USNH Open Education Initiative 2017-18
Student and Faculty Perceptions on OER & Open Pedagogy
at Granite State College, Keene State College
and Plymouth State University

Final Dissemination Report

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Executive Summary

The Academic Technology Steering Committee for the University System Of New Hampshire (USNH), refocused the annual Academic Technology Institute (ATI) in 2015 to begin to develop the capacity of each institution within the system to undertake meaningful and complementary Open Education projects that will make student learning more effective, including:

- Transition to OER content in order to save money for students and for USNH;
- Exploration of Open Pedagogy to strengthen learner-directed learning at USNH; and
- Augmentation of Open Access structures and protocols across USNH.

In 2017, forty-two instructors participated in the USNH ATI. Twenty-seven instructors from three of the institutions, Granite State College, Keene State College and Plymouth State University participated in a study that focused on both OER and Open Pedagogy. The instructors created plans to use OER, and/or Open Pedagogy, an approach often associated with OER. These collected faculty members taught 503 students over the academic year. This study describes the student perceptions of the effectiveness of OER and open pedagogy, an analysis of the efficacy of these open approaches, as well as faculty perceptions of OER and open pedagogy. A brief summary of these results are as follows:

Student perceptions on the effectiveness of OER

The overwhelming majority of students (95.4% of 151 student respondents) believed they saved money by using OER. Students were asked to compare the quality of the OER they used versus other textbooks they had used; of the 151 respondents, 64% rated the quality of both resources as the same quality, 32% of students rated the quality of open resources as better with 4% of responders rating OER as worse. In total, 59.1% students stated that they would enroll in the section with open resources like those offered in their course, 31.5% said they would have no preference, and 9.4% students said they would enroll in the course with traditional published texts.

Student perceptions on the effectiveness of Open Pedagogy

The vast majority of students felt that open pedagogy was as good as or better than traditional teaching techniques. Across the 173 students who responded to a survey regarding their experience with open pedagogy, 53% said open pedagogy had greater educational value than traditional learning activities. An additional 31% viewed both activities as having equal educational value and a minority (16%) felt that that the educational value of open pedagogy was lower than that of traditional activities.

Students were asked, "Imagine a future course you are required to take. If two different sections of this course were offered by the same instructor during equally desirable time slots, but one section had traditional learning activities (such as writing papers and taking tests), and the other used open pedagogy activities like you used in your class, in which section would you prefer to enroll?" In response, 52.7% preferred open pedagogy, 27.8% expressed no preference and 19.5% chose traditional learning activities.

Efficacy of Open Activities

When aggregated across the three participating institutions, the group of students whose faculty engaged in open activities (i.e., adopting OER and/or engaging in open pedagogy) included 503 students and the control group included 403 students. We examined differences between the two groups in terms of their DFW (drop, fail, or withdraw) rates. No statistically significant differences were found in either the aggregate analysis or any of the individual institution analyses. In other words, students whose faculty engaged in open activities performed as well as students whose faculty did not.

Faculty perceptions on the effectiveness of both OER and Open Pedagogy

While using open pedagogy took more faculty time, the overall impression was that it was worth the effort and resulted in improved student learning. Faculty members believed that they saved their students significant amounts of money and that students responded positively to open pedagogy. In reflecting on the experience with using open pedagogy, one faculty member seemed to capture the spirit of many of the responses, writing, "I am certain I will continue to use OER and Open Pedagogy in my courses. I am still getting my feet wet, but I can see that the quality of work I received from students is greater. I think they were more invested in the outcomes, knowing that their work could be viewed by others."

Summary

Students and faculty involved with the ATI project both found value in both OER and open pedagogy. Their perceptions were that the OER materials were as good as or better than traditional learning materials at a dramatically lower cost. They also believe that deeper learning often takes place with open pedagogy. Based on traditional learning measures, there are no negative side effects of using OER or Open Pedagogy.

Introduction

The University System of New Hampshire (USNH) is committed to innovation in public education. The USNH system is made up of 4 institutions with a shared goal of working collaboratively to improve access to higher education in New Hampshire; to increase the impact of research, teaching, and service have on the public good; and to provide an agile and connected learning environment to serve a 21st-century world. Those four institutions are as follows:

- The University of New Hampshire (UNH) is the flagship land-sea-space grant public research institution, serving 13,000 undergraduate and 2,400 graduate students. Its Center for Excellence and Innovation in Teaching and Learning led the system's earliest OER pilot in 2015 and produced two comprehensive final reports that include information on cost savings, student/faculty perceptions, and assessment of student learning outcomes.

- Granite State College (GSC), with over 3,700 active students, was founded with a mission to serve adult learners by providing access to flexible learning environments and offering degree programs that address the educational and workforce priorities of New Hampshire and the surrounding region. Students are able to complete their education online, face-to-face at one the college's six statewide physical locations, through credit awarded for prior learning, and selected competency-based programs.

- Keene State College (KSC) prepares promising students to think critically and creatively, to engage in active citizenship, and to pursue meaningful work. As the public liberal arts college of New Hampshire, KSC offers an enriching campus community and achieve academic excellence through the integration of teaching, learning, scholarship, and service. KSC's enrollment is approximately 3,700 students (2018).

- Plymouth State University (PSU) is an innovative university with a student body of approximately 6,500. It recently embraced a renewed mission to focus on experiential education through integrated and multi-disciplinary approaches to learning, with revisions to all aspects of the curriculum, support for cross-disciplinary teaching and learning, and robust collaborations with business and other leaders from the region and the state. Plymouth has programs and faculty

who have received international attention for their work with OER.

The Academic Technology Steering Committee for the University System of New Hampshire (USNH) refocused the annual Academic Technology Institute (ATI) in 2015 to begin to develop the capacity of each institution within the system to undertake meaningful and complementary Open Education projects that will make student learning more effective. In the 2017 ATI, one of the four institutions, UNH, focused solely on OER while the other three institutions included both OER and Open Pedagogy projects. The results of the research presented here only includes data from those three institutions: GSC, KSC, and PSU.

The USNH 2017 ATI provided definitions of several key terms to the participating faculty ambassadors (https://at.usnh.edu/what-open-education). "Open educational resources" (OER) were defined using the William and Flora Hewlett Foundation definition:

> Open Educational Resources (OER) are high-quality, openly licensed, online educational materials that offer an extraordinary opportunity for people everywhere to share, use, and reuse knowledge. They also demonstrate great potential as a mechanism for instructional innovation as networks of teachers and learners share best practices.

"Open pedagogy" was defined as embodying four common principles:

- Focuses on access, broadly conceived;
- Emphasizes learner-driven curricula and educational structures;
- Stresses community and collaboration over content;
- Sees the university in the context of a wider public.

The research on the 2017-2018 USNH ATI Open Education Initiative includes the following topics:

- Student perceptions on the effectiveness of OER
- Student perceptions on the effectiveness of Open Pedagogy
- Student efficacy when using OER and/or Open Pedagogy
- Faculty perceptions on the effectiveness of both OER and Open Pedagogy

These topics were examined by surveying students and faculty who used OER and/or Open Pedagogy, interviewing instructors, and examining course scores (see Appendix for specific instruments used). The following sections examine each of these topics in turn.

Student Surveys: Perceptions of OER

Students who were enrolled in classes that used OER but not open pedagogy were asked a series of questions designed to better understand how students related to OER in terms of cost savings and perceptions.

Perceived Cost Savings

A significant issue for students centered on cost-savings. Of the 156 students who responded to a question regarding their textbook expenditures each semester, 14.1% spend less than $100, 35.3% spend between $101-$200, 25.6% between $201 -$300, 19.9% between $301 - $400, and 7.1% spend more than $400.
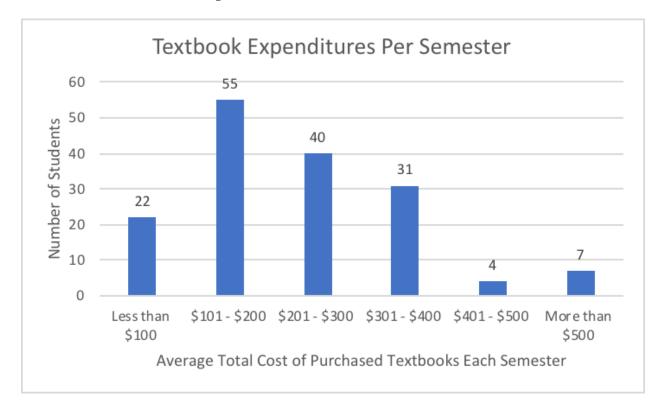
Chart 1. Textbook Expenditures Per Semester

The overwhelming majority of students (95.4% of 151 student respondents) believed they saved money by using these open resources. Of the 115 students who

specified what they did with the money they saved, 45 (39%) said that they spent the money on rent, food, and other bills. Another 38 students (33%) said they spent the money on tuition or textbooks for other classes. Eighteen students (16%) said that they saved the money and fourteen gave miscellaneous responses such as "I didn't do anything with it, it was less $ I had to charge on my credit card."

One method employed by students to reduce textbook costs was renting textbooks. When asked how often they rented required course material for courses taken, 19% of 258 respondents said they never rented materials, 18.2% rarely rented, 29.8% rented about half the time, 24% rented often, and 8.9% of students always rented. When asked how often they purchased required course material for courses taken, 4.7% of 256 respondents said they never purchased materials, 25.8% rarely purchased, 30.5% purchased about half the time, 22.3% purchased often, and 16.8% of students always purchased.
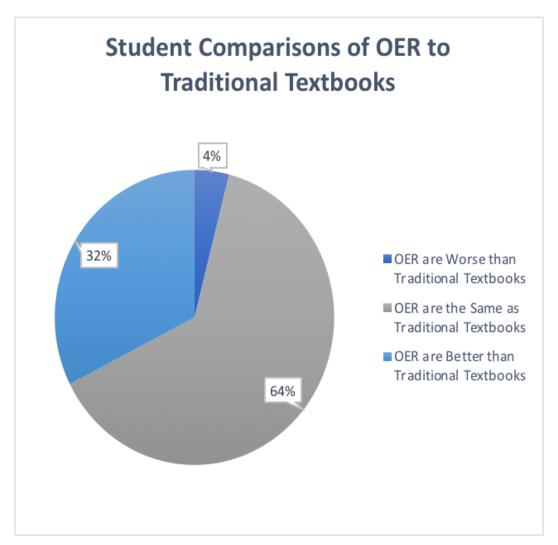
In total, 52.5% of 255 responders said they have not purchased course materials for a class because of the cost of course materials. Of those students, 44.5% felt that not purchasing the course materials influenced their course grade in a negative way, and 23.8% felt that not purchasing course materials contributed to their decision to drop a course. Additionally, 23.8% felt that not purchasing course materials contributed to their decision to drop a course, and 16.7% felt that not purchasing course materials ever caused them to fail or withdraw from a course.

Delaying purchasing course materials was a more significant issue than not purchasing them. Of the 167 students who responded to a question about delaying purchasing course materials, 73.7% said that they had delayed because of the cost of

course materials. Of those students, 38.7% felt that delaying their purchase of course materials influenced their grade in a negative way.

Perceptions of OER

Students were asked to compare the quality of the OER they used versus other textbooks they had used; of the 151 respondents, 64% rated the quality of both resources as the same quality, 32% of students rated the quality of open resources as better with 4% of responders rating OER as worse.

Chart 2. Student Comparisons of OER to Traditional Textbooks

Student Comparisons of OER to Traditional Textbooks

4%

32%

64%

- OER are Worse than Traditional Textbooks
- OER are the Same as Traditional Textbooks
- OER are Better than Traditional Textbooks

When asked to explain their rankings; thirty-nine people who viewed OER as better than other textbooks provided responses. They highlighted three advantages of OER: access, relevancy and cost-savings. For example, one student wrote, "Availability and being on the cloud means I can't forget my book at home." Another said, "The materials were more personalized to the course instead of a broad textbook chapter." Many comments were similar to the previous two as well as this one: "I liked that it was online and most importantly to me free."

One hundred and forty-nine students responded to this question: "Imagine a future course you are required to take. If two different sections of this course were offered by the same instructor during equally desirable time slots, but one section used open resources similar to those used in this course and the other used traditionally published texts, which section would you prefer to enroll in?" In total, 59.1% students stated that they would enroll in the section with open resources like those offered in their course, 31.5% said they would have no preference, and 9.4% students said they would enroll in the course with traditional published texts.
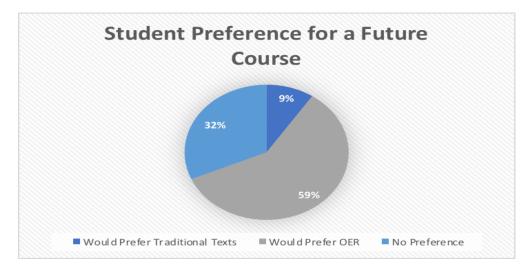
Chart 3. Student Preference for a Future Course

Student Preference for a Future Course

9%
32%
59%

■ Would Prefer Traditional Texts ■ Would Prefer OER ■ No Preference

Of the 149 students who asked if their opinion of their instructor changed when they learned they would be using OER, approximately one-third (36%) said their opinion of their instructor changed. Only one of these students said that they change was negative; this student said, "I felt that the level of their expertise was lower. I also felt like their expectations of me were lower because they must have chosen the e-book because a regular text would have been too complicated." In contrast, the other forty-one students who described how their opinion changed were overwhelming complimentary.

The following three comments are representative of students' responses regarding how their instructor using OER influenced their perceptions of their instructors: "She instantly became less frightening." "I immediately liked my professor more because I felt that she understood the problems we face in college and that she was trying to do something about it." "It showed me that she cared more about her students, and that she had taken the time to select pieces of work that were more suitable to our course objectives, rather than selected a book that mildly fit them."

Use of OER

The majority of students in classrooms where OER was implemented used digital versions of the OER. Out of the 140 student respondents, fewer than half (n=60, 42.9%), printed any part of their open resources for their courses. Out of those sixty students who did print pages, 17 students printed less than 10 pages, 20 printed 10-50 pages, 10 printed 51-100 pages, 7 printed 100-150 pages, 2 printed 151-200 pages, 2 printed 200-300 pages, and 2 printed more than 300 pages.

Students appeared to utilize the OER they received. Less than 1% of the 151 students who answered a question about use said that they never used the open

resources during the semester. In contrast, 10.6% students used the resources 2-3 times a semester, 34.4% used the resources 2-3 times a month, 44.4% used the resources 2-3 times a week, and 9.9% of students used the resources daily.
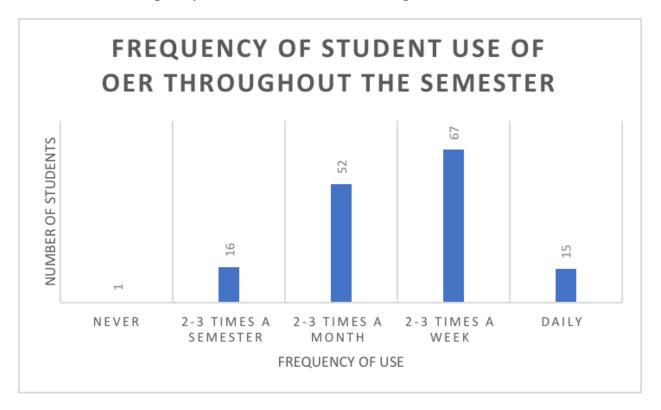
Chart 4. Frequency of student use of OER throughout the semester

FREQUENCY OF STUDENT USE OF OER THROUGHOUT THE SEMESTER

NUMBER OF STUDENTS

- NEVER: 1
- 2-3 TIMES A SEMESTER: 16
- 2-3 TIMES A MONTH: 52
- 2-3 TIMES A WEEK: 67
- DAILY: 15

FREQUENCY OF USE

Summary

Students perceive that they spend a significant amount of money on textbooks, a fact that causes many students to either rent, not purchase, or delay purchasing textbooks. A substantial number of students believe that lack of access to textbooks has hurt them academically.

In total, 64% of students felt that OER were comparable in quality to traditional textbooks with 32% ranking them as better and only 4% saying they were worse. A majority of students (59.1%) stated they would prefer to enroll in sections with OER; only 9% preferred to enroll in sections with traditional published texts. While only one-

third of students reported changing their perceptions of the professor when they learned

the professor was using OER, for this one-third the change in impression was

overwhelmingly positive.

Student Surveys: Perceptions of Open Pedagogy

The Educational Value of Open Pedagogy

The vast majority of students felt that open pedagogy was as good as or better than traditional teaching techniques. In total, 166 students responded to questions like the following: "How did [insert open pedagogy assignment used in specific class, e.g., writing blog posts] help you [insert key learning outcome], compared to the way engaging in traditional learning activities (like writing essays or taking quizzes) would have?" Student responses to these questions are summarized in Table 1.

Table 1. *Student perceptions of differences in learning outcomes with open pedagogy as compared to traditional activities*

Outcome	Greater with Open Pedagogy compared with traditional activities	Same with Open Pedagogy compared with traditional activities	Less with Open Pedagogy compared with traditional activities
Mastery of core academic content	79 (47%)	66 (40%)	21 (13%)
Skills in collaborative learning	80 (48%)	76 (46%)	10 (6%)
Critical thinking and problem solving	74 (45%)	83 (50%)	9 (5%)
Effective communication	62 (38%)	91 (55%)	12 (7%)
Learning how to learn	60 (37%)	90 (56%)	10 (7%)
Aggregate Learning Outcomes	43%	49%	8%

When asked to compare the overall educational value of open pedagogy versus traditional classroom activities, a majority of the 173 students who responded favored open pedagogy. In total 53% said open pedagogy had greater educational value than traditional learning activities. An additional 31% viewed both activities as having equal educational value and a minority (16%) felt that that the educational value of open pedagogy was lower than that of traditional activities.

Those who felt that open pedagogy had greater educational value indicated that it lead to increased knowledge of the material. For example, one student reported, "It allowed me to look through important course information, such as cases and related legal information, and synthesize it for the audience (my blog). This forced me to think of the information in terms of its importance relative to my topic and use it in a way that was meaningful to an audience that may not have the context to digest a lot of raw information. A traditional tool, like a test or quiz, would not achieve this same level of cognitive rigor in terms of how I used the course material." Another student wrote, "It really made you have to think about the material and understand it before publishing something that others would read and see. You want to make sure the information is correct and you are correct in what you are saying."

Another reason students valued the open pedagogy was that they found it to be more engaging and relevant in their lives. One student wrote, "I felt that this approach was much better than traditional quizzes and tests because it was a new way for me to demonstrate my learning and understanding of my research topic." Another student said, "It was more hands-on. It didn't feel like 'traditional' learning. Rather, it was more interactive and felt more 'life-like' enabling me to learn the material, while also gaining real life skills.

Students also appreciated the personalization afforded by open pedagogy. One student said, "I was actually able to retain information due to applying the concepts to real world issues and writing something I was passionate about. This was more helpful than being worried about cramming for an exam to get a good great and then forgetting all the information after." Another wrote, "By allowing students to have a hand in the construction of the course, we were given a sense of agency in our education. I feel as though this made us more invested in the assignments and in the material we discussed."

Those students who felt the educational value of open pedagogy was less than traditional learning activities tended to feel there was a lack of structure. For example one student said, "Nothing is set in stone and I am unaware of what to prioritize and what the goals of the class are." Another wrote that there was "less structure" which made it "easier to get distracted and not get work done."

Some students seemed to struggle with the technology aspect involved in creating a blog. One wrote, "I do not really understand how to format my page. This has made it difficult since that is the main aspect of this project." Another said, "It offered no education value at all unless I wanted to go into media or marketing then perhaps it is useful to know how to create a website." In some cases, students simply preferred traditional activities. One wrote, "I didn't get as much from this style of learning. I would rather take quizzes and exams to test what I know."

Student Perceptions of Open Pedagogy and Learning Outcomes

Students were asked, "Suppose that certain types of learning activities lead to certain learning outcomes. For example, reviewing flash cards might lead to memorizing facts. What types of learning outcomes do you think are the result of _[insert specific

open pedagogy used in the class]_?" A total of 136 students described their perception of the learning outcomes of open pedagogy.

The largest category of their response clustered around responses related to deeper learning. One student said that open pedagogy required "Synthesizing multiple ideas and information"; another stated that open pedagogy provided a "deeper understanding of the topics covered in the course." In total, 45 responses (33%) had similar descriptions of the learning outcomes. Other representative responses include the following: "Learning how to use facts and organize information to learn rather than just trying to absorb information and spit it out," and "By spending a good chunk of your time writing a blog about a certain phylum for example, you research about them and learn so much. By paraphrasing articles for your blogs, you have to think about what your reading and how you can get the point across. I think this is more effective than just memorizing flash cards."

Students also identified increasing student interest/engagement in a topic or course (mentioned by 24% of respondents) and learning real-world applications (23%) as important learning outcomes of open pedagogy. With respect to increasing interest, one student wrote, "People are more interested in what they are learning if they have a say in what they learn about." Another responded, "You're more involved as a student because you're allowed to take control of your education." Regarding real-world applications, one student stated that open pedagogy made it easier to "apply the information to the real world." Another said, "It leads to a more well-rounded understanding of the particular subject. Rather than just memorizing terms, we are learning a real issue in our world and using our knowledge to solve or complete whatever task is given."

Only five respondents (4%) provided learning outcomes that could be viewed as negative. For example, one student wrote that was no learning because students were creating all of the learning materials so "they are horrible and probably wrong."

Changing Opinions of Instructors

Approximately 30% (51/171) of students who answered a question about whether their opinions of their instructors changed when open pedagogy was introduced said that their perceptions of faculty members did change. Of the forty-nine students who provided a description of how their perception of the instructor changed when open pedagogy was introduced, thirteen (27%) wrote about feeling that the faculty member was more aware of their needs. For example, one student wrote, "I felt as though the instructor wanted us to create a course that we would enjoy, so it made me appreciate the professor more. It would have been easier for the professor to just call all the shots, but instead, they allowed us to determine what we would actually be working toward on a day-by-day basis. That control is one of the best feelings I've had as a student." Another student responded, "It made clear that the instructor expected us to make use of the material and engage with others related to that material versus simply memorizing or gaining a surface-level understanding." It is interesting to note that although only six students (12%) reported a negative change in opinion about the professor, some who did so identified the same attribute (instructor giving more agency to students) but viewed it negatively. One student wrote, "I felt we were doing her job."

Fourteen students (29%) viewed the instructor as being more open-minded and relaxed about the education process. A representative comment of this cohort of students was, "I thought that the instructor was very forward thinking and adaptable

which is very valuable as a professor." Another student said, "I noticed my instructor was a lot more involved with her students and more open minded."

Future Courses and Open Pedagogy

A total of 169 students responded to this question: "Imagine a future course you are required to take. If two different sections of this course were offered by the same instructor during equally desirable time slots, but one section had traditional learning activities (such as writing papers and taking tests), and the other used open pedagogy activities like you used in your class, in which section would you prefer to enroll?" In response, 52.7% preferred open pedagogy, 27.8% expressed no preference and 19.5% chose traditional learning activities.

An analysis of the comments from the twenty-seven students who provided an explanation of why they preferred traditional learning activities, two key themes emerged. First, many students felt that traditional activities were more familiar, and therefore more beneficial. One student wrote, "It's something I'm used to, also, I'm better at listening than taking most responsibilities in my own hands." Another student said, "I know how to answer questions in [traditional] classes and I feel I can get a better understanding for the material that way." A second theme involved a feeling that traditional learning activities were more effective. A student stated that with traditional activities, "I would get the help I need as a special needs student," implying that s/he did not get help expected. Another student stated that the "Traditional way makes you think and learn more even though it's a lot harder." Although these students expressed a minority viewpoint, their words indicate that some population of students will require more help and support than was present in the current iterations of open pedagogy that were utilized.

In contrast, three themes came out an examination of the comments from the eighty-two students who provided an explanation of why they preferred open pedagogy. First, students valued the ability to take ownership of their learning in creative ways. One student said, "I feel like I own my education more in this class option than the other." Another responded, "I think it is a lot more beneficial for the students because we get to decide how our education is being controlled." A second theme that emerged concerned feeling that open pedagogy was more enjoyable and less stressful. Representative comments included, "They are more enjoyable," "It is more individualized and less stressful. There are not huge standards that induce anxiety," and "It's less stressful and a lot more fun." The third theme involved deeper learning. One student wrote that open pedagogy activities "help the material stick. I probably couldn't tell you exactly what I learned last semester in physics, but I could tell you many things from my [current science course] because we were able to take the time and learn about things we were interested in and learn it in depth." Using similar words, another student wrote, "I feel like I learn more with open pedagogy activities. I learn actual real life situations! They "stick" better in my mind, rather than traditional memorization activities."

Use of Open Licenses

One potentially problematic aspect of open pedagogy concerns the ethics of requiring, or even strongly encouraging, students to use open licenses with whatever resources they create. Out of the 156 students who responded to a question about whether they created resources that were shared online or intended for reuse by others in the future, 93 (60%) said yes. Roughly one-third of these content-creators reported using an open license to license any of the work they created in the course. Across all

students who created resources for class, 7% of students said that they felt pressured to license their work in a specific way.
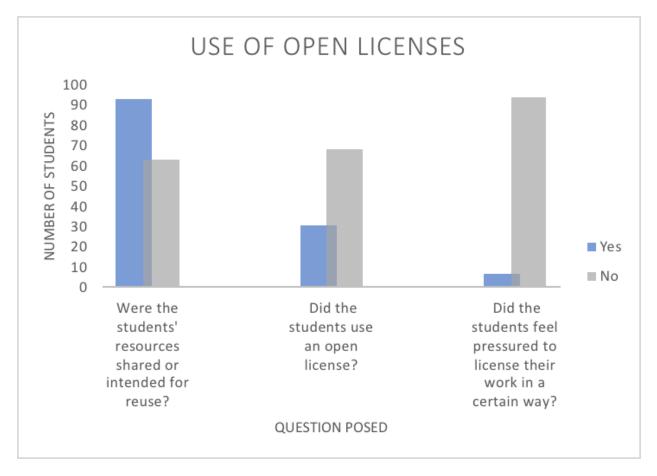
Chart 5. Use of Open Licenses

One student explained the coercion that was experienced: "I felt that since my class was open pedagogy I had to license my work so that others would be free to use it in any way they wish to. While I understand the reasons behind doing this, I felt like it was something that my class was expected to do even though it was optional." Another student expressed concern about being asked to openly publish class work stating, "Everyone could see them and I didn't know if they were right." While this appears to have affected a small minority of students, it highlights an important issue for faculty members using open pedagogy to be aware of.

Summary

A majority of students (53%) said open pedagogy had greater educational value than traditional learning activities. An additional 31% viewed both activities as having equal educational value and a minority (16%) felt that that the educational value of open pedagogy was lower than that of traditional activities. Factors such as increased knowledge, relevance, and personalization seemed to drive the preference for open pedagogy. While only 30% of students changed their opinions about their instructors based on the pedagogy used, for those who did the change was overwhelmingly positive.

Notwithstanding the general positive opinions, it is important to note that a minority of students (20%) stated that they would prefer to be in classes that used traditional pedagogy and 16% of students felt the educational value of open pedagogy was lower than traditional pedagogy. These students appear to desire more structure in their course and may have struggled with aspects of open pedagogy related to technology. In addition, a minority of students (7%) felt pressured to license their work in a specific way. While these numbers clearly do not represent a majority perspective, they are important to keep in mind when creating courses that utilize open pedagogy.

Student Outcomes

This section examines differences in student outcomes according to whether faculty engaged in open activities in their courses. "Open activities," means adopting OER for the class, assigning students to engage in open pedagogy activities, or both adopting OER and assigning students to engage in open pedagogy activities. As referred to below, the treatment group is comprised of those students whose faculty engaged in open activities. The control group is comprised of those students whose faculty did not engage in open activities.

Keene State College

Keene State College provided data for 410 students - 199 students in the treatment group and 211 students in the control group. We examined the DFW rates (the proportion of students dropping a class, receiving an F final grade, or withdrawing from the course) and drop rates (the proportion of students who enrolled in a course but dropped during the add/drop period) of the control and treatment groups in order to identify any potential differences between groups. Data were reported by de-identified student and we conducted a t-test to answer questions about potential differences between control and treatment groups. Neither of these differences were statistically significant.

Difference in DFW Rate
- Control group: 14.7% received a DFW final grade
- Treatment group: 16.1% received a DFW final grade
- $t = -0.388$, $df = 404.3$, p-value $= 0.698$

Difference in Drop Rate

- Control group: 3.8% dropped
- Treatment group: 8.0% dropped
- t = -1.816, df = 353.02, p-value = 0.07

Granite State College

Granite State College provided data for 206 students - 110 students in the treatment group and 96 students in the control group. We examined the DFW and drop rates of the control and treatment groups in order to identify any potential differences between groups. Data were reported by section and we conducted a test for equality of proportions to answer questions about potential differences. Neither of these differences were statistically significant.

Difference in DFW Rate

- Control group: 18.8% received a DFW final grade
- Treatment group: 13.3% received a DFW final grade
- X-squared = 1.16, df = 1, p-value = 0.281

Difference in Drop Rate

- Control group: 5.6% dropped
- Treatment group: 6.7% dropped
- X-squared = 0.07, df = 1, p-value = 0.791

Plymouth State University

Plymouth State University provided data for 290 students - 194 students in the treatment group and 96 students in the control group. As with the other institutions, we examined the DFW and drop rates of the control and treatment groups in order to

identify any potential differences between groups. Data were reported by section and we conducted a test for equality of proportions to answer questions about potential differences. Neither of these differences were statistically significant.

Difference in DFW Rate

- Control group: 10.2% received a DFW final grade
- Treatment group: 9.3% received a DFW final grade
- X-squared = 0.059, df = 1, p-value = 0.807

Difference in Drop Rate

- Control group: 0.7% dropped
- Treatment group: 2.8% dropped
- X-squared = 1.375, df = 1, p-value = 0.241

Overall

When aggregated across all three institutions, the treatment group included 503 students and the control group included 403 students. We conducted a test for equality of proportions to answer questions about potential differences in overall DFW and drop rates.

Difference in DFW Rate

- Control group: 14.6% received a DFW final grade
- Treatment group: 12.9% received a DFW final grade
- X-squared = 0.575 , df = 1, p-value = 0.448

Difference in Drop Rate

- Control group: 3.5% dropped
- Treatment group: 5.7% dropped
- X-squared = 2.336, df = 1, p-value = 0.126

Thus, there were no significant differences between the two groups.

Faculty Surveys: Perceptions of OER and Open Pedagogy

Twenty-seven faculty were part of the present research study; all of them were invited via email to participate in the faculty survey regarding their perceptions of OER and/or Open Pedagogy, depending on which they had utilized in their classes over the previous year. Of these faculty members, twenty-two completed the survey for a response rate of 81%. Faculty respondents were relatively evenly distributed across the three institutions (GSC, n =7, KSC, n =7, PSU, n =8). Respondents were likewise evenly distributed in terms of how long they had been teaching with four teaching for fewer than three years, and five having taught more than eighteen years, with an relatively even spread on the intervening years. Nearly half the respondents (n=10) had taught their course 7 or more times with six respondents having taught the course once or twice and the rest falling somewhere in between. Half of the faculty had Masters Degrees; the remainder held PhDs.

Faculty Responses on OER

Fourteen of the surveyed faculty members replaced materials that cost money with OER. According to those instructors' statements regarding the cost of textbooks for their course prior to adopting OER, students in their collective classes saved on average $90.00 per student in textbook costs based on the introduction of OER.

It was clear that there was in many cases a significant amount of time invested into the transition of using OER. Of the fourteen faculty members who began using OER during the semester in which they were surveyed, five (36%) said they spent about the same amount of time as they had previously in preparing to teach the course. Six faculty members (43%) said that it took somewhat more preparation time, with three (21%) stating that it took much more time.
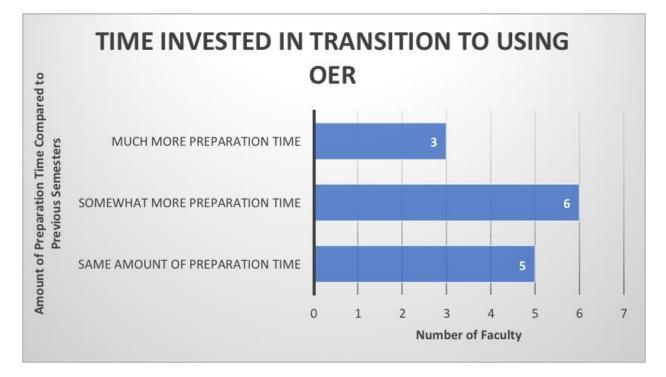
Chart 6. Time invested in transition to using OER

These same fourteen faculty members were asked, "How did your students' preparedness in the course compare to previous semesters?" in order to gauge the impact of the OER materials on student preparation. In response, one faculty member (7%) said less prepared, with eight (57%) stating that students were equally prepared, and five (36%) better prepared than they had been in previous semesters.
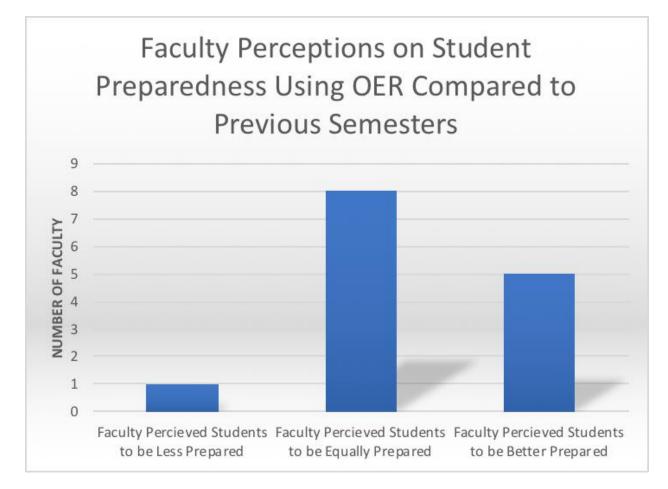
Chart 7. Faculty Perceptions on Student Preparedness

Faculty Perceptions on Student Preparedness Using OER Compared to Previous Semesters

While they felt their students were generally as well or better prepared for class, faculty members did raise some concerns with OER. For example, one wrote, "I really love the idea of democratizing education through OER, but I find a lot of holes in the coverage and quality. I'm not sure how those holes will be filled, as it does take labor to produce these works, and academic labor is already so devalued, that I worry about the potential for more exploitation." Another faculty member similarly commented on the tradeoff between increased faculty time required with saving students money: "Students at the intro level saved $279 [on textbook costs], and I had to work harder. I can't really take the extra work, so that would be the reason not to. But then again, maybe doing it the next time, it won't be so hard."

In spite of these relevant and important concerns, the fourteen faculty members who began using OER seemed generally positive about it. Several made comments such as, "I really like using OER as they are free and accessible for the students. I got the feeling that the students actually used and read them - which is not something I can say with certainty about the texts previously assigned." Overall, two faculty members (14%) said the OER was worse than the quality of texts in other courses they taught, with nine (64%) stating they were the same and three (22%) believing they were better.
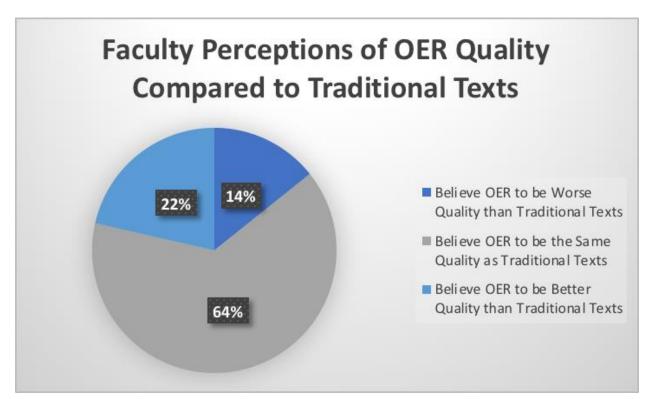
Chart 8. Faculty Perceptions of OER Quality

All faculty members said they were either somewhat likely (14%) or very likely (86%) to continue using OER in the future.

Faculty Responses on Open Pedagogy

Fifteen faculty members who completed the survey reported that the changes they made to their class included elements of open pedagogy. These individuals

generally had positive experiences, although there was a substantial investment of time required. Four faculty (26.7%) said they spent the same amount of time as in previous semester in their course preparations, whereas seven faculty (46.7%) said they spent somewhat more time and four (26.7%) spent much more time integrating open pedagogy into their courses. Despite this increase in time required, 53% of instructors said they were very likely to continue using Open Pedagogy based on their experiences, with the remaining 47% stating that they would be somewhat likely to do so.

Although the overall perspective towards open pedagogy was positive, there were some concerns. One faculty member wrote, "Overall, I have found that it's been tricky to have all students engage in open spaces when it's not a requirement. It seems that many students are grade-driven (or at least they prioritize the items that will be graded), so my attempts at authentically integrating Open Ped definitely didn't work for everyone."

While the use of Open Pedagogy was not a panacea, a majority of faculty believed that key learning outcomes increased with the use of open pedagogy. This finding is summarized in Table 2.

Table 2. *Faculty perceptions of differences in student outcomes when teaching with open pedagogy as compared to traditional activities*

Outcome	Greater with Open Pedagogy compared with traditional activities	Same with Open Pedagogy compared with traditional activities	Less with Open Pedagogy compared with traditional activities
Mastery of core academic content	11 (73%)	3 (20%)	1 (7%)
Skills in collaborative learning	9 (60%)	6 (40%)	
Critical thinking and problem solving	10 (67%)	5 (33%)	
Effective communication	12 (80%)	3 (20%	
Learning how to learn	9 (60%)	6 (40%)	

In reflecting on the learning outcomes that resulted from open pedagogy, faculty focused on relevancy, increased thinking skills, and improved communication. One faculty member wrote, "I feel that the open pedagogy assignment in my course was

relevant to the students real lives…it was not a throwaway assignment." A faculty member reported that open pedagogy led to "clearer thinking and rhetoric" with another stating that it "required each [student] to think critically about the subject." Open pedagogy allowed students to "take an active role in creation of material to share with others" according to one faculty member and increase their "ability to communicate widely" according to another.

Overall, faculty seemed pleased with the implementation of open pedagogy. One professor, whose students posted their learning on blog posts reported that students said, "they needed to more clearly explain the context of the issues that were the focus of their research since they did not know who would be reading their blog posts; 'if I only wrote for you, the professor, I knew that I did not have to explain it as well!' said several students." This additional layer of authenticity helped students demonstrate "greater creativity" according to one faculty member and, as another faculty member said, "Forced students to think about the content they were using and applying in a more intentional manner."

Summary

While using open pedagogy took more faculty time, the overall impression was that it was worth the effort and resulted in improved student learning. In reflecting on the experience with using open pedagogy, one faculty member seemed to capture the spirit of many of the responses, writing, "I am certain I will continue to use OER and Open Pedagogy in my courses. I am still getting my feet wet, but I can see that the quality of work I received from students is greater. I think they were more invested in the outcomes, knowing that their work could be viewed by others."

Instructor Perspectives on Open Pedagogy: Interviews

Instructor experiences with open pedagogy varied widely. In this section, we review those experiences, using representative quotes from faculty interviews to convey a rich sense of the way they experienced this work. When possible, quotations have been lightly edited to remove references to majors, names, and other information that might reveal the identity of the interviewee. However, it was not always possible to preserve the anonymity of the instructor and convey the full meaning of their comment.

Overall Instructor Response

Despite facing challenges as they embraced open pedagogy and engaged in the (sometimes frustrating) work of helping students take ownership of their learning, many of the participating instructors struggled to sufficiently express the depth of their positive feelings about their experiences with open pedagogy.

- It's greatly affected me. I think I've been transformed by this process as anything else that I can think of in my 25+ years of teaching. For me, it really opened my eyes to what it means to authentically center your students, not just say that you're doing that. You know? When we talk about student agency, actually giving them power and thinking about them as human beings that have other aspects to their lives, as people that need to both work, live in the real world, as well as learn in it…. It's absolutely transformed me as a teacher.

- It was just very validating… But until I, you know, participated in the ATI and learned about what other folks are doing, I kind of felt a little, maybe I'm out there alone on an island?… I feel like ATI just sort of gave me the confidence that I'm on the right track, that other people get it, that I'm not alone on an island.

- It's not often that my employer will pay for me to learn new techniques and send high quality staff to work with me on learning them. It's been a joy to interact with you and [others]. And it's nice to sit back and say, "How did this go?"

Usually I do that all by myself in my head, and I'm sure that there's a benefit to doing it with others.

- I was really uncomfortable with being so far outside my comfort zone.... [but] I hope that you can hear that this feels like it's a professional life changing experience. I suddenly see, teaching with open pedagogy - it changed my vision of what I'm trying to do as a teacher. It's changed everything I think about teaching.

Creating Educational Resources

Perhaps the widest variation in instructors' experience with open pedagogy was in their range of thoughts and feelings about what constitutes open pedagogy. For many of the instructors, open pedagogy involves the creation and sharing of educational resources by students. This was obvious in the array of essays, videos, and other media students created and shared on course websites, blogs, Twitter, and other sites. Every course had students engaged in creating and sharing artifacts of one kind or another. Students created resources such as the following:

- Course policies, learning outcomes, assignments, and rubrics
- Essays, headnotes, and other materials for literary anthologies
- Video essays
- Multiple choice questions
- Curated collections of photographs and links to additional information
- Policy papers, providing analysis of pending legislation
- Lab materials

Some instructors dedicated class time to discussing the meaning of open with students, actually displacing disciplinary content in the process.

- We talk a lot about what an open license means. I spend quite a bit of time, like, what is Creative Commons? You can see in my "Tools for Open Pedagogy" section there is a link about "What are Creative Commons licenses, how do they work, why might you want to choose one?" I have them all read that, we talk in class about it, then I say, "I openly license the work that I do, I've had other students

who have done this, this is something you have a choice to do. You don't have to do it. You can think about if you would like to do it."

- I had them do readings on open pedagogy at the beginning of the class and open-educational resources and talking about what those are.

Some faculty found that publicly sharing these resources was sufficient, and they stopped short of talking with students about making them open:

> The papers and analysis—it's just up there. Anybody could use it. I guess we could have officially put creative licensing on it, but there's no need to. People can just read it and use it.

Similarly, some characterized open licensing as valuable, but then went on to describe benefits that came from sharing publicly as opposed to the benefits that come from using open licenses.

> I think the value of the open license and students opening up their work and sharing it with others is really underestimated. And again, that's partly why I'm making use of Twitter, trying to get student work to a broad audience, encouraging my students to engage and have conversations with scientists that are out in the world. One of my ... students was having a discussion about a very specialized area of research with a professional scientist. So the more that they're out there publicly, the more they feel engaged in a larger sense of purpose, even. The more they actually want to learn, and the motivation to learn is really, what I think, is at the heart of learning. Not being required to learn. And I think we're really trying to shift the whole conversation and landscape about how higher education works with this open pedagogical approach. And I think that's what's so particularly exciting about it.

Some saw the open pedagogy aspects of the program as not being about open *per se*, but as creating a space for reflection about pedagogy more broadly. And while this chance to reflect was broadly appreciated, instructors also recognized that being thoughtful about their pedagogy didn't necessarily make it open.

- For me, open pedagogy was just another way to learn some teaching techniques.

- We did a lot of pedagogical transformation in that class but I wouldn't say what we did was open pedagogy, because students were reading and using OER but they weren't creating it themselves.

Several instructors explained that, for students, the idea of making the work they had created publicly available (without an open license) was frightening. However, in the end most students chose to share publicly.

- By the end of the semester, she changed her mind and decided that she wanted to. And again, there wasn't any pressure about it. I think she was kind of seeing that other students were doing. She saw places that sometimes student work got picked up, and put out there, and I think she wanted to be able to engage more in that too.

- He was really terrified to put anything up on the web at first. I thought he wasn't doing any work. I was like, "come on, what's going on, man? We've got so many weeks in and you're not getting any work done." But he had, actually. He had been writing and producing all this stuff and he was just really terrified to publish it. So when I finally talked to him about his feelings and fears and what he was worried about, he eventually felt brave enough to put it out there to the world… But he did finally feel good about it.

In some cases, the pressures associated with knowing that others will see your work did appear to benefit student learning.

- I think for him, and for my other students, one of the real values [of sharing work publicly] is that it makes them do their best work. That is so key to open pedagogy in my book.

- I haven't found students say that they've started doing it, they get into it, they do well, and then say, "this isn't working for me." Usually they're like, "I actually find that I'm learning so much more than I thought I would. This is really great! I'm so excited about it."

For other students, the idea of sharing their work publicly was simply mortifying. One said, "I just can't do this format. I get too nervous. I don't know how to do it. I don't want to do it. I'm going to have to drop the class."

Discontent among a small number of students led some faculty to make significant accommodations for them, as described further below. One instructor seemed to speak for everyone, summarizing both their hope that students would engage a broader public beyond the classroom and their frustration about how difficult it was to help students make that intellectual leap: "They're still not really getting that these things are public. I think they still think they're making their assignments for me."

Increasing Student Agency

Many instructors explained that increasing student agency was an important part of what they were trying to accomplish with open pedagogy. For instructors who felt this way, the phrases "open pedagogy" and "increasing student agency" were used almost interchangeably in their comments. Some instructors worked to increase student agency by providing students with small choices with regard to assessments. One said, "I have a tiny little bit of open pedagogy in there. I do have a design your own project element in there."

Other faculty essentially co-created the entire course with their students:

- An important component of open pedagogy is student agency. My students and I develop the learning outcomes together. Of course, I give them a list of outcomes that I use, and they say, "well, these ones we want to keep. These ones we want to get rid of. This is how we want to spend our time." My students submit a grading proposal. They want to decide how much of their energy they want to put into one piece vs another piece. And so the more they take ownership of what they're learning, the more they can learn about the things they're interested in, the more they can write about the stuff that they're interested in, the more they can connect that to their learning world, the better I think their learning becomes.

This co-creation approach to causing students to take more ownership over course design had benefits.

- They have a rating proposal they can submit, they can determine what percentage of their grade they want to go where. And they have a few weeks to do that… The fact that they aren't responsible for memorizing a huge list of a thousand terms for a test actually lessens their anxiety. And I think the fact that it makes them less afraid of how they're being graded, they're actually much more open to exploring a broad range of material and doing that kind of work.

- They designed all of their own projects. There were options for every single kind of unit. They decided how much points they were worth. They brainstormed different kinds of work students could do. They tend to either have a creative kind of option or an analytical option. Interestingly, they all went creative, all the way to the end.

In some cases, students even took over teaching the class:

In my class, students referenced how they didn't just draft notes to publish online throughout the semester, they also took turns teaching the class and facilitating the class. So, I tried to integrate the publication of digital texts with students actually kind of leading the class. And then I became kind of the student role for those particular classes.

Empowering students to make such important decisions about course structure

and grading led to fruitful conversations between instructors and their colleagues.

We have some interesting discussions about how we actually demonstrate whether students learn something or not. And again, I think those kinds of conversations are much broader just about open pedagogy—it's just about pedagogy in general, like, how do we ensure that anybody learns anything about anything?

But the co-creation approach struggled to succeed in some classes.

I had an ethical struggle for my first time really doing open pedagogy of finding that balance between instructor-driven pedagogy when it is kind of a hybrid and student-driven kind of pedagogy and so I didn't push it this time. And so I think it ended up being less effective for them… We were

spending a ton of time in class kind of processing things and discussing things. And when we would end class, it would feel like, "well I don't know if we've gotten any further." And it felt like four weeks, six weeks, and I was like, "we haven't even designed a single assignment. We've got to get moving on this."

The co-creation approach also involved significant intellectual overhead, in terms of knowledge about teaching and learning, for students.

- I think that notion of design and taking ownership of your own learning, like for me, that was probably the most interesting part of what I tried this time. And to see how my best students just shook their heads and looked at me. Like "I don't understand what you're talking about." And I'm like, "learning outcomes." And they're like, "I don't know what those are." These are 5th year seniors and I'm like, "this thing that's been on every syllabus you've had with me? I go over them and stuff."

- You've got to teach them about learning and about what open pedagogy does and about what a learning outcome is and setting goals for their own learning—for their learning as a class and how to hold each other accountable.

- I tried to get them to write a rubric. So I said, "all right, if we're going to create experiments you're going to choose a different social media platform and you're going to tell a story, whether it's on Twitter or Instagram, or whatever, then how do you think it should be graded?" I actually said, "I think you should re-grade." And they said, "no way!" Well, I was like, "how do you know what is good? You're not looking at all of them with this rubric that you created." So they said, "we do not want to do that, and we don't have time to do that," which I was like, "I get that part."

As mentioned above, several faculty had students push back against the idea of publicly sharing the materials they created for class. Some faculty interpreted this as a specific opportunity to increase student agency.

- [I told the student] if you want to do it in the traditional way, I've been teaching this class for years. I've got plenty of materials. I've got exams. I've got all kinds of things. Let's just do it your way." And so he agreed. He took the exams that I had. He came in for practice exams. He kept his writing private instead of

putting stuff online like we used to do in the old days, and I gave exams just for him. And he was happy. And to me, to be open and to say that it's student agency and giving students choices - we have to honor that. So I let him do the class in a completely traditional way because that's what he wanted to do.

- She had a whole class vote, and she ended up having like six students who did not want to have an open pedagogy experience in her class. So she created a differentiated class structure so she had 18 students do open ped and six students who were following a syllabus that she created. And I thought, "that's insanity!" But she was excited about it because she was like, "Look! They're taking responsibility for their own learning!" And I'm like, "the only reason you can do this is because you're teaching two classes of 25 students. This is impossible. How is this a good experience?"

Many of the instructors volunteered that they had very small class sizes in the course where they were using open pedagogy.

Negative Experiences

A number of instructors had negative experiences with their open pedagogy work. One instructor described problems with the open textbook they had chosen for their course and feeling torn between affordability for their students and quality of the materials.

> I don't know about the ethics of having people pay $300 dollars per class and using a lot of a textbook. So I have taught that class for many years, and so I thought that I could use a lot of my handouts. And so that's why the fact that the textbook wasn't really quality, I thought maybe that's not the end of the world because this is a class I've taught so much and I've made so many handouts... When I say this textbook isn't very good, I mean, I guess in the end I'll stick with using that textbook because it is free.... The students that stuck with it really learned a lot in this class. So I guess I thought it was because I was a brilliant teacher, but you probably want me to say it's because of open ed resources. No, the open ed resource was not really high quality. So this was the problem. It was inexpensive, but it was not high quality.

One instructor who assigned students to create multiple choice questions was greatly disappointed with the exercise.

> They made terrible questions at first, so I gave them bad grades. And so the students who originally made questions and then got the feedback that this is garbage did start to make better questions. Although, yeah. I think for those who started making the questions and stuck with it, it became a really useful exercise. But there were a number of students who only started to do the questions after the midterm because that's when they realized they might fail the class, and, you know, they didn't really have time for this learning curve, right? So, what difference does it make? The thing is, it took me a long time. It took me two hours to grade every set of questions.

Many instructors described the amount of time required to engage in open pedagogy as being excessive.

- I totally underestimated how much time it takes to do something like this.

- It takes a lot of time to set up the educational environment to make those opportunities happen.

- This is what I'm working on this semester with the textbook I'm creating with the students. It's a lot of work for me, because I try to go through and edit and make sure there aren't any typos in the essays. There normally aren't too many. But it's a lot of work because the students pull together the textbook they want to include in the anthology and they write the preface. But I upload the book into Pressbooks… and in terms of the final weeks of the semester, I'm scrambling and working incredibly hard to get that final book out.

Many instructors also described struggles with reading online or using the digital annotation tool Hypothesis.

- A lot of students dislike screen reading. I personally dislike screen reading. And many students dislike Hypothesis because it's like you have a chat room going as you write, because you see not only your annotation but all the other students' annotations. Because my class is a class that involves digital technology, we have

a lot of conversations about what do technological innovations do to the experience of reading. And many students are critical of it.

- When I ask students what they think about Hypothesis the first time they use it, it forces them to articulate that, "seeing other people's annotations actually crowds my mind. It's too many voices. I need to be alone with the text first, and then see the annotations."

Positive Experiences

Many instructors also had incredibly positive experiences with open pedagogy.

Several instructors commented on the relevance of the work students did when

engaging with open pedagogy.

- Research papers have a place, but after so many years they all start to blend together and sound the same. There's always surprise in these assignments. The work is generally better than the old assignments we used to give. The work is more relevant.

- I've noticed while I'm writing letters of recommendation for my more upper level English majors, I can link to these texts, and say, "this person has publishing and editing experience and anthologizing experience." So, I think there's something about the authenticity of the experience for an English major, that has an application in the job market.

While the instructor who had students create multiple choice questions wasn't

satisfied with the quality of the questions they wrote, engaging in the exercise did

improve student learning.

I had the students check their knowledge by taking each other's test questions and the students hated it because they said, "all of the questions we're writing are complete garbage." That was just tough, because you had a real quality issue.... Later in the semester, I'd say, "well, did you really understand that concept? Did you really get the material you were supposed to consume?" And some people said, "yeah I did because that was the topic I had to make questions about, so I really got that." So a number of people said that to me about a critical topic. "Oh yeah, that was the one I had to make questions about."

One instructor viewed the process of creating a textbook similarly – more about the quality of the learning that resulted from the process than the quality of the artifact students produced.

> For me, there's the question: "what is a textbook?" It's a compilation of stuff, right? So, if that compilation of stuff is dynamic and changing and you're adding new information all the time, as scientists do, then why create something that feels like it's meant to be static? And so, what my hope is is that students in the future will maybe choose to work on some of those places where there are not any links to because we haven't had time to delve into them as deeply, or they'll take some of the existing ones and improve them so that this is an ongoing, never-ending process of adding information and improving what's there, and helping to organize it better to provide new studies and breakthroughs in scientific understanding that have come through, new species that have been discovered, those kinds of things can constantly be added semester to semester. The learning process is in the students creating the resource more than it is as an outcome to us producing some kind of book that we call this thing.

Several instructors pointed to the way that open pedagogy reset their relationship with students, making them peers in doing valuable collaborative work that had a life outside the institution and strengthened relationships inside the institution.

- The students don't buy into it at first. But they become collaborators in the syllabus. And lately I've been asking for part of the final exam for them to bring part of a text or assignment if they were to teach the class following it. So, I'm starting to see students more as collaborators.

- My teaching philosophy before was that students should be active contributors to the classroom. And I think sometimes it's really hard to get them to do that. You know? Because they're coming right out of high school, they're learning how to read the syllabus. They're learning all these, kind of, other skills. They basically learn their identity as a student. So, to ask them to teach and to ask them to create pedagogical materials requires a lot from them. But when you do it, I think the payoff is worth the challenge.

- They're shocked every once in a while when someone will respond to their blog post and they're like, "Oh my God!" And I'm like, "That's right. People can actually read your work."

- My students' work was featured at a panel at a conference this past year. A faculty member from another college reached out to me and said, "Hey, I saw your students' work on the web and wanted to talk about how I could do something like it in my class. Can I add to your site?" I'm still interested in like, keeping it a local project, because there's something pedagogically important about students kind of having ownership over, "well this is my textbook." And I think it creates a really powerful culture of community within the major.

When students are deeply engaged in learning and work that is meaningful to them, they will even do extra work.

- One of my students wrote an essay on what open education class meant to me, and she – this was not an assignment. She just decided to write it. And that's happened for about three or four of my other students…. Reading [one of the other impromptu essays] is one of my proudest moments in my teaching life, actually, because I felt like she really got what the purpose of the course was – to engage her in her own interest and not about memorizing and spitting facts. And she talks about – she's a 4.00 student, she knows how to work the system – right? This is one of the first times she felt like she learned. It was just so moving to me when I read her post.

- I used to be one of those kinds of "complaining about my students" teachers. And I can't say that I'm perfect at it, right? But I can say that it's a lot less, a lot different, if I do make complaints. The idea is to take student blaming away. Empowering students and giving them agency is dramatically transforming. And that's not saying that open pedagogy is the only way that one might do that, but I think it offers a very powerful way for people to think about doing that. And so, yeah. It's been absolutely, very transformative for me.

In some cases, students become so engaged in the learning that they make extra efforts to find ways to legitimize continuing to spend time on the work.

When I taught the class as part of the ATI project, I had a student in the class that was, you know, first generation. So, this is like, at Keene State, our demographic kind of sweet spot. First generation, probably, you know, not the most academically proficient student. But very earnest, very

much wanting to learn, having some struggles and needing some remedial help with reading, not having a lot of confidence in his abilities. And so, he was in my environmental law class and we did the whole thing that I told you about with the bill. So, he got to meet the representative that we were supporting—like our client or whatever. It was all around this bill to prevent pesticides being applied in places where children play—so daycares, elementary schools. It will require these locations to not use pesticides in the parks or athletic fields. Kind of a no-brainer, right? And so he started…he was very timid. He definitely did not like the tweeting. He did not like the tweeting, you know? He did what he had to do. I asked kids to tweet about the weather just to get them started. I had them make so many tweets. But he just did what he had to do. He didn't like it. But anyways, he ends up connecting on a personal level with this representative, and then he says to me, "I kind of want to keep doing this work. I maybe want to make my senior seminar project…I want to learn more about what goes on behind the scenes in politics." He was also in my other class. I said, "well this is kind of crazy. I've never had a senior seminar that was so different. That was set up…he was going to be a legislative intern." But then I said, you know, "why not? Here's a potential, you know, light going off for this student." So, he ended up connecting with this legislator, and they hit it off, and he got this really great mentorship. He worked on more bills, he wrote some great papers, which are policy papers. He did a public presentation in front of 90 legislators in January…. I've got to tell you, I was so nervous. I was like, "Oh my God, I don't know how this kid is going to do. I really don't." You know? I've been mentoring him and all that, but…I was like, "I don't know how this kid is going to do. This could be terrible." And he got up there, and it was like it was another person. He was eloquent, he was authentic, you know? He was just like, a rock star. And it's been so amazing to watch this transformation over the last year. He testified before the state senate committee about a bill to lower safe limits for arsenic, so that this way the level will be cleaner. And he was amazing. It was such a great experience. And I would have never put him to it. I would have never predicted that this student would undergo such an academic transformation…. He wanted to make a difference and he needed somebody to believe in him. And so, we facilitated that opportunity for that to happen.

Summary

In the eyes of the faculty members who were interviewed, the implementation of Open Pedagogy was not perfect; however, there overall assessment was very positive. One of the main drawbacks to the implementation of Open Pedagogy was the significant amount of time that it took. On the other hand, faculty seemed to feel that increased student agency and involvement was worth the effort.

Conclusion

Executive Summary

Students who used OER said that it saved them money, and nearly all students felt that the OER used were as good or better than other textbooks they had used. Similarly, the vast majority of students felt that open pedagogy was as good as or better than traditional teaching techniques, with a slight majority stating that it had greater educational value than traditional educational activities. When students were asked if they would prefer to take a course with open pedagogy or traditional pedagogy, 52.7% preferred open pedagogy, 27.8% expressed no preference and 19.5% chose traditional learning activities. Faculty likewise were positive. They reported that using open pedagogy took more time, but that it was worth the effort. Faculty members believed that they saved their students significant amounts of money and that students responded positively to open pedagogy.

When aggregated across the three participating institutions, the group of students whose faculty engaged in open activities (i.e., adopting OER and/or engaging in open pedagogy) included 503 students and the control group included 403 students. No statistically significant differences were found in either the aggregate analysis or any of the individual institution analyses. In other words, students whose faculty engaged in open activities performed as well as students whose faculty did not. *Summary*

This study represents an important first step in quantifying the efficacy and perceptions of open pedagogy. Future research could focus on larger courses and a tighter definition of what constitutes open pedagogy. Fidelity checks to determine the extent to which open pedagogy is actually being used would also be beneficial. While further research is needed, it appears that open pedagogy has great promise.

Appendix

Q1 – Consent Form

New Hampshire Open Education Survey
Consent to be a Research Subject

Introduction

This survey is being conducted by John Hilton III and the Open Education Group (http://openedgroup.org) on behalf of the University System of NH Open Ed Initiative. The survey is about open education.

Procedures

If you agree to participate in this research study, you will take a ten-minute survey about open education.

Risks/Discomforts

There are minimal risks for participation in this study. If you feel uncomfortable answering a particular question, you may choose to not answer that question, or discontinue the study altogether.

Benefits

There are no direct benefits to you for participating in this study. It is hoped that through your participation researchers will learn more about the benefits and drawbacks about open education and assist others in their decision on whether they should use these approaches.

Confidentiality

You will be completely anonymous. You do not need to put your name on the survey, and no effort will be made to track whether or not you completed it. Anonymous responses will be aggregated.

Compensation

You will receive no compensation for participating in this study.

Participation

Your participation in this research study is voluntary. You have the right to withdraw at any time or refuse to participate entirely without jeopardy to any relationship you have with your college.
Your professor will not know if you participated in the survey. Your choice in participating will not affect your grade in any way.

Questions about the Research

If you have questions regarding this study, you may contact John Hilton, Ph.D. at johnhiltoniii@byu.edu, or (801) 422-7394.

Clicking the button below indicates that you have read and understood the above consent and desire of your own free will to participate in this study.

[Continue survey]

The following are general questions related to you and your courses at the college.

Q5 How many terms/semesters have you completed in college?
- ❍ Less than 1 (1)
- ❍ 1-2 (2)
- ❍ 3-4 (3)
- ❍ 5-6 (4)
- ❍ 7-8 (5)
- ❍ 9-10 (6)
- ❍ More than 10 (7)

Q6 What is your cumulative college Grade Point Average (GPA) on a 4.0 scale?
- ❍ 0.0 - 1.4 (1)
- ❍ 1.5 - 2.0 (2)
- ❍ 2.1 - 2.5 (3)
- ❍ 2.6 - 3.0 (4)
- ❍ 3.1 - 3.5 (5)
- ❍ 3.6 - 4.0 (6)
- ❍ This is my first term (7)
- ❍ I don't know

Q6.5 In general, how often do you *rent* the required course materials for the courses you take?
- ❍ Never (1)
- ❍ Rarely (2)
- ❍ About Half the Time (3)
- ❍ Often (4)
- ❍ Always (5)

Q7 In general, how often do you *purchase* the required course materials for the courses you take?
- ❍ Never (1)
- ❍ Rarely (2)
- ❍ About Half the Time (3)
- ❍ Often (4)
- ❍ Always (5)

7.1   Have you ever not purchased course materials for a class because of the cost of the course materials?
    a.   No
    b.   Yes

7.2   (If yes to 7.1) Do you think that not purchasing the course materials influenced your grade in the course in a negative way?
    a.   No
    b.   Yes

7.3   (If yes to 7.1) Has not purchasing course materials contributed to your decision to drop a course?
    a.   No
    b.   Yes

7.4   (If yes to 7.1) Has not purchasing course materials ever caused you to fail or withdraw from a course?
    a.   No
    b.   Yes

7.5   Have you ever delayed purchasing course materials for a class because the cost of the course materials?
    a.   No
    b.   Yes

7.6 (if yes to 7.5) Do you think that delaying purchasing the course materials influenced your grade in a negative way?
    a.   No
    b.   Yes

7.7   Have you ever registered for fewer courses because of course materials costs?
    a.   No
    b.   Yes

7.8   Have you ever not registered for a specific section of a course because of course materials costs?
    a.   No
    b.   Yes

Q8 How much do you typically spend on texts each semester/term?
○ Less than $100 (1)
○ $101 - $200 (2)
○ $201 - $300 (3)
○ $301 - $400 (4)
○ $401 - $500 (5)
○ More than $500 (6)

Q9 On average, how many courses do you take each semester/term?
- ○ 1 (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ 7 (7)
- ○ 8 (8)
- ○ More than 8 (9)

Q10 For a typical course, how often do you use the required course materials?
- ○ Never (1)
- ○ 2-3 Times a Semester (2)
- ○ 2-3 Times a Month (3)
- ○ 2-3 Times a Week (4)
- ○ Daily (5)

The remaining questions are related specifically to the open resources that your instructor used in this course for your class readings.

Q14 Did you print any part of your open resources for this course?
- ○ Yes (1)
- ○ No (2)

Answer If Did you print course materials for this course? Yes Is Selected

Q15 How many pages of the open resources did you print for this course?
- ○ Less than 10 (1)
- ○ 10-50 (2)
- ○ 51-100 (3)
- ○ 100-150 (4)
- ○ 151-200 (5)
- ○ 200-300 (6)
- ○ More than 300 (7)

Q15.25 Do you believe you saved money on this course due to using these open resources?
- ○ Yes
- ○ No

Q15.5 What did you do with the money you saved?

Q15.75 What would you have done with the money you saved?

Q16 How often did you use the open resources for this course during the semester?
- ❍ Never (1)
- ❍ 2-3 Times a Semester (2)
- ❍ 2-3 Times a Month (3)
- ❍ 2-3 Times a Week (4)
- ❍ Daily (5)

Q17 How would you rate the quality of the open resources used for this course?
- ❍ WORSE than the quality of the texts in my other courses (1)
- ❍ About the SAME AS the quality of the texts in my other courses (2)
- ❍ BETTER than the quality of the texts in my other courses (3)

Q18 Please briefly describe what made the quality of this course's open resources WORSE than those in other courses.

Q19 Please briefly describe what made the quality of this course's open resources BETTER than those in other courses.

Q20 Were the open resources used in this course available to you primarily online?
❍ Yes (1)
❍ No (2)

Q21 How do you feel about the online format of the open resources used for this course?
❍ I like the online format MORE than traditional printed texts (10)
❍ I like the online format LESS than traditional printed texts (11)
❍ I have no preference (12)

Q22 Overall, what do you think of the open resources used in this course?

Q23 How likely are you to register for a future course with open resources like those used in this course?
❍ Very Unlikely (1)
❍ Somewhat Unlikely (2)
❍ Somewhat Likely (3)
❍ Very Likely (4)

Q24 Imagine a future course you are required to take. If two different sections of this course were offered by the same instructor during equally desirable time slots, but one section used open resources similar to those used in this course and the other used traditionally published texts, which section would you prefer to enroll in?
❍ I would enroll in the section with TRADITIONAL PUBLISHED TEXTS
❍ I would enroll in the section with open resources LIKE THOSE OFFERED IN THIS COURSE
❍ I would have no preference

25. What additional thoughts would you like to share regarding course materials costs?

Q28 When you learned you would use free open resources instead of a traditional textbook, did this change your opinion of your instructor?
  a. yes
  b. no

28.1 [if yes to 28] how did your perception of your instructor change?

Your instructor included the following open pedagogy activity in your course: [insert open pedagogy phrase]. The following questions relate to your participation in the course's [insert open pedagogy phrase] in which **[insert description of open**

pedagogy used]. In the questions below this is referred to as "the course's [insert open pedagogy phrase]."

28.2. Have you ever completed an assignment similar to participating in the course's [insert open pedagogy phrase] in another class?

28.3. Was the educational value of participating in the course's [insert open pedagogy phrase] BETTER, WORSE, or the SAME AS that of traditional learning activities (e.g., writing papers, taking quizzes, etc.).

     A. Better
     B. Same
     C. Worse

28.31   [if Better in 27] in what ways was it better?
28.32   [if Same in 27] in what ways was it the same?
28.33   [if Worse in 27] in what ways was it worse?

Q28.5 When your instructor asked you to participate in the course's [insert open pedagogy phrase], did this change your opinion of your instructor?

a.   yes
b.   No

28.55   [if yes to 28] How did your perception of your instructor change?

Q29 Suppose that certain types of learning activities lead to certain learning outcomes. For example, reviewing flash cards might lead to memorizing facts. What types of learning outcomes do you think are the result of participating in the course's [insert open pedagogy phrase]?

Q30 Imagine a future course you are required to take. If two different sections of this course were offered by the same instructor during equally desirable time slots, but one section had traditional learning activities (such as writing papers and taking tests), and the other used learning activities like participating in the course's [insert open pedagogy phrase], in which section would you prefer to enroll?

- m I would enroll in the section with TRADITIONAL LEARNING ACTIVITIES
- m I would enroll in the section with ACTIVITIES LIKE PARTICIPATING IN AN [insert open pedagogy phrase]
- m I would have no preference

28.1 [if TRADITIONAL] Why would you choose a class with traditional learning activities?

28.2 [if ACTIVITIES LIKE PARTICIPATING IN AN [insert open pedagogy phrase]]
Why would you choose a class with activities like participating in [insert open pedagogy phrase]?

28.3 In this course, did you create any resources that were shared online or intended for reuse by others in the future?
<if yes to 28.3, then 28.5 and 28.7 should appear>
28.5 Did you use an open license, like a Creative Commons license, to license any of the resources you created for this course?

> Yes
>
> No

28.7 Did you feel pressured to license your work in a certain way?

> Yes
>
> No

28.75 [If yes to 28.7] Please share how you felt pressured to license your work and how this impacted you.

31. How did participating in the course's [insert open pedagogy phrase] help you master core academic content, compared to the way engaging in traditional learning activities (like writing essays or taking quizzes) would have?
- Participating in the course's [insert open pedagogy phrase] helped me master MORE core academic content than traditional learning activities would have
- Participating in the course's [insert open pedagogy phrase] helped me master THE SAME AMOUNT of core academic content as traditional learning activities would have
- Participating in the course's [insert open pedagogy phrase] helped me master LESS core academic content than traditional learning activities would have

31.1 [If more] – Why did participating in the course's [insert open pedagogy phrase] help you master MORE core academic content than traditional learning activities would have?
31.2 [if less] – Why did participating in the course's [insert open pedagogy phrase] help you master LESS core academic content than traditional learning activities would have?

32. Reflect on the collaborative nature of the [insert open pedagogy phrase]. Select one of the following:
- Participating in the course's [insert open pedagogy phrase] helped me become a MORE collaborative learner than traditional learning activities would have

- Participating in the course's [insert open pedagogy phrase] helped me collaborate with other learners THE SAME AMOUNT that traditional learning activities would have
- Participating in the course's [insert open pedagogy phrase] helped me become a LESS collaborative learner than traditional learning activities would have

32.1 [If more] – Why did participating in the course's [insert open pedagogy phrase] help you become a MORE collaborative learner than traditional learning activities would have?

32.2 [If less] – Why did participating in the course's [insert open pedagogy phrase] help you become a LESS collaborative learner than traditional learning activities would have

33 Reflect on how the [insert open pedagogy phrase] helped you learn to think critically or solve complex problems. Select one of the following:
- Participating in the course's [insert open pedagogy phrase] helped me become a MORE critical thinker and better problem solver than traditional learning activities would have
- Participating in the course's [insert open pedagogy phrase] helped my critical thinking or problem solving skills THE SAME AMOUNT that traditional learning activities would have
- Participating in the course's [insert open pedagogy phrase] helped me become a LESS critical thinker and worse problem solver than traditional learning activities would have

33.1 [If more] – Why did participating in the course's [insert open pedagogy phrase] help you learn to think critically or solve complex problems MORE than traditional learning activities would have?

33.2 [If less] – Why did participating in the course's [insert open pedagogy phrase] help you learn to think critically or solve complex problems LESS than traditional learning activities would have?

34 Reflect on how the [insert open pedagogy phrase] helped you learn to communicate effectively. Select one of the following:
- Participating in the course's [insert open pedagogy phrase] helped me become a MORE effective communicator than traditional learning activities would have
- Participating in the course's [insert open pedagogy phrase] helped my critical thinking or problem solving skills THE SAME AMOUNT that traditional learning activities would have
- Participating in the course's [insert open pedagogy phrase] helped me become a LESS critical thinker and worse problem solver than traditional learning activities would have

34.1 [If more] – Why did participating in the course's [insert open pedagogy phrase] help you become a MORE effective communicator than traditional learning activities would have?

34.2 [If less] – Why did participating in the course's [insert open pedagogy phrase] help you become a LESS effective communicator than traditional learning activities would have?

35 Reflect on how the [insert open pedagogy phrase] helped you learn more effectively. Select one of the following:
- Participating in the course's [insert open pedagogy phrase] helped me learn MORE effectively than traditional learning activities would have
- Participating in the course's [insert open pedagogy phrase] helped me learn THE SAME AMOUNT that traditional learning activities would have
- Participating in the course's [insert open pedagogy phrase] helped me learn LESS effectively than traditional learning activities would have

35.1 [If more] – Why did participating in the course's [insert open pedagogy phrase] help you learn MORE effectively than traditional learning activities would have?

35.2 [If less] – Why did participating in the course's [insert open pedagogy phrase] help you learn LESS effectively than traditional learning activities would have?