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Is It Worth It? Evaluating an Open Educational Resources Awards Program

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ABSTRACT

Awards or grant programs are a common way for higher education institutions to incentivize the use of Open Educational Resources (OER) and other affordable course materials. This study evaluates the results of a two-year pilot OER awards program at East Tennessee State University. To assess the awards program, we used data from student savings and program costs, grades, drop-fail-withdrawal (DFW) rates, and survey results compiled within the COUP framework (Cost, Outcomes, Usage, and Perception). The initial monetary return on investment was moderately positive, while the grades and DFW rates remained steady. The faculty and students rated the open and affordable materials as well as the OER awards program favorably but expressed some issues with using and implementing open and affordable resources. Based on these results, we determined that the awards program was worth the costs and efforts but needed improvements specifically to address the faculty's feedback around the lack of time to implement OER and the absence of OER for their courses.

Keywords: Open Educational Resources, OER, affordable course materials, awards program, grant program, textbook affordability

INTRODUCTION

Research over the last ten years has demonstrated the benefits of Open Educational Resources (OER) and other zero or low-cost materials (Clinton & Khan, 2019; Hilton, 2020). However, only an estimated 14% of higher education courses use OER or other affordable course materials. (Spilovoy, Seaman, & Ralph, 2020). Instructors (also referred to as faculty in this article) have cited numerous barriers to adopting OER, including but not limited to, the perception of quality, concerns about copyright, technical difficulties, and sustainability concerns (Martin & Kimmons, 2019). Colleges, universities, consortiums, and state-level organizations have worked to combath these barriers by providing incentives to instructors for implementing open and affordable course materials. The most common ways of incentivizing OER adoption are monetary grants or awards, instructional design assistance, technical assistance, professional development, public recognition, and course release time (SPARC, 2019). Dedicated funding, staff, and technical and administrative support are ways many institutions facilitate grants and awards programs (SPARC, 2019). Despite their growing prevalence, only a small amount of published research evaluates the overall impact of awards programs. This study reports on the results and analysis of a two-year pilot awards program designed

to motivate instructors to adopt, adapt, and create OER or adopt affordable course materials at East Tennessee State University.

This study follows the COUP (Cost, Outcomes, Usage, and Perception) model to evaluate the impact of the pilot OER awards program. Researchers from the Open Education Group (n.d.) and others have used this model extensively to measure the impact of OER use. Using this model aligns the results and discussion with larger trends in the research assessing OER use and impact. Many studies follow the COUP model to assess the impact of using OER on students (see e.g., Hilton, 2019). These studies often report on an OER implementation in a single class or small number of classes, which may or may not have had institutional support in the form of a dedicated program. Fewer studies (such as Lashley, 2017; Thomas & Bernhardt, 2018; Todorinova and Wilkinson, 2020) account for the institutional investment of funds to support OER in the form of faculty stipends, support staff, and other costs. Institutions may invest significant resources into supporting OER with a dedicated program, thus, it is important to know more about the return on investment. This study accounts for both the resources invested into the program and the results obtained from it. Cost is not the only important factor to consider in evaluating the impact of an awards program. Improved outcomes, fewer drops and failures in classes, easier access, more usage of course materials, content better tailored to specific class needs, and favorable perception of the quality and usability of OER all factor in as well.

LITERATURE REVIEW

Are awards programs a common means of supporting Open Educational Resources (OER)? How do they incentivize faculty participation? How are these programs staffed and funded? The 2018-2019 Connect OER Report (SPARC, 2019), which surveyed a sample of 132 U.S. and Canadian institutions, reports 30 grant/awards programs with an average budget of $35,249. Campus libraries most often lead these programs with other offices or groups such as faculty champions, teaching and learning offices, and student government associations closely involved. The average number of awardees was 26, and the average amount was $1,339. These programs offer various incentives to participating faculty, the most common of which is a financial grant or award. Other main incentives include instructional design and technical assistance, professional development credit, and course release time. According to the report, funding for these programs comes from a variety of sources, usually the "institutional general budget" or library budget (p. 15). Academic departments, external grants, and student fees are other common sources of program funding.

A report such as this gives a good snapshot of how common OER awards programs are and how they are structured and funded but does not evaluate the impact of the programs. It is simple enough to calculate and report the cost of savings to students. However, the total cost to the institution is not always apparent. If OER is only implemented with incentive stipends funded by the institution, the return on investment should account for this cost. Some studies do calculate and report this return on investment. Lashley et al. (2017) report on their OER program initiative at Kansas State University: “During the 2015-2016 academic year alone, an estimated 10,941 students enrolled in courses using OAER [Open and Alternative Educational Resources] and found savings around $921,000. Given the university’s financial investment in OAER courses was under $150,000, the annual return on investment was 6 times greater in terms of student savings” (p. 219-220). Thomas and Bernhardt (2018) describe an alternative textbook project at East Carolina University and the University of North Carolina at Greensboro and report an institutional investment of $23,842 and student savings of $924,769 for a return on investment of approximately $38.79 for each $1 spent. On a larger scale, the “Achieving the Dream’s OER Degree Initiative,” which involved 38 community colleges across 13 states with multiple funding partners reportedly saved nearly 160,000 students about $10.7 million (Griffiths et al., 2020). The report also notes, “Colleges invested a substantial amount of their own resources both directly and indirectly through staff and instructor time to develop OER programs, which cost an average of $576,000... The average cost of providing OER degree courses ($70 per

student) declined rapidly as enrollment in redesigned OER courses increased. Student savings averaged $65 or more per course after factoring in purchasing patterns" (Griffiths et al., 2020, p. ES-2). However, the return on investment is calculated, the bottom line is consistently clear: institutions that invest in OER programs see a positive return in student savings on the cost of course materials.

Besides cost, the most common measure of OER impact is the course outcomes. What effect does using OER have on student grades? Are there fewer drops-withdrawals-fails in OER classes? A recent meta-analysis by Hilton (2019) looked at 16 studies on OER use in post-secondary institutions and found the "studies suggest students achieve the same or better learning outcomes when using OER while saving significant amounts of money" (p. 853). Working with similar criteria, another meta-analysis by Clinton and Khan (2019) supports the same conclusion. When comparing classes that use commercial textbooks with classes using OER, there was no significant difference in learning outcomes, but there was a significant decrease in withdrawal rates. These studies would seem to warrant the assertion that while OER alone is insufficient to catalyze learning, it does lead to better overall outcomes because fewer students drop, fail, or withdraw from OER classes. This outcome is enough to indicate a positive impact for an institutional program supporting OER. As Hilton (2019) concludes, "A consistent trend across this OER efficacy research (spanning from 2008 to 2018) is that OER does not harm student learning" (p. 869).

Other outcomes may be less easy to directly measure, but no less important. Such a positive outcome for instructors using OER that Bliss et al. (2013) report is pedagogical change. Discussing the results of their survey of an OER program spanning eight community colleges, 75% of the instructors report some change in their instructional practice. Though some of these were just changes in technology and access, many instructors report higher levels of student preparedness, engagement, and interest in the materials. Todorinova and Wilkinson (2020) reported on the results of a survey of faculty who participated in a textbook affordability program at Rutgers University. They found that the majority of faculty believed their students were more prepared and engaged. In terms of use, Bliss et al. (2013) found no significant difference between how often students use OER as compared to traditional textbooks in other classes.

The final key factor to consider in evaluating OER is the user experience. Overall, how do instructors and students perceive the quality of OER as compared to traditional commercial textbooks? Hilton's (2019) meta-analysis identifies 20 studies between 2015-2018 that report on instructor and student perception of OER. In every such study that asked faculty or students to compare their experience of OER with commercial texts (CT), "a strong majority said OER were as good or better. In the five studies in which ratings of students using CT were compared with ratings of students who used OER, two studies found higher ratings for CT, two found higher ratings for OER, and one showed similar ratings" (Hilton, 2019, Table 2). When OER is rated to be of less quality, it is often related to technological barriers and less so to the quality of the OER texts themselves.

We can also ask about faculty perception of the quality of OER awards programs. Would they have considered and implemented OER in their classes without participating in such a program? What do they consider the best incentives for experimenting with OER? What support do they need from their institutions, and how well do the programs meet these needs? Todorinova and Wilkinson (2020) report that the faculty who participated in a textbook affordability program viewed it favorably and the award amounts were adequate. However, they caution against a "one size fits all" approach to incentivizing OER implementation. Awards funds are one incentive, but not the only one worth considering. Also needed is more departmental and institutional support, for example, by including more credit for experimenting with OER and textbook affordability in tenure and promotion guidelines.

DESCRIPTION OF OER AWARDS PROGRAM

The impetus for starting the East Tennessee State University (ETSU) Open Educational Resources (OER) awards program came from students. During the 2017-2018 academic year, the Charles C. Sherrod Library Student Advisory Council decided to use their student library fee to launch a two-year pilot project of OER initiatives in order to educate the campus on OER and support more instructors to use them. A committee with representatives from the Student Government Association, Sherrod Library, and Center for Teaching Excellence convened to launch the initiatives. The student library fee supported joining the Open Textbook Network (now Open Education Network), paying instructors to attend and participate in local Open Education Network (OEN) workshops, and funding the OER awards program. The OEN membership trained the OER leaders so that they could effectively train the rest of the campus. The OEN workshops provided a foundational education for instructors by introducing OER and then asking them to review an open textbook. If instructors attended the workshop and completed the review, they could receive a $200 stipend. The goal after the workshops was the successful implementation of an open textbook or other resources in their courses, which could be further supported by the OER awards program. Workshops were the primary way instructors were recruited for the OER awards program, although any ETSU instructor of record could apply.

The OER awards program offered monetary stipends to instructors and funds to departments willing to replace a commercial textbook costing students money with OER and affordable course materials. In some limited cases, instructors already using free materials in their courses qualified if they planned to take the next step through adaption or creation. For the purposes of the award, OER meant free plus rights to retain, reuse, revise, remix, and redistribute (generally through a Creative Commons license). Affordable meant using materials low-cost or freely available to students that are not and cannot be licensed as open such as articles and resources available through library databases. We incorporated affordable materials into the OER awards program during its second year to meet the need of disciplines that may not have suitable OER available. The awards program had three main tiers to determine the award amounts:

- Adoption: Using previously created and already available OER and affordable course materials.
- Adaption: Using OER that the awardee(s) heavily customized or revised.
- Creation: Using OER the awardee(s) created.

For adaption and creation, we required faculty to submit the final product into ETSU's institutional repository, **Digital Commons@ETSU**. Table 1 indicates the range of stipends based on the three tiers (adoption, adaption, creation) as well as whether an individual or department applied.

Table 1

Award Stipends Tiers

	Individual	Department
Adoption	up to $1,000	up to $3,000
Adaption	up to $2,500	up to $5,000
Creation	up to $5,000	up to $10,000

Sherrod Library distributed half of the awards when instructors initially received the award and the other half when the awardees successfully completed the award conditions (e.g., implement the materials). In addition to the stipends, co-coordinators of the awards and authors of this article (Ashley Sergiadis, Digital Scholarship Library from Sherrod Library, and Philip Smith, Teaching and Learning Specialist from the Center for Teaching Excellence) provided additional support and resources in group settings during the required meetings of the OER Faculty Learning Community as well as one-on-one sessions as requested. We helped instructors with finding suitable materials and advised on copyright, Creative Commons licensing, accessibility, pedagogy, and course design. For those adapting and creating, Sergiadis (Digital Scholarship Librarian) assisted instructors in publishing their materials in the institutional repository, **Digital Commons@ETSU** and ensured their availability in

OER repositories such as MERLOT, OER Commons, OASIS, and OER Mason Metafinder. Lastly, we created and deployed student and faculty surveys to assess the impact of the OER implementations. We shared these student responses as well as letters of recognition to awardees.

METHODS

This study analyses the two-year pilot of the awards program at East Tennessee State University (ETSU). We recruited instructors who implemented Open Educational Resources (OER) and affordable materials as part of the awards program in their courses, as well as students enrolled in those courses. Six departments and nineteen individuals received funds from the awards program and implemented open and affordable materials. One individual who intended to adapt OER did not complete the program but received the first half of their award. Therefore, they are not part of this study aside from reporting how much we paid them at the beginning of the program. Some departments and individuals received multiple awards. Excluding the one who did not complete the program, we awarded the departments and individuals for adoptions in twenty-five courses, adaptions in four courses, and creations in three courses. This resulted in 61 individual sections affected by the awards program. While the instructors applied and received the first half of their awards during the 2018-2019 and 2019-2020 academic years, most of the data come from the 2019-2020 and 2020-2021 academic years when the instructors implemented the open and affordable materials. We used three methods to collect the data. We organized this data within the COUP (Cost, Outcomes, Usage, and Perception) framework to evaluate the OER awards program.

First, we determined the return on investment (ROI) by dividing the amount of money that students saved by the amount the program cost. We used this method to determine the cost in the COUP framework. In terms of student savings, we calculated liberal and conservative estimates. To calculate the liberal estimate, we multiplied the cost of the previous textbook (purchased new) implemented in the course by the number of students who registered for the course. If the instructor had not implemented a commercial textbook previously in the course, we used the cost of a typical textbook for that course (as recommended by the instructor) instead. In one case, an instructor used a homework system with an affordable access code ($30.00). We subtracted $30.00 from the cost of the textbook to estimate the savings more accurately. To calculate the conservative estimate, we adopted the method by Lashley et al. (2017). We used the actual cost of textbooks priced under $100 but capped the cost of textbooks at $100. This cost was then multiplied by the number of students who registered for the course. To determine the cost of the program, we added how much we awarded and other indirect costs to run the program, such as staffing and workshop stipends.

Second, we compared the drop-fail-withdrawal (DFW) rates and grades from the implementation semester with the last semester the instructor taught the course. This method relates to outcomes in the COUP framework. We excluded courses when instructors had already been using OER previously in those courses, or they never taught the course before. As with most universities, COVID–19 affected courses and grade policies. At ETSU, courses moved online on March 12, 2020. Most courses continued to be online until fall 2021, when the campus resumed normal operations. During spring 2020, East Tennessee State University relaxed its pass/fail policy so undergraduate students could decide to convert their grades to pass/fail after learning their grades. For fall 2020, undergraduate students could request a pass/fail grade for one course by mid-December. (These policies did not extend to graduate students.) The pass/fail counts were included in the enrollment and DFW, but they were excluded from the aggregate GPA calculation. Out of the approximately 1,450 grades from courses during the pandemic, only 45 or 3.0% were of the “pass/fail” type.

Third, we distributed surveys to faculty and students whose courses were part of the awards program. The survey covered aspects of cost, outcomes, usage, and perception. We adapted the survey from Bliss et al. (2013) (available under a Creative Commons Attribution 4.0 Internal license; see Appendix A and Appendix B after the references below.) We offered to distribute the surveys in-person during

class time or email the survey to instructors to forward to their students. Fall 2019 was the only semester we distributed the survey in person due to COVID-19. We distributed the remaining online. We conducted student surveys several weeks before finals, while we distributed instructor surveys online around finals. As part of the conditions of the award, we required individual awardees and team leaders of department awardees to complete the instructor survey. In addition, non-lead instructors from the department awardees had the option to complete the survey. All instructors who completed the survey consented to using the results for research. To analyze the qualitative responses in the survey, we initially reviewed them and decided on coding categories based on similar themes we discovered throughout the comments. We coded the comments separately based on those categories. Finally, we resolved together any differences in our coding.

Demographic of Student and Faculty Surveys

For the student survey, 431 responded to the surveys, or 21.5% of the 2,008 students enrolled within the courses. The response rate was significantly higher during fall 2019 (55.7%, 250 responses out of the 449 enrolled students) than subsequent semesters (11.6%, 181 responses out of the 1,559 enrolled students) due to the inability to survey in-person. Even though the response rate was lower in later semesters, those responses reinforced the trends that emerged in the fall 2019 surveys. Overall, the distribution of responses reflected the distribution of levels (1000-2000, 2000-3000, and 5000+ or graduate courses) and modes of delivery (on-ground, online, and hybrid) of the courses participating in the pilot program (Figure 1 and 2). The surveys generally represented the range of the courses' subject areas but had a higher response from the arts and humanities courses and lower numbers from the social and behavioral sciences courses (Figure 3).

Figure 1

Course Levels: Students in Courses versus Student Responses from Survey

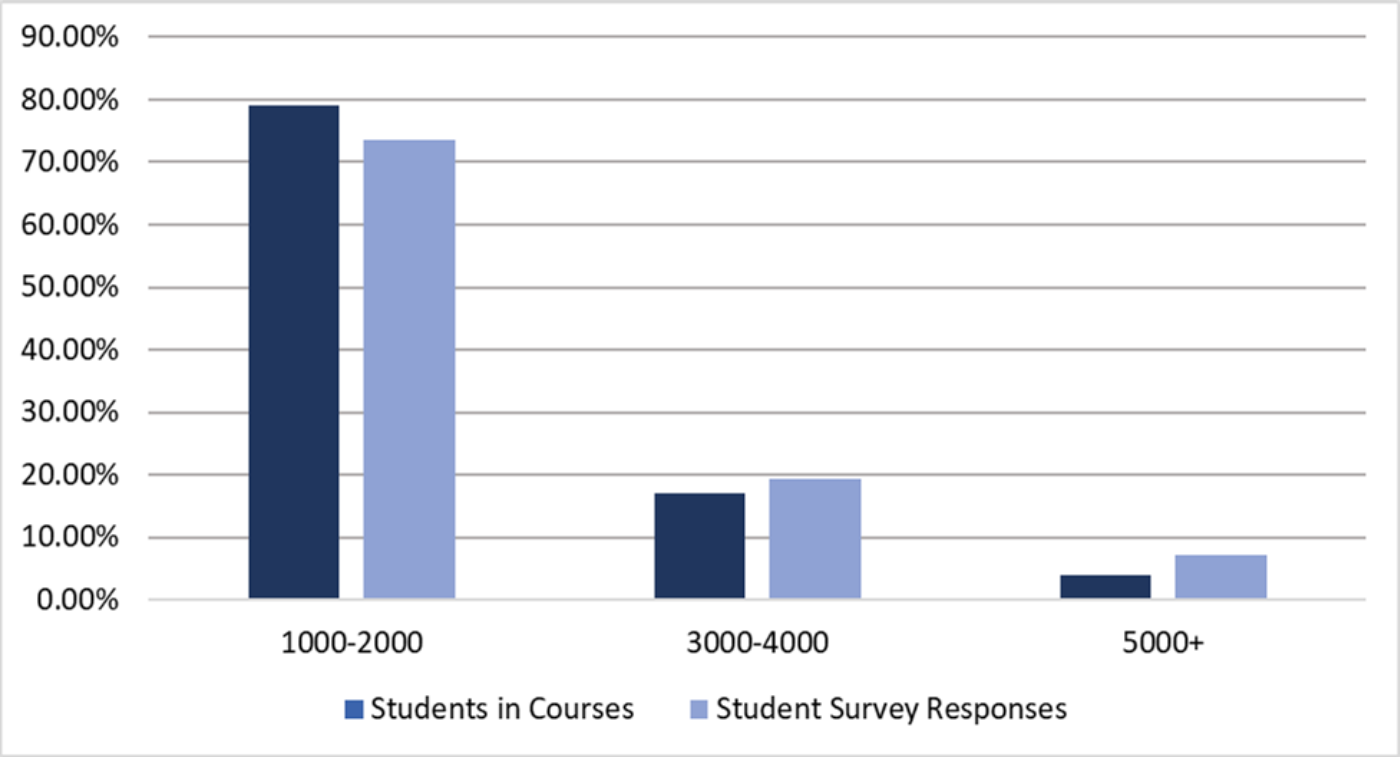


Figure 2

Mode of Delivery: Students in Courses versus Student Responses from Survey

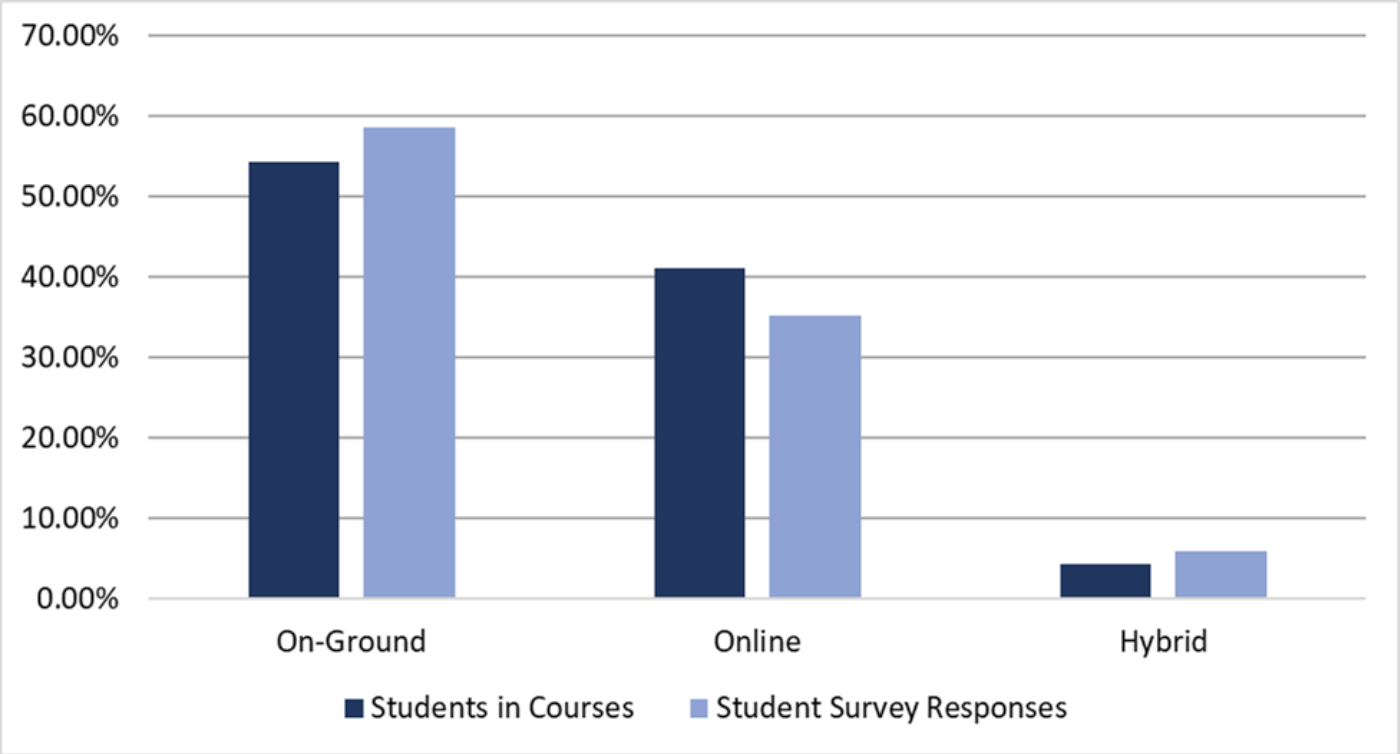
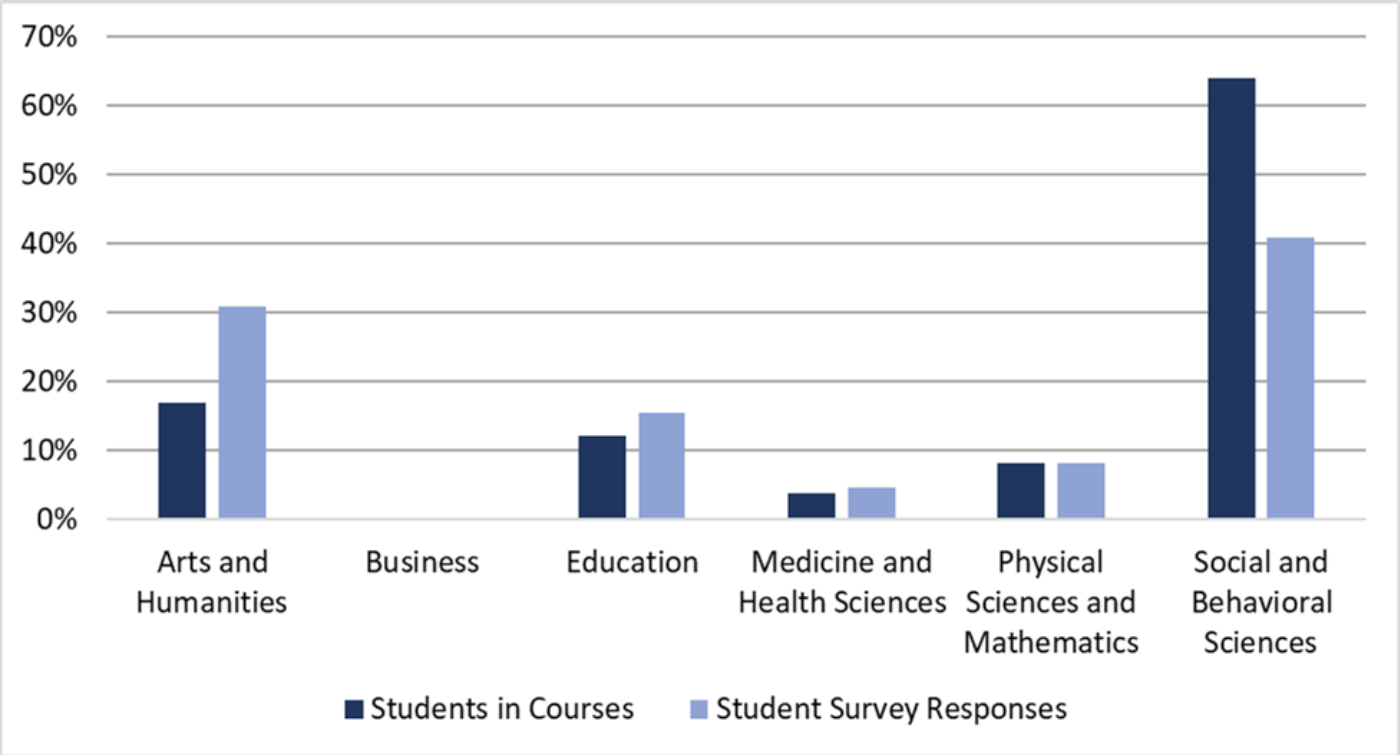


Figure 3

Subject Areas: Students in Courses versus Student Responses from Survey



The students taking the survey predominantly identified as White (88.4%), followed by Black or African American (6.7%), Hispanic or Latino (3.5%), and Asian/Pacific Islander (2.1%). More students identified as females (64.7%) than males (33.0%) or other genders (2.4%). The students tended to be newer to higher education. A third identified as a first-generation college student. The majority were between the ages of 18 and 22 (72.9%), with 19.8% of the students stating that this was their first semester in college. Similarly, 18.1% had only taken one to two semesters, and 20.0% had taken three to four semesters of college. Students tended to be full-time students (87.6%). The majority

worked either part-time (49.7%) or full-time (15.8%). Only 8.9% of respondents stated that they received no financial aid (e.g., loans, grants, work-study, scholarships, etc.).

For the instructor survey, there were 29 total responses. Instructors had almost an even spread of experience teaching at the college level from less than three years to more than 18 years. Most of the instructors (82.9%) had previously taught the courses that they were implementing OER. Twenty-two of the instructors participated in adoptions, four in adaptions, and three in creations.

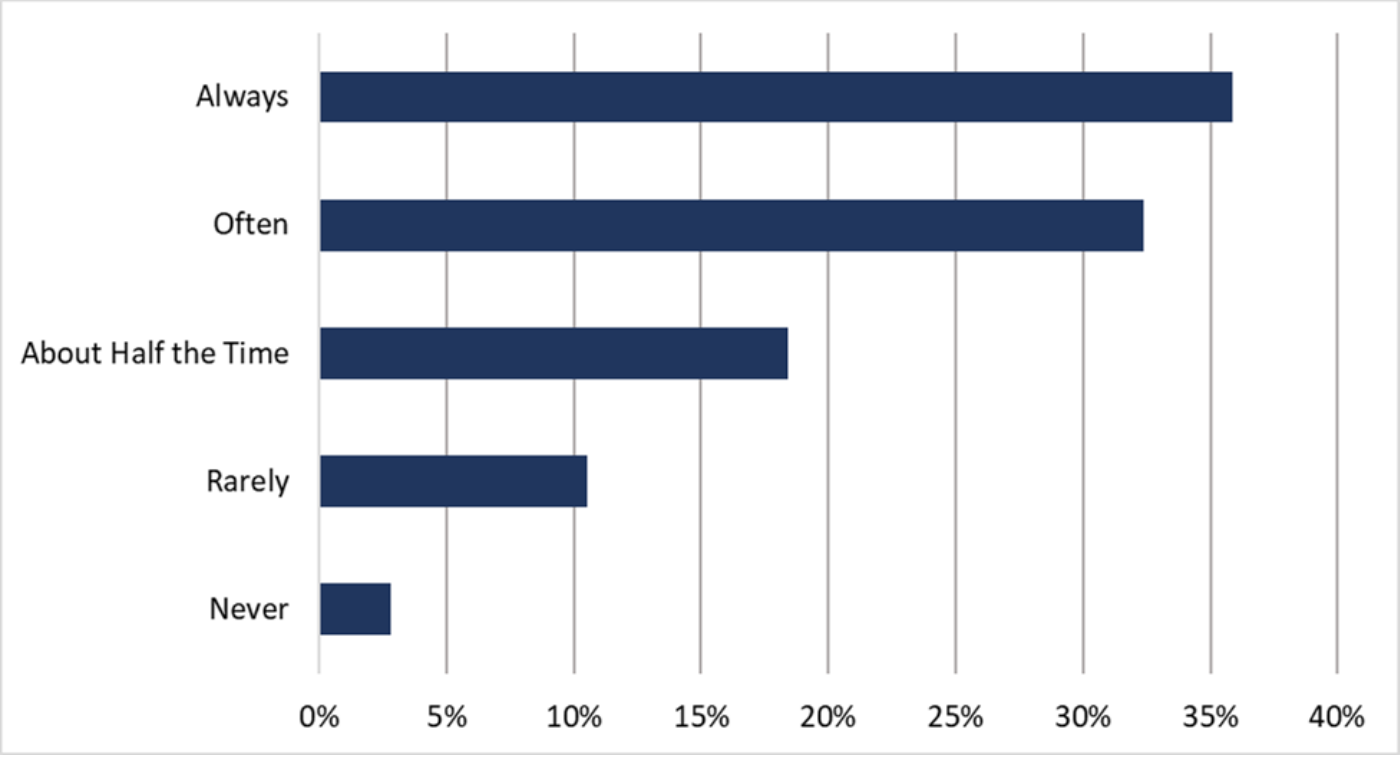
RESULTS

Cost

Through the Open Educational Resources (OER) awards program, 2,008 students saved between $194,060.27 and $295,429.94 during the first semester that the instructor implemented OER in their courses. The student survey confirmed that the student savings is closer to the conservative estimate. A third of students responded half the time, rarely, and never when asked how often they purchased the required texts for their courses (Figure 4).

Figure 4

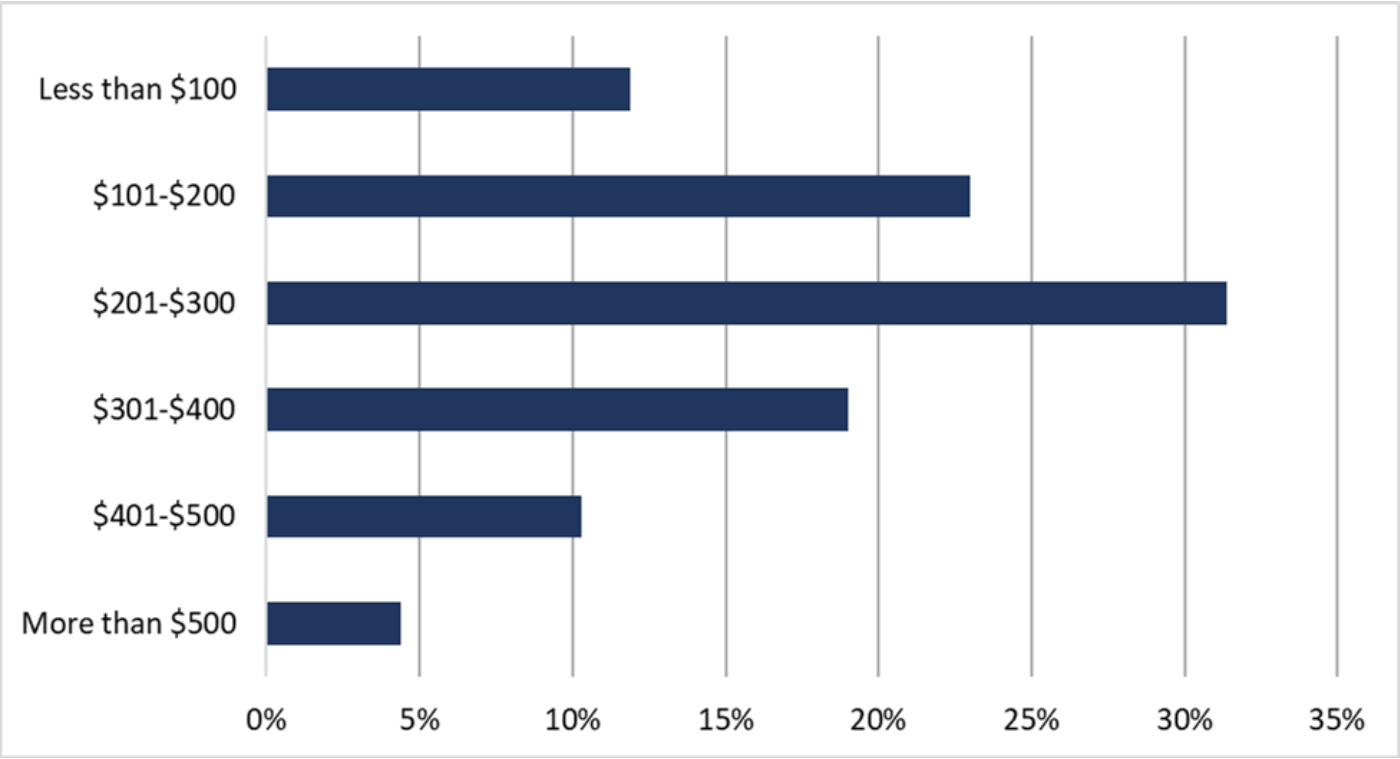
Student Frequency of Purchasing Required Texts



Furthermore, the survey asked the students how much they typically spent on texts each semester. While East Tennessee State University suggests students budget $1,350 for books and supplies (East Tennessee State University, n.d.), only a small percentage of students stated that they spend more than $500 (Figure 5). The survey also explored additional costs associated with printing. Based on the survey, only 16.5% of the students printed materials, with the majority of those students spending less than $10.

Figure 5

Typical Amount Students Spend on Texts Each Semester



Although awards programs can save students money, they also cost the institution money. The six departments and twenty individuals from the first two years of the OER awards program received a total of $55,150. The OER awards program also accrues a lot of indirect costs. Sherrod Library and the Center for Teaching Excellence committed a significant amount of time to launch, promote, and execute OER initiatives. Although this time was split primarily between two staff members, we estimate the time spent equaled that of a full-time librarian. When calculating salary and other compensation (health insurance, retirement, etc.), a full-time librarian position would cost $72,454.15. In addition, we paid $200 stipends for instructors who attended workshops and reviewed an open textbook in the Open Education Network. Part of the workshop outcomes was to encourage faculty to apply to the awards program. During the two-year pilot, 79 faculty attended workshops, and 58 submitted reviews and received the stipend. That is an additional cost of $11,600. Approximately 50% of awardees attended the workshops prior to applying for the awards. All but one stated that the workshops helped them see the value of OER and inspired them to use OER. When calculating staff time and education/promotional costs, the return-on-investment ranges from 139% to 212%.

Outcomes

For outcomes, we examined average grades and drop-fail-withdrawal (DFW) rates. When looking at individual courses, some grades were better, and some were worse. Likewise, percentages of DFW rates increased and decreased. When looking at the averages, grades and fails made slight improvements while drops and withdrawals increased around 1.5% (Table 2). The numbers slightly improved if reviewing the numbers for fall 2019 prior to COVID-19 (Table 3). Specifically, the drop/withdrawal percentages became almost identical. The grades aligned with the instructor's perception of student preparedness. Almost all instructors thought that their students were equally (73.3%) or more (23.3%) prepared.

Table 2

Comparison of Grades and DFW

	BEFORE using	AFTER using OER/Affordable

	OER/Affordable	
Average Grades	3.30	3.39
Drops/Withdrawals	6.6%	8.3%
Fails	5.4%	4.1%

Table 3

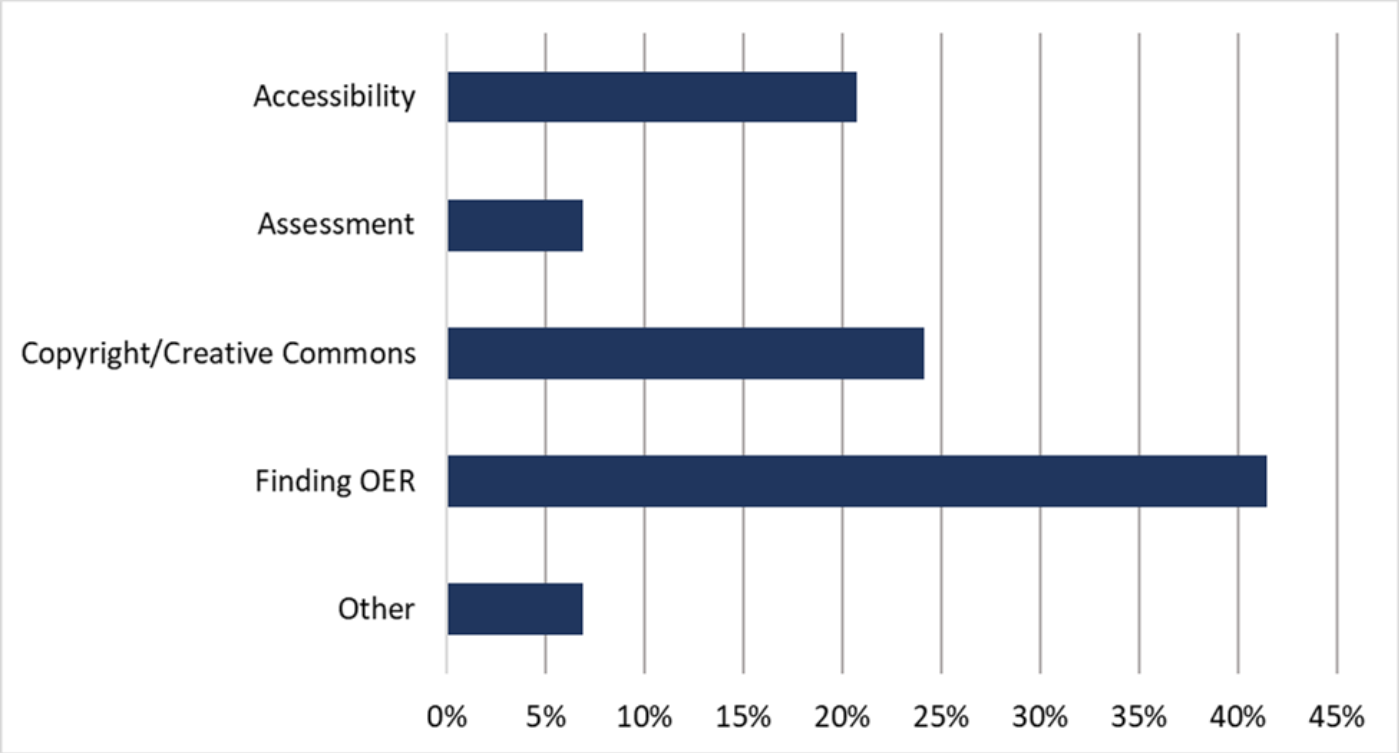
Comparison of Grades and DFW (Courses from Fall 2019 Only – Pre-COVID-19)

	BEFORE using OER/Affordable	AFTER using OER/Affordable
Average grades	3.18	3.34
Drops/Withdrawals	8.9%	8.5%
Fails	7.19%	4.60%

The survey also helped to evaluate the outcomes of the OER awards program and make improvements to our open and affordable initiatives. We intended the program to encourage and support faculty's transition to open and affordable course materials. All but one instructor agreed that the support of Sherrod Library and Center for Teaching Excellence staff was helpful. Most awardees (89.2%) claimed that the general discussion and sharing of ideas in the Faculty Learning Communities was helpful, particularly the discussions on finding OER, copyright and Creative Commons, and accessibility for OER (Figure 6). Almost half of faculty (42.9%) would not have adopted the OER awards program without the incentives. All the faculty supported the continuation of the OER awards program, while 87.1% of students supported spending student fees to encourage and incentivize instructors to use open and affordable texts.

Figure 6

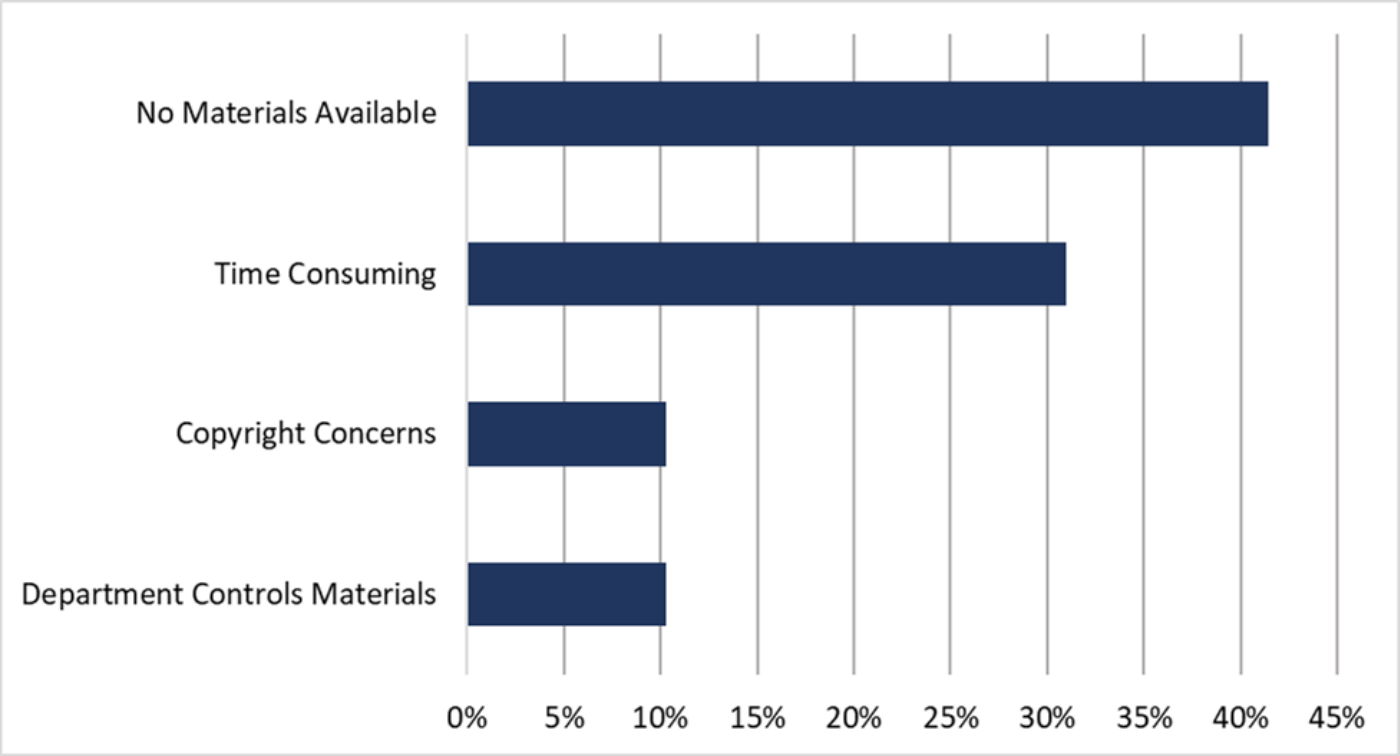
Helpfulness of Faculty Learning Community Discussions by Topic



Despite the helpfulness of the OER awards program, faculty indicated challenges with implementing OER that the awards program, or other initiatives, would need to address in the future (Figure 7). First, not every course has open and affordable materials available. Second, faculty may not have the time to implement the materials. Implementing OER proved to be a time-consuming task. Most instructors expressed having to spend more time preparing to teach their courses in comparison to previous semesters. The type of award also affected this. All creators stated that they spent over 51 hours locating, selecting, customizing, and/or creating OER. All adaptors stated that they spent 21 hours or more. Almost 60% of adopters spent 20 hours or less. Third, instructors may not have a choice because some courses have coordinators or departments that choose the materials for all instructors. Lastly, even with the help of staff, dealing with copyright issues is cumbersome.

Figure 7

Challenges or Barriers Preventing Faculty from Using Open and Affordable Materials

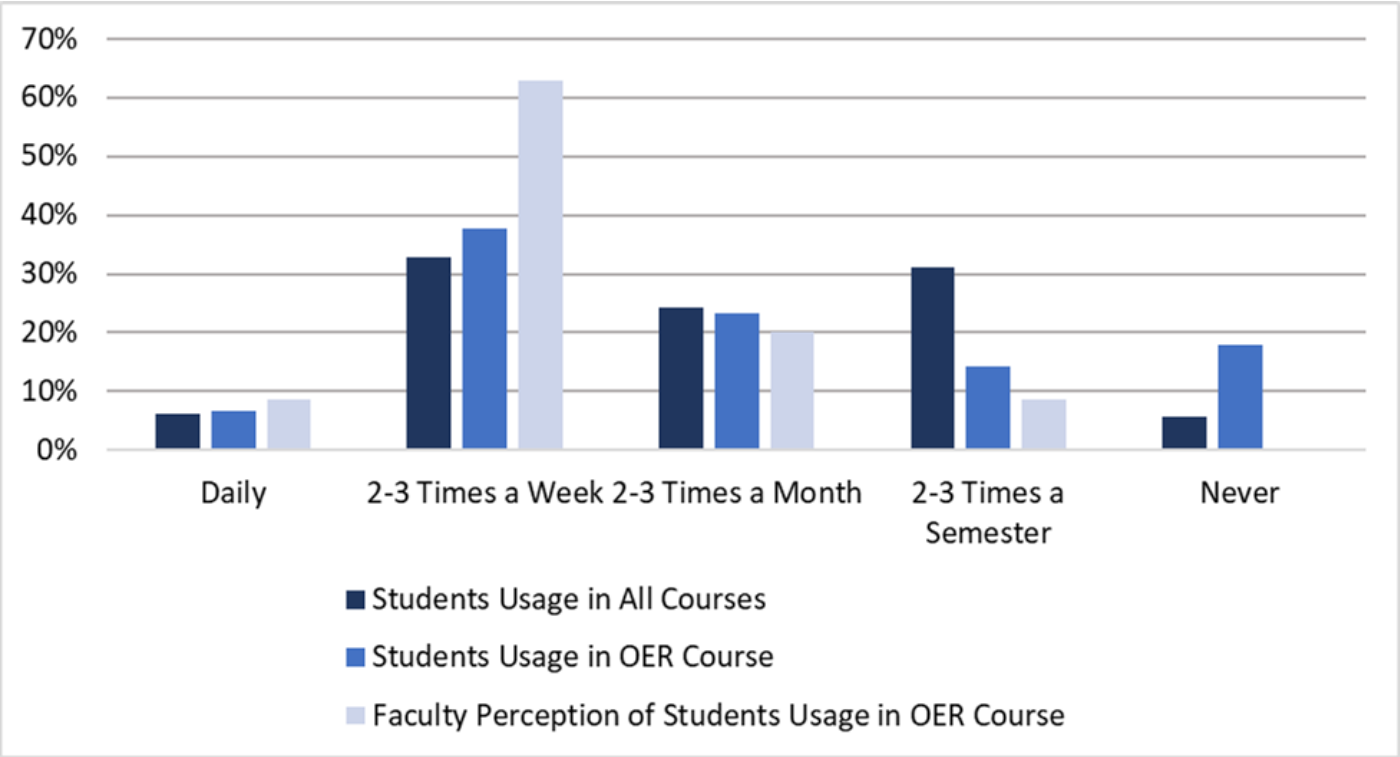


Usage

The survey explored how often students reported using the open and affordable materials versus their reported use of course materials in general versus the faculty's perception of the students' usage (Figure 8). The most striking contrast is where students reported that they never used the materials in the course with OER at a higher percentage than their normal habits. When investigating why this may be the case, we discovered that 18% of the "never" responses were due to confusion over the question's wording. The question asked the students about their usage of "texts for this course." In the survey, we defined what "texts for this course" meant based on what the instructors assigned in each course, which in some cases meant non-textbook materials such as PowerPoint slides and videos. Despite defining "texts for this course" as including non-textbook materials, students reported that they "never" used the "texts" because their course did not use "texts" but non-textbook materials (e.g., slides, videos). Of course, some of the "never" responses (11.7%) came from students who had issues with the OER. Specifically, these responses came from a course where the instructor themselves had issues with the OER because the materials were not a good fit. In general, faculty had a more optimistic view of how much students used the OER throughout the semester as none of the instructors stated "never."

Figure 8

Student Usage of Required Materials



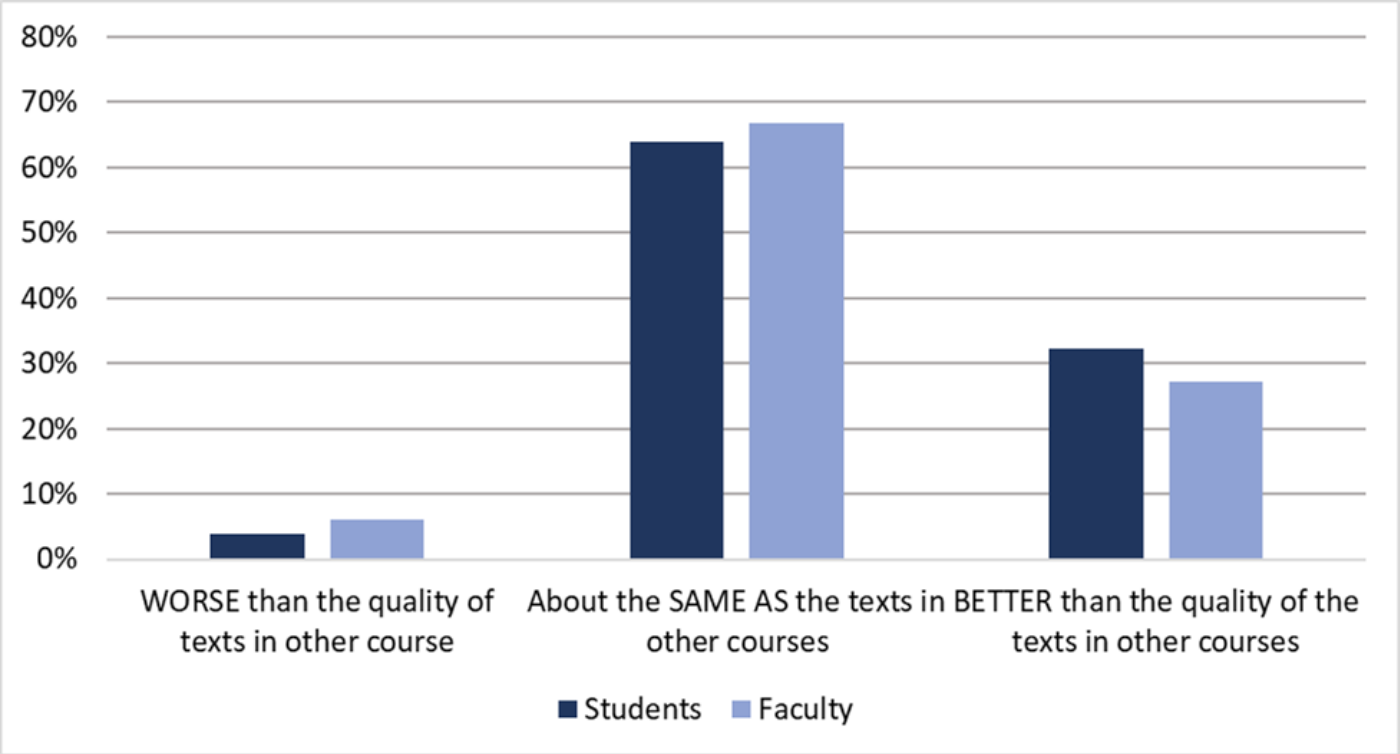
In addition to the student usage of the materials, the faculty used OER creatively through adaption and creation. The OER produced during the two-year pilot were diverse in both subject area and medium. They included (1) slides that replaced an art appreciation textbook, (2) a podcast on computer organization and design fundamentals, (3) lecture notes from a pathophysiology nursing course, (4) videos demonstrating digital animation, (5 and 6) two graduate political science textbooks adapted for an undergraduate audience, (7) videos on elementary social studies education, and (8) a textbook on teaching early and elementary STEM. The adaptions and creations received 8,589 downloads and streams through the institutional repository, **Digital Commons@ETSU**, within the first year of their publication.

Perception of Quality

Overall, the perception of open and affordable materials was positive. Over 95% of students and faculty expressed that the open and affordable materials were the same as or better than the quality of the texts in their other courses (Figure 9).

Figure 9

Quality of Open and Affordable Materials

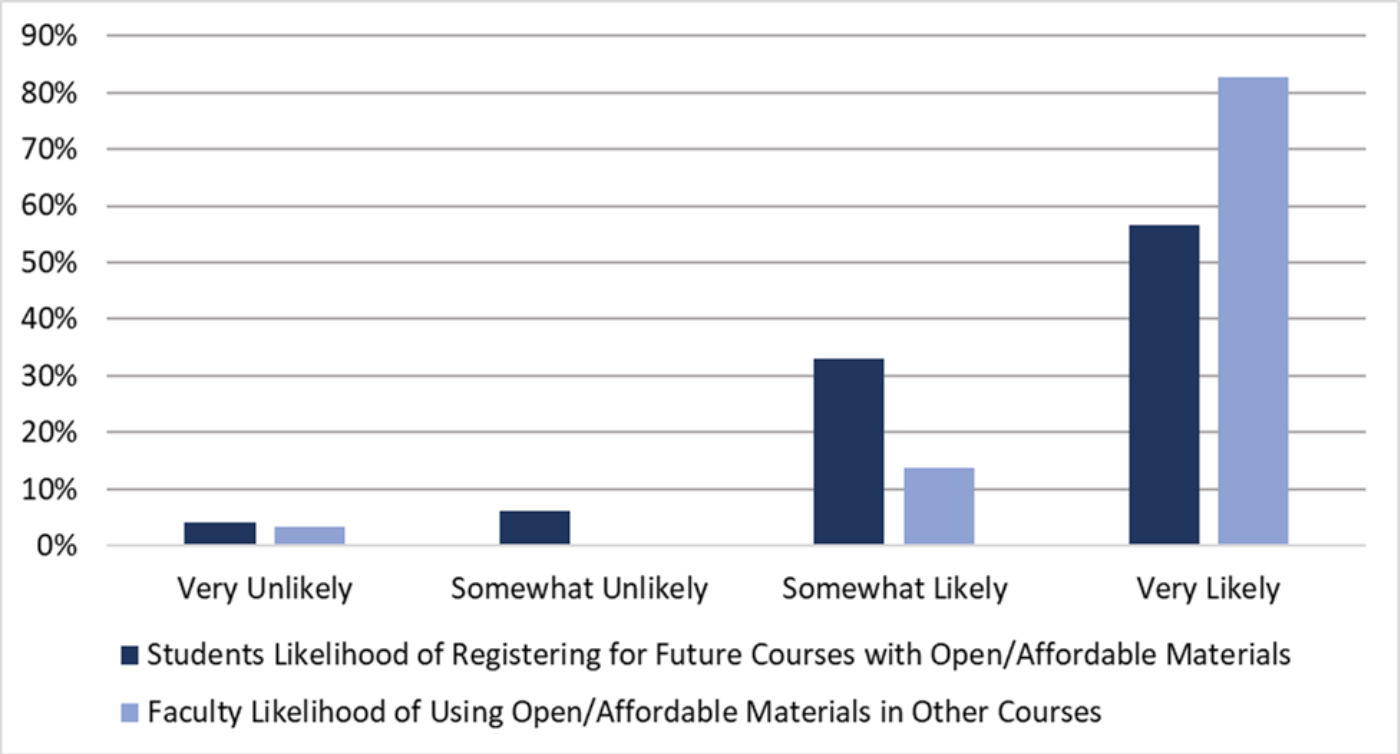


The student and faculty survey had open-ended comments that illuminated what they liked (or disliked) about OER. It was no surprise that a quarter of students mentioned that they liked that the course materials were free. The students also recognized other aspects that made OER and affordable course materials appealing. First, 29.5% of respondents commented that the content was high quality, specifically that they were digestible or easy to understand and relevant. Second, 25.8% of respondents mentioned that they liked the usability or accessibility of the materials. This included specific comments on preference for online materials and appreciation of features available through online materials (e.g., searching through text, highlighting, etc.). Third, 6.3% of respondents mentioned the benefits of the material's medium other than texts (videos, podcasts, PowerPoints), and 3.2% mentioned how the materials transformed the pedagogy of the course. For the instructors who stated the course materials were better, they mentioned that the content was relevant and well suited for their course in part because of the flexibility of OER. Students and faculty provided negative comments as well. Six percent of students discussed the content negatively due to the materials being irrelevant to the course. Students also mentioned poor appearance (.5%), difficulty of use (1.9%), and preference for print over online materials (1.9%). The two faculty that thought that the open and affordable materials were worse than traditional ones had issues with the content not being relevant enough for their course.

The positive perception seemed to carry over when faculty and students discussed using them in the future (Figure 10). Students were overwhelmingly somewhat likely or very likely to register for future courses with open and affordable materials. Most faculty were very likely to continue using OER materials in both the course for which they received the award as well as other future courses. This indicates potential future behavioral changes that would increase the implementation and usage of open and affordable materials beyond the scope of the awards program.

Figure 10

Comparison of Students' and Faculty's Likelihood to Continue with Open and Affordable Materials



DISCUSSION

While reviewing the results of this study, our first concern was whether the benefits were worth the costs. Based on our calculations, the return on investment (ROI) ranged from 139%-212% within the first semester of implementation. (Savings ranged between $194,060.27 and $295,429.94, while direct and indirect costs were at $139,204.15.) This ROI will grow as faculty continue to use OER in their classes, which most planned to do so. While the ROI may not be extraordinarily high, other aspects of the program must be considered. In terms of outcomes, students' grades and DFW rates remained steady with some slight improvements, specifically when reviewing the pre-COVID-19 numbers. One limitation with this type of data is that grades and DFW rates cannot be attributed solely to the use of OER, especially when measured during a pandemic. At the very least, our data indicate that using OER did not have a significant negative impact on students' grades and DFW rates. This finding is consistent with Hilton's (2019) meta-analysis that found no difference in grades and fewer DFW rates in courses using OER. In terms of usage, the faculty used these materials in innovative ways and contributed their own materials to the OER community, which also reflects well on East Tennessee State University (ETSU). The clearest (non-monetary) advantages to the awards program may be seen in terms of the perception of students and faculty. Both groups overwhelmingly rated the quality of OER as the same or better than commercial texts, appreciated the obvious value of saving money, and thought that using OER led to improvements in access, learning, and engagement. Beyond the COUP analysis, the awards program provided an opportunity to make strong connections with faculty, who then became OER champions and could spread the word to their colleagues. Is it worth it for institutions to invest in awards programs to support faculty to use OER and other affordable materials? The answer will depend on the institution and other contextual factors, but this study suggests awards programs can offer a healthy return on investment, support the faculty, and provide immediate benefits to many students.

Although we decided to continue the awards program, the evaluation provided insight on how we could improve not only the awards program but also our general services. The primary barriers that emerged from our evaluation were the lack of materials and time. The awards program was originally for faculty implementing openly licensed materials. Once we received our first cycle of applications, it became clear that this was too restrictive. As the survey results suggest, faculty can struggle finding freely available materials for courses, let alone openly licensed ones. Our awards program now allows

for the use of free and low-cost materials such as open materials, library materials, and low-cost learning systems that work with OER. Sherrod Library also began an e-textbook reserves program to purchase required e-textbooks in ETSU courses that are available with an unlimited license. This supplements the awards program by providing a way for instructors to continue to use the textbook they prefer when open and other free materials are unavailable. Our workshops also became more focused on finding materials. One strategy that seems successful is providing a list of two or three open and affordable materials for each course taught by the attendees of the workshop. This saves the instructors some time by providing examples of open and affordable materials before they must search on their own. It also demonstrates that resources are available relative to their courses' subject area. We have also begun to target departments for workshops to provide a more personal experience. This particularly becomes helpful when explaining how to find open and affordable resources. We can point to resources that the instructors may find the most useful for their courses. For example, we may emphasize our library collections for departments that primarily teach upper-level or graduate courses because OER is scarce in their field. Being able to improve our programs and services was one of the major benefits of conducting an extensive evaluation.

CONCLUSION

Adapting the COUP (cost, outcomes, usage, perception) framework to evaluate an Open Educational Resources (OER) awards program was incredibly helpful. It not only provided evidence of the awards program benefits, but also the challenges that faculty endure implementing open and affordable materials. Building off a growing base of research, which shows the many benefits of OER to students, faculty, and institutions alike, the results of this study suggest a dedicated awards program is worth the initial investment. However, one lingering question is how long the awards program should last. Our ultimate goal is to have a culture change at East Tennessee State University, where stipends are not required to incentivize faculty to adopt open and affordable materials. This would require that instructors automatically consider using OER and affordable materials whenever they plan to change their required materials (even if they eventually determine commercial products are still the best for their courses). In addition, the administration would need to support instructors such as recognition of OER in tenure and promotion criteria as well as incorporate open and affordable materials in institutional processes such as curriculum approvals. We still anticipate the need to compensate authors for the publication of OER that they adapted or created, especially substantial OER such as open textbooks.

One of the major benefits of spending the time to evaluate the awards program is that we have a plethora of data to present to our faculty, students, and administrators. It is important to remind the institution continually of the benefits of open and affordable materials as well as the barriers for faculty. Sherrod Library and Center for Teaching Excellence can only provide a certain level of support. It takes more stakeholders' cooperation to create a real cultural change on campus. Until then, the awards program will work towards this change one course at a time. Building from the baseline established by this pilot program, future efforts and research could focus on how to recognize this culture change and, if possible, to measure its impact beyond just the return on investment but also more qualitatively on how behaviors and attitudes toward course material affordability and open educational practices can change and be sustained.

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Appendix A: Student Survey

What is your age?

- ○ Under 18
- ○ 18-22
- ○ 23-29
- ○ 30-39
- ○ 40-49
- ○ Over 50
- ○ Prefer not to say

To which gender identity do you most identify?

- ○ Male
- ○ Female
- ○ Transgender male
- ○ Transgender female
- ○ Gender variant / non conforming / non binary
- ○ Not listed
- ○ Prefer not to say

With which ethnicity do you identify?

- ☐ Asian / Pacific Islander
- ☐ Black or African American
- ☐ Hispanic or Latino
- ☐ Native American or American Indian
- ☐ White
- ☐ Other
- ☐ Prefer not to say

Are you a full time student? (take at least 12 credit hours)

- ○ Yes
- ○ No

Do you work in addition to going to school?

- ○ No
- ○ Yes - Part time
- ○ Yes - Full time

Is English your first language (or one of your first languages)?

- ○ Yes
- ○ No
- ○ Prefer not to say

Are you a first generation college student?

- ○ Yes
- ○ No
- ○ Not sure
- ○ Prefer not to say

Do you receive any kind of financial aid? (check all that apply)

- ☐ Loans
- ☐ Grants
- ☐ Work-study
- ☐ Scholarships
- ☐ Other
- ☐ None
- ☐ Prefer not to say

How many semesters have you completed in college?

- ○ Less than 1
- ○ 1-2
- ○ 3-4
- ○ 5-6
- ○ 7-8
- ○ 9-10
- ○ More than 10

What is your cumulative college Grade Point Average (GPA) on a 4.0 scale?

- ○ 0.0 - 1.4
- ○ 1.5 - 2.0
- ○ 2.1 - 2.5
- ○ 2.6 - 3.0
- ○ 3.1 - 3.5
- ○ 3.6 - 4.0
- ○ This is my first semester

In general, how often do you purchase the required texts for the courses you take?

- ○ Never
- ○ Rarely
- ○ About Half the Time
- ○ Often
- ○ Always

How much do you typically spend on texts each semester?

- ○ Less than $100
- ○ $101 - $200
- ○ $201 - $300
- ○ $301 - $400
- ○ $401 - $500
- ○ More than $500

On average, how many courses do you take each semester?

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ More than 8

For a typical course, how often do you use the required texts?

- ○ Never
- ○ 2-3 Times a Semester
- ○ 2-3 Times a Month
- ○ 2-3 Times a Week
- ○ Daily

Some of the questions that follow refer to "this course," which is [INSERT COURSE ID HERE]

In the questions that follow “texts for this course” refer to [… insert name(s) of OER materials and distinguish from any other materials you may have required …]
Did you print text materials for this course?

- ○ Yes
- ○ No
- ○ Not applicable

If you answered, Yes to “Did You print text materials for this course?”:
How much did you spend on printing text materials for this course?

- ○ Less than $10
- ○ $11 - $20
- ○ $21- $30
- ○ $31 - $40
- ○ $41 - $50
- ○ $51 - $60
- ○ $61 - $70
- ○ More than $70

How often did you use the texts for this course during the semester?

- ○ Never
- ○ 2-3 Times a Semester
- ○ 2-3 Times a Month
- ○ 2-3 Times a Week
- ○ Daily

How would you rate the quality of the texts used for this course?

- ○ WORSE than the quality of the texts in my other courses
- ○ About the SAME AS the quality of the texts in my other courses
- ○ BETTER than the quality of the texts in my other courses

If you answered, WORSE than the quality of the texts in my other courses:
Please briefly describe what made the quality of this course's texts WORSE than those in other courses.

If you answered, BETTER than the quality of the texts in my other courses:
Please briefly describe what made the quality of this course's texts BETTER than those in other courses.

Overall, what do you think of the texts used in this course?

How likely are you to register for a future course with online texts like those used in this course?

- ○ Very Unlikely
- ○ Somewhat Unlikely
- ○ Somewhat Likely
- ○ Very Likely

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 texts similar to those used in this course and the other used traditional 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 TEXTS LIKE THOSE OFFERED IN THIS COURSE
- ○ I would have no preference

Would you support using student fees to encourage and incentivize instructors to use affordable and open texts?

- ○ Yes
- ○ No

Appendix B: Instructor Survey

This version of the instructor survey was sent to adopters. Adaptors and creators received a similar survey with some questions removed or edited.

Some questions were adopted or adapted from a survey under a CC-BY 4.0 license featured in Bliss, T., Robinson, T. J., Hilton, J., & Wiley, D. A. (2013). An OER COUP: College teacher and student perceptions of Open Educational Resources. *Journal of Interactive Media in Education*, 2013(1), Art. 4. http://doi.org/10.5334/2013-04

How long have you been teaching at the college level?

- ○ Less than 3 Years
- ○ 3 - 6 Years
- ○ 6 - 9 Years
- ○ 9 - 12 Years
- ○ 12 - 15 Years
- ○ 15 - 18 Years
- ○ More than 18 Years

What is your average teaching load during a regular length semester at your institution?

- ○ 1 Course
- ○ 2 Courses
- ○ 3 Courses
- ○ 4 Courses
- ○ 5 Courses
- ○ More than 5 Courses

How many courses (not sections) did you receive the award for adoption that you taught this semester?

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5

The next set of questions refers to Course #1, Course #2, Course #3, etc. based on the number of courses for which you received the ETSU OER Award for adoption. *This example of the survey does not repeat the questions for Course #2, #3, etc.*

Examples: If you only received 1 award for 1 course, Course #1 refers to that course.
If you received 2 awards for 2 different courses, Course #1 refers to one of the courses (your choice) and Course #2 refers to the other course.

Have you taught Course #1 in previous semesters?

- ○ Yes
- ○ No

If you answered Yes to "Have you taught Course #1 in previous semesters?":
How many times have you taught Course #1?

- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10
- ○ More than 10

If you answered Yes to "Have you taught Course #1 in previous semesters?":
When you have taught Course #1 in the past, how much have students generally been asked to spend on required texts?

- ○ Less than $20
- ○ $21 - $40
- ○ $41 - $60
- ○ $61 - $80
- ○ $81 - $100
- ○ $101 - $120
- ○ $121 - $140
- ○ More than $140

If you answered Yes to "Have you taught Course #1 in previous semesters?":
How much time did you spend preparing to teach Course #1 each week this semester compared to previous semesters (not counting time spent developing the text, if applicable)?

- ○ Much Less Time
- ○ Somewhat Less Time
- ○ About the Same Amount of TIme
- ○ Somewhat More Time
- ○ Much More Time

If you answered Yes to "Have you taught Course #1 in previous semesters?":
How did your students' preparedness in Course #1 compare to previous semesters?

- ○ Students were Less Prepared
- ○ Students were Equally Prepared
- ○ Students were More Prepared

How much did you communicate with your students about the experimental nature of the open or affordable materials approach used in Course #1 this semester?

- ○ Never
- ○ Once
- ○ 2-4 Times
- ○ 5-7 Times
- ○ 8-10 Times
- ○ Every Class Meeting

In the questions that follow "OER Award Materials" refers to the materials that you used in your course in order to receive the OER Award. This may include written texts, articles, textbooks, textbook chapters, slides, videos or other multimedia materials. You may also have seen them referred to as "Open Educational Resources", "OERs", or "affordable learning materials".

How often do you think students used the OER Award Materials for Course #1 throughout the semester?

- ○ Never
- ○ 2-3 Times a Semester
- ○ 2-3 Times a Month
- ○ 2-3 Times a Week
- ○ Daily

What feedback, if any, did you receive from students about the OER Award Materials used in Course #1?
How likely are you to continue using OER Award Materials for Course #1 again in the future?

- ○ Very Unlikely
- ○ Somewhat Unlikely
- ○ Somewhat Likely
- ○ Very Likely

On average, how would you rate the quality of the OER Award Materials used for Course #1?

WORSE than the quality of texts in my other courses
About the SAME AS the quality of texts in my other courses
BETTER than the quality of texts in my other courses
If you answered WORSE to "On average, how would you rate the quality of the OER Award Materials used for Course #1?":
Please briefly describe what made the quality of Course #1's OER Award Materials WORSE than those in other courses.

If you answered BETTER to "On average, how would you rate the quality of the OER Award Materials used for Course #1?":
Please briefly describe what made the quality of Course #1's OER Award Materials BETTER than those in other courses.

About how much time did you spend locating and selecting the OER Award Materials you adopted for Course #1?

- ○ Under 10 hours total
- ○ 11-20 hours total
- ○ 21-30 hours total
- ○ 31-40 hours total
- ○ 41-50 hours total
- ○ Over 51 hours total

How likely are you to use open or affordable materials for other courses you teach in the future?*

- ○ Very Unlikely
- ○ Somewhat Unlikely
- ○ Somewhat Likely
- ○ Very Likely

Would you support continuing the OER Awards Program at ETSU?*

- ○ Yes
- ○ No

The Open Textbook Network (OTN) workshop and review stipend helped me see the value of OER and inspired me to use OER.

- ○ Strong disagree
- ○ Disagree
- ○ Agree
- ○ Strongly Agree
- ○ I did not attend this workshop

Which discussion was the most helpful during the Faculty Learning Community meetings?*

- ○ Accessibility for OERs
- ○ Assessment for OERs
- ○ Copyright / Creative Commons
- ○ Finding OERs
- ○ Other

In general the discussion and sharing of ideas in the Faculty Learning Communities was helpful.

- ○ Strong disagree
- ○ Disagree
- ○ Agree
- ○ Strongly Agree

Support from Sherrod Library and Center for Teaching Excellence staff was helpful.

- ○ Strong disagree
- ○ Disagree
- ○ Agree
- ○ Strongly Agree

Would you have adopted the OER Award Materials without the incentive provided by the Awards Program?

- ○ Yes
- ○ No

What challenges or barriers might prevent you from using open or affordable materials again (in this class or any other you teach)?

Please share any other comments, suggestions or feedback about the OER Awards Program or your experience using open or affordable materials this semester.