

Beyond OERs: Using an Environmental Scan Process and an AI Assistant to Evaluate the Current OER and Open Practice Landscape

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Introduction

Academic libraries often assume leadership roles in promoting the design and development of Open Educational resources (OERs) and textbook affordability initiatives on their campuses¹. At the University of Utah there are no formal open education initiatives, and no librarian or library staff officially dedicated to open education topics. In 2014, a faculty senate subcommittee established relationships and partnerships with the campus bookstore and savings were documented and shared across campus. However, these efforts were not sustained. Gleaning what was learned from the 2014 project, a 2023 sabbatical study was designed to explore open education themes to uncover barriers, frame strategies for decision-making, and design approaches for campus-wide OER initiatives.

Although textbook cost saving is the most common and well-researched open education topic, research on the design and development of Open Education Practice/Open Pedagogy (OEP/OP) cultures in higher education are still emerging². This research used an environmental scan methodology that utilized a broader and holistic lens to look at OER themes and open practice in teaching and learning. Research findings were then used to build an action plan for expanding OER and OEP/OP awareness across campus. As a librarian, and an adjunct instructor in the College of Education, my students have reported to me the benefits and opportunities of using OERs in our classroom, so more exploration was needed to understand the value of open education.

This project also provided an opportunity to explore new AI-assistant features embedded in Computer Assisted Qualitative Data Analysis Software (CAQDAS) tool, Atlas.ti³. Tools such as Atlas.ti, MaxQDA, and NVivo integrate 'AI-assistants' to auto-code, auto summarize findings, and conduct sentiment analysis. Although some AI-assisted tools have been integrated in tools for years with mixed review, there have recently been major Generative AI capability enhancements. New qualitative data analysis tools, such as AILYZE, Delve, and QInsights, are also being built directly using generative AI technology that could be possible alternatives for traditional CAQDAS tools.

The questions driving the open education qualitative research were:

- What are the OER and associated open education practice trends being discussed, reported on, and utilized both inside and outside the library? How do these trends align to library and institutional teaching and learning priorities?
- Based on evidence collected in an environmental scan of the open education landscape, what could an open education initiative at a R1 public university look like?
- How could the AI-assisted tools embedded in CAQDAS tools, like Atlas.ti be used to conduct an environmental scan? What value does the AI-assisted tools in Atlas.ti bring to a qualitative researcher?

Literature Review

During these uncertain times in higher education, college/university degree affordability and decreasing student enrollment are issues surfacing on many college campuses⁴. Covid-19 identified gaps in traditional library practices that emphasized the value of digital low-cost or no-cost resources, and highlighted the importance of digital literacy skill sets.⁵ Post-Covid changes continue to pivot toward a reliance on digital resources and continued interests in improving and maintaining online learning modalities. OERs and no-cost or low-cost textbook options are touted as possible strategies to move the Post-Covid digital trends forward with a benefit of keeping college costs down⁶.

Librarians are primary players in these possible solutions by helping faculty find alternative solutions to expensive textbooks. Libraries also provide copyrighted, but free to use e-books for scholarly research and for teaching. There are also web resources that appear to be free on the internet, but in most cases are not free and cannot be considered OERs. UNESCO defines OERs as: "... learning, teaching and research materials in any format and medium that reside in the public domain ... that have been released under an open license, that permit no-cost access, re-use, re-purpose, adaptation and redistribution by others."⁷ David Wiley, who authored the 5 Rs framework (Reuse, Revise/Rework, Remix, Redistribute and Retain,) contends that the idea of being able to own, remix, and share resources openly with others is what really defines OERs.⁸

Challenges of Finding and Using OERs in Teaching

Although there are many benefits for using OERs, there are also challenges of finding, using, and creating OERs.⁹ Time constraints are one of the biggest challenges faculty face when creating their own textbook. Finding OERs that are already published and free to use can also be a time-consuming task. There is not a central repository to locate all available OER resources. In addition, the volume of open content available can be overwhelming and includes not only textbooks, but also course modules, lesson plans, syllabi, PowerPoint presentations, and handouts.

There are also questions about the quality of OERs that do not usually undergo a traditional peer review process. Creating OERs are often considered not a realistic alternative for faculty on the tenure line track due to this lack of peer review. The Driving OER Sustainability for Student Success (DOERS) Collaborative, a US/Canadian collaborative of higher education systems has developed [The Equity through OER rubric](#), and more recently an OER textbook with recommendations and case studies for increasing the value of OERs for the tenure and promotion process.¹⁰

Creative Commons Licensing

Creative Commons (CC) licensing provides guidelines for faculty selecting and applying CC licenses to their work. The guidelines also articulate what users can do with an OER. Authors using CC licensing can share their work openly and provide free access to their work. Conditions are placed on work, such as providing an attribution requirement so authors receive credit for their work. Creative commons licenses range across a scale of public domain (free to use with no restrictions) to licenses that restrict use for commercial purpose. Creative Commons licenses are

international (Figure 1 from New Zealand). This diagram shows how a user of an OER with different licenses can use and change the original work.

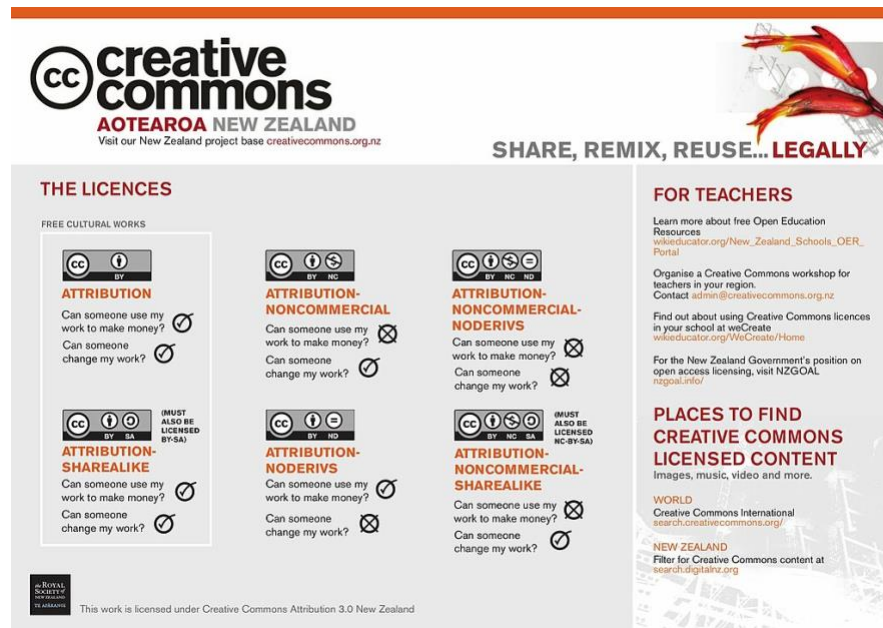


Figure 1. Royal Society of New Zealand Aotearoa (2012). [Wikimedia Image](#)

No-cost or Low-cost Student Benefits

Faculty are often unaware of how CC licensing can be used to reuse and remix the work of others or how to apply CC licenses to their own work. Finding a location to house OERs and difficulties maintaining updates to their OERs are other barriers identified in the literature. However, faculty report when using no-cost or low-cost OER texts in their courses, students report financial benefits and claim that they use that extra money for rent, food, and other bills.¹¹ The AAC&U report by Watson and Rush-Marlowe (2023) reports that 94% of students know when they decide not to purchase a textbook, that decision will have a negative impact on their academic success. Many colleges and universities are now tracking the adoption numbers of OER free textbooks to calculate the student savings for students. This tracking process, called course marking,¹² provides a way for institutions to calculate the student savings by using OERs on college campuses.

Research that documents the use of no-cost textbooks contend students get better grades, stay in courses, and graduate sooner¹³. The financial benefits of OER use makes a case for OERs and documents a reduction of course drops, withdrawals and fail (DWF) rates.¹⁴ Students also report that having a textbook from the first day of a course provides a good start to their learning. Students and faculty both value the inclusion of content that is more representative of the students in the classroom.¹⁵ Leveraging the use of OERs with instruction design and [Universal Design Learning \(UDL\) guidelines](#) is another theme emerging in the literature. The three UDL guidelines: (1) engagement; (2) representation; and (3) action and expression provide a model for optimizing learning for *all* students, engaging students in the active learning classroom, and helping instructors create equitable and inclusive access to learning materials.¹⁶

Faculty Transformative Practice

Even though we often refer to OER textbooks as free for students, they are not ‘technically free’. There are hidden costs related to designing and developing a new textbook. When faculty just swap out an expensive textbook with an OER, they save students money. However, adjustments may need to be made to the course design plan to accommodate the new text. Adapting, customizing or creating a textbook, require more faculty time and effort. Existing OERs with a creative commons license that permits editing, revising and remixing provide opportunities for faculty to adopt an existing book and still personalize their course. This option may not need as much time. Faculty can also just integrate open supplemental materials such as context-specific case studies, quizzing and interactive activities, and mix and match chapters from different textbooks to create a textbook solution that better fits their needs without creating a new textbook from scratch. But despite the hidden costs, faculty report that students appreciate their efforts to lower their costs by not requiring an expensive textbook in the course.¹⁷

Faculty who utilize open pedagogy practices in the classroom while using OERs also report benefits such as transforming and rethinking their teaching practice. McGill (2013) claims that, “These changes have the potential to flatten the traditional [teaching] hierarchy and change the balance of power in learner/teacher relationships” (p. 7).¹⁸ Finding, revising and using OER textbooks for teaching can also increase opportunities for building faculty-librarian partnerships.¹⁹ The practice of effective OER use in teaching and learning is a complex and context dependent endeavor that goes beyond the OERs. Hegarty has defined eight attributes of open pedagogy that encourage participatory learning and building an inclusive community of learners. Similar to the touted benefits of active learning that address the needs and culture of learning in the twenty-first century, Hegarty’s model of OEP/OP (2023) includes eight attributes such as, using participatory technologies, sharing ideas and resources, learner generated work, and peer review (pg. 5).²⁰ The most significant and successful OEP/OP examples in the literature involve the building of real-world skills sets such as writing for different audiences, collaboration and team work, making course work visible beyond the course, authentic and reusable assignments, critical thinking skill building, and self-directed projects. The inclusion of student voices in course decision-making and what are called [renewable assignments](#), empower students and provide opportunities for more inclusive assignment design success.²¹ The [Open Pedagogy Notebook](#)²² and an OER book on [Open Pedagogy Approaches](#)²³ provide a variety of different ways faculty can partner with students.

Study Design and Methodology

Methodological Choices

This paper presents the findings from a 7-step environmental scan process²⁴ conducted during a 2023 librarian sabbatical²⁵ to explore, document, and analyze OER, OEP/OP, and the broader open education landscape. Environmental scanning is a methodology used to inform decision-making for designing new policy, program planning, and initiative development.²⁶ As the researcher on this project, I am not an OER expert therefore, I selected environmental scanning to study a broad swath of secondary resources on open education topics that could be used to build a solid foundation for planning open education initiatives at my institution. Using a large number of sources also provided an opportunity to test and learn how to use the AI-assisted qualitative analysis tools in Atlas.ti. Data collected from open and available sources included: (1)

transcripts of open education webinars, events, and interviews; (2) abstracts of open education scholarly articles; (3) reports, newsletters, websites and blogs; and (4) open education list-serves and notes. Although some scholarly peer-reviewed abstracts were analyzed, the goal was to focus on the current topics being ‘talked about’ in non-peer-reviewed formats to get a current understanding of what was happening on the ground.

One thousand six hundred and ninety-five documents were included in the data set. The documents used for analysis were collected randomly in the two years before the 2023 sabbatical project. I registered for a variety of open education listservs and collected transcripts from webinars that were cleaned for analysis. There was not a systematic method of collecting the documents and no date range limitations. The listserv text and transcripts were more recent, but the scholarly articles were across a broad range of publication dates. The data and abstracts were imported into Atlas.ti from Zotero. I did not use the most version of Atlas.ti for this analysis. Since then, the new Atlas.ti version has improved the AI-assistant tools.

The Content Analysis (CA) method used in this study was based on a CA model that incorporated a qualitative analysis component.²⁷ CA is often a method of choice in library science research used for exploratory and descriptive qualitative studies.²⁸ CA models are also flexible data analysis models that can include quantitative, qualitative or mixed methods analysis. Both qualitative and quantitative data were collected in this study but only the qualitative data analysis is included in this paper since the secondary purpose of the study was to use and test the new Atlas.ti AI qualitative data auto-coding features.

Two strategies for coding were used. The AI-assistant provided the primary coding of the data, and the researcher served as the second coder and triangulated the coding using manual deductive and abductive coding strategies. After the content auto-coding process, the codes were manually merged, purged, and re-organized into new categories for a rigorous thematic analysis. The revised categories were then analyzed looking for patterns and connections and five themes were identified. I thought this auto-coding process would save me coding time, but it extended the time of data analysis

An abductive analysis approach was used when consolidating and purging codes and categories. Abduction is often associated with grounded theory research, but I found this process helpful to reimagine and retest the alignment of codes and categories. Timmermans and Tavory (2012) state that, “Abduction refers to a creative inferential process aimed at producing new hypotheses and theories based on surprising research evidence” (pg. 167).²⁹ Charmaz refers to the process of “abductive logic” when thinking about surprising findings and intriguing findings and when checking new ideas and concepts” (pg. 137–38).³⁰ Based on my first experience of using auto-coding in this exploratory and descriptive study, I would recommend to other researchers to layer in an abductive approach when trying to make sense of and interpret auto-coded data.

Findings

Lessons Learned Using Auto-coding Tools in Qualitative CAQDAS Products

The biggest lesson learned in this research was that doing auto-coding process first resulted in too many codes and categories: 597 codes and 5355 instances of codes. The initial coding was very broad and literal and not very helpful for identifying themes. On manual analysis, it was

noted that some of the auto-tagged excerpts did not have a code about the central idea of the excerpt. In one case, the code 'sports' was tagged with 46 occurrences, but was only referring to one of the many abstracts include in the entire dataset. Although the large number of created codes and categories were overwhelming, the process also created an opportunity for me to be totally immersed in the data in a way not usually possible with a more traditional coding practice. Coding I would not have done manually, created new creative threads to explore. The immersion in a lot of data also provided new insights that were valuable as I completed the manual coding process.

Themes for the Open Education Content

The manual category reorganization resulted in a more nuanced and detailed understanding of the open education topic themes and provided more relevant and descriptive codes and categories. A process of recursive coding helped to tease out details on the impact of open pedagogy on student success and engagement. Identified codes and themes also indicated the value that OER and open practices could contribute to other campus initiatives such as faculty development, inclusive teaching training, equity initiatives, and UDL implementation. A second level of coding identified: challenges of implementing OER initiatives, a need for funding, faculty resistance to using OERs, lack of peer reviewing of OER textbooks, and time constraints of finding and adapting or creating OERs. Third level coding, or selective coding, that utilized constant comparative strategies resulted in the identification of the five themes. Doing the last level of coding and using the abductive logic process resulted in strategies for connecting the open education higher education context to broader institutional broader topics.

The five themes identified include:

- Integrating OERs and open practices on a college campus is a team sport
- Building campus-wide awareness, open education capacity, and digital competencies that are customized to university culture and context
- Designing a community of openness to bridge support for different stakeholders
- Impacting student success through empowering students using equitable and inclusive open pedagogy best practices
- Extending beyond the OER and aligning open education work to the library and university strategic planning priorities

Integrating OERs and open practices on a college campus is a team sport is the first and most important theme identified in this study. This theme, often implied in the scholarly literature is one that was strongly represented in the secondary data. Coding related to this theme emphasized the importance of conducting a campus-wide needs assessment to survey existing OER users, the level of OER use and OER awareness, and most importantly, the need to identify other open education advocates and partners. Findings indicate that OER initiatives and implementation is not a one-person task. We do not have a position on our campus responsible for open education work, but the coding and themes indicate that librarians should assume responsibility to locate OERs in their disciplinary areas and help their departmental faculty with CC licensing. OER design, OER implementation and program sustainability were common categories. Coding around a wide range of stakeholders and impacted groups stressed the importance of OER work as team work.

The second identified theme of *building campus-wide awareness, open education capacity, and digital competencies that are customized to university culture and context* helped me to realize how much I still needed to learn about OERs and OEP/OP. Coding and categories indicated the different levels of successful OER initiatives and what is needed to move through those levels. Capacities, competencies, and buy-in are some of the major categories in this theme. Coding also included social learning, societal norms, campus culture, self-determination theory, motivation, responsibility, and respect.

The third theme, *designing a community of openness to bridge support for different stakeholders*, is directly related to the first theme of building awareness, but it extends the work to include customizable training and a variety of educational materials that will meet the needs of the various stakeholders. We need to meet our stakeholders where they are so they can work together to maximize campus OER benefits. This will take additional work and research beyond just OERs.

The fourth theme of *impacting student success through empowering students using equitable and inclusive open pedagogy best practices*, will be critical step to align OER and open education efforts to campus initiatives such as student success. Coding related to this theme such as professional development, faculty resistance, academic flexibility, anxiety, and best practices for both OERS and inclusive teaching will need to take center stage thinking about designing OER initiatives.

Extending beyond the OER and aligning open education work to the library and university strategic planning priorities, the fifth theme requires we focus on how OERs and the OP initiative work can align to the library and other university strategic planning priorities at a higher level beyond the classroom. Coding related to this last theme indicated alignment to the broader campus-wide open education vision, going beyond the library, aligning to other campus priorities and initiatives if OER efforts are to be successful.

Discussion

Going beyond a focus on affordable textbooks and showing how to integrate open textbooks into teaching practice is an emerging topic in the open education literature and one evident in the data. Providing a scaffolded and community approach for easing into OER planning and implementation to meet faculty where they are was one of the lessons learned from this research. Findings indicate the importance of building not just awareness but also community around OERs such as a Communities of Practices (CoP). Wenger-Trayner and Wenger-Trayner define communities of practice as “groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly” (pg 1).³¹ The community will need to provide flexibility for a variety of different stakeholder where each group can communicate, collaborate and learn from each other.

A focus on how OERs and the OEP/OP initiative work can align to the library and other university strategic planning priorities is also an important theme that resonated from this research.³² This alignment piece will require logic model planning, town halls or focus groups, and engaging with a variety of campus stakeholders. We are currently undergoing college,

department and university-wide strategic planning processes, so the work required for this task will need to wait until this campus-wide work is completed. Finding ways for OER and OEP/OP efforts to best leverage and enhance the changes happening in other places on campus could help make a solid case for the impact of OER and OEP/OP on student success.

There is interest in this topic at higher administrative levels on our campus, as well as at the state level and capitalizing on those interests at this time is important. Progress is being made through the work of the Utah Academic Libraries Consortium (UALC) OER sub-committee is planning a state-wide OER survey of students and faculty in spring 2025. Using this survey data to begin the collaborative planning and forming of an advisory group at the University of Utah will be the first step to launch open education initiatives in summer 2025.

Action and Impact

Being immersed in this topic for a [six-month sabbatical project](#) was not enough time to complete the research project and begin to apply the research findings to the University of Utah context. This sabbatical provided an opportunity to jump start the research and initiative planning and to enhance my own teaching practice open education efforts. The link to the sabbatical project above includes a detailed action plan grounded in the *OER Journey and a Maturity Model* developed by Pressbooks for rolling out OER initiatives³³ (See Figure 2). This maturity map provided a framework to think about the importance of different needs at different stages for designing, developing and prioritizing our OER work. The findings also indicate that a diverse group of OER-interested advocates will help ensure continued interest and sustainability for the OER work.

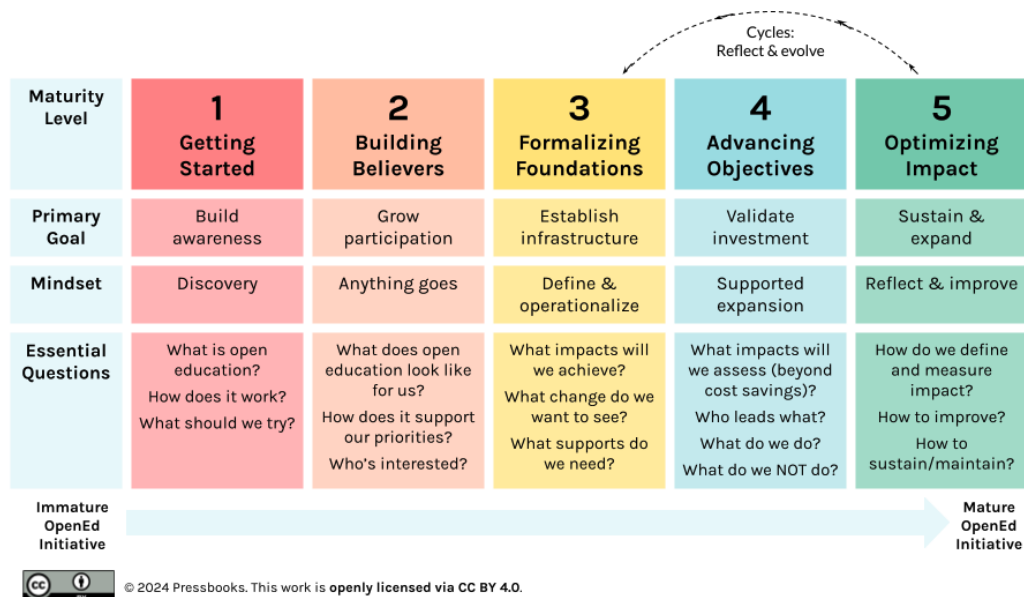


Figure 2. The Pressbook Maturity Model for Open Education and Webinar about the model.

The themes from the qualitative analysis were aligned to the maturity model used to design and develop an action plan to build campus-wide OER and OER/OP awareness and engage university faculty, students, and administrators in open education. Distribution of my [six-month](#)

[sabbatical project](#) in the library and across campus has resulted in funding to hire two undergraduate students to help with building awareness, marketing, decision-making and support for creating Pressbook OER books for courses and initiatives on campus.

Practical Implications and Value

This research contributes to the library assessment community in two several ways. First it presents the lessons learned, opportunities, and challenges of using an environmental scan methodology and content analysis process with a large secondary source dataset. The application of this type of research resulted in an action plan, as well as a contribution to the assessment literature. The environmental scan method can be adapted and used for exploring any type of library initiative or outreach project. We often think of conducting a needs assessment before planning library programming, but the environmental scan provides a broader view of the situational context and trends around the topic. This process could help identify areas for a needs assessment or flag topics of concern. After an environmental scan, a team or advisory group could use the findings to help create a logic model, a needs assessment, an assessment plan, and a communication plan based on the environmental scan findings.

This research also presented insights into using an AI-assistant tool for qualitative data coding that would be of interest to the library assessment community. If I try this again, I will use another CAQDAS tool to compare the AP tools. The recommendation would be to conduct preliminary inductive level 1 coding first for a selection of the sources, and then use a deductive method for analyzing the auto-coded data. This would solve the problem of using an overwhelming amount of data and then trying to sort through it. This process could also provide an opportunity for the AI coding process to generate new ideas researchers have not considered or extend coding beyond what has already done. After manually consolidating and purging codes and reorganizing into new categories the data were easier to handle, analyze, and interpret. The best methodology would have been to do an inductive traditional coding of a selected representation of the data sets first, and then auto-code to enhance and fill in gaps in a more deductive way.

Based on recommendations and themes from the coding, we are creating a CC-by OER playbook that can be shared and adapted by others. With the help of two student employees and their invaluable student perspectives, the playbook will contain tasks and chunked information and organized into short tutorial ‘plays’ which could be customized for different stakeholder groups. Playbooks are already used on our campus so there is campus familiarity with the playbook concept and terminology.

The Open Education Playbook will serve as a framework for organizing all OER and OEP/OP initiative work, policies, training materials, tools, resources, outreach, planning and recommendations for using OERs and open practice in teaching. A playbook will also be a way to create an open education brand and online presence, make a case for OERs and open education, and a place to display open education work and statistics. The concept of a playbook also provides a modality to continue to build new plays and add new components without having to redesign the whole structure when adding content.

Conclusion

Lessons learned from this 6-month sabbatical project on OERs, and OEP/OP have driven my thinking differently about the concept of open education. The findings triggered new campus support and positions and creative ways we can move forward. The challenges of open education have also opened new avenues of scholarship for me that are also directly related to my online teaching and learning research agenda. The scan of the literature and other current discussions and presentations around OER and OEP/OP make clear that this is a complex topic with many opportunities and challenges that need additional research and work to operationalize.

Prioritizing planning efforts that could result in the most impactful and visible progress will be critical for successful open education efforts. Funding and time constraints, lack of staffing, and faculty resistance are serious challenges identified in the literature that will need to be taken into consideration up front if the Open Education initiative is to achieve a level of sustainable change on campus. However, the discovered clear evidence of financial and academic benefits for students keeps me engaged in this challenge. The data collected and lessons learned from the sabbatical research will be a good springboard to engage colleagues in OER advisory group work. Proposed activities, grounded in the data and themes from my research, will be prioritized and I am excited to begin engaging with other campus stakeholders about OERs and OEP/OP.

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