important result of their work on OER. For some examples, team members often presented their results at conferences in OER as well as in their discipline:

> The data collected as part of this grant have already been presented at the 13th Annual Open Education Conference. (Hesse et al., 2017, p. 10)

> We have one publication and three conference presentations resulting from this project. (Budryte et al., 2018, p. 9)

> Thus far, two conference presentations took place: a panel presentation at the 2020 OpenEd conference on OER in entrepreneurship and innovation … and a presentation at the spring 2021 California Entrepreneurship Educators Conference. (Graybeal et al., 2021, p. 9)

These experiences speak to the broader role of projects such as the ALG repository in faculty development and training. They also speak to the role of faculty participating in grant projects in providing advocacy for using OER beyond the parameters of the grant project itself.

On the subject of professional development, some teams indicated that they participated in professional development activities to better develop their OER. Typical of these reflections were comments about how they engaged in training to find better OER, integrate it with their courses, and how to adapt their pedagogy to using OER:

> We attended pedagogical workshops and professional development trainings throughout the year, which enhanced our knowledge of the subject matter and pushed us to discover and integrate innovative technology into the learning environment. (Johnson & Johnson, 2021, p. 2)

In another example faculty engaging in training developed a resource to enhance collaboration on the grant project:

> In this project, faculty members participated in a training workshop to learn Softchalk e-textbook and specific ways to implement these learning modules into the Learning Management System (D2L). A D2L webpage was created for instructors to share their teaching tips and suggested class plans (which will be included in the Instructor's manual when published) in order to facilitate a smooth transition in textbook transformation, as well as to promote the success of this textbook transformation project. (Huang et al., 2018, p. 3)

Departmental Support. Many of the reports reflected on how their departments received their OER development. Often this included mention of further adoption of their OER by other

faculty members. Sometimes this increased awareness led to tangible results in terms of greater use of OER in their respective departments, as this example shows:

> Perhaps the most significant result of this project was an increased awareness of the availability of open textbooks among faculty in the department. The project PI [REDACTED] frequently updated the department faculty about the project and one faculty member subsequently decided to use an open text for their Calculus courses. (Smith et al., 2018, pp. 2-3)

In many cases, increased awareness of the benefits of OER was important for departmental buy-in to using open resources. Occasionally, advocacy for OER led to departmental commitment to using OER. This advocacy took various forms, such as training new faculty in using OER (Amsden et al., 2016) as well as discussing the topic at department-wide meetings (Traylor et al., 2022). One team noted "that getting buy-in from faculty on such a wide-ranging project is much better done incrementally and early, rather than all at once" (Hammock et al., 2017, p. 3).

In addition to trainings and meetings, the reports noted that some departments established departmental roles to facilitate OER use. Advocacy from department chairs was identified as an important factor for project success and further faculty acceptance of OER (Curtright et al., 2016; Okonko et al., 2018; Weaver et al., 2019). Some departments developed a mentoring program to encourage faculty to use OER (Davis et al., 2016; Southard & Menter, 2018). Another department included their course coordinators as part of the ALG grant team, with the expectation that the faculty in these positions will continue to advocate for the use of OER in the courses for which they are responsible (Shi et al., 2019). These factors speak to the importance of leadership involvement in developing a CoP.

The issue of departmental buy-in sometimes worked in the other direction. One team described how the department as a whole was instructed by their department chair to make a switch to using OER. This report reflected that they did not have "the opportunity to have a deep, open, frank discussion with the other instructors about the text" and that as a result, none of "the necessary groundwork was done to get them on board" (Tucker et al., 2016, pp. 2-3).

Some reports similarly described how their respective faculty departments resisted adopting the open materials that teams developed. For example, one report described that "[t]he common course syllabus was not well-received by some of our more senior faculty as it meant they would have to make changes in the way they were previously teaching their classes" (Subacz et al., 2016, p. 2). The reasons for this resistance were sometimes described as coming from faculty who felt that adoption of OER materials impinged on their academic freedom:

> Because our tradition is one of a strong sense of academic freedom, which for some includes the choice of textbook, it was clear that overall the department would likely not support a requirement that all of our introductory classes use the same text or one that is an open source text. (Hammock et al., 2017, p. 9)

In one case, a team reported that after completing the grant project and reviewing the results, their department "decided that a complete shift to OER is impractical at this time" (Cannon et al., 2016, p. 9). This team explained that while they recognize the importance of having lower-cost resources available for students, they also found supplemental offerings from commercial textbooks to be too useful to pass up. After the experience with the ALG grant project their department settled on a commercial textbook, albeit one that cost students less than the one they

had previously been using. The team also noted that the grant project was an opportunity to "[e]ducate our colleagues about the improving OER options" (Cannon et al., 2016, p. 9).

Institutional Supports. Many teams identified specific roles and responsibilities for members. These are enumerated in the initial proposals and, as per Transformation Grants guidelines, teams included support staff to promote the development of OER. These support staff included librarians, instructional designers, and/or disability support specialists to improve accessibility (Flynn et al., 2018).

Librarians were the support role most often identified in these reports. Librarians had a role in finding resources, developing LibGuides, and in maintaining the OER and updating links post-grant. For example, comments such as the following were typical of the way teams reported the role of the libraries in supporting OER:

> Another source of sustainability is the LibGuide prepared by our Librarian team member. (Hammock et al., 2017, p. 8)

> However, this journey is far from over as instructor and librarian continue to update the LibGuide with refreshed and new resources on a regular basis. What the team has accomplished thus far is significant. (Liss-Green et al., 2015, p. 6)

> The anthology that we created was presented as a LibGuide and provided an easy-to-navigate central location for all of the articles to be organized in. Another advantage of this LibGuide is the ability to easily add or remove articles so that I can keep the information and issues at hand up-to-date. (Kasey & Townes, 2018, p. 2)

As the last quote shows, the LibGuide is intended for ease of access and the sustainability of the OER post-grant. Some teams also pointed out that they made their OER available on multiple platforms. This included LibGuides but also platforms such as MERLOT (Tesar et al., 2018) and OER Commons (Yang et al., 2019) as well as the access that the ALG repository afforded.

Summary

This Results section presented the results from data collected from four methods used to study the revisability of OER in the ALG repository, how faculty at GSU use OER, and whether the setting of the ALG repository can be interpreted as a CoP. These methods were an analysis of the contents of the ALG repository, a questionnaire circulated among faculty teaching online course with OER, interviews with faculty about their OER use in online courses, and an examination of the ALG repository, its affordances and related documentation.

RQ1: How revisable are OER in the USG repository?

The analysis of the 261 items in the ALG repository showed that a plurality of items (40%) were Mostly Revisable. Another 31.4 % were only Somewhat Revisable, and 28% included elements that made them Not Revisable. There were also no significant trendlines toward greater revisability in the years 2015 to 2022. Also noted in the assessment were that nearly a third (32.6%) of items included OER from other sources, and just over half (52.5%) included links to FTU web sources.

RQ2: How do faculty integrate OER into their online courses at GSU?

Questionnaire. Forty-eight faculty teaching online courses using OER completed the questionnaire, representing 21.7% of the 221 potential participants contacted to complete the

questionnaire. Only 12 respondents (25%) indicated that they actually use the ALG repository, while others indicated they use other popular OER repositories. Thirty-six respondents (75%) also look for OER in web sources, and seventeen (35.4%) enumerated other sources of open resources that they use. In terms of practices involving revision of OER, only 29.2% of respondents indicated they did not revise OER, and 22.9% indicated they did not revise or modify their courses to accommodate OER. As far as materials go, two-thirds (66%) responded that they use open textbooks. Most respondents used FTU online resources, with 78% indicating that they link to web pages in their online courses, and 86% using online media.

Interviews. Nine interviews were conducted with faculty who teach online courses using OER. Most indicated an awareness of OER as materials that were free and open to use and had been developed for educational purposes. Most also used freely available web links and resources that were not traditionally understood as OER until they were given educational purposes. Only two interviewees used materials from the ALG repository. Most interviewees also indicated problems with the quality of OER they found and recognized a need to balance the quality of OER with the benefit to students of not requiring them to pay for an expensive textbook or other course materials. Some indicated the OER they found was of poor quality, while others described that the OER they found did not fit their context or curriculum.

In response to these concerns over finding appropriate quality the interviewees took different strategies. Some produced their own OERs and shared them informally with colleagues or more formally in repositories. Some interviewees described changing file formats to make revisions easier, including rewriting or altering text of materials saved from the web. Others took a strategy of supplementing OER with additional materials to cover gaps. Finally, some

interviewees used methods of scaffolding to provide context and relate OER or FTU materials to their course learning.

RQ3: Does the context of OER reuse at GSU represent a CoP?

Community of Practice Evaluation. The third research question addressed the issue of whether the context of the ALG repository can be considered a community of practice. The ALG grant process is designed for applicants to form collaborative teams to produce OER. ALG offers training and workshops on OER. It also provides information and advocacy for using OER. There is also a listserv for communicating among grant recipients, but it is not clear how robustly this was used.

Interviews. Most of the interviewees described how they discuss and advocate for OER within their departments. Several described sharing OER with their departmental colleagues, and some also described how their departments maintain small repositories of course materials shared internally within their departments.

Final Reports. The Final Reports from ALG grant teams describe efforts to advocate for and share their OER within their departments. They describe a process of seeking "buy in" to using OER from their colleagues. This was often facilitated through support from department chairs or through participation in committees focused on using OER. Examples of resistance to departmental buy-in included concerns by faculty about adopting OER impinging on their academic freedom and/or the need for faculty to change their pedagogy to employ OER.

Chapter 6: Discussion

Introduction

This research project examined how faculty teaching online at GSU revise, remix, and reuse OER, focusing on the materials available to them through the ALG repository. In the course of research, the contents of the ALG repository were assessed for their revisability. A questionnaire was circulated and faculty were interviewed regarding their practices incorporating OER into their online course sections. Also, the question of whether the context of reuse of materials at this repository could be construed as a CoP was considered. Taken together these questions paint a picture of how faculty teaching courses online at GSU adapt and adopt OER in their courses, some of the challenges they encounter in using OER, and some of the factors that facilitate their use of OER.

The research questions that were intended to capture these findings were as follows:

RQ1: How revisable are OER in the USG repository?

RQ2: How do faculty integrate OER into their online courses at GSU?

RQ3: Does the context of OER reuse at GSU represent a CoP?

This section will present and discuss the major findings related to these questions, organized by the findings that respond to each research question.

Discussion Research Question One: How revisable are OER in the USG repository?

Finding 1: A plurality of non-syllabi content in the ALG repository is Mostly Revisable, though a majority is Not Revisable or Somewhat Revisable.

Finding 1 groups Not Revisable and Somewhat Revisable together for several reasons. The first reason is the suggestion that if the majority of scores contain files that are effectively unrevisable, or can only be revised with difficulty, then it may mean that there is room for improvement among repository materials in terms of revisability. RQ1 examined how revisable the contents of the ALG repository were, and grouping files receiving a Revisability Score of Somewhat Revisable with the Not Revisable files emphasizes the problematic nature of trying to revise components of these particular content items.

Another reason why the Not Revisable and Somewhat Revisable categories are grouped together is because they point to issues related to the context of OER reuse, more so than more easily revised file types like Word documents. Although audio, video, and image files are difficult to revise, it would be hard to argue that they shouldn't be included in OER content if they bear genuine pedagogical value. The pedagogical intent and context for using these files is a consideration when evaluating their purpose as part of OER content.

Finally, for these problematic file types, remixing the OER by replacing the files and substituting them with similar content may be easier than revising them. This points to revision and remixing as interrelated strategies for adapting and updating OER.

These second and third reasons will be discussed further in this section. The basic reason why the Not and Somewhat Revisable categories are grouped together is because they point to issues related to the context of OER reuse, more so than more easily revised file types like Word documents.

As presented in the Results, a plurality of scores landed in the Mostly Revisable category. As Table 21 shows, 40.2% of materials fall into this category. The majority of scores were in the

Somewhat Revisable (31.4%) and Not Revisable (28.0%) categories. The repository as a whole has a mean revisability of 2.1, or just slightly above the Mostly Revisable rating. Only a single entry out of the 261 items scored received a Fully Revisable rating. The item in question is a textbook created using Open Office. A further result was that there was no significant trendline toward greater revisability in the period 2015-2022.

Table 21

Revisability Scores for Contents of the ALG Repository

Score	Number	%
1 (Not Revisable)	73	28.0
2 (Somewhat Revisable)	82	31.4
3 (Mostly Revisable)	105	40.2
4 (Fully Revisable)	1	0.4
Total	261	100.0

Most of the attested file types that had a low Revisability Score were images and videos, though a few materials also had audio file types and there were a few other types of software that were included as not effectively revisable. For images, a distinction was made between images that offered meaningful learning content in the context of the material, versus images that served a decorative purpose. Only images that appeared to serve a pedagogical purpose were counted for the sake of the analysis.

A closer look at these results by item type is presented in Table 22. The totals in this table add up to more than 261 items since some entries in the repository contained more than one type of content. For the purposes of this table files marked as unrevisable were those that fell into the Not Revisable or only Somewhat Revisable categories combined.

Table 22

Number of Unrevisable Files in Each Type of Resource in ALG Repository

Type of Resource	Contains One or More Not or Somewhat Revisable File Types	Total Resources in Category	% Not or Somewhat Revisable
Open Textbook	62	113	54.9
Open Course	77	111	69.4
Lecture Slides	25	40	62.5
Homework	13	37	35.1
Video	11	11	100.0
Assessment	3	7	42.9
Totals	191	319	59.8

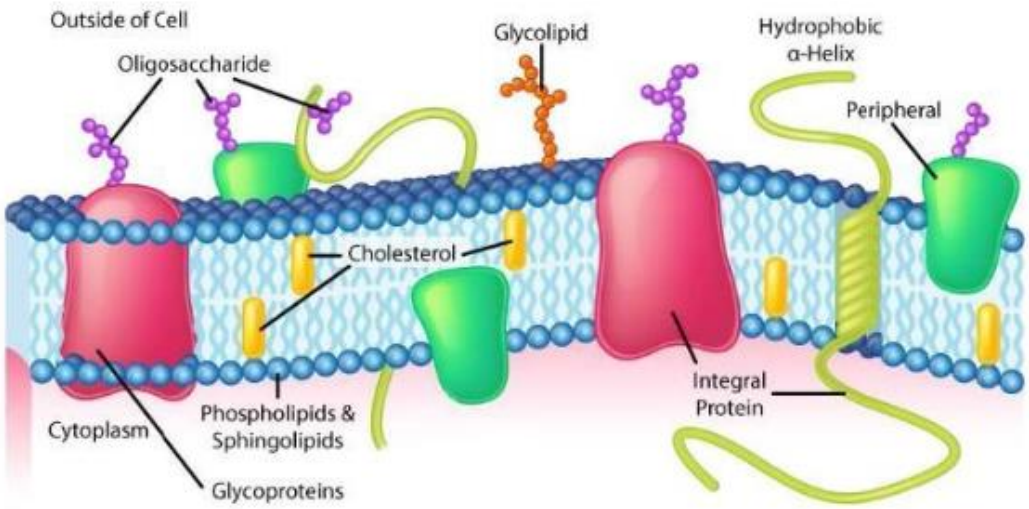
Note. This table shows the combined tallies by content type of files marked as Not Revisable or only Somewhat Revisable.

Following on these results we should consider whether the prevalence of unrevisable contents in the ALG repository represents a challenge to how open we should consider the materials in the repository. There are two factors to consider in response. One is to consider the pedagogical purposes of the materials in the repository. The other factor is to consider replacement and remixing as a pedagogical strategy as an alternative to revising materials.

Since the materials with low-revisability serve a pedagogical purpose it seems unreasonable to replace these images or videos with text-based learning. To do so would reduce the richness of the educational content in the repository. For example, take the following image from the *Fundamentals of Cell Biology* open textbook in the repository (Figure 7).

Figure 7

Sample Image from Fundamentals of Cell Biology Open Textbook



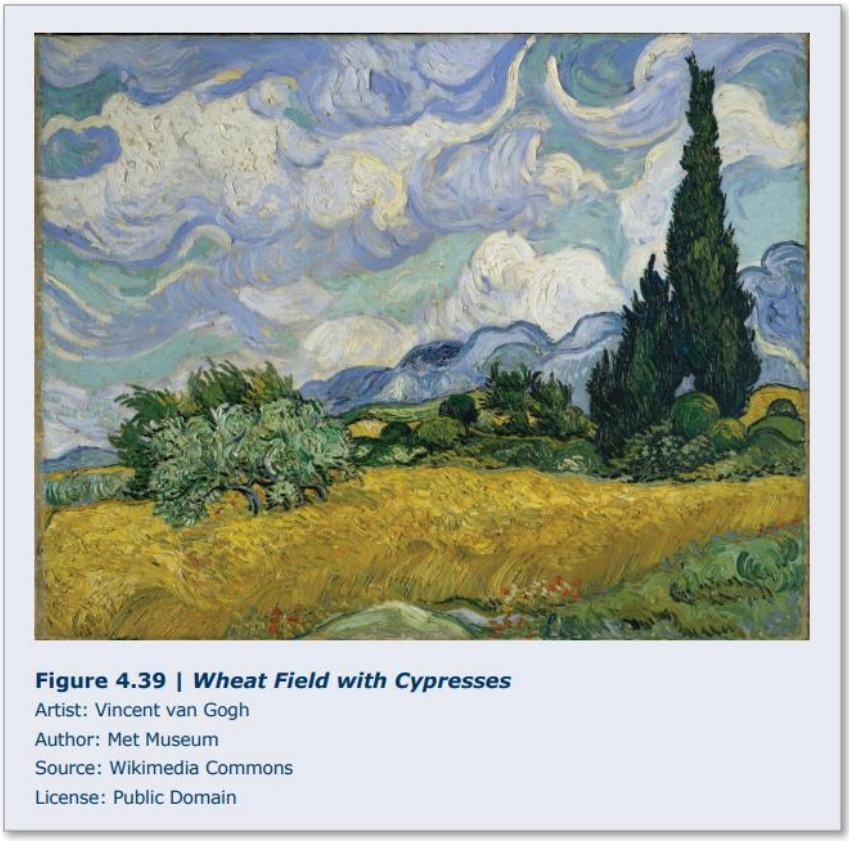
Note. Image of a cell wall with parts labeled. From *Fundamentals of Cell Biology* by B. Alberts, A. Johnson, J. Lewis, D. Morgan, M. Raff, K. Roberts, and P. Walter, 2015. (https://alg.manifoldapp.org/read/fundamentals-of-cell-biology/section/63bdf811-2ef8-41c1-a07b-ef62d182b7f1). CC-BY-NC-SA.

It would be hard to argue that the image itself, or others like it, should not be present in a biology textbook. One could imagine, however, that if an instructor needed to modify the image, then it would be easier to replace it with a similar substitute than to revise it directly.

An example from the *Introduction to Art: Design, Context, and Meaning* open textbook also illustrates the integration of one OER with another open resource (Figure 8). The image uses a picture of a Van Gogh painting and credits Wikimedia Commons. One can imagine that if an instructor, for whatever reason, needed to replace the image, they could also make use of Wikimedia Commons or another open resource to find a suitable replacement image.

Figure 8

Sample Image from Introduction to Art: Design, Context, and Meaning Open Textbook



Note. Image of van Gogh's *Wheat Field with Cypresses*. From *Introduction to Art: Design, Context, and Meaning* by P. Sachant, P. Blood, J. LeMieux, and R. Tekippe, 2016, p. 125. (https://oer.galileo.usg.edu/arts-textbooks/3/). CC-BY-SA.

There are examples of analogous remixing from some of the interviews. As described in the results, Interviewee B indicated that they replace images from a Canadian textbook with images from a U.S. source that applies more directly to their course context or sometimes they take their own photos to supplement the textbook. For another example, Interviewee G explained that they look for images of non-white language speakers to include in a world language course.

The concept of replacement of a resource is subsumed in the idea of remixing in the 5 Rs (Wiley, n.d.). One part of a resource can be swapped out and replaced with a part of another resource (Mosharraf & Taghiyareh, 2020). For example, Goshtasbpour et al. (2022) described the process of localizing OER materials for a Kenyan educational context. In this example the authors wrote that their process of revising and remixing included

> replacing (and where necessary co-creating bespoke) OER images to represent Kenyan culture, and educational context in a gender-balanced manner, using local examples and sometimes terminologies, ensuring different ethnicities are represented as much as possible, and removing culturally taboo references. (p. 122)

One conclusion to take away from this is to consider remixing in tandem with revision. In this example we see both replacement of elements of the OER such as images as well as revision of content to reflect Kenyan culture. The process of replacement is also an important aspect when we consider the prevalence of FTU resources attested in the ALG repository analysis and the practices of faculty in developing and using OER.

The tension between the pedagogical purpose of an OER component and its revisability mirrors concerns expressed in earlier considerations of LOs. Authors such as Ilomäki et al. (2006) and McCormick and Li (2006) argued that effective design principles can be at odds with pedagogy when LOs are transferred from one context to be used in another. However, objects in the ALG repository are generated by teams for specific contexts of use within their own courses and departments within USG, and the final reports document how effective they are within their particular course contexts. They are developed as localized OER, even if they can presumably be

used in other pedagogical contexts outside of particular departments or outside of USG as an institution.

Discussion Research Question Two: How do faculty integrate OER into their online courses at GSU?

Finding 1: Faculty use a variety of no-cost materials

This research project started with an examination of the ALG repository and looked more broadly at how faculty integrate OER from this and other sources into their online courses. This suggests three sub questions: How much do faculty use OER from the ALG repository? Where else do they find OER? And what other kinds of no-cost materials do they use?

The questionnaire and interviews both addressed these questions. From the questionnaire, only a quarter of respondents (12 out of 48) indicated that they found OER from the ALG repository. Only two of the nine interviewees contributed to and used OER from the ALG repository. The questionnaire also indicated that significant minorities of respondents found OER in other well-known sources of OER, such as MERLOT, Creative Commons, and OpenStax. The majority of respondents (72%) found OER and other no-cost resources through online searches, and a significant minority (34%) indicated that they found OER through other places. Some of these users indicated that these OER came from faculty colleague recommendations, or were shared by department members, or were found through the GSU library.

Many of these findings are consistent with the findings from the interviews. In addition to the two interviewees who made OER for and used OER from the ALG repository, interviewees looked for OER in online searches of other OER repositories, or used materials shared with colleagues, or created their own. Three made some use of OpenStax textbooks, but all three used

only parts of the OpenStax textbooks and remixed them with other resources. One contributed to OER in a repository hosted by their professional association. For three of the faculty the OER that they created and shared with others informally were significant components of their courses.

These similarities between the questionnaire and interview results continued for open textbooks and FTU web resources. Just over two-thirds (68.8%) of respondents in the questionnaire used open textbooks and again, this is like the results from the interviews, which found that seven of the nine interviewees used at least some content from open textbooks. The majority of questionnaire respondents (78%) link to or use web resources in their courses, and 86% indicated that they use online images or video. This is consistent with the interview participants, almost all of whom indicated that they use web resources of one form or another as part of the collection of materials they assembled for their online, no-cost courses.

The inclusion of FTU online resources in courses as a strategy was described in more detail by interview participants. Most of the faculty described using FTU web resources to supplement course materials, and it was easier to search for new materials to use than to revise existing materials. Only one faculty interviewee described extensively revising materials they found on the web, and that only occurred after saving the materials as Word documents to facilitate revision. As described in the Results, most interviewees indicated that revision of files was limited to changing file formats from Word to PDF or vice versa, depending on what fit their pedagogical needs and preferences.

It should also be noted that the assessment of the contents of the ALG repository showed that slightly over half (52.5%) used non-OER external links, while just under one-third (32.6%) integrated other kinds of OER. Given that slightly over half of the materials in the ALG

repository linked to FTU web resources it appears that many faculty also consider web resources as possible alternatives for replacement and remixing of content in their courses.

A small minority of questionnaire respondents (16%) used entire online courses, and 18% used entire modules of content they found online. This represented a discrepancy with the interview respondents, as none of the interviewees used entire OER courses. On this score it should be noted that one interviewee was in the process of building an open course template to share with others through ALG, and one other described contributing to an open course template hosted within their department. This discrepancy might be explained by the small sample size of the interview set of nine participants.

Overall, there was no single source that faculty used to find their OER, such as the ALG repository. Although a majority of faculty used open textbooks, a significant number did not. No other form of OER predominated over other kinds of OER. The one consistency among most faculty was that they did use FTU materials from the web in their course offerings as part of a strategy of offering diverse materials at no additional cost to students.

Finding 2: Faculty use both FTU materials and OER to provide open resources in their online courses

The finding that many faculty use both FTU materials as well as materials designated as OER deserves further consideration. Eight of the nine interview respondents indicated that they use both FTU and OER materials. Similarly, 78% of questionnaire respondents indicated that they use links to online web pages in their courses in addition to other types of open resources.

The assessment of the ALG repository also revealed that 52.5% of the materials in the repository linked to external FTU resources. This analysis did not include whether the images

and other materials embedded in the OER were themselves FTU materials imported into the content. Taken together with the lived practices of faculty this suggests that FTU materials are a significant source of content for faculty implementing no-cost solutions for their online courses.

To provide some contrast with these figures, Rodriguez (2022) surveyed the types of materials faculty used in a context that included open resources as a dimension, but which was not directed at faculty who exclusively use open resources. In this study, only 15.5% of faculty made use of "Free resources found online" among other resources, both free and commercial (p. 7).

The finding that faculty make extensive use of FTU links in tandem with OER is important for several reasons. First, many web sites do not have clear copyright permissions. In the United States web pages are not automatically granted copyright, but the author of a web page may register for copyright with the U.S. Copyright Office if the page includes significant original work (United States Copyright Office, 2019). This differs from the standard in Canada, where according to the Canadian Intellectual Property Office, works (including web pages) that meet criteria for originality, expression, and fixed format are automatically granted copyright (2023). Web pages and other original may still register their copyright to better support their legal rights and serve public notice (Canadian Intellectual Property Office, 2023).

Many web pages may also include copyrighted material illegally, making linked resources problematic for inclusion in a genuinely open resource. Just because something is available on the web does not mean that it is acceptable to use it. The emerging issue of AI-generated art shows that this is as yet an emerging area of copyright law in the United States (McMahon, 2018; Bomann-Larsen, 2022). Publicly available materials on the web and

elsewhere, both copyrighted and otherwise, have been used to train generative AI models under U.S. standards of fair use. However, the products of generative AI are not currently copyrightable in the U.S. (United States Copyright Office, 2023, p.3; Congressional Research Service, 2023, p.2; *Thaler v. Perlmutter*, 2023) and may be the subject of lawsuits over copyright infringement in cases that are still working their way through the U.S. court system (Congressional Research Service, 2023, p.4).

Second, there is the issue of replacing broken links in an online course. If using FTU links are as prevalent in providing no-cost materials to students as this research suggests, it is worth considering replacing links as an important component of revising and remixing OER materials, as discussed above. This may also be significant for considering the relevance of the ALMS analysis: it is less important to consider how revisable a material is when it might simply be replaced.

Finally, the prevalence of FTU materials alongside OER suggests a conceptual overlap between the two categories. The majority of interviewees made a distinction between OER and FTU web resources when asked, suggesting awareness of OER as having features that distinguished them from FTU materials. In practice, however, faculty made use of both FTU and OER interchangeably. The overlap rests on the availability of FTU materials, especially when comparable OER may not exist. For example, Interviewee G described searching for songs and YouTube videos to use in assignments in addition to looking for OER for examples to use to teach their subject. Interviewees C and F described using web searches to find credible and quality materials to introduce to the online classroom for reflection and discussion of course

concepts. Both types of materials serve the same purpose of providing free examples for students to learn from.

It is useful to think of the mixing of FTU and OER in online courses as representing a broader landscape of open educational practices. As discussed in Chapter 2 OEP is a term for the variety of practices which broadly encompass the ways in which education is open. This can include the use of OER and other open resources but can also refer to the range of pedagogical practices which involve student participation in and empowerment from constructing and sharing their learning. It is a term that is intentionally broad to encompass a range of components in the educational process, whether that refers to elements of open resources, open pedagogy, or open participation by learners.

Most of the interview respondents indicated that their motivation for making their courses no-cost was out of a concern not to make their students pay too much for their courses. For most this was an issue of fairness, but other motivations included offering more variety in their curriculum and a pragmatic recognition that some non-majors might not purchase a textbook. The use of FTU resources is part of a strategy of creating an open curriculum, and/or supplementing OER resources. Moreover, these instructors also made efforts to engage students with FTU resources. These resources were not just added to the course without context but were typically integrated into the course with other forms of scaffolding with pedagogical outcomes in mind.

Some of the ALG grant Final Reports did also comment that they included FTU materials in the OER materials they generated. For some grantees, including FTU alongside OER meant that they could customize their courses better:

> From the instructors' perspectives, collecting and organizing the learning material ourselves not only enable us to better respond to dynamic nature of the information technology field, but also give us the flexibility to customize the course content to better serve our students. (Li et al., 2017, p.3)

Other reports express similar reflections on the use of a variety of materials from web sources to provide a variety of relevant content (Curtright et al., 2016, p.6; Smith & Leckie, 2016, p.3).

Some of the recent literature shows similar results in terms of how faculty use both OER and FTU materials in their courses. An interview-based study of art history faculty found that all their interviewees "reported using OER in conjunction with other resources that were free for students (but not "formally" OER)" (Chtena, 2021, p. 8). The author of this study also noted that all the faculty interviewed did distinguish between OER and FTU materials, but that they used the terms interchangeably and were unconcerned about licensing issues. In a case study of OEP at the Polytechnic Institute of Turin, Nascimbeni, Burgos, Campbell, and Tabacco (2018) found that 43% of the faculty surveyed indicated that they are unconcerned about the licensing of materials they use in their courses (p. 521). They also note that "open practice looks different for each individual and that educators will typically be more open in some areas of work than in others" (p. 522).

This last recognition brings to mind Conrad and Prinsloo's (2020) delineation of open and closed spaces in education as existing, if not on a spectrum, then in a variegated range of spaces to enhance student engagement with learning. We see this in the range of responses by interview faculty to the approaches they take to open resources. Most remixed OER with FTU resources in one way or another: supplementing open textbooks with FTU web resources,

revising file formats of web resources or altering the text of OER, or capturing FTU resources to generate their own educational materials which they then share as OER.

The results show that faculty engage in some open practices beyond the narrower rubric of OER in their courses. As noted previously, FTU resources represent significant sources of learning beyond what is commonly designated as OER. The faculty interviewed indicated that these serve as important supplemental materials in their courses. Moreover, faculty generally recognized that there is a definitional distinction between FTU resources and OER.

Finding 3: Revision and remixing are both important elements of integrating OER and FTU materials into online courses

All the interviewees indicated that there were challenges in finding the right OER for their online courses. The main challenges they identified included finding good quality resources and finding OER that met their curriculum and context. Concerns over curriculum included a recognition that OER available did not meet the specific course curriculum at GSU. Another concern was that the OER available did not reflect the context of GSU in terms of diversity or locality. Participants described the concerns they had in terms of trying to satisfy different concerns over cost, quality, and fit for the materials they adopted. These concerns led to different responses to how to adapt open resources to their courses as well as to adapt their course design to the resources they found.

Remixing OER with other open materials was one significant approach. These supplemental materials could be other OER, or FTU materials from the web, or materials the instructor themselves made in order to fill gaps in the course. Almost all the interviewees

described using different resources from different sources in their online courses to provide a variety of no-cost learning materials.

Revision of materials often proved to be less significant than remixing as a response to challenges of finding OER for most interview respondents. Most interview respondents confined revision to switching document file formats between HTML, Word, or PDF, depending on their pedagogical preference. Two interviewees revised PowerPoints that they themselves had already created and shared with others. One interview participant had, in collaboration with colleagues, revised the textbook they created for the ALG repository. Another rewrote passages in Word to better suit particular language lessons. Most interview participants also equated revision with tasks like replacing broken links to FTU resources, though as discussed above, replacing links is better understood as a form of remixing (Mosharraf & Taghiyareh, 2020). These findings are also consistent with the questionnaire results which suggest that a significant minority of faculty (28%) do not revise OER or other open resources they adopt. By contrast, a slight majority (54%) of questionnaire respondents indicated that they remix open resources from multiple sources.

Interviewee G did describe an extensive process of revision of materials for use in their courses. Their account provides a particularly illustrative description of the process by which they use FTU materials but adapted them to meet the educational purposes in their language courses. Although lengthy, it is worth quoting this passage in full to demonstrate the pedagogical concerns that guided their process:

> You know, I do need to adapt how I present it, because I can find that song online. And I can play it, you know, and that's a cultural element. They might have, you know, an

> introduction there to new [REDACTED] artists or [REDACTED] artists that they don't know, or [REDACTED] speaking artists, I should say. But I also want to try and incorporate the skills that that song or those lyrics can benefit. So are they developing their ear? Are they hearing the verbs that we've gone through? Are they recognizing the vocabulary, are they recognizing whether something is masculine or feminine, and how that agrees? And if I just give them the song, I have very little control of any kind of assessment of those skills. And I would suggest as well, that if I just give them the printout of the lyrics, it's great for them to follow along, because particularly with beginning students, you know, very often, they have no clue what's being said. And so that's also good. But again, there's a limit to what I can do, by not altering the format to provide any kind of assessment that I can then gauge how well they're learning the materials. So I do end up creating, you know, comprehension questions or fill in the blank, like I said, listening for specific verb tenses or words, or even listening and then having them give an oral presentation back, you know, what did you hear and keeping that in [REDACTED]? So I do end up adapting the materials.

In this passage the interviewee describes several components here of their process for using FTU materials. First, they find a song in the language they teach for students to listen to and provide a copy of the lyrics for students to read and follow the song. But they are also interested in ensuring the students are learning from the process, so they develop assessments to ensure the students are actually following the song and are able to identify and comprehend the vocabulary and grammar the song exemplifies. Pedagogically the instructor selects these FTU materials to be culturally relevant, engaging to students, and to train students to be able to hear the spoken language.

Later in the interview they described that they sometimes alter the wording used in FTU materials they take from the web to better fit the purposes of the lessons in question:

> I have taken poems, I've taken song lyrics and strip them of the more difficult aspects and provide them with that content to listen to. Now that might be cutting out a whole stanza, or it might be taking something that is in a tense that we're not even going to learn and altering the text so that it is something that fits what we're going over in the class.

The process here does have several of the features described here: the use of FTU materials to supplement their course materials, as well as remixing the elements they find on the web (using a copy of the lyrics to accompany listening to the song) as well as revising (changing wording to better reflect the lesson being taught).

Scaffolding was another approach some faculty used in their course designs. Scaffolding is the process of adding comments, notes, or prefatory material to content to facilitate learners' navigation of the content. It can include providing technical methods to reflect on material, such as in the example of Interviewee C who used Perusall in their courses for comments and analysis, as well as the support materials to teach learners how to use Perusall. Three interviewees offered examples of adding introductions to content that they added to their courses, and a fourth annotated such content to guide students through the material. These approaches to scaffolding are consistent with the questionnaire findings that nearly half (48%) add curation or explanatory material to open resources they use in their courses.

Faculty adopting OER as-is was attested in some cases. In the questionnaire 28% of respondents indicated that they did not revise or otherwise alter the OER they adopted, and 22% of respondents indicated that they did not significantly revise or alter their online courses to

accommodate the OER they adopted. However, the interview participants generally indicated more engagement with revising or remixing their adopted materials, or adapting their course to accommodate open materials, than the questionnaire would suggest. Even the interviewees who created their own OER indicated that they revise and update the materials periodically.

Did any of the interviewees adopt OER materials completely as-is, without change? This is a complicated question. Interviewee I used a resource from the ALG repository that they had collaborated with colleagues to create and periodically update. In this case, the revisions took place prior to introducing the material to their online courses, and as part of a committee working to review and revise the resource. This interviewee did also utilize other OER that they revised before including in their course. As discussed above, several participants described reusing at least some open resources without revision to the resource itself. They did, however, frame these resources in their course with either introductory text, or reflective assessments, or similar forms of scaffolding throughout the course.

Finding 4: Motivations to use no-cost materials are consistent with findings elsewhere

As described in the Results, most of the interview respondents were motivated to use OER because of a concern over the cost of textbooks. In practice this meant that most of the interviewees used examples of FTU resources interchangeably with examples of OER. This should be understood together with the motivations to use open resources. Interviewee B in particular described their thought process thusly:

> I'm looking at it as my desire to use them comes from the standpoint of no-to-low cost, no-cost. And then I know that there are some things that are, you know, part of an OER project, specifically, maybe an open-source textbook or something. But there's a lot of

> other resources that maybe don't have that exact title, but that are free to use. No copyright or open copyright. And no cost.

The motivation to provide good learning resources to students at no additional cost shaped the decision to use whatever resources were found, regardless of whether they were designated as OER.

There are significant nuances to this motivation to use OER, however. Some expressed disdain for publishers. Another indicated that having an open textbook was an advantage in competing for student enrollments. Others used open resources to expand and diversify their curriculum. And finally, grant money to develop OER made it easier to switch to using OER.

These findings are consistent with other findings on the motivations to use OER. A study of faculty perceptions of OER at community colleges in Oregon found that 95% of faculty were motivated by reducing costs, 64% saw OER as a way of increasing access to course materials, and 59% saw OER as a way to be more innovative pedagogically (Lantrip & Ray, 2021). A survey of USG faculty applying for ALG grants found that, aside from grant considerations, the top three motivations for adopting OER were “Dissatisfaction with availability or expense of current course materials” (73.2%), “Desire for improved student learning” (70.4%), and “Dissatisfaction with content of current course materials” (39.4%), respectively (Nagashima & Hrach, 2021). In terms of the effect of OER adoption on student success, Becker, Safa, and Becker (2023) found that a significant number of students in courses using publisher’s textbooks at community colleges opted not to purchase the textbook, and that this led to higher rates of students dropping, failing, or withdrawing from courses. This last finding is consistent with the

strategy of choosing an open textbook to attract students who are deciding between a NCLC course or a course with the additional expense of a textbook.

Finally, in motivating students Nagashima and Hrach (2021) emphasized that incentives do matter. Recognizing that while faculty might see the value of OER, limiting factors such as time to find, evaluate, and adopt OER might be limited. They write that the OER usage they observed "included additional incentives provided by the program, including the *monetary incentive*, *collaboration opportunities*, and *recognition*" (p. 8; emphasis in original) were important factors in making it possible for faculty to actually develop OER. This finding is consistent with the motivations of faculty interviewees E, H, and I who all indicated that grant support had an instrumental role in developing their decision to create OER.

Discussion Research Question Three: Does the context of OER reuse at GSU represent a CoP?

Two approaches to the third research question emerged in the course of conducting the data collection and analysis. The first is to consider how well ALG and the wider university community collaborates to develop and maintain OER. The second approach that emerged is to examine how OER are developed and maintained at the departmental level.

Finding 1: The context of ALG has many of the features of a Community of Practice

Can we consider the culture of collaboration around the ALG repository a Community of Practice? There are some features that point in this direction. The first and clearest is that the procedures in place for awarding grants emphasize collaboration to create OER. Initially grants were only awarded to teams, and it was only after Mini-Grants were added as a category in 2018 that grants could be awarded to individuals (Grants Archive, n.d. -a). ALG also promotes other

features associated with a CoP, such as disseminating information and promoting training and professional development. It holds events for participants to discuss and learn about OER and related projects. It advocates for including OER use and leadership as part of faculty's tenure portfolios. On that note, it does specifically identify "Contributing to Communities of Practice in Open Education" as a category for inclusion in a tenure portfolio (Affordable Learning Georgia, n.d. -a).

Active communications among members of a community, such as through social media, are an important component of a CoP as well. Here the evidence is not as clear. There is a listserv for use by grantees, but access is restricted to non-grantees so it could not be examined for this research. There is also a separate listserv for the ALG Faculty Champions at each campus. The program director indicated that these listservs function to inform users of meetings, deadlines, and opportunities for research and publishing (J. Gallant, personal communication, December 14, 2022). The ALG program director did indicate that they recommend interested people get involved in the SPARC forum, (J. Gallant, personal communication, December 14, 2022), though this forum serves many institutions, not just USG. This study was also not designed to evaluate in-person communications among members of the community who had participated in ALG grants, as this may be a significant source of information.

It is more accurate to describe the teams sponsored by ALG grants as representing CoPs. A CoP has three components: a domain which represents a subject matter or shared interest, a community of members, and a practice for sharing and discussing information and skills for members to improve facility with their domain (Wenger & Wenger-Traynor, 2015). The locus where these features are best attested is with the teams sponsored by ALG grants. The teams

themselves represent a collaborative community at work finding, revising and remixing, and producing OER within their discipline or course-specific contexts, as well as developing sustainability plans to maintain OER and advocate for their use in their respective departments. ALG grants have a role in sponsoring and structuring these teams as CoPs. Based on this it seems that ALG has a support role for fostering CoPs on a smaller scale, among teams situated within their respective departments.

Finding 2: There is evidence supporting Communities of Practice using OER within some departments

Based on the data collected, it appears that CoPs involving the use of OER also arise within individual departments. This does not mean that all departments have CoPs for OER use. But there are at least some departments in which some or most faculty have adopted OER, and it is within these departments that the most active discussions about and advocacy for OER takes place. The evidence for this comes primarily from the interviews as well as the final reports from the ALG grants.

Interview Evidence. Interviews with faculty revealed that many engage in OER sharing and collaboration at the departmental level. Eight of the nine faculty indicated that they engage in sharing open resources in some capacity with colleagues in their own departments. Two faculty from the same department indicated that they informally share materials they find and make a concerted effort to look for useful resources together before they begin each semester. Others urged colleagues to adopt OER at department meetings, contributed to open departmental resources, or collaborated with others to develop OER with grant money. Collectively these findings are consistent with Pulker and Kukulska-Hulme's (2020) assertion that "teachers find

inspiration in browsing through colleagues' resources" (p. 224). They shed some light on the processes Beaven (2018) noted in which private sharing among colleagues, as well as adapting resources an instructor has privately collected, constitute practices of "dark reuse" (p. 386).

Several interviewees shared that their departmental websites hosted small OER collections. Four interviewees related how they had contributed to an open course template. These templates were hosted by their respective departments and were for use by any faculty who were interested in teaching those courses, although none were required. Three faculty interviewees also indicated that they shared other kinds of OER resources within their department pages or had colleagues who shared OER with them. For example, interviewees C and D described how a colleague had revised an open textbook to better fit the course curriculum as it was taught by their department. As these faculty members indicated, the open textbook they sourced for this was designed for a two-semester sequence, whereas GSU teaches this particular subject in a single semester.

Two faculty interviewees also collaborated with departmental colleagues to produce open textbooks for the ALG repository. These textbooks were not sponsored or hosted by their respective departments. Interviewee E collaborated with colleagues at other colleges to produce an open textbook. Interviewee I collaborated with their departmental colleagues to produce their open textbook for the ALG repository. This interviewee also related how they continued their collaboration to revise and update their open textbook and was one of the participants mentioned above who collaborated to build a departmental open course template. This planned course template is intended to be taught using the open textbook they had already developed.

In addition to actively developing open materials several faculty advocated for OER use with their colleagues. Eight of the nine interview participants described discussions they had engaged in with departmental colleagues. Only two expressed encountering some resistance from other colleagues in adopting OER. Interviewee H suggested that the resistance mainly came from "older, tenured" faculty, and only represented about a quarter of the department. Interviewee D expressed some concern about the limits of advocacy for OER from their position as a contingent faculty member in the department. Both participants did otherwise indicate that the general consensus toward using OER was mostly favorable in their respective departments.

Finally, seven of the nine interview participants described making use of support resources in developing OER. For two participants this was limited to making use of professional development courses on OER. Three participants worked with the college library to find and link to OER. Five of the participants worked with instructional designers to develop OER, including the two participants who had collaborated on ALG repository materials.

Final Reports. As described in the Results, many grant teams' Final Reports described efforts by faculty to advocate for the use of OER within their departments as well. One caveat here is that the final reports include summaries from all the teams that ALG grants support in the USG system, not just those at GSU.

The ALG grant process appears to have an important or catalytic role in an ecosystem of open practices among the institutions it serves. Some departments are an active locus of discussion and advocacy for OER. As the final reports describe, in many departments discussions about OER adoption continue beyond the term of the ALG grant. Quite a few reports indicated that their efforts led to increasing adoption of OER within their department. Reports

discussed how team members advocated for OER with the faculty of their department, seeking departmental "buy-in" (McIntosh et al., 2019, p. 3) or getting faculty "on board" (Tucker et al., 2016, p. 4; Pace et al., 2018, p. 10). For example, the following quote is representative of those reports that attest a positive reception to OER from faculty in the team's department. This report is interesting because the team deliberately chose a strategy of convincing faculty in the department of the benefits of OER, and respecting the culture of the department, rather than trying to mandate OER use:

> Earlier involvement of faculty (and associated buy-in) is key for proper implementation. Though it must be noted that all faculty did eventually embrace the project. … However, over time and as the quality of the open source texts improves, we believe there is a group of faculty who are interested in keeping up with the evolution of open resources and are willing to seek low cost texts that are satisfactory in quality. Additionally we plan to encourage faculty to collaborate to share 'best chapters' and add to the reviews we have thus far of individual chapters across free resources. (Hammock et al., 2017, p. 3)

For some departments this advocacy took the form of institutional committees related to the use of OER in their department's courses (Ault & Goel, 2015; Pearcey et al., 2017). One report described the role of a committee as being established to meet to update the electronic materials, to work with librarians, to revise the OER, as well as to call on departmental faculty to contribute to the OER (Curtright et al, 2016). Others developed training (Pace et al., 2018; Usher & Lyons, 2016; Hodges & Rascoe, 2018) or mentoring measures (Southard et al., 2018) to onboard faculty with using OER collections. In at least one case students participated in identifying resources

that were potentially useful to developing an open course for the repository (Smith & Leckie, 2016, pp. 2-3).

What these results show is that for at least some departments, there are active efforts to collaborate at the departmental level to create and share OER. Many of these efforts are supported by departmental resources such as providing hosting for OER. In these cases faculty described discussing OER with colleagues as well as sharing and updating materials. They also undertook efforts to seek out information and help from other university support facilities, such as the libraries and professional development opportunities. This suggests that active CoPs are in evidence at the departmental level, at least for some departments.

This is not to say that a CoP could not flourish outside of a department. The ALG grants were aimed at grant teams within departments, and the final reports emphasize the role of the OER generated within departments. Most of the interviewees also framed discussions and collaborative efforts within departments. However, three of the participants did explain how they discuss OER with faculty in departments other than their own (Interviewees F and G) or in other professional contexts (Interviewee H). So while most collaborative activity attested in this research takes place in intra-departmental contexts, this should not be construed to mean that collaboration could not occur across departments or organizations.

These findings echo the conclusion of Nascimbeni et. al. (2018), that “openness seems to flourish within small collaborative groups and to stem from the sharing culture that naturally exists among close colleagues, particularly with regard to the use of resources produced by others” (p. 523). Sharing and advocacy for OER occurs most often within a department, between colleagues who know each other. Pegler (2011) and Wills and Pegler (2015) also pointed to the

idea that sharing within a department constituted the innermost circle of their zones of reuse model, suggesting that such sharing facilitates generation of the most granular and responsive OER.

Finding 3: Collaboration increases the availability and responsiveness of OER

One of the reasons the issue of whether this setting can be considered a CoP was out of a recognition that some authors argue that a CoP enhances the development of quality and reusability of OER. It is worth considering the extent to which any collaboration that was observed in this setting can be said to contribute to the quality and reusability of OER.

To break this issue down, this finding considers three areas where evidence was found linking collaboration to OER use. The first is whether collaboration between teams developing OER for the ALG repository led to more revisable materials. As addressed above, in Finding 1 for RQ1, while a plurality of OER in the repository were considered Mostly Revisable, a majority were Not Revisable or only Somewhat Revisable. On this score, then, it cannot be said that collaboration led to more revisable OER. However, as it was also argued, pedagogical concerns and the process of remixing materials through replacing links and images may compensate for the attested degrees revisability of materials.

On this note, the OER in the repository were developed by teams working in collaboration to develop OER that were responsive to their departmental needs. Some teams reflected on the significance of OER as being responsive to departmental needs, such as the team that wrote that “One key lesson we learned is that careful evaluation and revision of open source material for local use is very important” (Zhang et al., 2017, p.2). OER was a way to provide timely and high-quality materials for their students. One team reflected that the OER provided

could be "be easily modified to reflect the latest developments in the field and current events" (Ogloblin et al., 2018, p.3). Another described how using OER made primary source materials available to their students:

> In addition to the "transformative impacts on our instruction," perhaps the major lesson learned is that government websites and their internal resources can be very useful for criminal justice courses. Not only are these free and accessible to the public, but they also expose our students to information and materials used by criminal justice practitioners. Furthermore, students are directly connected to original source information, rather than reading it secondhand in a textbook. (Davis, Allen, & Jacques, 2017, p.3)

Several teams recognized in their development of OER that they could make different resources available to faculty to adapt and customize to their respective teaching styles and needs (see, for example, Padgett et al., 2018; Li et al., 2018; Reardon et al., 2018; and Gerdes-McClain et al., 2019).

In these contexts, the role of collaboration was one of making more OER that is responsive to departmental contexts available for faculty to use. For some teams, this meant that OER were available for faculty to use as an alternative to commercial textbooks, though others saw the OER grant process as a way to offer customizable, timely, and high-quality materials.

The results from the interviews suggest that the role of collaboration is to make more contextually appropriate OER available. Interviewees C and D both described how a colleague revised an open textbook to match the curriculum of widely-taught course in their department. Interviewee I described how within their department there was a committee that developed an open textbook for the ALG repository for use within their courses. This group also periodically

updates this textbook and is currently developing an open course template. Interviewees B and F described the creation of a small in-house collection of open materials, including a course template, housed on their departmental LMS. While the quality of these materials cannot be assessed here, these examples suggest that collaboration between faculty does have the purpose of making OER available to faculty, and that these OER are responsive to the local needs of their respective departmental curricula.

Finding 4: Libraries have a significant support role in developing and maintaining OER

Although this finding does not directly address the CoP question, it does bear reflection that many of the documents reviewed reflect the essential nature of library support for effective OER development and sharing. The picture of how OER are developed, shared, and reused is incomplete without consideration of the role of libraries in the OER ecosystem.

First, there is the recognition that the ALG repository itself is accessible through the library's GALILEO site. It was through this site that the materials in the repository were examined and analyzed.

The Final Reports from ALG grantees also reflect the role of the USG library system for finding materials, developing supplementary LibGuides, and/or for hosting the OER themselves. LibGuides were an important element in the sustainability plans of many final reports. Some simply acknowledged that their materials were openly available through a LibGuide. For example, the report for one course recognizes that "The LibGuide serves as the publicly available database housing the syllabus, resources, discussion board topics, and projects in the course" (Liss-Green, Perkins, & Nevajomsky, 2015, p.2). Others credited the LibGuide with facilitating the maintenance and updating of materials. Some reflections on this are as follows:

> The use of LibGuides to develop the Subject Guide was thoughtful and allowed for ease of development and continued support for future courses. (Huffman & Bernstein, 2016, p.2).

> The anthology that we created was presented as a LibGuide and provided an easy-to-navigate central location for all of the articles to be organized in. Another advantage of this LibGuide is the ability to easily add or remove articles so that I can keep the information and issues at hand up-to-date. (Kasey & Townes, 2018, p.2)

> In addition, since web links can break often in LibGuides, [REDACTED] will continue to monitor the links and provide updates as needed for the project. In summary, we plan to maintain and expand all of the course materials and the LibGuides in the future. (Lu & Taylor, 2018, p.5)

The role of libraries as important for supporting OER development here is consistent with findings elsewhere. As described in Chapter 2, librarians have an important role in maintaining OER (Blick & Marcus, 2017; Suhr, 2016; and Smith & Lee, 2017) as well as supporting OER repositories (Ferguson, 2017, and Hare & Sullivan, 2020).

Only two of the faculty interviewed mentioned working with the college library to find potentially usable materials, however. Interviewee B stated that “university librarians have been helpful in finding some things” and Interviewee G related that they “asked the library here to create a subject study guide for our students”. When asked about other supports at the university interviewees sometimes mentioned other institutions, such as design advice from the Center for Teaching and Learning or instructional design help.

Questionnaire data indicated similar fractions of respondents who use libraries and other institutional support staff. Question 8 asked respondents to identify what institutional supports faculty sought when using OER. Eleven respondents (23%) indicated that they consulted with librarians, just slightly below the twelve respondents (25%) who indicated that they consulted with instructional design staff.

Recognition of the role of libraries and librarians does not necessarily fit the CoP model directly. However, describing the importance of libraries and librarians is important because it does speak to the broader mechanisms for developing and distributing OER in higher education. If the grants such as those offered by ALG have a catalytic role for teams to collaborate on OER, then libraries have an important role in finding resources, updating them, and making them available in support of these collaborations.

Limitations

This section will address some of the limitations that arose in the course of this research. To begin with, was hoped that more faculty would volunteer for interviews. Sixteen faculty expressed potential interest for an interview, yet only nine responded to follow up emails to schedule an interview. These interviews did yield a rich set of information about how faculty do use OER in their online courses, however, and as discussed in Chapter 4, it is above the threshold set for a minimum of eight interviews.

When it comes to assessing the contents of the ALG repository, there were a few broken links among the contents of the repository. The content for some of these resources were recoverable after contacting the ALG program director. In the end, only six non-syllabi

repository contents could not be assessed. This represented 1.8% of the non-syllabi materials, and which does not significantly affect the overall results from this method of data collection.

One additional limitation is that materials in the ALG repository were created by teams from different member institutions of USG, not just GSU. This variety of contributions is reflected in the ALG grant Final Reports. This means that not all results from these methods reflect GSU directly. However, there is consistency among many of the reports with the data that comes specifically from GSU, including the interviews and questionnaire. This speaks to the validity of the results across institutions, although it should be noted that these member institutions share a governance and policy structure through USG.

One other limitation is that data from the ALG grant Final Reports depended on the reflections of teams, so varied in depth and content. The reports did ask for some set categories, such as lessons learned and sustainability plans. However, while some reports opened a window onto some of the dynamics of the teams involved, others did not do so in a consistent manner. Conclusions drawn from the Final Reports thus relied on those details that were attested in the reports when it comes to the CoP evaluation.

Recommendations for Future Research

OER Repositories

The first research question focused on how revisable the OER in the ALG repository are. The results found that there was room for improvement and that there had been no significant trend toward greater revisability from 2015-2022. ALG has offered Continuous Improvement grants since the Fall 2020 round of awards to facilitate revision and updating of materials in the ALG repository. One area for future research along these lines would be to investigate the effect

of Continuous Improvement grants on the repository materials. Some areas to consider are whether these yield more revisable materials, or alternately, what features faculty prioritize when improving OER.

OER Pedagogy

As has been pointed out, more empirical research on how faculty develop, adopt, and adapt OER is needed. This research illustrated some of the different approaches that faculty take to these tasks in online courses. Pedagogy has a role in how faculty make choices in finding, adopting, and adapting open resources and, has been argued above, pedagogy has a role in assessing the need for revision of a given OER. A closer look at the pedagogies involved would help contextualize the relationship between revision and replacement as a form of remixing. As addressed previously, the mean Revisability Score for items in the ALG repository was closer to Somewhat Revisable than to Mostly Revisable. Most interview participants conflated revision with replacing links. They also emphasized efforts at remixing and scaffolding resources over revision of OER. Interviewee G was the significant outlier here, as they described in detail efforts to revise materials to better align them with pedagogical outcomes. Taken together, these results suggest that revision and remixing should be reconsidered in light of other pedagogical strategies and the availability of suitable resources.

Professional Development and Training

Another area that was touched on in this research but could use further study is the role of professional development and training in facilitating OER adoption. This includes faculty mentoring and possibly the role of advocacy by colleagues for adopting OER. All the interviewees in this study indicated that a concern for lowering costs for students as a motivation

for turning to OER. Several also mentioned the role of mandates and grants as motivation to use OER. Another suggested the availability of OER produced by a colleague was a factor in starting to use OER. Several of the faculty interviewees described not only advocacy with their colleagues but informal sharing practices within their department. Also, many of the ALG grant Final Reports also highlighted the role of professional development to better find and adapt OER, as well as the institution of faculty mentoring and training to get their colleagues on board with using OER. More research along these lines could better define processes for institutions looking to implement OER adoption programs as well as allocate resources for professional development.

Intradepartmental OER Collaboration

One of the most interesting findings from the interview data is the level of sharing of OER within departments. There were three main findings here in the way that OER are discussed and shared within departments. First, some OER users advocated for and/or discussed OER within their departments. Second, some shared OER with their departmental colleagues. And finally, some described how their departments hosted small repositories of materials and shared course templates. This suggests that the ways OER are discussed, shared, and hosted within departments may be a promising area for further research. As a corollary, the role of OER development grants is worth studying as well as a means of facilitating departmental collaboration and adoption of OER. By contrast with larger, more public repositories like OpenStax, MERLOT, or even ALG, departmental-level sharing is not as visible but may be a significant source of OER for faculty looking to provide no-cost options for students. Looking at

OER sharing on an intradepartmental level may pose difficulties for researchers who may not have inroads into multiple departments to study this phenomenon across departments, however.

Recommendations for Future Practice

Brown (1992) reminds us that education research should both further theoretical considerations and improve practice. With that advice in mind, it is hoped that this project's results will contribute to understanding how OER are used in the context of distance learning in higher education. This is useful not just for developing theory to match observation but also to develop implementation policies which reflect and improve usage of resources. That is, if there are policy or technical issues which prevent designers from revising OER then these should be recognized and corrected. Best practice policies can be developed to reflect effective reuse, revision, and remixing of OER in online courses. Also, study of the context of reuse contributes to how to facilitate a community around OER reuse, and how to manage that community so members can access OER effectively.

Several recommendations for practice emerged from this study. All the interview faculty shared a concern over the cost of textbooks for their students, but many also indicated that there were additional motivations which helped them choose to adopt NCLC options in their online courses. Continued awareness of, advocacy for, and education about OER among college faculty will help facilitate their adoption. This is in keeping with the recognition among several of the interviewees that they benefitted from discussing OER with their colleagues. It also recognizes the importance of working toward buy in from departments and from faculty members who may resist changing their pedagogy to use OER. These were issues that were mentioned by interviewees and were discussed in the Final Reports from the ALG grants.

The ALG grant process itself has an important role in spurring OER use in the college. Aside from developing OER projects themselves, the ALG organization has an important role in educating faculty about how to develop, use, and share OER. As described above, it has a catalytic role in introducing OER use in some departments as well as providing guidance for OER adoption.

On this note there is one additional significant result for future practice, which will be to advocate for building a collection of shared resources within the department's iCollege portal. This author is based in the Department of Humanities at Perimeter College within GSU. The different areas within the department have shared introductory courses that may benefit from a collection of in-house resources and documents, if not full courses for use by faculty. There is also a department-wide introductory Humanities survey course which many faculty teach, but which they approach from their own subdisciplines. It may be helpful for faculty to see how others teach it, what resources they use, and to have the resources from other areas in the department in drafting a course that touches on unfamiliar areas of the Humanities.

Chapter 7: Conclusion

Introduction

The overarching aim of this research was to examine the role of the ALG repository in relation to the use of OER in online courses at GSU. This goal was broken into three research questions which asked how revisable the contents of the ALG repository were, how faculty made use of OER in online courses, and whether the context of OER use can be considered a community of practice in relation to the repository. A mixed-methods approach was taken to seek answers to these questions. These methods included a questionnaire, interviews, an assessment of the repository contents, and an examination of the affordances and documentation associated with the repository. The resulting picture of OER use among faculty teaching online at GSU and the role of the ALG repository was construed as a case study. This conclusion will provide a narrative summary of the results and conclusions of this research as a case study.

Setting

GSU is a public research university in Atlanta, Georgia, that is a member institution of the USG. It incorporates Perimeter College, a former community college, allowing the university to offer degrees from the associates' level up through doctoral degrees. In recent years it has also initiated efforts to offer more affordable options for students. One visible mark of this effort is that courses are identified as No-Cost/Low-Cost if they require no additional cost to students for materials, or for which the cost of textbooks or additional materials is less than $40 USD.

The colleges that make up USG participate in the ALG program, which offers grants to teams to develop OER which are then housed in a repository available to member institutions, including GSU. There are two kinds of grants currently offered: Transformation grants and

Continuous Improvement grants. The majority of items in the repository were developed through the Transformation grants, which required faculty to work in teams of two or more members including support staff such as librarians or instructional designers. Continuous Improvement grants were instituted in 2020 and were aimed at teams who wished to revise, add to, and/or update existing repository OER. The process for completing each grant project includes a semester in which each team administers the OER generated in their courses and collects student success data. This data is incorporated into a Final Report which summarizes the grant teams' experiences creating the OER, reflects on challenges and lessons learned, details the results of using OER in the classroom, and identifies future plans involving the OER.

Repository and Revisability

The first research question sought to assess how revisable the contents of the ALG repository were. When analyzing the repository, a distinction was made between content identified as syllabi and non-syllabi items. The reason for this was that a syllabus was available for every content set in the repository, and because nearly all the syllabi were offered in PDF and/or Word formats. Including the syllabi would obscure the results of the revisability of content and, since there were syllabi associated with each content entry, little or no new information would be gained about the OER content that faculty were likely to adopt.

This left a set of 261 items in the repository to examine and assess for their revisability as of Spring 2022. Using a four-level scale (Not Revisable, Somewhat Revisable, Mostly Revisable, and Fully Revisable) it was found that a plurality of the content (40.2%) was Mostly Revisable. It was found that 31.4% were Somewhat Revisable, and 28.0% were scored as Not Revisable. Only one item out of the 261 in the repository met the criteria for Fully Revisable. This may

suggest that materials could be developed which better revisability in mind. It could also mean that the role of revisability in OER design and pedagogy should be reconsidered. Some other factors that may impinge on the place of revisability are whether a given item is replaceable as well as the pedagogical purpose and context for which the OER is designed.

Data was also collected as part of the repository assessment about the use of FTU web resources in addition to OER. Just over half (52.5%) of the materials in the ALG repository included links to non-OER FTU resources, while just under a third of the materials (32.6%) remixed open materials from established OER sources. This suggests that the mission to develop NCLC materials is frequently supplemented by a variety of online sources, not just traditional OER. These supplemental resources may have unclear copyright permissions. Also, since they exist on the web outside of the OER, it may be easier to replace and remix these resources than to revise them.

Faculty Practices

Related to the question of the revisability of the contents of the ALG repository is the question of what faculty actually do to adapt OER when they adopt it. This research project circulated a questionnaire and conducted interviews to answer the question of how faculty use OER in their courses. These methods of data collection sought these answers from faculty who taught online in the 2021-2022 academic year and who were marked as using NCLC materials. Of the pool of 221 potential participants, forty-eight faculty completed the questionnaire and nine faculty agreed to and completed an interview.

Motivation and Materials

Most of the faculty interviewed indicated that offering materials to students at no extra cost was an important motivating factor in using open resources. This was an issue of fairness to students, for whom an expensive textbook represented a significant cost added to their tuition. Some interviewees also explained that they started using OER because they received a grant to do so or were directed to do so through policies at institutions where they taught before GSU. One interviewee explained that using OER made their course more attractive to students deciding on an elective. Finally, several interviewees also explained that using free and open resources meant that they could offer more diverse materials to their students, whether recent articles, or cultural artifacts (such as song lyrics) to study and learn from.

Faculty used diverse materials in their course. Some did use an open textbook, or portions of open textbooks remixed with other resources. A few used readings or assignments from other OER sources, such as WikiSources, or from repositories at other institutions or professional organizations. Almost all faculty interviewed and the majority of questionnaire respondents used FTU online resources in their courses to supplement other resources. These FTU materials variously included images and media, such as YouTube videos or podcasts, articles and web sites found through web searches, primary source documents, song lyrics and other examples of language and dialogue from blogs, films, and music, government web sites.

Challenges and Solutions

Finding good quality resources that were appropriate to their course curricula was the single greatest challenge faculty faced when using open resources. For starters, most faculty reported problems with the overall quality of OER available. For several faculty, OER textbooks did not match their curricula, such as two faculty who noted that the OpenStax text for their

subject was built on a two-semester model when their course is designed to cover the subject matter in one semester. One of these faculty made use of an open textbook that a colleague revised, but then supplemented it with additional materials. Two other interviewees used portions of Canadian textbooks which they then supplemented with materials and examples that better reflected the subject matter as students would encounter it in the context of Georgia. For a world languages course one interviewee identified a problem in finding examples of dialogue or lyrics that were at an appropriate level of difficulty for learners, and revised the examples found to better reflect grammar lessons.

Faculty generally responded to challenges by selecting a variety of supplementary materials from open and FTU sources. More than half added scaffolding in their online courses to better integrate these materials. Scaffolding primarily meant adding introductory text to explain and contextualize the materials. Others integrated the open materials into their assessments, such as building discussion questions based on these materials. Over half of the faculty interviewed also developed their own OER from FTU resources which they then shared with others. In most cases, revision of materials primarily involved changing file formats between Word and PDF, although a few faculty built FTU resources into PowerPoint lectures.

Sources and Sharing

The ALG repository is one source among others in an ecosystem of OER sharing, but one with a significant role at GSU. The questionnaire found that only 25% of respondents made use of OER from the ALG repository for their online courses. Two of the nine faculty interviewed used OER from the ALG repository. The questionnaire showed that faculty also found materials from well-known OER sources such as Creative Commons (36%), MERLOT (16%), OER

Commons (16%), and OpenStax (22%). Seventy-two percent of respondents found open materials through online searches, and a sizable proportion (34%) identified the sources of their open materials as "Other". The interviews similarly substantiated these numbers. Interviewees indicated that they did perform searches in established OER repositories, such as MERLOT and OpenStax, as well as repositories maintained by their respective professional organizations. Nearly all interviewees conducted online searches for additional materials and frequently used FTU materials in their online courses.

Another significant source of OER that the interviews revealed were the materials shared between faculty. In some cases this occurred as informal sharing between colleagues within a department through word of mouth or at department meetings. For others this sharing took a more structured approach as faculty established a small in-house repository to share materials on a departmental site or actively collaborated to create and update OER.

Community of Practice

The third question asked if the collaborative context of the ALG repository can be interpreted as a CoP. This setting has many of the features of a CoP but it may be more accurate to say that it has a catalytic role for fostering CoPs among the collaborative teams it sponsors.

The grants ALG sponsors require teams of faculty to collaborate to generate OER, and to continue this collaboration long enough to implement the OER and to evaluate the results in classrooms. Materials on the ALG website advocate for OER use and promote OER education and training for using OER.

The locus for CoPs appears to be at the level of teams and their departments. The original description of a CoP described a group or community involved in practices which enhance and

improve involvement with a particular domain (Wenger & Wenger-Traynor, 2015). The teams themselves represent a collaborative community at work finding, revising and remixing, and producing OER within their discipline or course-specific contexts. ALG grants have a role in sponsoring and structuring these teams as communities of practice.

There is also the suggestion from the data that some departments can be construed as being the site of CoPs related to OER use. Some interviewees described informal sharing of OER materials within their department, alongside discussion with colleagues about the utility of OER. These activities meet the criteria for a community (interested faculty within the department), a domain (using OER to teach their discipline), and a practice (collaborating on creating, sharing, and reusing OER). In addition, some final reports from ALG grantees also describe processes whereby grant teams discuss advocacy within their departments and the issue of departmental buy-in for using OER. These reports delineate the processes by which department members have adopted OER materials and have a role in maintaining and updating OER materials.

The function of fostering a CoP appears overall to make more OER available to faculty and, secondarily, to make OER that is more responsive to departmental curriculum needs. The ALG grant teams as CoPs are engaged in developing materials for use in their courses and by their departments. As the interviews suggest, sharing of OER within departments appears to make more OER available that is responsive to the department's needs. Based on these considerations, it appears that the dynamics of departmental collaboration in the use of OER is an issue that can use further study and practice in developing OER.

Recommendations

On a final note, this research suggested several directions for future research and practice for effective use of OER in higher education. The first suggestion is to examine the role of Continuous Improvement grants to update and improve existing repository materials. The nature and prevalence of intra-departmental CoPs using OER is an additional area that bears further research. Finally, one practical suggestion that emerged from this research is that this researcher should consider developing an in-house collection of shared educational resources within his own department.

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Appendix A: Questionnaire Template

This is the text and questions of the questionnaire that was circulated. It consists of eight multiple-choice questions, and response choices are included below each question. There is also an open-ended question for any additional feedback or comments. The questionnaire also asks if respondents would be willing to be interviewed regarding their OER use.

Introductory Language

For this questionnaire consider how you have used Open Educational Resources (OER) in online courses you have taught at Georgia State University.

For this survey OER are defined as digital resources for learning, such as readings, assignments, test questions, or even learning modules or textbooks, which are available for free or with minimal barriers in terms of cost and effort to acquire and use. These include materials used for courses identified in the course catalog with the "No Cost" (NC) tag. For this questionnaire, the terms No Cost and OER will be used interchangeably.

Question 1: What is your position at GSU?

Faculty (TT)
Faculty (NTT, full-time)
Faculty (NTT, part-time)
Staff
Other (please specify)

Question 2: Which of the following fields best represent the course you teach using OER or no-cost materials?

Natural Sciences
Social Sciences
Mathematics
Computer Science and Engineering
Humanities (including English)
Language
Fine Arts
Education
Business Administration
Other (please specify)

Question 3: How long have you taught online?

0-2 years
3-4 years
5-6 years
7-8 years
9-10 years
11 or more years

Question 4: What kinds of OER or no-cost materials have you used in course(s)? (Check all that apply)

I have used entire open courses
I have used an entire open content module
I have used an open textbook
I have used one or more open assessments
I have used open interactive learning materials
I have linked to web pages
I have used online media (images or videos)
Other (please specify)

Question 5: Where have you found OER or no-cost materials that you have used in your course(s)? (Check all that apply)

Affordable Learning Georgia
Creative Commons
MERLOT
OER Commons
OpenStax
Through online searches
Other (please specify)

Question 6: To what extent have you revised OER or no-cost materials for use in your course? (Check all that apply)

Edited the text of the resources
Combined them with other OER or no-cost resources
Curated resources or added explanation
Improved accessibility of resources
I did not revise OER or no-cost resources
Other (please specify)

Question 7: To what extent did you modify your course(s) to accommodate OER or no-cost materials? (Check all that apply)

I revised course content
I revised course assessments

I curated or open no-cost materials
I did not make changes to the course to add open or no-cost materials
Other (please specify)

Question 8: Have you consulted with or discussed using OER or no-cost materials with others at GSU? (Check all that apply)

Yes, with my department chair
Yes, with other faculty
Yes, with library staff
Yes, with instructional support
No, I did not consult with or discuss using OER or no-cost materials with anyone at GSU
Other (please specify)

Question 9: If you have any comments about this questionnaire or your use of OER or no-cost materials, please add them here.

[Open-ended response]

Thank you

Thank you for your time and attention. I am also looking for volunteers to be interviewed regarding their use of OER and NC resources at GSU. If you are willing to be contacted for an interview, please enter your email address below or contact me at mbingley@gsu.edu. Interview participants will receive a $15 Amazon gift card to thank them for their time.

Question 10: If you are willing to be contacted about an interview, please enter your email below.

[Short answer response]

Appendix B: Interview Script

Interviews were conducted using Webex videoconferencing software. They were recorded with interviewee permission to facilitate creating a transcript and later reference.

Icebreaking and Background Questions

How long have you taught for GSU?

What subject(s) do you teach?

Do you tend to think of open resources as no-cost materials or as open educational resources (OER)?

How familiar are you with OER? How did you learn about them? For this interview OER are defined as digital resources for learning, such as readings, assignments, test questions, or even learning modules or textbooks, which are available for free or with minimal barriers in terms of cost and effort to acquire and use.

Course Design Questions

What are some no-cost low-cost materials you have used or reused in your courses?

Where did you find these materials?

How did you evaluate the quality of these materials?

Did you work with any colleagues or staff to include these materials?

Have you shared any OER with your colleagues, or have any shared OER with you?

Have you encountered problems bringing OER into your course?

If so, what problems did you encounter?

How did you solve these problems?

Did you need to revise any of these resources?

In what ways did you revise these resources?

What problems or challenges did you encounter in revising these materials?

Have you ever looked for OER that you were unable to find?

If so, what did you do to compensate for not finding what you needed?

Course Analysis Questions

Would you be willing to show me some examples of the resources you have used in your course? (emphasize that I am not asking to see student work or identifying information).

Can you walk me through what kind of resource this is? And what file format?

Where did you find the resource?

What, if anything, did you do to integrate it into your course? (such as modifying the resource, curating it, changing its file format, etc.).

How much experience do you have creating or editing digital objects?

How "tech-savvy" do you consider yourself?

Would you mind if I take a digital picture of the resource?

Community Participation

Did you work with any university staff, such as librarians or instructional designers, to develop your course?

Have you engaged in any discussions about course design and if so, with whom?

Have you engaged in any discussions about using OER or NCLC materials and if so, with whom?

Closing

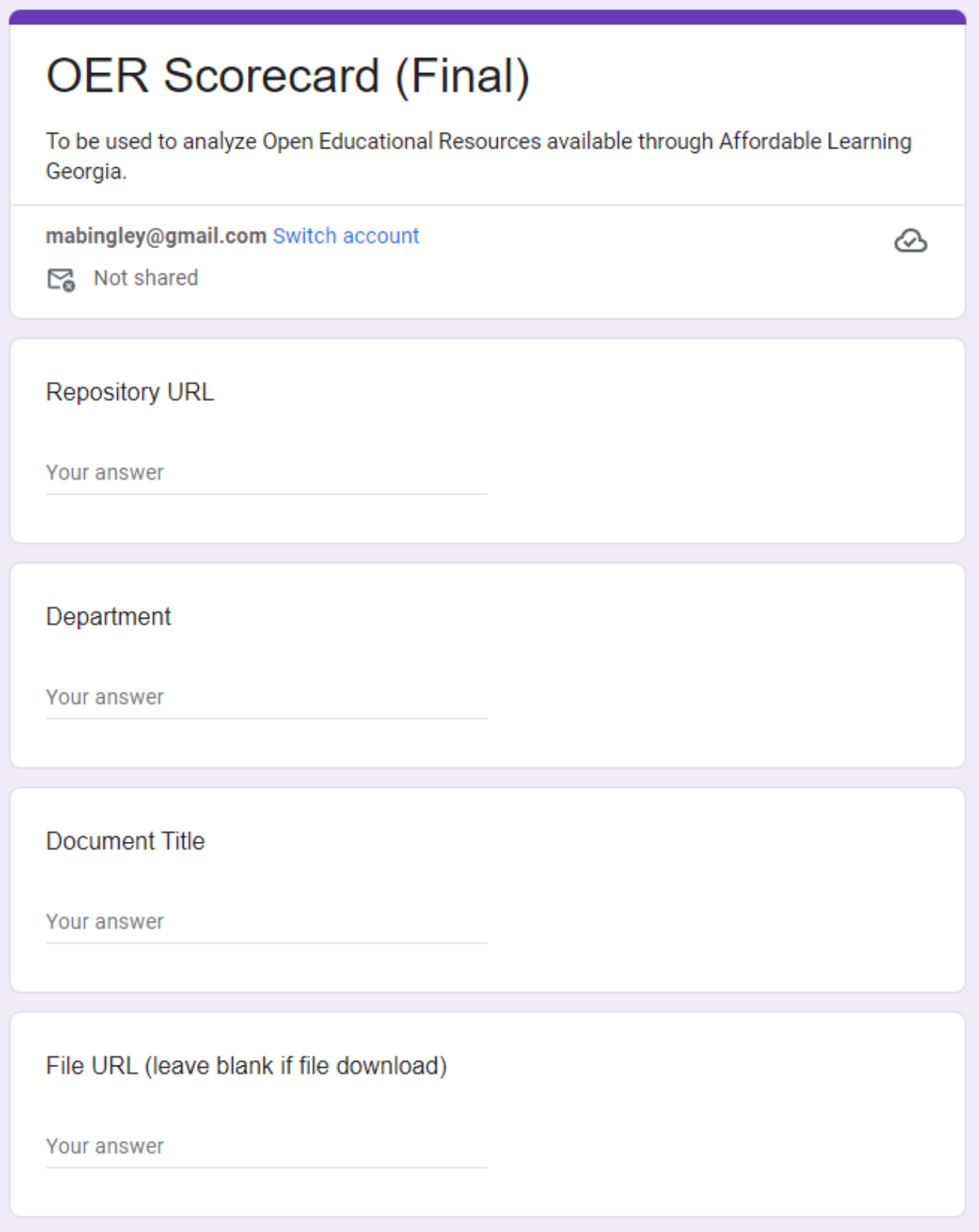
Is there anything else you want me to know about how you built your course or how you used OER or NCLC materials?

Do you have any questions about this research project?

Are there any faculty you know who use OER or NCLC materials who you could recommend I contact for more information?

Thank you very much for your time and willingness to speak with me.

Appendix C: Document Analysis Instrument



OER Scorecard (Final)

To be used to analyze Open Educational Resources available through Affordable Learning Georgia.

mabingley@gmail.com Switch account

Not shared

Repository URL

Your answer

Department

Your answer

Document Title

Your answer

File URL (leave blank if file download)

Your answer

Date

- ○ 2015
- ○ 2016
- ○ 2017
- ○ 2018
- ○ 2019
- ○ 2020
- ○ 2021
- ○ 2022

How many contributors?

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5 or more

Resource Type

- [ ] Assessment
- [ ] Audio
- [ ] Course Syllabus
- [ ] Homework
- [ ] Lecture Slides
- [ ] Open Course
- [ ] Open Textbook
- [ ] Photograph/Image
- [ ] Video
- [ ] Other: .....

File Types in Resource

- [ ] HTML
- [ ] PDF
- [ ] PPT
- [ ] Word doc
- [ ] Audio media
- [ ] Video media
- [ ] Open Office docs
- [ ] Images
- [ ] ZIP file
- [ ] Other: .....

External Links

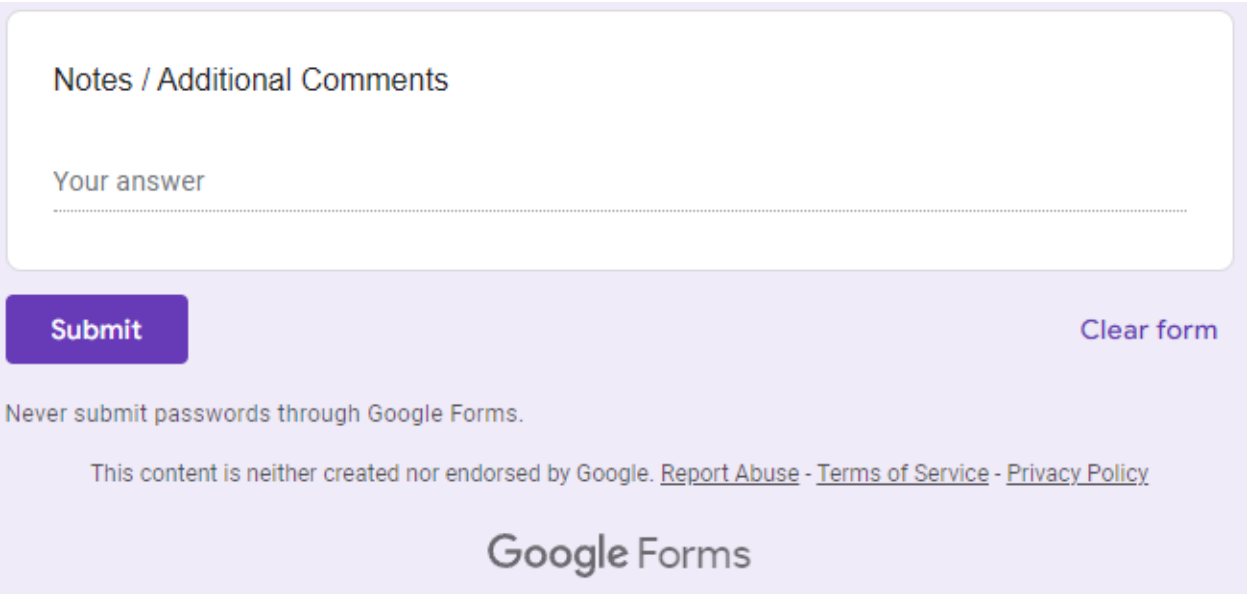
- ◯ Yes
- ◯ No

Additional OER from other sources?

- ◯ Yes
- ◯ No

Licensing of Resource

- ◯ CC BY
- ◯ CC BY-SA
- ◯ CC BY-ND
- ◯ CC BY-NC
- ◯ CC BY-NC-SA
- ◯ CC-BY-NC-ND
- ◯ Copyrighted
- ◯ unknown
- ◯ Licensed from third party
- ◯ Other: .....


Notes / Additional Comments
Your answer
Submit
Clear form
Never submit passwords through Google Forms.
This content is neither created nor endorsed by Google. Report Abuse - Terms of Service - Privacy Policy
Google Forms

Appendix D: Certification of Ethical Approval

Athabasca University
RESEARCH CENTRE

CERTIFICATION OF ETHICAL APPROVAL

The Athabasca University Research Ethics Board (REB) has reviewed and approved the research project noted below. The REB is constituted and operates in accordance with the current version of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2) and Athabasca University Policy and Procedures.

Ethics File No.: **24644**

Principal Investigator:

Mr. Matthew Bingley, Graduate Student

Faculty of Humanities & Social Sciences\Doctor of Education (EdD) in Distance Education

Supervisor:

Dr. Rory McGreal (Supervisor)

Project Title:

ADOPTING AND ADAPTING: HOW FACULTY REUSE, REVISE, AND REMIX OPEN EDUCATIONAL RESOURCES

Effective Date: February 18, 2022 **Expiry Date**: February 17, 2023

Restrictions:

Any modification or amendment to the approved research must be submitted to the AUREB for approval.

Ethical approval is valid *for a period of one year*. An annual request for renewal must be submitted and approved by the above expiry date if a project is ongoing beyond one year.

A Project Completion (Final) Report must be submitted when the research is complete *(i.e. all participant contact and data collection is concluded, no follow-up with participants is anticipated and findings have been made available/provided to participants (if applicable))* or the research is terminated.

Approved by: **Date: February 18, 2022**

Davina Bhandar, Chair

Faculty of Humanities & Social Sciences, Departmental Ethics Review Committee

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Athabasca University Research Ethics Board

University Research Services, Research Centre

1 University Drive, Athabasca AB Canada T9S 3A3

E-mail rebsec@athabascau.ca

Telephone: 780.213.2033

Appendix E: IRB Outcome Letter (GSU)

INSTITUTIONAL REVIEW BOARD

Mail: P.O. Box 3999
Atlanta, Georgia 30302-3999
Phone: 404/413-3500

In Person: 3rd Floor
58 Edgewood
FWA: 00000129

Date: March 04, 2022

Principal Investigator: Matthew Bingley

Key Personnel: Bingley, Matthew A

Study Department: Georgia State University, Perimeter College

Study Title: ADOPTING AND ADAPTING: HOW FACULTY REUSE, REVISE, AND REMIX OPEN EDUCATIONAL RESOURCES

Submission Type: Not Engaged in Research

Review Type: Administrative

IRB Number: H22448

Acknowledgement Date: 03/04/2022

Thank you for your submission. The Office of Research Integrity determined that Georgia State University is not considered engaged in the human subjects' research as described in the above referenced submission. The determination is based on "Guidance on Engagement of Institutions in Human Subjects Research (OHRP, October 16, 2008)" and the GSU IRB Manual of Policies and Procedures.

Further review by the Georgia State University Institutional Review Board (IRB) is not required.

The IRB requires notification and review if there are any proposed changes to the activities described in the IRB submission that may affect this determination. If changes are being considered and there are questions about whether IRB review is needed, please contact the Office of Research Integrity at 404-413-3500.

This correspondence should be maintained with your records.

Sincerely,

Susan Vogtner

Susan Vogtner, IRB Co-Vice Chair

Appendix F: Questionnaire Consent Form

Adopting and Adapting:

How Faculty Reuse, Revise, and Remix Open Educational Resources

ONLINE PARTICIPANT CONSENT FORM

(for anonymous survey-based research only)

Principal Researcher:

Matthew Bingley

mbingley@gsu.edu

Supervisor:

Dr. Rory McGreal

rory@athabascau.ca

You are invited to participate in a research study about how faculty teaching online courses use open educational materials, including those identified as no-cost or low-cost, and where faculty find those resources. I am conducting this study as a requirement to complete my Doctor of Education in Distance Education at Athabasca University.

As a participant, you are asked to participate in this study by completing a short online questionnaire about where you find open or no-cost/low-cost materials, how you use them, and whether you revise these materials before reusing them. Participation will take approximately 15 minutes of your time.

Participating in this study carries no more than minimal risks than other online activities. There are no direct benefits to you from participating in this study. However, the data collected will help to better understand and potentially improve how open educational resources are used by faculty in online courses. Involvement in this study is entirely voluntary and you may refuse to answer any questions or to share information that you are not comfortable with. You will not be asked to provide any personal or identifiable information or data.

You may withdraw from the study at any time by simply closing out of your browser. Once you submit your completed survey, however, data cannot be withdrawn as the survey is completely anonymous. Please retain a copy of this consent form for your records.

Please note that the survey data may be initially collected and stored on a server in the U.S. and is subject to access under the U.S. Patriot Act until it is transferred from that server to the researcher's computer.

Your data is being collected anonymously and cannot be attributed back to you. All electronic data will be kept in a password protected computer at my office. All information and records will be destroyed by confidential shredding; electronic records will be deleted when all project requirements have been met (anticipated in December 2022).

Results of this study will be used for writing a dissertation and used in the dissertation's defense. Results will also be made available to interested participants upon request upon completion of data analysis. The existence of the research will be listed in an abstract posted online at the Athabasca University Library's Digital Thesis and Project Room and the final research paper will be publicly available.

If you have any questions about this study or require further information, please contact Matthew Bingley (mbingley@gsu.edu) or Dr. Rory McGreal (rory@athabascau.ca).

This study has been reviewed by the Athabasca University Research Ethics Board. Should you have any comments or concerns about your treatment as a participant, the research, or ethical review processes, please contact the Research Ethics Officer at 780.213.2033 or by e-mail to rebsec@athabascau.ca.

Thank you for your assistance in this project.

CONSENT:

The completion of the questionnaire and its submission is viewed as your consent to participate.

BEGIN THE SURVEY

Appendix G: Interview Participant Consent Form

Adopting and Adapting:

How Faculty Reuse, Revise, and Remix Open Educational Resources

INTERVIEW PARTICIPANT CONSENT FORM

Principal Researcher:

Matthew Bingley

mbingley@gsu.edu

Supervisor:

Dr. Rory McGreal

rory@athabascau.ca

You are invited to participate in a research study about how faculty find, reuse, and revise open educational resources in online courses. I am conducting this study as a requirement to complete my Doctor of Education in Distance Education at Athabasca University.

What are the purposes of this project?

The purposes of this research project are to examine how faculty find and reuse open educational resources (OER), and what challenges they encounter to finding and reusing OER.

What will you be asked to do?

As a participant, you are asked to take part in an interview about where you find open educational resources for your online course(s), whether and how you revise those resources, and what problems you may encounter in reusing those resources. interview will be recorded for accuracy of transcription. Participation will take approximately one hour of your time.

I will provide you with a transcript after the interview for your review. The transcript will be sent as a Word documents via email. The deadline for any comments or clarifications, or to inform me you wish to withdraw your data from this study, will be two weeks from when the transcript is emailed.

Why are you being asked to take part in this research project?

You are being invited to participate in this project because you have been identified as a faculty member at GSU who has taught an online course in the past year which used OER and/or identified in the course catalog as using No-Cost or Low-Cost materials for your course.

What are the risks and benefits of participating in this study?

Risks from participating in this study are expected to be minimal.

There are no direct benefits to you from participating in this study. However, the data collected will help to better understand and potentially improve how open educational resources are used by faculty in online courses. Participants will receive a $15 digital gift card to Amazon by email following this interview as a thank-you for participating.

Do you have to take part in this project?

Involvement in this study is entirely voluntary and you may refuse to answer any questions or share information that you are not comfortable sharing. You may withdraw from the study at any time during the data collection period by informing me verbally during the interview, or by email after the interview, that you wish to withdraw. Data collected to that point will not be used and will be deleted.

How will your privacy and confidentiality be protected?

The ethical duty of confidentiality includes safeguarding participants' identities, personal information, and data from unauthorized access, use or disclosure. This study will collect some directly identifying data such as your name and email address, as well as the recording made of the interview. These forms of directly identifying data will be separated from the indirectly identifying data of the interview. Data from the interview will be assigned a code. Analysis and reporting from the interview will use this coded data. As discussed in the next section, directly identifying data will be stored separately from indirect data and will be destroyed after completion of this research study.

How will the data collected be stored?

Directly identifying data (your name, email, and recording of the interview) will be stored on a USB drive under lock in my home office. Directly identifying data will be deleted after the dissertation is completed. Indirectly identifying data from the interview will be assigned to a code and stored behind a password on my laptop. REB approval will be sought if indirectly identifying data is used in future secondary research.

Who will receive the results of the research project?

Results of this study will be used for writing a dissertation and used in the dissertation's defense. Results will also be made available to interested participants upon request upon completion of data analysis. The existence of the research will be listed in an abstract posted online at the Athabasca University Library's Digital Thesis and Project Room and the final research paper will be publicly available.

Who can you contact for more information or to indicate your interest in participating in the research project?

If you have any questions about this study or require further information, please contact Matthew Bingley (mbingley@gsu.edu) or Dr. Rory McGreal (rory@athabascau.ca).

Thank you for your assistance in this project.

This project has been reviewed by the Athabasca University Research Ethics Board. Should you have any comments or concerns about your treatment as a participant, the research, or ethical review processes, please contact the Research Ethics Officer by e-mail at rebsec@athabascau.ca or by telephone at 780.213.2033.

CONSENT:

I have read the Letter of Information regarding this research study, and all of my questions have been answered to my satisfaction. I will keep a copy of this letter for my records.

My signature below confirms that:

- I understand the expectations and requirements of my participation in the research;
- I understand the provisions around confidentiality and anonymity;
- I understand that my participation is voluntary, and that I am free to withdraw at any time with no negative consequences;
- I am aware that I may contact the researcher, the research supervisor, or the Research Ethics Officer if I have any questions, concerns or complaints about the research procedures or ethical approval processes.

Name: _____

Date: _____

Signature:
_____

By initialing the statement(s) below,

_____ I am granting permission for the researcher to use a video and audio recorder to facilitate transcription

_____ I acknowledge that the researcher may use specific quotations of mine, without identifying me

_____ I acknowledge that I will receive a copy of the transcript of the interview at the email address below:

e-mail address:
_____

If you are willing to have the researcher contact you at a later time by e-mail or telephone for a brief conversation to confirm that I have accurately understood your comments in the interview, please indicate so below. You will not be contacted more than six months after your interview.

_____ Yes, I would be willing to be contacted.

e-mail address or phone number:
_____

_____ Participants in this interview will receive a $15 Amazon gift card as a thank you. I acknowledge that I will receive the gift card via the email address I have provided.

e-mail address:
_____