**ABSTRACT**

Our small community college library developed a learning object repository to support a cross-institutional, land-based, multidisciplinary academic initiative using the open-source platform Omeka S. Drawing on critical, feminist, and open practices, we document the relational labor, dialogue, and tensions involved with this open education project. This case study shares our experience with tools and processes that may be helpful for other small-scale open education initiatives, including user-centered iterative design, copyright education, metadata design, and user-interface development in Omeka S.

**INTRODUCTION**

Whatcom Community College (WCC) is a rural, public institution, located on the lands of Coast Salish peoples, including Lummi, Nooksack, Semiahmoo, and Samish, in the northwest region of Washington State and just south of British Columbia and the US-Canada border. Referred to as the Pacific Northwest or the North Puget Sound, this area is part of the greater Salish Sea bioregion (see fig. 1). The sea’s name was adopted in 2009 in Washington State and British Columbia to refer collectively to the Strait of Georgia, the Strait of Juan de Fuca, and the Puget Sound.¹

The library at WCC has recently established several new digital services, including the college’s first institutional repository. Housed within this repository is a site named the **Salish Sea Curriculum Repository**, which has been developed to host a collection of materials and multidisciplinary curriculum related to engaging college students with this bioregion and is a unique cross-institutional collaboration between the library and the Salish Sea Institute at nearby Western Washington University (WWU).

In this paper, we document, from the perspective of the constraints of a small community college library, the development of the institutional repository service through the creation of the **Salish Sea Curriculum Repository**. This first phase development process began through relational work and proceeded through user-centered iterative design considerations, copyright education, metadata design, and user-centered interface development. A second phase was then launched that produced a curated index of existing work.

We document our process to demonstrate a case study of a small-scale, open-source-backed scholarly communication project that can be reasonably replicated by other smaller institutions in order to encourage scholarly communication and open education services at all levels of librarianship.

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DESCRIPTION OF LIBRARY REPOSITORY SERVICE DEVELOPMENT

In spring 2020, our library began to develop an institutional repository in response to a need to document faculty and staff scholarship and student scholarship, including newspapers and journals, and to host a collection of historical college images and videos. Lacking the budget for bepress and the dedicated technical expertise to implement DSpace, we found that Omeka S hosted on a shared server through Reclaim Hosting was the most appropriate fit for our needs.

Omeka was originally developed at the Roy Rosenzweig Center for History and New Media at George Mason University; it offers libraries and museums a way to publish online exhibits while ensuring accessibility and the inclusion of standards-based metadata to support discovery and use. Omeka S is a later platform that offers one single point of administration for multiple instances of Omeka, making it more usable for institutions like ours with a variety of unique collection sites with their own display templates. Omeka S adheres to international standards, such as the Dublin Core Schema for metadata, and allows creation of digital content collections, simple web pages, and complex online exhibits. The software can be managed and administered by one librarian. It allows interoperability through the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH is critical for future ingestion into the Digital Public Library of America, which will provide wider discoverability) and REST APIs (which will be necessary for any integration into the library’s OPAC).

As the college’s open education resources and copyright librarian, McKernan initially developed and administers the library’s Omeka S installation. While the initial collections were in line with traditional institutional repository sites, a new need developed later in 2020 in response to curricular developments at the college: a repository based around multidisciplinary, land-based learning objects. This repository was the Salish Sea Curriculum Repository.

DEVELOPMENT OF SALISH SEA CURRICULUM REPOSITORY

Relational work, which in our process includes time to build relationships and engage in dialogue, is important given our mutual exploration of open education projects. Luo, Hostetler, Freeman, and Stefaniak point to the importance of a campus culture that supports open education, through resource allocation such as OER design and development. As part of a larger team, this project represented three institutions (WCC, WWU, and the University of British Columbia) with three different open education cultures. And additional faculty partners at WCC and WWU had varying experience with open education, ranging from an awareness of Creative Commons licenses to experience authoring OER textbooks.

Dai and Carpenter discuss the feminized labor that goes into OER projects, arguing that, like instruction librarianship, OER librarianship is predicated on relational work. As feminized work is often invisible and undervalued, they suggest planning and documenting time for consultative tasks such as meeting with faculty as ways of bringing critical, feminist, and open pedagogies into this work. By discussing the development of the Salish Sea Curriculum Repository in terms of development phases, we want to devote space not just to the final products, but also to documenting this collaborative process.

A note on terminology: the ERIC descriptor Place Based Education is described as pedagogy to engage learners in their cultural, social, and ecological contexts; it often includes inviting community members in as instructors and bringing learners into the natural environments where...
they live. While place-based education is the prevailing term, Calderon has argued that the expression of this term has typically erased Indigenous relations with land and obscures the violence of settler colonialism. In contrast, Calderon writes that land education or land-based education makes explicit the ideologies and structures of settler colonialism and that land education centers Indigenous peoples’ relations to land, critically examining what it means to inhabit the lands of Indigenous nations. We will continue to use the phrase land-based education in this paper.

At WCC, the Salish Sea Studies (SALI) curriculum was developed by history instructor Anna Booker in partnership with Natalie J. K. Baloy of the Salish Sea Institute at WWU. The curriculum includes experiential learning about the complex human-environment systems of the bioregion that builds a sense of place, connection, and relational accountability.

At both colleges, the instruction teams who co-teach this course rotate from term to term and include faculty from multiple disciplines. Instructors at WCC have included faculty from the departments of history, anthropology, geology, and sociology. At WWU, instructors have included faculty with appointments in Salish Sea Studies, Canadian-American Studies, Comparative Indigenous Studies, the College of the Environment, and Fairhaven College of Interdisciplinary Studies. Units in the introductory SALI course are designed to demonstrate that many ways of knowing are relevant and important to understanding the Salish Sea.

When the second iteration of the course shifted online due to the COVID-19 pandemic, with less than two weeks’ notice in spring 2020, instructors shifted to creating learning objects for asynchronous learning. Since then, curricula for this course and adjacent courses in Salish Sea Studies have been designed for online, in-person, and hybrid learning.

Subsequently Booker had received a 2020–22 grant from the National Endowment for the Humanities (NEH) to further develop the Salish Sea Studies curriculum. With the pivot to online, she was looking for digital ways to support curriculum sharing, Baloy had been approached by Ingram-Monteiro (who was in the UBC’s Master of Library and Information Studies program at the time) about supporting Salish Sea Studies during the initial COVID-19 shutdown. Baloy connected her with Booker about a possible grant work project. Because of Booker’s previous work on OER with McKernan, she suggested approaching the college’s library about a collaboration.

The idea of using existing repository software to build a new site that would serve as a space to collect and share curriculum was born out of this dynamic context. In addition to the rotating instruction team and teaching modality variables introduced by the global health pandemic, the field of Salish Sea Studies as taught in our context was also being defined and articulated concurrent with the initial development of this repository (through distinct curricular conversations). What started as a repository to share open educational resources about the Salish Sea bioregion became an online space for creating and sharing a curated set of OER explicitly for use in land-based, experiential, multidisciplinary, and transboundary teaching and learning about the Salish Sea bioregion.

**Phase One: Initial Digital Repository Development**

The first phase of development ran from November 2020 to January 2021. Library work in the first phase included designing, building out, styling, and initially populating the repository. We used a user-centered iterative design process in this phase (see fig. 2). User-centered iterative
design is used in the human-computer interaction field to foreground user needs during design processes. Van House, Butler, Ogle, and Schiff discuss how designers need to know the larger context and purposes of users’ work with a digital library, as well as their specific tasks and information acts, such as searching or repackaging. For our project, user-centered iterative design started with consulting faculty partners to help them articulate use cases, identify primary users, and discuss ways to build the repository to incentivize submissions from instructors. These consultations included asking a lot of questions to draw out their needs and wishes for the repository. Ingram-Monteiro spent about 15 hours (of the 120 dedicated to this phase of the project) meeting or corresponding with our faculty partners over the course of four weeks. Our partners contributed this time and more, in addition to their standard workloads and during winter break. This was very much a dialogue, as we went back and forth on some topics over the course of a few weeks, brainstorming together and looking for inspiration to share with each other.

**Figure 2.** “Agile development” by [Dave Gray](https://davegray.typepad.com) is licensed under [CC BY-ND 2.0](https://creativecommons.org/licenses/by-nd/2.0/).

Through our dialogue, we were able to articulate that the repository would include adaptable, reusable teaching materials for lessons and courses about the Salish Sea. Users of the repository would primarily include faculty contributors who use the repository to submit teaching materials and instructors from bioregional higher education institutions who use the repository to find material to adapt for their teaching. Other users considered could include site visitors who are seeking information about the Introduction to Salish Sea Studies course that is taught in parallel at WCC and WWU.

*Copyright Education*

We provided copyright education in various modalities to the instructors who were involved during this phase. Our faculty partners’ questions informed how we built copyright considerations into the repository. Questions included what materials they could use and remix in a learning object that they would then license for reuse. While they felt protected by fair use for distributing copyrighted videos, maps, or readings within a traditionally mediated classroom environment, this calculus could not be automatically extended for distribution in OER. A recent systematic
A literature review of empirical OER studies found that faculty are consistently uncertain how to license their creation when it includes remixed materials\textsuperscript{9} and our experience echoed that.\textsuperscript{10}

The solution for the Salish Sea repository was the creation of a Resources section in the repository that included citations for all rights reserved published works, so that an instructor could point to traditionally copyrighted works without directly uploading them to the repository (see fig. 3).

\textbf{Figure 3.} Screenshot of an Omeka S record for an article citation in the Resources section.

Our faculty partners also had questions about Creative Commons licensing and how to select an appropriate license for their work. We designed the curriculum submission form to include explanations of each Creative Commons license type, as well as public domain and all rights reserved options. A submitter can read about these six terms and select which license is appropriate for their activity.

\textbf{Figure 4.} Screenshot of copyright guidance and license selector on the submission form.
While we were able to provide some guidance in the context of this project, bigger questions remained. Faculty partners worked through the challenges of creating public OER from private, contextual lesson plans and learning objects.

Given the curricular emphasis on relational accountability in the Salish Sea bioregion, and the central role of Indigenous knowledge holders and ways of knowing in line with land-based education, materials referenced in Salish Sea Studies include Traditional Knowledge of Indigenous nations. While this knowledge is shared in a consensual way in the context of a course (where a knowledge holder may be an invited guest, for example), sharing these materials in an open repository online introduces different considerations.

*Local Contexts*’ Traditional Knowledge (TK) labels are a popular topic in open education and have been adopted by the Library of Congress, but as Reijerkerk demonstrates, simply applying these labels in online catalogs is insufficient. The use of these labels is intended to be one intervention and done in relationship with Indigenous knowledge holders. Our role may be more to ask questions about existing permissions to share that knowledge, especially around ownership of that knowledge. Christen provides more context on how TK labels can be applied in such material when it has been published in the public domain.

*Metadata Schema*
Omeka S offers linked data infrastructure with the Dublin Core™ Metadata Initiative’s [DCMI metadata terms (dcterms:)](http://dublincore.org/documents/dcmi-terms/) as the default vocabulary. We used this vocabulary to create a functional metadata schema that allows faculty to describe their submissions in ways that would be useful for other users. The metadata added during the submission process was then cleaned and enhanced by the librarian who reviewed each submission. For site visitors, this metadata allows browsing through the set of learning objects in the repository; they can browse lessons from a particular discipline or place, for example. They can also perform keyword searching to find results based on titles and lesson descriptions.

During this design phase of the metadata, we started with an examination of the types of learning objects that would be shared through the repository. Through iterative design we arrived at an initial structure that included four types of objects that would be deposited: assignments, activities, existing published resources, and learning modules. For each type, we then created an Omeka S resource template to support consistent metadata processing and a “collecting form” to support metadata collection. We then added 40 resources, one module, two assignments, and five activities—all provided by our faculty partners—to test this structure. After more faculty consultation, we simplified the metadata design to include two learning object types: activities (including assignments) created by instructors and bibliographic citations for core resources used in Salish Sea Studies.

We refined our metadata schema for each of these and documented this metadata design and processing. See table 1 for one example.
Table 1. Metadata design—Resource type: Activity

<table>
<thead>
<tr>
<th>Metadata field</th>
<th>Label</th>
<th>Values</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>dcterms:title</td>
<td>Activity</td>
<td>Described by submitter</td>
<td></td>
</tr>
<tr>
<td>dcterms:description</td>
<td>Lesson description</td>
<td>Described by submitter</td>
<td></td>
</tr>
<tr>
<td>dcterms:subject</td>
<td>Discipline</td>
<td>Indigenous Ways of Knowing, Humanities, Natural Sciences, Social Sciences, Multidisciplinary/Interdisciplinary, Other</td>
<td></td>
</tr>
<tr>
<td>dcterms:spatial</td>
<td>Spatial coverage</td>
<td>Described by submitter</td>
<td>Repeatable</td>
</tr>
<tr>
<td>dcterms:audience</td>
<td>Course modality</td>
<td>Face-to-face, Online synchronous, Online asynchronous, Hybrid, Other</td>
<td></td>
</tr>
<tr>
<td>dcterms:temporal</td>
<td>Temporal coverage</td>
<td>Described by submitter</td>
<td>Repeatable</td>
</tr>
<tr>
<td>dcterms:format</td>
<td>Primary format of activity</td>
<td>Icebreaker, Problem-based discussion, Field trip, Other</td>
<td></td>
</tr>
<tr>
<td>dcterms:extent</td>
<td>Estimated time for students to complete activity</td>
<td>15 minutes, 30 minutes, One hour, Two hours, More than two hours, Multiple sessions, All quarter</td>
<td></td>
</tr>
<tr>
<td>dcterms:creator</td>
<td>Primary creator(s)</td>
<td>Full name</td>
<td>Repeatable</td>
</tr>
<tr>
<td>dcterms:contributor</td>
<td>Institutional affiliation</td>
<td>Western Washington University, Whatcom Community College, Other</td>
<td></td>
</tr>
<tr>
<td>dcterms:license</td>
<td>License</td>
<td>8 listed in item set</td>
<td>Add as “Omeka Resource”</td>
</tr>
</tbody>
</table>

User Interface Design

Once we had a working metadata schema and collection mechanism/workflow and the high-level site structure, we shifted our focus to considerations of the interactivity and look and feel of the repository site. We heard from our faculty partners that they wanted a clean, colorful design that would be appealing to users. They shared the Stanford History Education Group as one example, noting its simple navigation, and BlackPast.org, noting its interactive timeline. They also shared SpokaneHistorical.org, which is built on Omeka and includes an interactive map.

We tried to manage expectations about what would be possible. We did not have many resources available for web design or experience with the Omeka-compatible mapping and timeline tool Neatline. Still, we found that it was possible to create a simple, visually pleasing interface with some basic CSS skills, Omeka S modules, and documentation from HistSex.org, a library collection made with Omeka S.¹⁷

Modules in Omeka S are plug-ins that can be installed and activated to add additional functionality.

One of the more key modules we activated (on the admin side) was the CSS Editor.¹⁸ We could then write an internal style sheet in this editor, in which to style the colors and links in accordance with Web Content Accessibility Guidelines for styling headers, color contrast, and text decoration for hyperlinks.¹⁹ The CSS Editor module also includes input fields for external style sheets, which enabled us to include one for Google fonts. The color scheme we selected uses WCC’s colors and complements the blues and greens of the Salish Sea.
Another key module we added was the Mapping module. This enabled us to represent the spatial coverage of learning objects on maps within the repository. Instructors contributing content can associate their contribution with a specific geographic place by placing a marker or entering an address. The librarian processing the contribution can add to and edit this geospatial data. For site visitors, the mapping module allows interactive, map-based browsing of repository items. We initially deployed it only for bibliographic citations because this was the only resource type with a critical mass of existing content when we built the repository. When a visitor opens the Resources page from the navigation, they see the option to “Find resources by place,” with an embedded OpenStreetMap that includes markers that link to associated citations in the repository (see fig. 5). The spatial markers help locate scholarship to concepts of land-based education.

**Find resources by place**

This map includes only resources that are about or associated with specific geographic places in the Salish Sea region.

![Map with markers](image)

**Figure 5.** A screenshot of map indicators tied to repository items.

A third Omeka S module that we installed was Fields as Tags. This module increases the number of browsable metadata fields available to visitors on the main pages of the repository; in addition to title, subject, extent, and creator, visitors can also browse spatial and temporal coverage tags.

In the interim months between phase one and phase two, we introduced the repository to WCC faculty who were participating in a year-long professional development workshop about teaching Salish Sea Studies. The culminating project for that workshop involved submitting a teaching activity to the repository. However, while many participants began the submission process, few
were able to submit an activity that was repository ready. Reflecting on this and their own experiences developing curriculum for Introduction to the Salish Sea, our faculty partners scaled back on expectations for OER development. It was evident that thoughtfully designing land- and place-based, experiential, multidisciplinary, transboundary curriculum that is also open and adaptable would require dedicated resources in the context of deeper relationships and a longer timeframe.

**Phase Two: A Curated Index of Published Works**

The second phase of development, which took place roughly from July to December 2021, focused on further honing the interface and usability of the site. Our faculty partners designated some NEH grant funds to pay Ingram-Monteiro a stipend for summer website development work.

Further developing the Resources section of the repository thus became the focus of our work in summer 2021. By providing a central access point for curated, published works about the Salish Sea, the repository would support faculty who were developing Salish Sea teaching materials as OER. We also referred to the Resources section as the Salish Sea Index, a space that provides building blocks for teaching materials.

Developing this index included adding individual pages for maps, collections, and terminology. The maps and collections pages—as well as the original Resources page that includes published articles, books, videos, podcasts—are configured to automatically pull in newly entered Omeka S items. Each item was added using our previously developed bibliographic citation resource template for published resources. Whenever there was a Creative Commons license, Open Access license, or copyright information provided, we note this at the item level to facilitate reuse and attribution.

The digital collections page points visitors to digital collections (such as the Northwest Indian College Salish Sea Speaker Series videos and the South Asian American Digital Archive) as well as to information about physical collections (such as the Wing Luke Museum and the Center for Pacific Northwest Studies), which can be visited in person.

Finally, in addition to maps, journal articles, archival collections, and other media catalogued in the index, another building block for creating Salish Sea teaching materials is the terminology. This HTML page is in progress. It will be a reference tool for the vocabulary of Salish Sea studies, synthesizing concepts that are critical to this multidisciplinary and transboundary pedagogy.

Providing these building blocks functions as a way of supporting OER creation and remixing.

**Phase Three: Future Work—Building Transboundary Community**

As of spring 2022, the Salish Sea repository’s role is to share curricular building blocks, learning outcomes, and sample materials. Our faculty partners, with our support, are working on building a transboundary community around the repository, including librarians and interdisciplinary scholars engaged with relational accountability and land- and place-based learning in higher education. We are producing this article in this context.

As we expressed earlier, we wanted this to document the way relationship building is critical to the development and future growth of this project. As an example, we met with Ashley Edwards, one of two Indigenous initiatives and instruction librarians at Simon Fraser University (SFU). In her work with the Indigenous Curriculum Resource Centre at SFU, Edwards collects and organizes
resources to assist faculty in learning about and engaging in Indigenizing their pedagogy and curriculum, centering materials by and about Coast Salish communities. The creation of the center is part of SFU’s response to Canada’s Truth and Reconciliation Commission Calls to Action. Though no such mandate exists in the US, Indigenous and non-Indigenous settler faculty at WWU and WCC are engaged with Indigenization, as reflected in the inclusion of land-based education in Salish Sea studies. Building a transboundary community invites collaboration with Indigenous librarians like Edwards, from whose work we can learn how to better support Indigenization of curriculum in ethical, responsible, and respectful ways.

We also presented the repository at the Washington Library Association Academic Libraries Division/Association of College and Research Libraries of Oregon and Washington (ALD/ACRL-WA and ACRL-WA) Academic Libraries Summit in fall 2021 with the intention of sharing this case study to document our work in the vein of open scholarship. Audience questions focused on labor—attendees were interested in knowing about the job titles of people involved with the project.

As more OER are developed for sharing in the Salish Sea repository, we intend to continually evaluate the effectiveness of the repository for users, including user experiences around adapting and remixing the building blocks, filling out the submission form, and browsing learning objects. One area that we expect to focus on is refining the metadata scheme. For example, what is the best approach for describing spatial coverage in this repository, given the variety of place names that can describe one location? We began with a controlled vocabulary and then shifted to an open-entry user-defined field. This trades off the user’s ability to browse by a place name for the contributor’s ability to choose the specificity of a location name, which is important given the interdisciplinarity of land-based learning and the inclusion of multiple ways of knowing in this curriculum. We hope metadata librarians will be interested in bringing their skills to this project and working through such questions. Future refinements will be driven by these evaluations.

SUMMARY

In response to an emerging, multidisciplinary academic initiative that originated at two local public colleges, our small library utilized our Omeka S installation to create the Salish Sea Curriculum Repository.

We implemented this open education project using a user-centered iterative development process. As of spring 2022, this has involved three phases of development. In the first phase, library work focused on metadata design, copyright education, and user interface development in Omeka S. In the second phase, we focused on developing an index of Salish Sea resources, including information to help instructors find, adapt, and remix published maps, vetted terminology, and bioregional archival collections. The third phase will be focused on building a transboundary community around the creation and sharing of OER that meets Salish Sea Studies learning objectives, including inviting other librarians to bring their specialized skills in support of this project.
ENDNOTES


5. Dai and Carpenter, 159.


9. Luo, Hostetler, Freeman, and Stefaniak, 143.

10. The 2021 guide “Code of Best Practices in Fair Use for Open Educational Resources,” distributed by American University’s Washington College of Law and the Center for Media and Social Impact, has since become an important resource in such consultations.

11. One faculty partner shared Walthausen’s article “How the Internet Is Complicating the Art of Teaching” (The Atlantic, October 26, 2016) pointing to the sentence “What I hadn’t understood before this tentative jump into the broader sharing economy was that making assignments is so much about personalization,” which illustrates one challenge to this work.

12. We are writing from Lummi territory and so will share an example from here. Anthropologist Stacy Michelle Rasmus was asked by the Lummi Nation to study knowledge transmission and acquisition in the 1990s and early 2000s, including how research relationships are affected by the way knowledge is accessed and controlled in different contexts. In a 2002 article, Rasmus shares several ways that outside researchers unethically extract and disseminate knowledge beyond the community. She shares how knowledge holders will share knowledge without giving it away, but outsiders often interpret this sharing as a license to do with it as they wish.
She writes, "... some researchers may not in fact know when they have been exposed to knowledge that, within a community context, is considered private in nature."


14 Jane Anderson and Kim Christen, “‘Chuck a Copyright on It’: Dilemmas of Digital Return and the Possibilities for Traditional Knowledge Licenses and Labels,” Museum Anthropology Review 7, no. 1–2 (Spring-Fall 2013), 110.


23 Edwards, 177.