COLORADO OPEN EDUCATIONAL RESOURCES COUNCIL

Report to the Joint Budget Committee and
The Education Committees of the General Assembly
Open Educational Resources in Colorado
November 2017

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OPEN EDUCATIONAL RESOURCES COUNCIL

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OER Council Report to the Joint Budget Committee

November 2017

Overview

Open Educational Resources (OER) are freely available online teaching and learning materials accessible to students, instructors and self-learners. Contained in digital media collections from around the world, examples of OER include full courses, lectures, quizzes, classroom activities, pedagogical materials and many other assets.

Colorado's Open Educational Resources Council is a statewide body charged by the Legislature and the governor through SB 17-258 to develop recommendations for an OER initiative serving public higher education in the state of Colorado. This *OER Council Report to the Joint Budget Committee* includes a rationale for state investment in OER, an overview of successful OER initiatives in other states, a description of the current status of OER use in Colorado and structural and investment recommendations for a statewide OER initiative.[1]

In order to develop impactful policy recommendations, this past year the OER Council collaborated with Western Interstate Commission on Higher Education (WICHE) Center for Educational Technologies (WCET) to understand the status and use of OER in Colorado. That project resulted in the analysis, *Open Educational Resources in Colorado*, by WCET Director of Open Policy Tanya Spilovoy, Ed.D. Data from Dr. Spilovoy's analysis is an integral part of this report to the JBC and her analysis, in its entirety, follows this report.

Research into OER benefits conducted by the council, and described in the following narrative, shows that increased adoption of OER significantly benefits students through cost savings, improved learning and increased student retention. Therefore, the council recommends launching and funding a Colorado OER Initiative (COER) for at least three years[1] with a total proposed budget of $2,820,070[2] to:

- Scale the use of OER through targeted grant funding, including:
    - ***Institutional grants*** to campuses for establishing an OER task force, setting their own OER priorities and disbursing grants in support of these priorities; and
    - ***Individual or small-group grants*** for faculty and staff, especially at institutions without an institutional grant or OER initiative, to support OER creation, adoption and promotion.
- Ensure knowledge-sharing, professional development and community-building and sustaining opportunities such as
    - Regular ***virtual meetings*** of selected OER interest groups; and
    - An ***annual OER conference*** of and for stakeholders from around the state, with keynotes and workshops on specific practical issues.
- Establish enabling structure and staffing at the state level with
    - A standing ***State OER Council*** to set statewide policy, oversee grant programs and act as conference organizing committee, among other duties;
    - A ***full-time staff member in the Colorado Department of Higher Education (CDHE)*** to support the above activities and to maintain information resources such as websites and collateral materials; and
    - An ***annual report*** to the Legislature describing COER activities and reporting on various metrics of success.

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[1] See Appendix 1 for a three-year timeline.

[2] See Appendix 2 for budget details.

Funding an OER Initiative is of Vital Importance to the State of Colorado

High Textbook Costs Harm Students

In the last 20 years, the cost of college textbooks has risen much more rapidly than the Consumer Price Index (CPI). According to one study, the increase in textbook prices was 945 percent between 1978 and 2014, compared to the increase in overall CPI of 262 percent (Perry, 2015). Textbooks and course-material access codes cost individual college students 100s to 1,000s of dollars per year. Digital materials requiring access codes are becoming increasingly problematic for students (Senack, Donoghue, Grant, & Steen, 2016) as well. In total, Colorado students are estimated to have paid $148 million dollars on textbooks in 2016.[3] Results of the Colorado Open Educational Resources Council Survey, reviewed in *Open Educational Resources in Colorado*, indicate student concern with those costs.

The high cost of textbooks and access codes can lead students to either enroll in fewer courses, which can ultimately threaten their successful graduation, or to forego required textbooks and potentially earn lower grades. The increasing numbers of students who cannot afford to purchase course materials are at a clear disadvantage in learning, retention and earning a college degree (Florida Virtual Campus, 2016; Donachie, 2017). College students, particularly student governments, have organized to influence OER initiatives on their campuses, including in Colorado (Scholarly Publishing and Academic Resources Coalition (SPARC), n.d.; Hernandez, 2017).

OER Have a Positive Impact on Student Outcomes and Faculty Innovation

Research shows that student outcomes are generally as good as or better when using OER, as compared to traditional textbooks:

- Students generally have similar or better grades and learning gains in courses that used open educational materials as compared with students using traditional textbooks (Fischer, Hilton, Robinson, & Wiley, 2015; Hilton 2016; Ozdemir & Hendricks, 2015).
- Student retention rates are as good as or better in courses using OER as compared to conventional textbooks (Ozdemir & Hendricks, 2017).
- Students taking courses with OER are significantly more likely to take a larger number of credits per semester, which can increase degree completion rates and decrease the time to degree attainment (Fischer, Hilton, Robinson, & Wiley, 2015).

In addition, adopting, adapting or authoring OER enables instructors to utilize quality, open, online resources to engage students with content that extends beyond often encyclopedic texts to more pointedly—and creatively—engage with course content and learning outcomes (Lieberman, 2017; Ozdemir & Hendricks, 2017).

OER initiatives offer faculty an opportunity to innovate their curriculum in a potentially transformative way in addition to saving students money (Orr, Rimini & van Damme, 2015). However, work remains to raise faculty awareness of OER. A 2015-16 study conducted by the Babson Research Group found that only 35.5 percent of the instructors in higher education who were surveyed were aware or very aware of Open Educational Resources (Allen & Seaman, 2016). The OER Council's survey of Colorado institutions, reviewed in *Open Educational Resources in Colorado*, found that only two of the 27 institutional responses declared that their faculty "are aware of OER and how to use them" while the remaining 25 institutions responded that faculty are unaware of OER, don't know much about them or are not sure how they can be used.

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[3] An average of $579 was spent for textbooks per student in 2016-17 (National Association of College Stores, 2017). CDHE reports there were 255,510 Colorado college students in 2016. Together these numbers indicate Colorado college students spent approximately $148 million dollars on textbooks in 2016. The College Board uses an estimate of $1,250 per year for books and supplies, indicating that textbooks and supplies are a potential cost to Colorado college students of $319 million per year (Average Estimated Undergraduate Budgets, 2017-18, n.d.)

Return on Investment for OER Initiatives in Other States is High

Funding OER adoption, adaptation and authorship can help increase access to higher education and alleviate the increasing expenses of attending college with a significant return on investment (ROI) (Hilton 2016). Evidence from other states suggests a four-times ROI is reasonable in the first year, and that additional returns are realized in subsequent years:

- Just under $900,000 in grants through Affordable Learning Georgia resulted in $3.8 million savings to students in the first year alone (Affordable Learning Georgia, n.d.).
- The first year of a $55,000 Oregon grant program realized $77,000 in savings while over $225,000 in savings was realized the second year from the same initial investment (Open Oregon Educational Resources, 2017a).
- Approximately $280,000 in grant funding was distributed in Oregon in 2016-17 for a total student savings of $1.15 million dollars (Open Oregon Educational Resources, 2017b).
- A North Dakota $110,000 legislative appropriation in 2015 led to $2 million in savings in the 2016-17 year (Poulin, 2016).

Surveys Show Colorado is Primed to Increase Awareness and Use of OER

To gain a better understanding of the current use of OER in Colorado, the OER Council worked with a consultant to launch statewide surveys that gathered input from stakeholders about OER awareness and use. The council and the consultant collaborated on the development of three surveys: one for individual stakeholders, one for public postsecondary institutions and one for state systems of higher education. Some survey items were adopted from previous studies.

Stakeholders Agree that Textbook Costs are a Concern

The individual stakeholder survey consisted of 11 questions—five multiple choice, five free response and one a combination—after a page of explanatory material and definitions. Invitations to participate were sent to the Colorado Higher Education Computing Organization (CHECO), Colorado Community College System's Learning Technology Committee, Colorado Alliance of Research Libraries Deans, Community College Librarians Listserv, K-12 School District Superintendents, Colorado Charter School Leadership and to faculty and students at public two- and four-year colleges and universities. In addition, the survey was publicized in the Colorado Department of Education newsletter targeting K-12 stakeholders. Though highly encouraged, participation in the surveys was completely voluntary and not all stakeholders took part.

As reported in *Open Educational Resources in Colorado*, this survey did not seek the opinions of any precisely defined population, therefore it is not appropriate to calculate an overall response rate. However, the absolute number of respondents was surprisingly large: a total of 3,009, of which nearly 50 percent were students, approximately 20 percent were faculty and almost 10 percent were parents. The remainder comprised a set of approximately 20 percent who did not self-identify as well as several groups in small numbers.

The strongest finding of this survey is the near unanimity that textbook costs are a concern: 89 percent of respondents expressed partial or complete agreement with the statement "Textbook costs have become a serious affordability barrier to students attending Colorado's colleges and universities." While students expressed the strongest agreement with that statement about textbook costs, interestingly, administrators and faculty expressed slightly weaker agreement. This indicates that there is a potential to motivate key players in Colorado institutions of higher education to use OER by educating them about the financial pressures felt by students.

Another survey finding is that there are some individuals in higher education in Colorado who are familiar with the concept of open licensing, important in the use of OER and Open Textbooks, and others who are not. Based on statistical analysis of the individual survey data by the OER Council, these data show that librarians are knowledgeable about open licensing, while administrators, faculty and students are less so. Encouraging collaboration between faculty, librarians and administrators could help improve dissemination of information about OER and its implementation.

Institutions Note Need for Increased Awareness, Faculty Workshops

The public postsecondary institutions survey was designed to assess each institution's current awareness and adoption of OER and included questions about collected activities, policies, perceived challenges and barriers, success stories and aspirations about OER. Invitations to participate were sent directly to the chief academic officers at each of Colorado's 31 public institutions; 27 returned the survey for an 87 percent response rate.

Among the survey results and related pertinent information reported in *Open Educational Resources in Colorado* are:

- Twenty-six of the completed surveys indicated that reducing the cost students pay for higher education is a "major" or "moderate" concern to the institution's board, president and senior administrators.
- While the majority of staff, faculty and administrators have some awareness of Open Textbooks, there is a need for more training in the area of OER and their implementation. Workshops for faculty were unanimously endorsed as an activity that would be encouraged on campuses if there is adequate support.
- Respondents showed high levels of support for grant programs to promote OER adoption and creation, workshops for librarians, instructional designers and/or multimedia designers and opportunities to nurture OER campus champions.
- Barriers to a wider adoption of OERs have been identified in multiple studies, including a lack of faculty awareness, the time and difficulty to find resources and a lack of ancillary materials.

Dispersed OER Excellence in Colorado Could be Harnessed and Scaled

Some Colorado institutions have been successful with OER initiatives and there are ideas worth spreading. As reported in *Open Educational Resources in Colorado*, specific initiatives were identified at a system level and at selected institutions. Institutional initiatives include grants to adopt and develop OER, creating and maintaining instructional materials repositories, hosting workshops for faculty and recognizing faculty OER champions. Individual instructors are also engaged in efforts in promoting OER on their campuses, which includes creating their own Open Textbooks, supplementary workbooks or set of podcasts. Instructors also report compiling their developed materials with freely available sources to meet their instructional needs. Chief academic officers from 17 of the 27 institutions responding indicated that OER are used in at least some courses on their campuses. Faculty, librarians and instructional designers were identified as major stakeholders involved in campus OER work.

The OER Council Recommends the Launching and Funding of the Colorado OER Initiative (COER)

The OER Council recommends the creation of the Colorado OER Initiative (COER), a state-funded program of at least a 3-year duration, with annual reporting to the Colorado Commission on Higher Education (CCHE) and the Legislature.

This program will support a significant increase in the use of OER in public institutions of higher education in Colorado for the purpose of increasing the availability, equity and quality of higher education in our state, raising students' rates of retention and completion and lowering the total cost of postsecondary education. Efforts to raise faculty awareness of OER and how to use them effectively will take some time, yet the payoff to students from increased use of OER in courses will persist well beyond the funding period. As evidenced by other states' experiences, a four-times ROI in OER grant funding is a reasonable expectation in the first year, with additional returns realized in subsequent years. Therefore, this program will be a highly efficient way to pursue the higher education goals articulated in the CDHE's master plan, *Colorado Rises: Advancing Education and Talent Developmen*t.[4]

The COER will consist of three main components: structure and staffing at the state level, knowledge-sharing and community-building activities and a grant program to fund institutional and individual OER initiatives.

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[4] http://masterplan.highered.colorado.gov/

1. Establish Enabling Structure and Staffing at the State Level

A Standing State OER Council Will Advocate for OER Use

To advocate at the state level for robust and sustained support of campus OER initiatives, and to oversee the proposed Colorado OER Initiative, the current OER Council recommends the creation of a standing State OER Council consisting of representatives from public institutions who would collectively represent faculty, students, librarians, instructional designers and campus administration. Its composition and method of selection should be similar to the current council's, with the exception of an increase in the number of faculty and a suggestion for disciplinary diversity.

The standing State OER Council would be tasked with:

- Setting the direction for OER programs at the state level;
- Overseeing and administering grant programs, including writing and disseminating calls for proposals and evaluating those proposals;
- Overseeing the development of shared communication collateral and professional development events and templates;
- Providing support for campus advocates, in part by connecting individuals across and between campuses;
- Advocating for OER through workshops and speaking engagements across the state, both in political and postsecondary settings;
- Helping identify and secure financial and in-kind resources for scaling the adoption of OER;
- Serving as the program committee for the annual OER conference;
- Providing materials, data and analysis for the annual report to the CCHE and the Legislature; and
- Exploring other possible activities or feasibility studies.

We also suggest that some financial provision be made by the state for travel as well as other clerical and administrative needs of the standing State OER Council, and that the institutions whose faculty and staff become members be encouraged or required to provide those individuals with some release time from their other duties to serve on this proposed council.

Dedicated Staffing Will Ensure Coordination and Effectiveness

The council recommends that COER be supported by one full-time staff member in the CDHE at the program manager level. This individual would serve as a single point of contact and coordinator for all OER activities and initiatives across the state, and would maintain various statewide OER information resources.

The position would:

- Staff the standing State OER Council, including meetings;
- Develop and manage websites for the COER, including shared and collaboratively developed communication and professional development content;
- Assist with the administration of grant programs;
- Plan and manage virtual meetings;
- Travel frequently around the state to work with campus OER teams and individuals to help their efforts, including the identification of open materials as alternatives to commercial access codes and textbooks,
- Coordinate data collection and initiative evaluation;
- Serve as the conference coordinator for the annual OER event; and
- Explore other possible activities or feasibility studies.

Annual Reporting Will Increase Transparency and Accountability

To increase transparency of this multi-year program, the council recommends that the standing State OER Council submit to the Legislature an annual report of supported activities and progress on important metrics of OER success

around the state. The report would detail how resources were used and with what results, including information on the following proposed metrics:

- Percentage of institutions with OER support programs [target: approaching 100 percent]
- Percentage of faculty and student awareness of OER [target: approaching 100 percent]
- Number and percentage of courses using OER
- Number of OER created and shared by Colorado faculty
- Number of existing OER revised and adopted by Colorado faculty
- Number of students using OER and total resulting financial savings
- Course completion and pass rates in courses using OER compared to courses using commercial materials

2. Develop Statewide Knowledge-Sharing and Professional Development

Experience in other states, as well as Colorado individual survey data, show that increasing faculty, student and administrator understanding of OER is perhaps as important as the creation or adoption of specific OER in particular classes. Data also show that many librarians and IT professionals on campuses around the state have this understanding, and that some campuses are starting to build organizational support and incentive structures for OER. The council therefore recommends that the proposed standing State OER Council and staff support activities that will enable knowledge-sharing across the state through shared communications, regular virtual meetings, an annual conference and statewide advocacy.

Use Colorado Experts to Create Shared OER Collateral

The council recommends collaborative creation of communications and associated collateral that can be adapted at the campus level. These communications, which would be centrally maintained by the CDHE OER program manager, include:

- Those targeting faculty to raise awareness of the benefits, including pedagogical, of OER, and to encourage review and adoption of OER;
- Those aimed at students to raise awareness of OER and
- A website to host or link to all communication materials as well as to external OER and any existing institutional databases.

Build, Educate and Sustain a Strong Colorado OER Community

The council recommends:

- An annual OER event for faculty, instructional designers, librarians, campus administrators, K12 educators, other relevant staff and involved students, to share knowledge, ideas and resources.
- Monthly virtual events that invite participation from organizations such as Creative Commons, OpenStax, the Open Textbook Network, SPARC, U.S. PIRG and other civil society organizations working in open education, with a possibility for discipline-specific virtual events.
- Vigorous sharing and development of faculty workshop templates and content.
- Recognition of OER champions, possibly through a badging program or other incentives.
- Identification of institutional practices that promote faculty engagement in OER.
- Institutions add OER course designations to the course catalog where possible, or minimally to department websites, so students can be informed of low- and no-cost course options.

3. Scale the Use of OER Through Grant Funding at Institutional and Individual Levels

Building internal campus structures to support OER use and creation, creating new educational materials and re-building courses takes a great deal of time, effort and expertise but would have large cost savings for students. The council therefore recommends that COER provide funding through grants targeted at both institutions and individuals. This

grant program should run for at least three years to ensure a culture of OER use and creation in Colorado institutions of higher education.[5]

The council recommends two levels of targeted funding: institutional and individual.

- *Institutional Grants* ranging from $10,000-$150,000 that would support deploying and sustaining campus-wide OER initiatives.
- *Individual or Small Group Grants* ranging from $250-$5,000 that would support the creation or adoption of OER by faculty, especially from institutions without an OER initiative or incentive funding.[6]

Sample and Draft an OER Grant Program

The goal of the OER Grant Program would be to support deploying and sustaining campus-wide OER initiatives and the creation or adoption of OER by faculty from Colorado public institutions.

Institutional grants, with potential funding amounts of $10,000-$150,000, are intended to support campus-wide OER initiatives with an emphasis on funding faculty who are adopting, adapting or creating OER textbooks or applications on their campus. Other high-student-impact activities may also be appropriate for funding.

Individual or small-group grants are intended to support the creation, adaption or adoption of OER by faculty from Colorado public institutions, primarily faculty at an institution without an OER initiative or incentive funding. Potential funding could range from small grants (less than $300) for OER material review, medium grants ($500-$1,000) for adoption in a single course, medium-high grants for curation and adaptation ($1,000-$2,000), and high grants ($10,000) for creation of OER, such as writing an OER textbook, developing open adaptive learning or other applications or adoption of OER over many courses or sections of the same course.

Consideration of Projects

Grants that target courses with high enrollment, textbook or materials costs as well as high-impact courses such as gtPathways or concurrent high school enrollment, will have priority. Proposals for multi-institutional collaborations or faculty working with a team that includes librarians and instructional designers are encouraged.

Project requirements

Requirements for individual grant proposals may include:

- A description of the baseline data about any OER adoption;
- How the outcomes of the grant will be evaluated, including the number of students impacted and anticipated ROI; and
- Any plans for scaling OER adoption beyond the project.

Requirements for institutional grant proposals may include:

- Evidence of a campus OER council or committee;
- Institutional baseline data about current OER adoption;
- Identified library, instructional design and administrative staffing in support of the initiative;
- An evaluation plan for reporting the outcomes of the grant;
- A plan for scaling OER adoption that includes communication, professional development and faculty incentives;
- Course catalog identification of no- or low-cost courses; and

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[5] Three-year timeline in appendix 1.

[6] See budget in appendix 2.

- Sustainability commitment as part of the grant application

To further a statewide culture of OER use, all institutional and individual/small-group COER grant and contract recipients should be required to:

- Submit two progress reports to the review committee, one at the half-way (typically 6-month) mark and one at project completion;
- Provide data about student impact (number of students and savings);
- Provide measures of effectiveness of a campus OER initiative or individual OER adoption, adaptation or creation;
- Openly license and share any developed or adapted OER material with state funding under the broadest possible license, typically Creative Commons or other appropriate licenses for certain media (such as a suitable open license on software), as determined by the State OER Council in particular cases;
- Post any new or adapted OER to an open repository accompanied by versions in appropriate editable file formats, or with source code, so the OER can be remixed for future use; and
- Comply with the American Disabilities Act (ADA) to ensure access to all individuals in a manner that enables them to access information and communication technology resources in the same manner as non-disabled individuals.

4. Recommended COER Funding

Of the funding requested, 80 percent will go directly into grants. The ROI is expected to be $1.8 million dollars in savings to students after implementation of the first year of grants and $3.6 million in savings each for the second and third years, for a total of over $16 million dollars of student savings directly from the grant program. The substantial savings will be, in part, due to grant-disbursement priority being given to courses that are high-enrollment and/or high-cost.

The remaining 20 percent of funding will provide the infrastructure and training, including raising faculty awareness about available resources and how to use them, that will ensure successful implementation and long-term continuation of OER adoption, adaptation and creation in Colorado. These investments will allow the impact of COER to be sustained well beyond the three years of identified funding, for the substantial benefit of the students attending Colorado's colleges and universities.

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Appendix 1: Timeline for a 3-year Colorado OER Initiative

Year	Main Activities	Proposed Budget
1st year	Targeted grant funding ● Initial grants for individuals and institutions ready to deploy Knowledge-sharing and professional development activities ● Develop and deploy workshops for campus OER teams ● Plan and hold first OER conference (possible themes: basics of campus OER promotion and implementation; basics of OER review and selection) Enabling structure and staffing ● Establish standing State OER Council and plan statewide advocacy engagements ● Hire CDHE OER staff ● Begin work on shared communication resources (website, OER collateral) ● Collect baseline data ● Submit first annual report Explore other possible activities or feasibility studies	$660,000
2nd year	Targeted grant funding ● Evaluation of first year's funding ● Major targeting funding round for individuals and institutions, especially for gtPathways and high enrollment or high-textbook-cost courses Knowledge-sharing and professional development activities ● Develop virtual meeting series for OER stakeholder groups ● Plan and hold second annual OER conference (possible themes: identifying and celebrating successful approaches; pedagogical affordances of OER) ● Implement recognition activities Enabling structure and staffing ● State OER Council outreach to campuses without OER teams ● Evaluate shared communication resources (website, OER collateral) ● Submit second annual report Explore other possible activities or feasibility studies Start to plan for COER sustainability	$1,079,350

3rd year	Targeted grant funding ● Evaluation of first- and second-years funding ● Major targeting funding round for individuals and institutions, especially for sustaining campus OER initiatives Knowledge-sharing and professional development activities ● Continue and evaluate virtual meeting series for OER stakeholder groups ● Plan and hold third annual OER conference (possible themes: celebrating successes and identifying ways to sustain OER) ● Continue with recognition activities Enabling structure and staffing ● Continued outreach to campuses without OER teams ● Finalize plan for sustainability of COER ● Submit third annual report	$1,080,720

Appendix 2: Proposed Budget

Activity	FY 19	FY20	FY21	Total
Targeted Grants[7]	$450,000	$900,000	$900,000	$2,250,000
CDHE Support[8]	$90,000	$91,350	$92,720	$274,070
Communications Development, including website	$35,000	$20,000	$20,000	$75,000
State OER Council[9]	$5,000	$3,000	$3,000	$11,000
Annual OER Professional Development Event	$40,000	$40,000	$40,000	$120,000
Workshop/ Open Course[10]	$40,000	$5,000	$5,000	$50,000
Recognition[11]	$0	$20,000	$20,000	$40,000
TOTALS	**$660,000**	**$1,079,350**	**$1,080,720**	**$2,820,070**

[7] Institutional grants ranging from $10,000-$150,000 to support deploying campus-wide OER initiatives and individual or small- group grants ranging from $250-$5,000 to support the adoption or creation of OER.

[8] Support staff for State OER Council meetings, and website coordination, management of grants, conference planning, coordinate data collection and dissemination. 1.0 FTE + benefits.

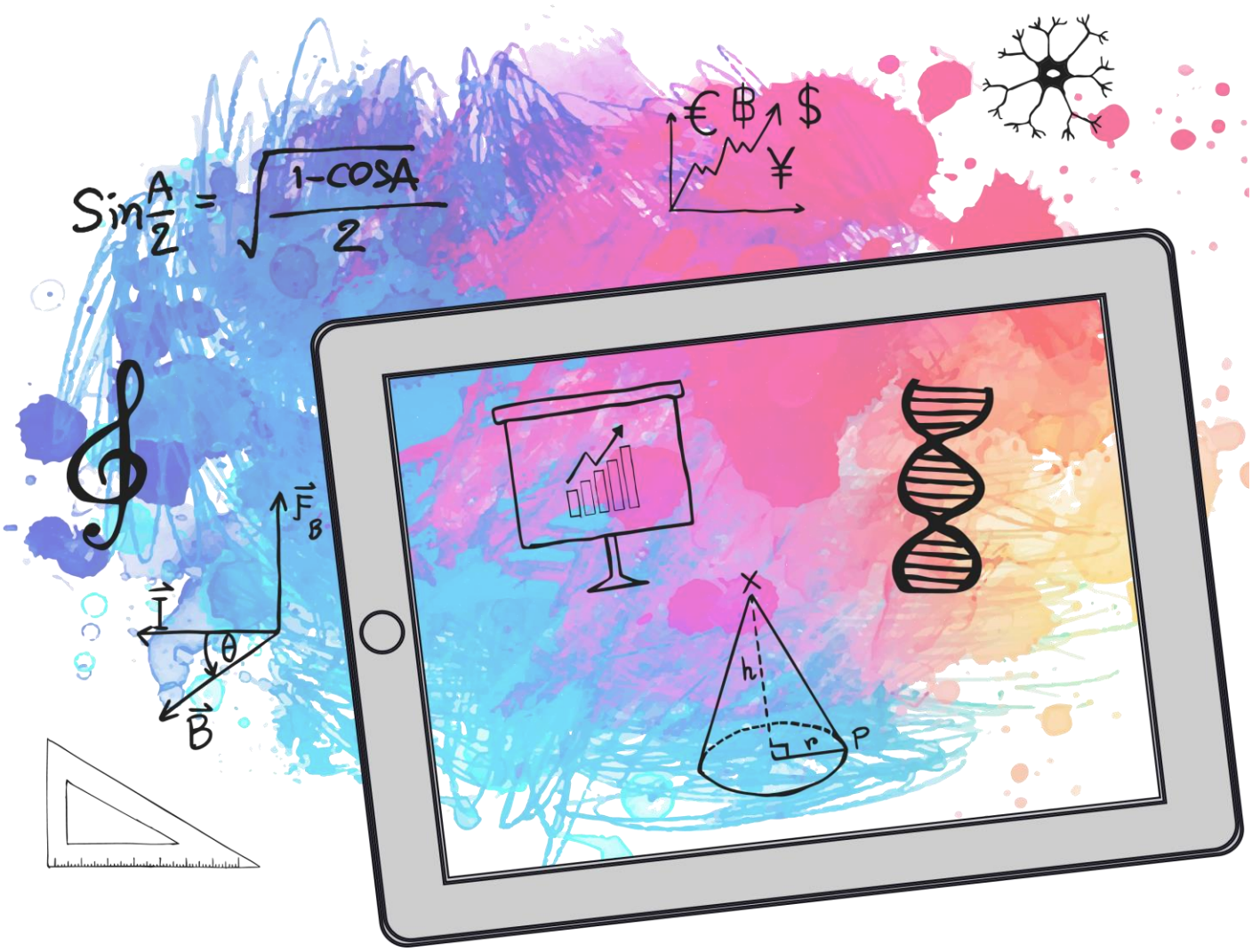
[9] Travel and outreach expenses.

[10] Development of workshop or open course to build awareness of OER and COER, and deployment of existing training programs from national OER organizations.

[11] Small monetary awards for up to 25 faculty and staff (ex. librarians) per year and development of a badging program.

Open Educational Resources in Colorado

On Behalf of the Colorado Department of Higher Education (CDHE) OER Council



By Tanya Spilovoy, Ed.D.

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Author

Tanya Spilovoy, Ed. D. is the director of open policy at the Western Interstate Commission on Higher Education (WICHE) Cooperative for Educational Technologies (WCET). Spilovoy leads the Z Initiative, which focuses on the policy, practice and implementation of Open Educational Resources (OER) in states, systems and higher education institutions. (tspilovoy@wiche.edu)

Acknowledgements

The Colorado Department of Higher Education (CDHE) Open Educational Resources Council took on this enormous project with positivity and collaboration. Working far beyond their daily job duties, the dedicated professionals who volunteered without pay to serve on the OER Council, deserve respect and gratitude; they are the OER champions on their respective campuses and for the state of Colorado. Student government representatives Carter Gruba and Troy Fossett were instrumental in promotion, perspective and high student survey participation. Special thanks to CDHE Executive Director Kim Hunter Reed, Ph.D., and her staff for their support, and to Andrea Elliott of Colorado Community Colleges Online for her graphics assistance. Thank you as well to the team at WCET for their many hours in planning, support, calls and draft. This report was carefully reviewed by four transformational educators: John Hilton III, Ph.D., Nancy W. Bentley, Ph.D., Russ Poulin, M.S. and T.J. Bliss, Ph.D. Finally, it is important to thank the William and Flora Hewlett Foundation and countless other OER pioneers who envision a world where a people have access to information regardless of their ability to pay.

OER Council Survey Subcommittee members were instrumental in guiding the areas of inquiry and fashioning the final questions to be asked; they are indicated in the list below with a plus sign (+). Council members with research and editing backgrounds served on the Final Review Subcommittee and were responsible for proofreading the final draft; they are indicated in the list below with an asterisk (*). Additional data analysis was performed by one member and is indicated with a pound sign (#).

- CDHE OER Council
    - Meg Brown-Sica, M.S, Assistant Dean for Scholarly Communication and Collections, Colorado State University +
    - Courtney Bruch, M.L.I.S., – Lead Librarian, Colorado State University - Global
    - Karen Danielson, Ph.D., Associate Professor of Art, Community College of Denver +
    - Brittany Dudek, M.L.I.S., Library Coordinator, Colorado Community Colleges Online *
    - Eugene Hainer, M.L.I.S., State Librarian
    - Deborah Keyek-Franssen, Ph.D., Associate Vice President for Digital Education and Engagement, University of Colorado. Vice Chair of the Council *
    - Alexey Leontyev, Ph.D., Assistant Professor of Chemistry, Adams State University +
    - Renee Martinez, M.A., Online and Blended Learning Specialist, Colorado Department of Education, representing the CDE Commissioner
    - Tina Parscal, Ph.D., Executive Director, Colorado Community Colleges Online +
    - Jonathan Poritz, Ph.D., Associate Professor of Mathematics, Colorado State University, Pueblo + *#

    - Emily Ragan, Ph.D., Assistant Professor, Department of Chemistry, Metropolitan State University of Denver -- Chair of the Council *
    - Helen Reed, A.M.L.S., Dean, University of Northern Colorado Libraries *
- Colorado Student Government Representatives
    - Carter Gruba, Student Body President of External Affairs, University of Colorado Boulder
    - Troy Fossett, Intercampus Student Forum Vice Chair, University of Colorado and Student Body President of Internal Affairs, University of Colorado Boulder
- Colorado Department of Higher Education
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    - Carl Einhaus, M.A., Chief Officer, Student Academic Affairs
    - Spencer Ellis, M.S., Academic Policy Officer, Student Academic Affairs
    - Tim Flanagan, Ph.D., retired Chief Student Success and Academic Affairs Officer
    - Kim Hunter Reed, Ph.D., Executive Director
    - Kachina Weaver, B.S., Chief Policy Officer (Legislative Liaison)
- WICHE Cooperative for Educational Technologies (WCET)
    - Rosa Calabrese, B.A., Manager, Digital and Project Support Services
    - Lindsey Downs, M.Ed., Manager, Communication
    - Russell Poulin, M.S., WCET Director, Policy and Analysis
    - Terri Taylor-Straut, M.B.A., WCET Senior Research Analyst

+ OER Council Survey Subcommittee members
* OER Council Final Review Subcommittee members
# OER Council Data Analysis

About the WICHE Cooperative for Educational Technologies (WCET)

WCET is the leader in the practice, policy and advocacy of technology-enhanced learning in higher education. WCET is an unbiased, trusted and dynamic source of effective practices, policy analysis, advocacy and expertise in areas related to leveraging learning technologies to support institutional effectiveness and student success. Connect with WCET at wcet.wiche.edu.

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Executive Summary

The state of Colorado is uniquely poised to reduce the cost of textbooks for college students through an initiative encouraging the adoption of Open Educational Resources (OER) and Open Textbooks for four main reasons: 1. Colorado college students are interested in reducing their cost of college attendance; 2. The CDHE's Four Strategic Goals align well with an OER initiative, 3. Public institutions of higher education administrators and faculty are willing to explore the use of OER; 4. The Colorado Legislative Council is evaluating options for policy and funding.

During Colorado's 2017 legislative session, the Legislature passed and Gov. John Hickenlooper signed Senate Bill 17-258. The bill, sponsored by Sen. Kevin Lundberg (R-15) and Rep. Bob Rankin (R-57), provided guidance and funding for the creation of the Open Educational Resources Council, a body charged to contract with an independent "entity to review and evaluate the extent to which each public institution of higher education is using Open Educational Resources and options for and obstacles to increasing the use of Open Educational Resources in public institutions of higher education. The entity shall complete the review and submit a report to the council and the department…"[12] The WCET director of open policy was selected to work with the CDHE OER Council to design and release three separate surveys, collect and analyze the data and write a report discussing:

1. Colorado stakeholders' feelings about college textbook costs;
2. Status of OER and Open Textbooks implementation at Colorado colleges and universities;
3. Opportunities and barriers;
4. Best practices to reduce textbook costs for college students; and
5. Recommendations.

This independent report reflects the four goals of the CDHE's Master Plan: increase credential completion, erase equity gaps, improve student success and increase affordability and innovation. It is intended to inform legislative planning and to give options that, if implemented, would reduce the cost of textbooks for students taking college courses at Colorado public institutions of higher education. It is important to recognize that replacing traditional textbooks with Open Educational Resources and Open Textbooks has great potential to improve the financial outlook and completion success for ALL students.

The Colorado Department of Higher Education Four Strategic Goals:

[12] https://leg.colorado.gov/sites/default/files/documents/2017A/bills/2017a_258_signed.pdf

Definitions

The following definitions are provided in the introduction to the survey.

- **Open Educational Resources (OER)**[13] – OER are defined as "teaching, learning and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and repurposing by others." Unlike traditionally copyrighted materials, these resources are available for "open" use, which means users can edit, modify, customize and share them. This means that all students in a class have access to no-or low-cost learning materials on the first day of class.
- **Open Textbooks**[14] – Open Textbooks are textbooks that are freely available with non-restrictive licenses. Covering a wide range of disciplines, Open Textbooks are available to download and print in various file formats from several websites and OER repositories. This means that all students in a class have access to no- or low-cost textbooks on the first day of class.
- **Creative Commons Licenses**[15] – These are licenses that allow various types of reproduction, distribution and re-mixing (sometimes with specific exclusions) without fee or restriction; see creativecommons.org.
- **CDHE OER Council**[16] – This body was created by the Colorado State Legislature in SB17-258 to collect data on the current use of OER in Colorado and to report to the Legislature on how such use can be expanded. The council consists of faculty, staff, administrators, librarians, policymakers, etc. from public institutions of higher education in Colorado.

[13] https://www.hewlett.org/strategy/open-educational-resources/
[14] https://open.umn.edu/opentextbooks/
[15] https://creativecommons.org/licenses/
[16] http://highered.colorado.gov/Academics/Groups/OERCouncil/schedule.html

Survey Questions and Responses

To meet the needs of the legislation and the Colorado OER Council, three surveys were conducted to obtain input from a wide variety of higher education stakeholders. Higher education institutions and systems were separately surveyed about the current state of their OER activities. A broad range of K-12 and higher education professionals, students and parents were also asked to provide their individual opinions. There were four main questions asked in the surveys. Here is a summary of the answers to these questions.

Colorado Stakeholders' Feelings About College Textbook Costs

- Nearly 90 percent of respondents who took the Solicitation of Individual Input Survey reported that they agreed with the statement "Textbook costs have become a serious affordability barrier to students attending Colorado's colleges and universities."
- Of the 27 public institutions that returned surveys, 26 indicated that reducing the cost students pay for higher education is a "major" or "moderate" concern to the institution's board, president and senior administrators.
- Comments from participants agree that lowering the cost of education is beneficial to both individual students and Colorado society as a whole.

Status of OER and Open Textbooks Implementation at Colorado Colleges and Universities

In response to questions regarding OER and Open Textbook implementation in Colorado, two main themes emerged.

1. **Colorado College Students are Concerned about the Cost of Textbooks.**
   - Higher education students made up nearly 60 percent of respondents who took the Solicitation of Individual Input Survey. The next largest category was "Faculty" (19.9 percent), when categories of "tenured faculty, tenure-track faculty, non-tenure-track faculty" were added together. "College parent" was the third largest percentage of respondents at 9.5 percent.
2. **There are OER and Open Textbook Champions on Colorado College and University Campuses.**
   - The survey results show that there are individuals on Colorado campuses taking the initiative to utilize open source materials for instruction.
   - However, the surveys show that campuses are working separately. If institutions were to communicate and share ideas and resources, they would collectively move forward more quickly. Opportunity exists to expand upon success through collaboration. Instead of duplicating effort, Colorado can build upon the success of the Colorado Community College System, and other institutions leading and implementing Open Textbooks and OER. When system offices and institutions were asked "Please select all of the Open Educational Resources and/or Open Textbook activities your leadership would encourage if you had adequate funding and support," the response was overwhelmingly positive. In addition, 100 percent of system and institutions reported that they would support workshops for faculty, librarians and campus OER champions.

Obstacles and Opportunities to Increasing the Adoption of OER and Open Textbooks

Colorado's barriers are similar to challenges faced in other states. The main obstacles to increasing the adoption of OER and Open Textbooks are:

1. Resistance to change,
2. Lack of statewide initiative,
3. Need to identify and nurture campus champions,
4. Need to engage the students,
5. Funding to support efforts, and
6. Lack of universal access to technology and internet.

Best Practices to Reduce Textbook Costs for College Students

While there is no perfect initiative, this report offers examples of best practice in OER and Open Textbook policy and initiatives. Many state and system leaders have taken meaningful actions to reduce or eliminate college textbook costs through OER. Nearly half of all states have adopted some form of program or policy to support the creation, adoption or curation of Open Educational Resources and/or Open Textbooks. Cases where states have invested funding in OER programs have resulted in an exponential return on investment – something rare in higher education. While it will always be the right of individual faculty to select how they teach their courses, much can be done to provide support to faculty who are interested in using affordable, effective OER. Colorado policymakers can use these examples to make policy decisions for the state of Colorado and its students.

Recommendations

For Legislators and the Governor:

- Focus on reducing costs for students.
- Don't duplicate effort.
- Provide faculty development, incentives and rewards.
- Provide a vision.

For Institutional Personnel:

- Engage the students.
- Empower campus OER champions.
- Give individual faculty control of course materials.
- Work together.

Introduction

Purpose of this Report

The state of Colorado is uniquely poised to reduce the cost of textbooks for college students through an initiative encouraging the adoption of Open Educational Resources and Open Textbooks for four main reasons: 1. Colorado college students are interested in reducing their cost of college attendance; 2. The CDHE's Four Strategic Goals align well with an OER initiative, 3. Public institutions of higher education administrators and faculty are willing to explore the use of OER; 4. The Colorado Legislative Council is evaluating options for policy and funding. This independent report is intended to inform legislative planning and to give options that if implemented, would reduce the cost of textbooks for students taking college courses at Colorado public institutions of higher education.

During Colorado's 2017 legislative session, the Legislature passed and Gov. John Hickenlooper signed Senate Bill 17-258. The bill, sponsored by Sen. Kevin Lundberg (R-15) and Rep. Bob Rankin (R-57), provided guidance and funding for the creation of the OER Council, a body charged to contract with an independent "entity to review and evaluate the extent to which each public institution of higher education is using open educational resources and options for and obstacles to increasing the use of open educational resources in public institutions of higher education. The entity shall complete the review and submit a report to the council and the department…"[17]

The WCET director of open policy was selected to work with the CHDE OER Council to design and release three separate surveys, collect and analyze the data and write a report discussing resources, incentives, obstacles and recommendations regarding policy, organization and resources. The report is organized around the five primary legislative inquiries:

1. Colorado stakeholders' feelings about college textbook costs;
2. Status of OER and Open Textbooks implementation at Colorado colleges and universities;
3. Opportunities and barriers;
4. Best practices to reduce textbook costs for college students; and,
5. Recommendations.

[17] https://leg.colorado.gov/sites/default/files/documents/2017A/bills/2017a_258_signed.pdf

Definitions

The following definitions were provided in the introduction of the survey.

- **Open Educational Resources (OER)**[18] – OER are defined as "teaching, learning and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and repurposing by others." Unlike traditionally copyrighted materials, these resources are available for "open" use, which means users can edit, modify, customize and share them. This means that all students in a class have access to no-or low-cost learning materials on the first day of class.
- **Open Textbooks**[19] – Open Textbooks are textbooks that are freely available with non-restrictive licenses. Covering a wide range of disciplines, Open Textbooks are available to download and print in various file formats from several websites and OER repositories. This means that all students in a class have access to no- or low-cost textbooks on the first day of class.
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- **CDHE OER Council**[21] – This body was created by the Colorado State Legislature in SB17-258 to collect data on current use of OER in Colorado and to report to the Legislature on how such use can be expanded. The council consists of faculty, staff, administrators, librarians, policymakers, etc. from public institutions of higher education in Colorado.

Context

The CDHE, led by Executive Director Kim Hunter Reed, Ph.D., has developed a Master Plan[22] with four strategic goals for the future of higher education. Looking ahead to 2020, the CDHE recognizes that reductions in state higher education funding, demographic shifts and workforce needs require planning and innovation today. According to statistics, 74 percent of jobs will require postsecondary education or training by 2020. The state will need to find creative ways to make higher education accessible and attainable for all Coloradans, especially historically underserved populations.

About Colorado

- 7th fastest-growing state in terms of overall population.[23]
- The cost of college is going up for students and their families. According to the CDHE, Colorado families used to be responsible for one-third of tuition, now, they're responsible for two-thirds of tuition costs.

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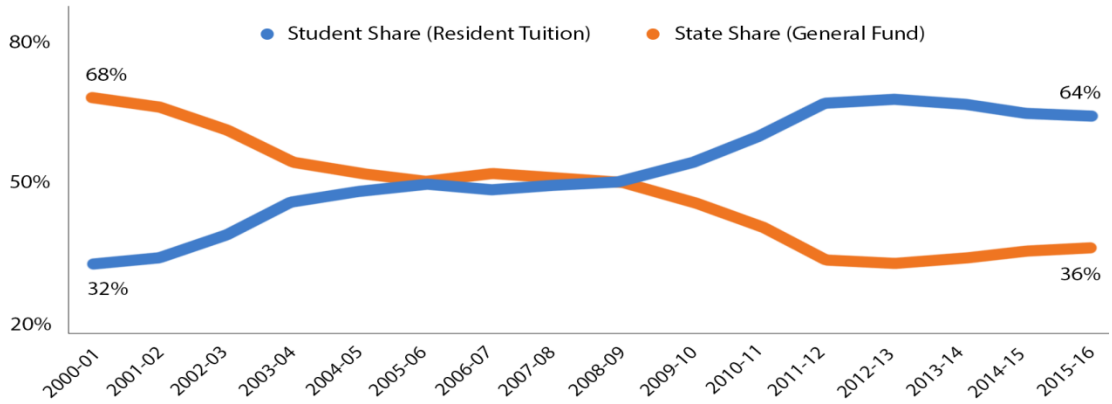
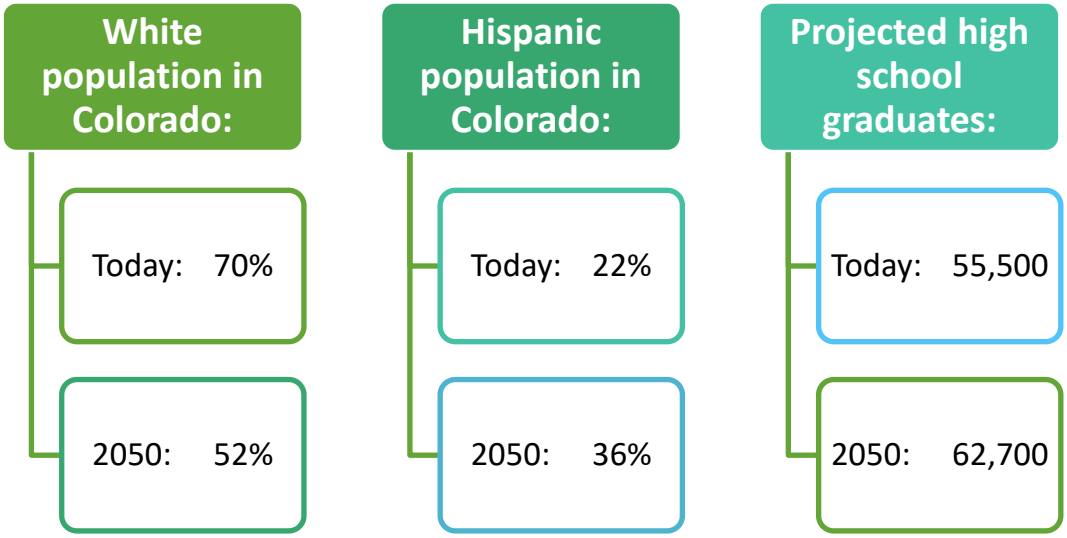
[18] https://www.hewlett.org/strategy/open-educational-resources/
[19] https://open.umn.edu/opentextbooks/
[20] https://creativecommons.org/licenses/
[21] http://highered.colorado.gov/Academics/Groups/OERCouncil/schedule.html
[22] http://masterplan.highered.colorado.gov/
[23] https://www.census.gov/newsroom/press-releases/2016/cb16-214.html



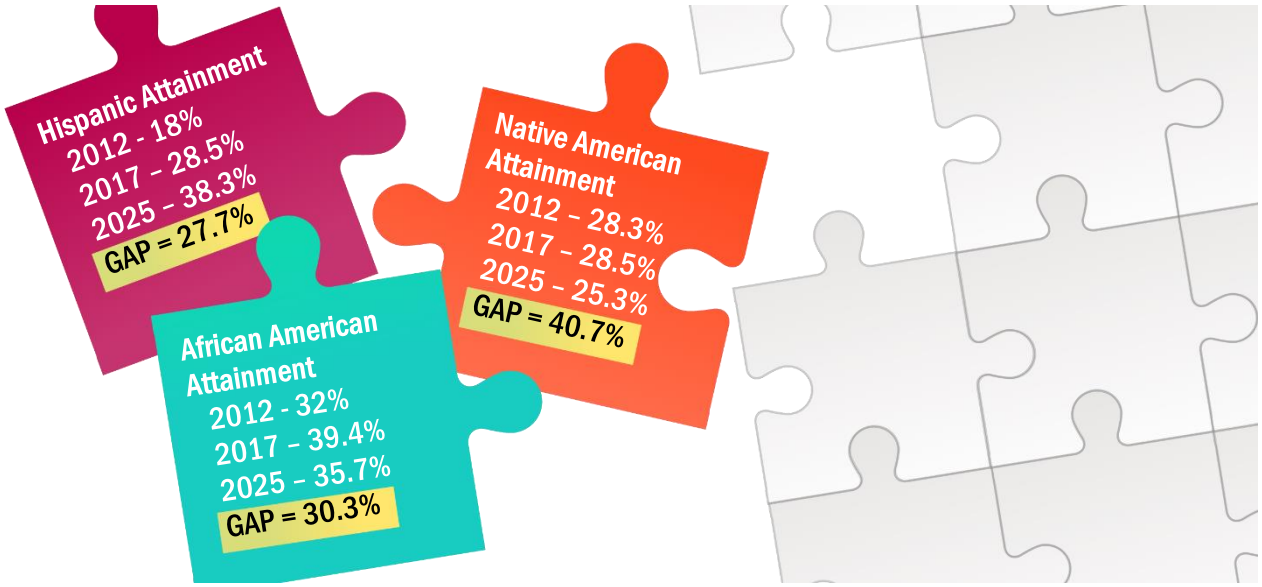
COLORADO Department of Higher Education

- Colorado higher education students are getting involved. "Actively pursuing the implementation of Open Educational Resources is by far one of the biggest initiatives outlined by student leadership at all four University of Colorado campuses." –Troy Fosset, University of Colorado Intercampus Student Forum vice chair, and University of Colorado Boulder student body president of internal affairs.
- The share of Colorado's white majority population that has earned a credential is more than twice that of Hispanics and Latinos and about 1.5 times the share of African Americans.[24]
- Colorado has the second-largest attainment gap behind California (34.68 percent vs. 34.66 percent)[25].



[24] http://highered.colorado.gov/Publications/Reports/Legislative/PostSecondary/2017_Postsecondary_Progress_rel20170303.pdf
[25] http://strongernation.luminafoundation.org/report/2017/#nation

Colorado Attainment Statistics



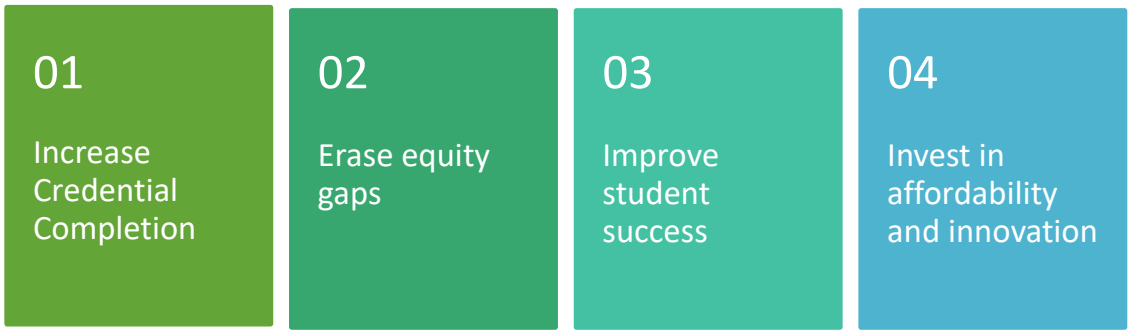
Colorado Rises, Kim Hunter Reed, Ph.D.[26]

- More than 38,000 Colorado high school students take at least one dual enrollment class, which amounts to one-third of all Colorado juniors and seniors. *Dual enrollment participation by race:*[27]
  - Asian: 3.1 percent
  - African American: 3.1 percent
  - Hispanic: 22 percent
  - Native American: 0.6 percent
  - White: 54.8 percent

[26] http://masterplan.highered.colorado.gov/
[27] http://highered.colorado.gov/Publications/Reports/Enrollment/FY2016/2016_Concurrent_Enrollment_April_2017.pdf

This report is focused on helping Colorado policymakers and educators achieve the CDHE's four strategic goals. It is important to recognize that replacing traditional textbooks with Open Educational Resources and Open Textbooks has great potential to increase credential completion, erase equity gaps, improve student success and increase affordability and innovation for ALL students.

The Colorado Department of Higher Education's Four Strategic Goals:[28]



[28] http://masterplan.highered.colorado.gov/

Methodology

Colorado Senate Bill 17-258 and the OER Council's *Request for Proposals* were explicit in directing both the broad scope and narrow timeframe of this study. While previously published national survey-based research studies have focused on either students or faculty, this is the first OER study that attempts to gain input from more than 20 different groups of stakeholders, including but not limited to, school districts, charter schools, public institutions of higher education, K-12 and college students enrolled in college courses, faculty, IT technologists, librarians, distance education professionals, parents, bookstores, textbook publishers and legislators. For the purposes of this report, broad results are reported for stakeholders; direct quotes supporting significant findings are integrated so that individual voices can be heard. All survey results are made publicly available at the conclusion of this report; I encourage other researchers to utilize the rich survey data to inform future analyses and reports.

In an effort to gather information from this wide range of stakeholders, three separate surveys were developed and released on Aug. 21, 2017 and closed on Sept. 10, 2017 targeting:

- Public Systems of Higher Education
- Public Institutions of Higher Education
- Individual Stakeholders

All three of the surveys were mixed-methods design, meaning there were quantitative and qualitative questions. Survey Monkey and Excel software were used to gather, sort and organize quantitative data. NVivo qualitative software was used to analyze and code qualitative responses; the detailed analysis and selection of quotes from open-ended answers was done by hand. The CDHE, OER Council members and government leaders sent weekly invitations to survey audiences through email, press releases and social media posts. Invitations to participate were sent directly to the chief academic officers of each higher education institution, Colorado Higher Ed Computing Organization (CHECO), Colorado Community College System's Learning Technology Committee, Colorado Alliance of Research Libraries, Community College Librarians Listserv, Public Superintendent Listserv and Charter School Leadership Listserv. Though highly encouraged, participation in the surveys was completely voluntary and not all stakeholders participated. To make Colorado's data comparable to national data, portions of the surveys were adapted from existing research surveys by Babson Survey Research Group, and we thank Jeff Seaman, Ph.D., and Elaine Allen, Ph.D., for their expertise. Other survey questions were designed to specifically meet the request of the Colorado Legislature and the OER Council and this report is organized to answer the Legislature's questions.

A description of the Colorado OER surveys that inform this report:

Colorado Public Systems of Higher Education OER Survey

This survey was designed to capture OER activities and initiatives originating from and managed by system offices. Survey instructions and questions explicitly asked system offices to not include OER activities at the campuses because each campus would respond separately.

Colorado Public Institutions of Higher Education OER Survey

To meet the legislative objective: "review and evaluate the extent to which each public institution of higher education is using Open Educational Resources and options for and obstacles to increasing the use of Open Educational Resources in public institutions of higher education," we designed and deployed a survey for the 31 separate public institutions of higher education in Colorado. The Institution Input Survey was designed to assess each participating institution's current awareness and adoption of OER. The unit of analysis for this survey was the institution, to measure the collective activities, policies and aspirations for OER and not individual opinions. The chief academic officer at each participating institution received the survey so that there was a single point of contact with supervisory authority over faculty, library, academic initiatives, programs and curriculum. In cases where an institution had multiple campuses, one survey was used to collect responses from the various branches. Survey responses were received from 27 of the 31 public institutions. Institution Input survey responses are included in the addendum to this report.

Solicitation of Individual Input OER Survey

This survey was designed to solicit input concerning the use of Open Educational Resources from a broad sample of Colorado stakeholders. Outreach included the many constituents the OER Council identified in the Request for Proposals. The CDHE, the higher education systems in the state, WCET, student government leaders and individual OER Council members helped in promoting the survey to statewide groups such as faculty, student governments, libraries, campus IT departments, high schools, publishers, K-12, etc.

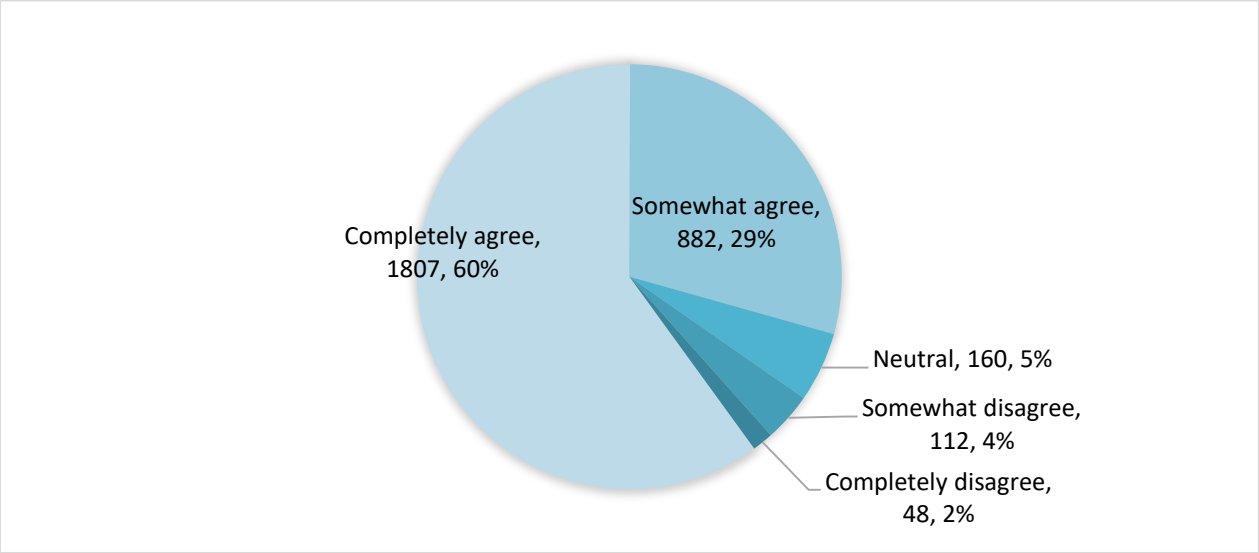
The unit of analysis for this survey was any Coloradan interested in participating in sharing their experiences, concerns or suggestions on the use Open Educational Resources in higher education. Survey responses totaled 3,009. Because the survey was designed as a solicitation of input, there is no way to determine how many people received the survey or the survey response rate.

Survey Questions and Responses

Q.1. How do Colorado Stakeholders Feel About the Cost of Textbooks?

Indicate your level of agreement with the following statement: "Textbook costs have become a serious affordability barrier to students attending Colorado's colleges and universities."

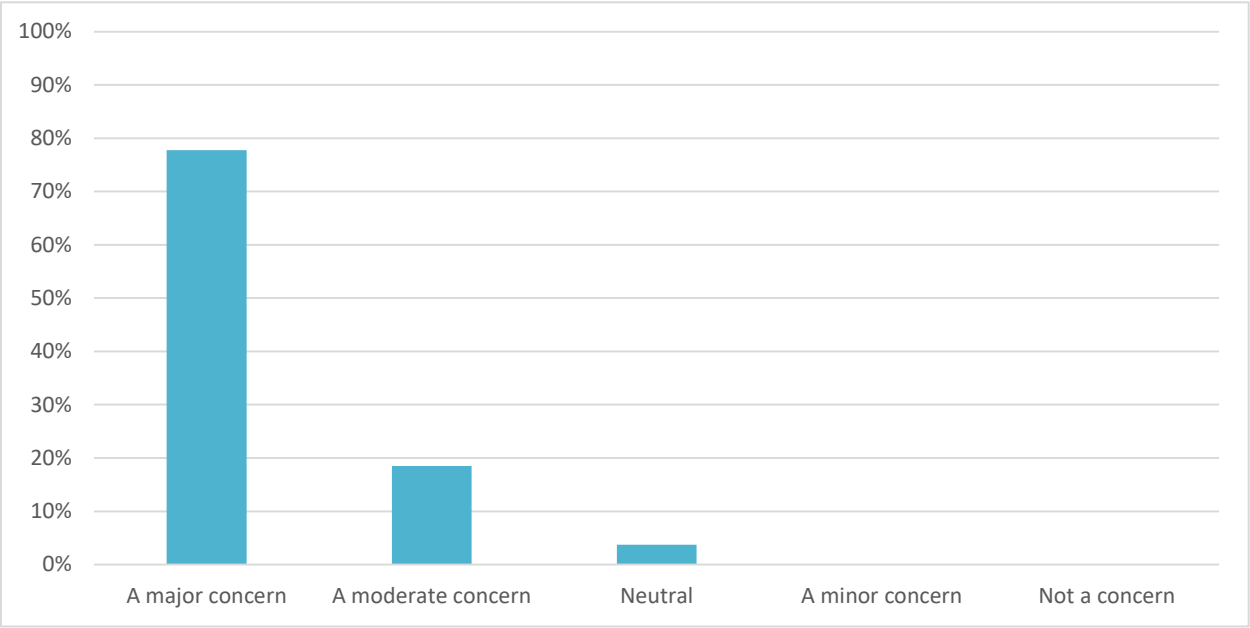
Answered: 3,009 Skipped: 0



-Solicitation of Individual Input Survey

ANSWER CHOICES	RESPONSES	
Completely agree	60.1%	1,807
Somewhat agree	29.3%	882
Neutral	5.3%	160
Somewhat disagree	3.7%	112
Completely disagree	1.6%	48
TOTAL		**3,009**

How important is reducing the cost students pay for higher education to your institution's board, president and senior administrators?



Answered: 27 Skipped: 0

-Institution Input Survey

ANSWER CHOICES	RESPONSES	
A major concern	77.8%	21
A moderate concern	18.5%	5
Neutral	3.7%	1
A minor concern	0.0%	0
Not a concern	0.0%	0
TOTAL		**27**

Commentary:

"Don't lose sight of who this affects most and that is the students. Weigh both sides and make a decision based on all facts pros and cons. Make it work for parents and students to help them fulfill a dream and don't let these fees get in the way of a brighter future."
-College Parent, K-12 Parent and an Early Childhood Teacher

Nearly 90 percent of respondents who took the Solicitation of Individual Input Survey reported that they agreed with the statement "Textbook costs have become a serious affordability barrier to students attending Colorado's colleges and universities."

Be as open to the idea as possible and think of the needs of the students more than contracts with textbook companies."
-Faculty, Non-Tenured

Of the 27 institutions that returned the Institution Input Survey, 26 indicated that reducing the cost students pay for higher education is a "major" or "moderate" concern to the institution's board, president and senior administrators.

Get out in front of this initiative and do what you can to make it possible for more people to be able to afford college"
-Distance Education Professional

Comments from participants agree that lowering the cost of education is beneficial to both individual students and Colorado society as a whole. Survey results show that there is opportunity for leaders at the CHDE and the Legislature to collaborate with Colorado public institutions to reduce textbook costs through the adoption of Open Educational Resources and Open Textbooks.

I think this is a great program. The world is changing, and it's important to grow and evolve with it. College is already expensive, so offering textbooks for free could make a major difference in the future of our youth."
-Administrator

"I would like to see an adoption/approval of OER and Open Textbooks for Guaranteed to Transfer (GT) courses. This would support concurrent enrollment students, community college students and university students by keeping costs down at the entry level, which we know is where there is a significant rate of attrition. Removing the economic barrier of high textbook costs could increase retention and completion of programs."
-K-12 Administrator

"I believe the most serious barrier is faculty buy-in, familiarity and ability/willingness to try OER."
- Colorado Legislator

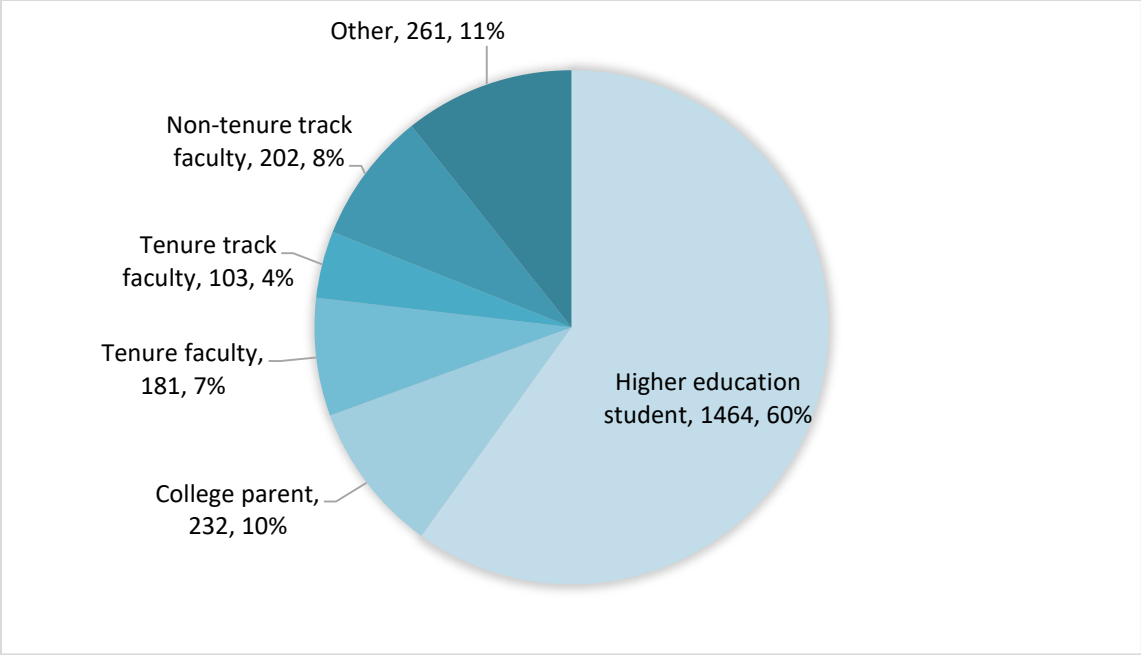
Q.2. What is the Status of OER and Open Textbooks Implementation at Colorado Colleges and Universities?

Based on input from the OER Council and information collected surveying systems and institutions, there is a wide range of attitudes and activities that provide a solid foundation on which future initiatives could be built.

1. **Colorado College Students are Concerned About the Cost of Textbooks.**

Select the option that best describes your primary role in response to this survey.

Answered: 2,443 Skipped: 566



-Solicitation of Individual Input Survey

ANSWER CHOICES	RESPONSES	
Higher education student	59.9%	1,464
College parent	9.5%	232
Tenured faculty	7.4%	181
Tenure track faculty	4.2%	103
Non-tenure track faculty	8.3%	202

Commentary:

The “Higher Education Student” category made up nearly 60 percent of respondents who took the Solicitation of Individual Input Survey.

> *I either pirated the book or went without it while attending the school. Providing a free text will really increase how successful students are.”*
> *-Higher Education Student*

> *Please develop ways to support professors to adopt OER and Open Textbooks!”*
> *-Higher Education Student*

> *“Support your future contributing citizens and make education more attainable! Don't add to the already drowning debt of college education.”*
> *-Higher Education Student*

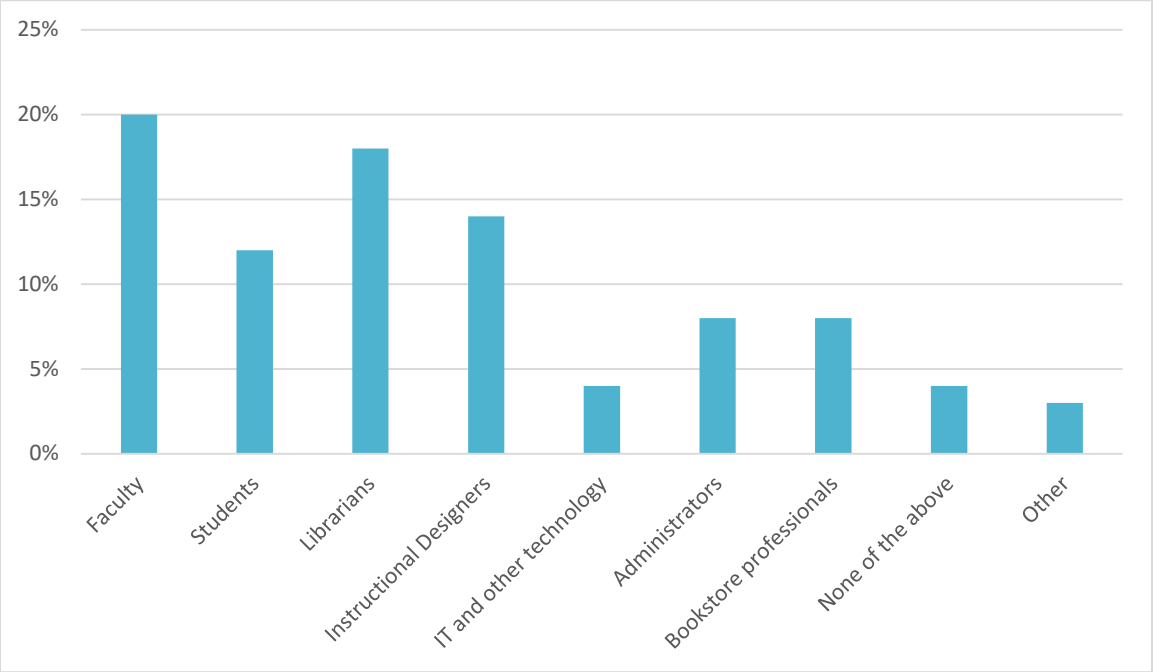
The next largest category was “Faculty” (19.9 percent), when categories of “tenured faculty, tenure-track faculty and non-tenure-track faculty” were added together. “Higher Education Parent” was the third largest percentage of respondents at 9.5 percent.

> *“Make sure the writers and producers of material are adequately and fairly compensated for their investment and work.”*
> *-Higher Education Parent*

2. **There are OER and Open Textbook Champions on Colorado College and University Campuses.**

Please select all of your institution's constituents that are currently using, adopting, adapting, producing, archiving or promoting Open Educational Resources and/or Open Textbooks:

Answered: 27 Skipped: 0



-Institution Input Survey

ANSWER CHOICES	RESPONSES	
Faculty	74.07%	20
Students	44.44%	12
Librarians	66.67%	18
Instructional Designers	51.85%	14
IT and other technology staff	14.81%	4
Administrators	29.63%	8
Bookstore professionals	29.63%	8
None of the above	14.81%	4
Other, please specify (100-character limit)	11.11%	3

Response from CCCS and CCCOnline:

A highlight of OER use is the Colorado Community College System (CCCS) and CCCOnline, the online consortium of the system's 13 colleges. Reducing the cost students pay for higher education is a "Major Concern" for system office leadership, and there are many initiatives already in motion to address their concern.

Here are some of the OER activities reported by the CCCS, system colleges and CCCOnline. Responses from the Solicitation of Individual Input, Institution Input and system surveys can be found in the appendices to this report. These examples are taken directly from the System Survey and Solicitation Survey responses:

- CCCOnline is tracking cost saving to students through the OER Initiatives. For example, for the Fall 2017 semester (so far) it is estimated that OER courses are saving CCCOnline students an aggregated $300,714 for the semester.
- CCCOnline has an OER Task Force that is creating guidelines for the use and implementation of OER at CCCOnline. They have developed operational definitions and implementation workflows for CCCOnline, which will be shared with CCCS colleges through the Learning Technology Council.
- The CCCS Learning Technology Council is in the early stages of developing shared best practices related to OER and learning objects.
- CCCS has funded several System Innovation Grants that involve OER. Red Rocks, Community College of Denver and CCCOnline received an Innovation Grant for integrating WebWorks, an OER math resource. CCCOnline has received two Innovation Grants involving OER content, one in liberal arts and one in biology courses.
- In addition to the Innovation Grants, CCCOnline has been providing OER courses since 2013. Effective Spring 2018, CCCOnline expects to have 40 OER courses that require no textbook or digital content fees to students. CCCOnline is also working on the branding for OER courses, as well as student education regarding what to expect when taking an OER course. Effective Summer 2018, CCCOnline will launch a suite of early childhood education courses that will be OER as well.
- CCCS has set a strategic priority for the system to "increase the use of learning object repositories in three statewide disciplines per year" and is currently setting up the CCCS Learning Object Repository. This will facilitate the use and sharing of OER across CCCS, and will hopefully remove barriers for faculty interested in adopting OER at all system colleges.

Responses from Other Colorado Public Institutions of Higher Education:

Faculty-Developed Materials:

- Several faculty have created their own open textbooks (e.g. engineering professor has written two intro texts, a math professor has created an upper-level text and an intro stats text); others have created extensive OER not quite at the level of text (e.g. history prof created extensive workbook w/original sources). OER adoption includes more faculty, e.g. the business school faculty often use OER, and others have piloted texts from e.g. OpenStax.
- Dr. Oscar Levin, a faculty member in University of Northern Colorado's School of Mathematical Sciences, has written an open source textbook in discrete mathematics that is being used here at UNC and at several other institutions around the country, including the Air Force Academy. This text is available through the American Institute of Mathematics Open Textbook Initiative (https://aimath.org/textbooks/).

Institutional Material Repository:

- All UNC instructors may submit teaching materials such as full lesson plans, individual activities, textbooks, media and games to UNC's Institutional Repository. Currently, there are several items in OER: Information Literacy (http://digscholarship.unco.edu/infolit) that have been recognized nationally and repurposed at other universities.

OER Promotion:

- We [Colorado School of Mines] are starting our campus effort in promoting OER. In April 2017, we joined five other universities in greater Denver area to host a multi-campus event, Colorado Open Scholarship Summit (http://libguides.mines.edu/coss). The campus session was on OER by Nicole Allen, the OER director of SPARC. Many faculty and students attended the session and we opened up the campus conversation on the topic. We also published a guide page for OER at http://libguides.mines.edu/oer to facilitate the education about OER on campus."

Colorado Mountain College OER Pilot:

- Since Fall Semester 2016, CMC has piloted on their Steamboat Springs campus a flat-rate access fee program for course materials so that 100 percent of students have 100 percent of required learning materials the first day of class based on a library-like access model. The CLMP (CMC Learning Materials Program) is innovative and directly addresses the issues CMC has seen in regard to trends related to textbooks and learning materials.

  CMC has prioritized a goal that 100 percent of students have 100 percent of their materials at the lowest possible costs per student. Students have indicated some reasons why they do not have their textbooks and required materials which include:

  - Loss of financial aid and unexpected costs and not budgeting for the unexpected high costs related to learning materials.

    - Inability to quickly get the materials needed due to "shopping around" or shipment delays.
    - Other reasons related to communication regarding what is required.
    - Of students surveyed over 81 percent indicated they know having their required textbooks and materials correlates to higher grades and success in their courses.
- We have just begun this work. One College Algebra class is using an Open Textbook.
- We also have a few champions who've created their versions of open resources for teaching; for example, a suite of instruction videos posted on YouTube by Professor Toberer (https://www.youtube.com/channel/UCmYihgd-MXI8oCUN5MIt86g/videos), sets of class podcasts posted by Professor Shoery (http://inside.mines.edu/~cshorey/pages/sygn.htm), and open source learning management software (e.g. LON-CAPA and iOLabs) used by a few classes on campus. Although these initial efforts are not yet crafted and licensed properly as OER, they could become our early champions for adoption and creation of OER.

Open Textbook Network

- We [Colorado State University] have been pushing OER for several years now, are members of the Open Textbook Network, have conducted workshops on Open Textbooks for about 100 interested faculty, and have gotten some adoption, but the adoptions are distressingly small.

Commentary:

- The results of this question show that there are individuals on Colorado campuses taking the initiative.
- However, campuses are working separately on separate OER projects. If institutions were to communicate and share ideas and resources, they would collectively move forward more quickly. Opportunity exists to expand upon success through collaboration. Instead of duplicating effort, Colorado can build upon the success of the Colorado Community College System and other institutions leading and implementing Open Textbooks and OER.

3. For Open Educational Resources and Open Textbooks to Expand, Colorado Institutions Need Funding, Training, Organization and Support.

"Work to educate faculty and staff about open resources and highly encourage their use. And support (and fund) development of open resources where materials are lacking."
-Faculty, Non-Tenured

"Help to promote the development of good quality OER materials and encourage faculty to adopt these resources."
-Faculty, Tenured

"Adopt, adopt, adopt.
Then train, train, train."
- Distance Education Professional

"Please partner with your campus libraries to facilitate the move to greater use of OER – librarians are experts in the open movement, providing access and helping faculty find the right materials for their courses."

- Higher Education Librarian

"Emphasize that the opportunity is available to ALL students. Make sure that universities/colleges are well-versed and 'trained' on the logistics of OER, that they encourage its use and that they support this new system."

- Faculty, Non-Tenured

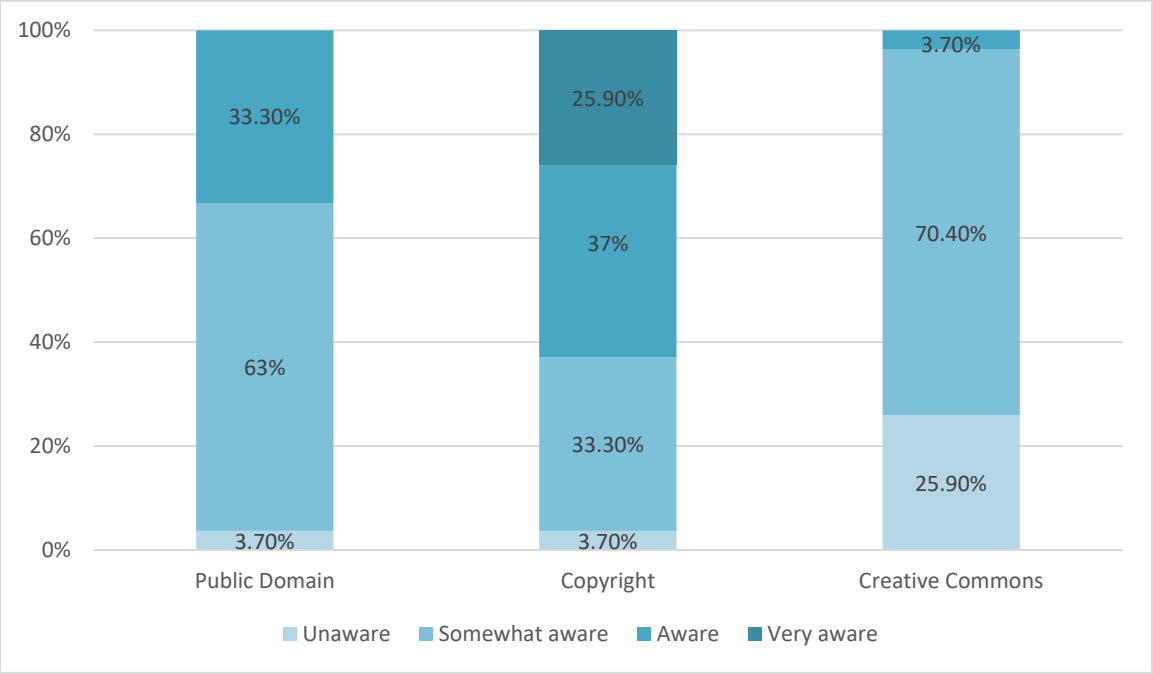
"Libraries increasingly serve a scholarly communications role in higher education. They have the knowledge, experience and existing community to develop a coordinated statewide approach to OER and open access. They are uniquely poised to manage a Colorado-based initiative.

- Higher Education Administrator

Generally, how aware is the majority of faculty, staff and administrators at your institution of each of the following mechanisms for licensing academic content?

Answered: 27 *Skipped: 0*

	UNAWARE	SOMEWHAT AWARE	AWARE	VERY AWARE	TOTAL	WEIGHTED AVERAGE
Public Domain	3.7% 1	63.0% 17	33.3% 9	0.0% 0	27	2.30
Copyright	3.7% 1	33.3% 9	37.0% 10	25.9% 7	27	2.85
Creative Commons	25.9% 7	70.4% 19	3.7% 1	0.0% 0	27	1.78



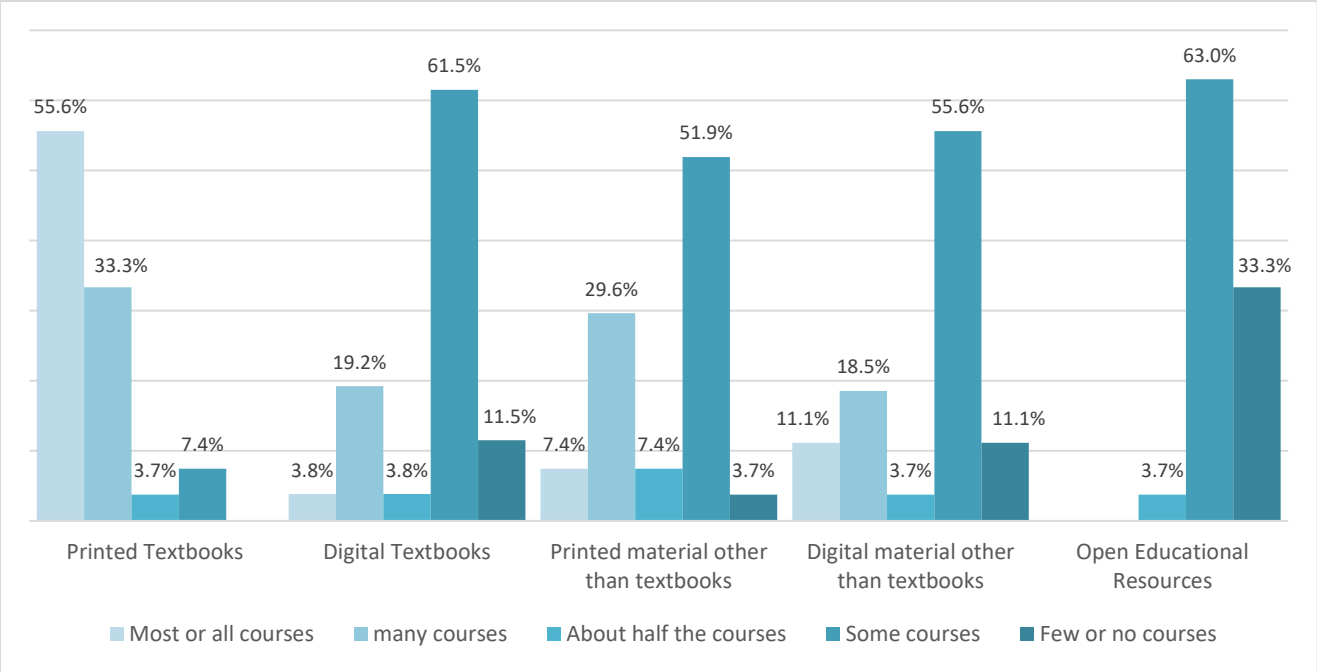
-Institution Input Survey

Generally, how aware is the majority of faculty, staff and administrators at your institution of Open Textbooks.

ANSWER CHOICES	RESPONSES	
They are not aware of Open Textbooks	14.8%	4
They have heard of Open Textbooks but don't know much about them	40.7%	11
They are somewhat aware of Open Textbooks but are not sure how they can be used	40.7%	11
They are aware of Open Textbooks and how they are used	3.7%	1
They are very aware of Open Textbooks and their use in the classroom	0.0%	0
TOTAL		**27**

What types of learning materials are currently required for courses at your institution?

Answered: 27 Skipped: 0



-Institution Input Survey

ANSWER CHOICES	MOST OR ALL COURSES		MANY COURSES		ABOUT HALF THE COURSES		SOME COURSES		FEW OR NO COURSES	
Printed Textbooks	55.56%	15	33.33%	9	3.70%	1	7.41%	2	0.00%	0
Digital Textbooks	3.85%	1	19.23%	5	3.85%	1	61.54%	16	11.54%	3
Printed Materials Other than Textbooks	7.41%	2	29.63%	8	7.41%	2	51.85%	14	3.70%	1
Digital Materials Other than Textbooks	11.11%	3	18.52%	5	3.70%	1	55.56%	15	11.11%	3
Open Educational Resources	0.00%	0	0.00%	0	3.70%	1	62.96%	17	33.33%	9

Commentary:

- While the majority of institutions reported that staff, faculty and administrators have some awareness of Open Textbooks, there is a need for training in the area of Open Educational Resources, Open Textbooks, and their use and implementation in college courses.
- When system offices and institutions were asked "Please select all of the Open Educational Resources and/or Open Textbook activities your leadership would encourage if you had adequate funding and support?" the response was positive. In addition, 100 percent of system and institutions reported that they would support workshops for faculty, librarians and campus OER champions.
- With funding, there would be opportunity to implement a variety of OER initiatives in the responses below:

Workshops for faculty	100.00%	27
Workshops for librarians	77.78%	21
Workshops for instructional designers and/or multimedia designers	77.78%	21
Opportunities to nurture OER campus champions.	74.07%	20
Grant programs to encourage OER adoption and creation	81.48%	22
A position dedicated to leading OER/Open Textbook campus initiatives	37.04%	10
Tenure and promotion policies that reward faculty for publishing in open journals, publishing open textbooks, and publishing open educational resources.	18.52%	5
Policies that require all research and publication under an open license	7.41%	2
Z Courses (zero textbook cost) that use Open Educational Resources instead of costly textbooks	37.04%	10
Replacing textbooks with OER in all general education courses	18.52%	5
In the course registration system and course listings, label class sections using reduced or zero cost textbook options.	40.74%	11
Z Degrees (zero textbook cost) degrees that use open educational resources instead of textbooks for ALL program-related courses.	18.52%	5

Q.3. What are the Obstacles and Opportunities to Increasing the Adoption of OER and Open Textbooks?

A 2016 Instructional Technology Council (ITC) survey of its member colleges found that the top four challenges to using OER are: time needed to locate/evaluate resources (76 percent), lack of faculty awareness (70 percent), lack of ancillary materials (45 percent) and resistance from administration (10 percent).[29] Similar to this Colorado survey and report, a 2015 study by Spilovoy and Seaman compared a statewide survey of North Dakota (ND) faculty to a national Babson Survey OER report from 2014.[30] Similar barriers were cited, including "difficulty finding resources (46 percent ND/ 51 percent national), lack of a catalog (46 percent ND/37 percent national), not enough subject resources (46 percent ND/37 percent national) and the difficulty of finding what is needed (39 percent ND/43 percent national).[31] In 2016, a faculty survey by Allen and Seaman, found that "Most higher education faculty are unaware of open educational resources (OER), but they are interested and some are willing to give it a try."[32] Colorado is not the only state with barriers to overcome; my recommendation is to see each obstacle as an opportunity to lead a change.

Change

Certainly, a barrier is humanity's natural resistance to change. One faculty survey respondent advised, "Do NOT, under any circumstance, support the adoption of OER." In addition to individual resistance to change, cumbersome policies and processes slow progress. An IT director who took the Solicitation of Individual Input Survey cited "Uncertainty in the face of change" as a barrier.

Individual Faculty Choice of Course Materials:

The survey question, "Who makes the decision to create a new course/modify a course/select new required course materials at your institution?" prompted a variety of responses that included faculty, departments and committees. One response is indicative of the complexity of the process:

"… decisions depend on whether development of a new course is being addressed, or required materials for a course is being addressed. Development of a new course often begins with an individual but requires departmental and college (division) and faculty senate approval, i.e. there must be significant 'buy in' at multiple levels from individual faculty to institutional approval. Regarding texts and resources, for many courses that are taught by a single instructor, especially in a specialty area, the decision of textbook may lie with that individual instructor; for courses that involve multiple sections and numerous faculty, that decision is typically made by the faculty in that area that may have been tasked with making that recommendation at the departmental level – i.e. for course materials/resources, that decision is primarily with individual faculty or at the departmental level."

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[29] http://www.itcnetwork.org/aws/ITCN/pt/sd/news_article/137070/_PARENT/layout_details/false
[30] https://www.onlinelearningsurvey.com/reports/openingthecurriculum2014.pdf
[31] https://www.onlinelearningsurvey.com/reports/2015openingthepublicsnd.pdf
[32] https://www.onlinelearningsurvey.com/reports/openingthetextbook2016.pdf

While I'm not advocating to do away with approval processes or policies, higher education has a tendency to slow or stop progress by erecting bureaucracies.

When faculty have the ability to choose their own course resources, they are able to make individual decisions regarding the use of Open Textbooks and OER. A 2015 study comparing ND faculty to faculty nationally found that faculty at every level had significant control over curriculum selection.[33] After the first year implementing a statewide OER initiative, North Dakota saved students an estimated $2 million; by 2018 it is expected to generate $4-5 million in student savings *per year*.

Change is also an opportunity: Working with faculty librarians and students is essential to the success of any OER initiative. Many states and institutions have successful initiatives that fund library workshops, faculty workshops, stipends and mini grants for the adoption and/or creation of Open Educational Resources and Open Textbooks.

Other Barriers and Opportunities as Reported by Institution Input Survey Respondents:

- Lack of Designated Campus Champions – "There are librarians committed to furthering OER awareness, education and support on campus but they are developing this work in balance with their other primary position responsibilities."
- Need for Organized Structure – "The need to develop a UCB working group focused on OER and with broad stakeholder representation (of students, faculty, the bookstore, instructional designers, librarians, administrators, etc.)." and "…that for the OER work to continue, they will need the resources, both in staffing and funds, to locate and evaluate (curate) quality and stable OER content or create custom content, while redesigning courses to maintain the highest academic standards and rigor that our students and faculty expect from CCCOnline and system colleges." OER materials are often dynamic and need staff and/or faculty resources to ensure that materials remain accurate, relevant, accessible and current.
- Need for Student Engagement – "A current need to develop a closer working relationship and dialogue with the UCB's students and student government, in relation to OER."
- Ability to Identify and Nurture Champions – "A current need to identify those faculty/instructors who are aware of and using OER in their teaching, and who could share their experiences and diverse perspectives with colleagues. Ideally, the Colorado OER Council's current other survey may increase our knowledge of campus OER adopters, supporters and advocates." and "OER content and other digital content may require faculty and student training and support, as well as technology support."
- Lack of Funding – "The need to explore and identify funding sources to support and encourage OER adoption and creation and publication by faculty, instructors and others. This funding could support education for faculty, instructors and others about OER and related considerations such as open licensing, as well as support OER adoption and creation/publication with grant funds, course release time and more."

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[33] https://www.onlinelearningsurvey.com/reports/2015openingthepublicsnd.pdf

- Uneven Technology and Internet Access – A barrier mentioned by a respondent who identified as a director of IT services was "…the devices required to deliver these resources. Our students may have issues accessing the materials due to lack of internet access and devices."

Q.4. What are Other People Doing to Reduce Textbook Costs for College Students?

While there is no perfect initiative, the following section gives examples of best practice in OER and Open Textbook policy and initiatives. Many state and system leaders have taken meaningful actions to reduce or eliminate college textbook costs through OER. Nearly half of all states have adopted some form of program or policy to support the creation, adoption or curation of OER. Cases where states have invested funding in OER programs have resulted in an exponential return on investment – something rare in higher education. While it will always be the right of individual faculty to select how they teach their courses, much can be done to provide support to faculty who are interested in using affordable, effective OER. Colorado policymakers can use these examples to make decisions for the state and students. The following is adapted from a previous state policy guide produced by SPARC.[34]

High-Level Endorsements

One of the biggest barriers with OER is raising awareness. While high-quality OER are available across many subjects, many faculty and students remain unaware that it is an option. A strong, visible statement made by a legislature, governor, top-level education administrator or state agency can direct tremendous attention to an issue.

Affordable Textbook Act[35]

Introduced in the 114th Congress, this act seeks to reduce the cost of textbooks at U.S. colleges and universities by expanding the use of Open Textbooks (and other Open Educational Resources) that everyone can use, adapt and share freely.

The Open Government Data Act[36]

This act requires that work created with grant funds apply an open license.

Rhode Island[37]

In the fall of 2016, Rhode Island Gov. Gina Raimondo issued a challenge to the state's higher education institutions to save students $5 million over five years through the use of open textbooks.

Task Forces

Some states have created a task force or consortium to lead OER work. Task forces can be beneficial because they bring many institutions to the table, and allow the work to be guided by the stakeholders it will affect.

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[34] https://sparcopen.org/
[35] https://www.congress.gov/bill/115th-congress/house-bill/3840?r=328
[36] www.congress.gov/115/bills/s760/BILLS-115s760is.pdf
[37] www.innovate.ri.gov/opentextbook

Creation of a task force can be accomplished through state appropriations, authorizing legislation or a resolution.

Connecticut[38]

In 2015, Connecticut passed legislation creating a task force of faculty, administrators and students. With a combination of a state appropriation and private funding, the University of Connecticut was able to introduce Open Textbooks on campus. The University Libraries surveyed faculty about the use of open textbooks, created online workshops for faculty development and adapted an existing general chemistry textbook. It is estimated that Connecticut students will save more than $1 million per school year.

Colorado[39]

In 2017, Colorado passed legislation creating a task force of faculty, librarians, administrators and students. With a state appropriation of $25,000, the CDHE convened the OER Council and hired WCET to conduct surveys and write this report.

System-Wide Initiatives

Part of the value of OER is that once created, these resources can be shared and used by other institutions. College and university systems have therefore found success in coordinating initiatives. Support and strategic guidance from the system level can help guide effective local action. System-wide initiatives are often supported by legislative or grant funding.

North Dakota University System[40]

The North Dakota University System launched a multi-pronged initiative to encourage OER creation and use at public institutions within the state. This included the adoption of OER policy language in the system's strategic plan, a rigorous survey evaluating faculty awareness and interests in OER, professional development for faculty, and – with support through an $110,000 appropriation from the state legislature – grants to faculty members who want to begin using OER. The initiative has already saved students an estimated $2 million; by 2018 is expected to save students $4-5 million *per year*.

University of Georgia System[41]

The State of Georgia's budget includes funding to support Affordable Learning Georgia[42] and other initiatives to reduce the cost of textbooks by providing grant opportunities for faculty, libraries and institutions.

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[38] www.cga.ct.gov/asp/cgabillstatus/cgabillstatus.asp?selBillType=Bill&which_year=2015&bill_num=6117
[39] https://leg.colorado.gov/sites/default/files/documents/2017A/bills/2017a_258_signed.pdf
[40] https://wcetfrontiers.org/2016/08/23/north-dakota-open-educational-resources-initiative-a-system-wide-success-story/
[41] http://www.affordablelearninggeorgia.org/about/rfp_r1011/#overview
[42] http://www.affordablelearninggeorgia.org/

Colorado Community College System[43]

The Colorado Community College System received the Trade Adjustment Assistance Community College Career Training (TAACCCT) grant from the U.S. Department of Labor in partnership with the U.S. Department of Education. Grants provide community colleges with funds to improve the delivery of career training programs in high-wage, high-skill occupations. Students from 13 community colleges can take online courses to complete certificates or associate degrees completely online. CCCOnline has been offering OER courses since 2013 and expects to offer 40 OER courses in Spring 2018. In the Fall 2017 semester, students saved $300,714.

State-Led Initiatives

States themselves can lead initiatives, with activities similar to system-led initiatives, by working through agencies or government offices. Often state agencies that oversee higher education are involved, and programs are most effective when there is legislative funding for staff and programming attached to the initiative.

Oregon[44]

In 2015, Oregon passed legislation requiring the state's Higher Education Coordinating Commission to establish an OER grant program and hire a staff person to oversee it. The bill also requires public postsecondary institutions to prominently mark courses whose course materials are exclusively Open, or free, Textbooks. The Legislature appropriated $700,000 to support the program, and the projected savings are $1.7 million.

Grant Programs

Grant programs are part of nearly every Open Educational Resources and Open Textbooks initiative at institutions, systems, states and foundations.

Utah State University[45]

The Replacing Traditional Textbooks with Open Educational Resources (OER) Grant Program offered stipends between $500-$3,000/course for faculty to adopt, adapt and create OER.

Baruch College, CUNY[46]

The Center for Teaching and Learning created a grant proposal program to provide support for faculty to develop courses that use OER to replace textbooks and other high-cost materials. Grants focused on high-enrollment courses.

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[43] www.cccs.edu
[44] http://www.oregon.gov/HigherEd/Pages/oer.aspx
[45] usu.edu/grants/oer
[46] https://ctl.baruch.cuny.edu/grant-opportunity-for-open-education-resources-oer/

University of North Dakota[47]

Students at UND were so pleased with $3 million in textbook savings – supported mostly through legislative funding for North Dakota University System grants – the UND Student Senate passed a bill to allocate $75,000 to fund more faculty grants. That allocation was coupled with a $25,000 match from the provost. Together, the senate, dean of libraries and the provost have provided $100,000 in grant funds for faculty to adopt and create Open Educational Resources for the purpose of reducing textbook costs.

Zero-Textbook-Cost Degrees

One of the latest trends in OER is efforts to develop entire degree programs that use OER in every single course. This concentrates the benefits of OER along a degree pathway, delivering significant savings to students and resulting in demonstrated increases in course completion.

Tidewater Community College[48]

The Zero-Textbook-Cost Degree was first realized at Tidewater Community College in Virginia. Part of a 38-campus initiative led by the nonprofit Achieving the Dream, Tidewater now has full degree programs and courses with zero textbook costs. Textbook-free courses are clearly marked in the student course catalog.

California[49]

In 2016, the California state government appropriated $5 million to support the creation of Zero-Textbook-Cost Degrees at the state's community colleges. Among the justifications for the program were that the more than 100 institutions in that system could easily share and build upon each other's work, so investing in one degree at one college, could lead to multiple degrees at multiple colleges.

More Information

There is a robust community of organizations, companies, institutions and practitioners that have been working to advance OER for more than a decade – from MIT's OpenCourseWare program to Khan Academy.

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[47] blogs.und.edu/und-today/2017/02/more-bucks-for-open-resources/
[48] tcc.edu/academics/degrees/textbook-free
[49] edsurge.com/news/2016-07-06-with-5-million-for-z-degrees-small-change-is-a-big-step-for-california-community-colleges

Where to Find OER

- Open Textbook Library[50]
- OpenStax[51]
- Lumen Learning[52]
- OER Commons[53]
- MERLOT[54]
- Boundless Learning[55]

...and many more

Advocacy Groups

- WCET Z Initiative[56]
- SPARC[57]
- U.S. PIRG[58]
- Open Textbook Alliance[59]
- Open Textbook Network[60]
- Achieving the Dream[61]
- Creative Commons[62]
- International Council for Open and Distance Education[63]
- Wiki Education[64]

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[50] www.open.umn.edu/opentextbooks/
[51] www.openstax.org
[52] www.lumenlearning.com
[53] www.oercommons.org
[54] www.merlot.org
[55] www.boundless.com
[56] http://wcet.wiche.edu/
[57] www.sparcopen.org
[58] www.uspirg.org
[59] www.opentextbookalliance.org
[60] www.open.umn.edu
[61] www.achievingthedream.org
[62] www.creativecommons.org
[63] https://www.icde.org/#sthash.0fCywL9H.dpbs
[64] https://wikiedu.org/

Recommendations

The state of Colorado is uniquely poised to reduce the cost of textbooks for college students through the adoption of Open Educational Resources and open textbooks for three main reasons: 1. Colorado college students are interested in reducing their cost of attendance; 2. Colorado higher education administrators and faculty are willing to explore the use of OER; 3. The Colorado Legislative Council is evaluating options for policy and funding. The following recommendations can be used when creating OER policy and initiatives.

For Legislators and the Governor:

- **Focus on Students**
    - Focus on students. While the adoption of Open Educational Resources and Open Textbooks won't reduce the need for education funding, it has been proven to reduce the amount students pay for college. Measurements of success should be framed in the context of impact on students.
    - Ask "What can you do to reduce bureaucracy, how will you measure OER usage and (most importantly) how will this reduce the cost of education for college students?"
    - Consider technology needs and internet access when making policy.
- **Don't Duplicate Effort**
    - Utilize existing repositories, organizations, policies and implementation methods. For example, there is no need to waste time and money building a Colorado repository; excellent repositories already exist and can be accessed. One of the advantages of Open Licensing is that it is OPEN!
    - Work with and empower the innovators within your state. Librarians are experts in curating resources; faculty are experts in curriculum and pedagogy. Bookstore leaders understand the marketplace. Engage the established professional networks. Look to the experts in the field for national best practice.
- **Provide Faculty Development, Incentives and Rewards**
    - If the expected outcome is "more work for less money," there will be no incentive for individuals to do the work.
    - Fund the effort. States that have funded initiatives and grant programs have seen exponential return on their investments.
    - Encourage Colorado institutions of higher education to become part of the larger open education community of organizations, experts and resources.
    - Allow campuses to create OER initiatives that work for their unique mission and culture.
    - Require reporting based on student textbook cost savings.

- **Provide a Vision**
    - Rather than being prescriptive, provide a vision of the goals you are trying to reach and challenge higher education to meet that vision. Designate a goal and assign an agency to lead it.
    - Collaborate with higher education leaders to fashion that vision; encourage multiple levels of leadership. Possible solutions are a grant program and an OER initiative established at the CDHE, a statewide OER consortium or council, etc.
    - Avoid the urge to micromanage or mandate. Instead, empower the visionaries (OER council, faculty, librarians, campus leadership and students) who understand their communities to design what works. You'll be amazed at what people will do when you give them the resources and freedom to implement their ideas.
    - Think beyond brick-and-mortar campuses. Consider initiatives that will meet projected state needs: high school students taking concurrent enrollment courses, working parents enrolled in online degree programs, veterans earning certificates, high-demand career training programs, general education courses and high-enrollment courses. Focus on areas that will make the biggest impact for Colorado now and in the future.

For Institutional Personnel:

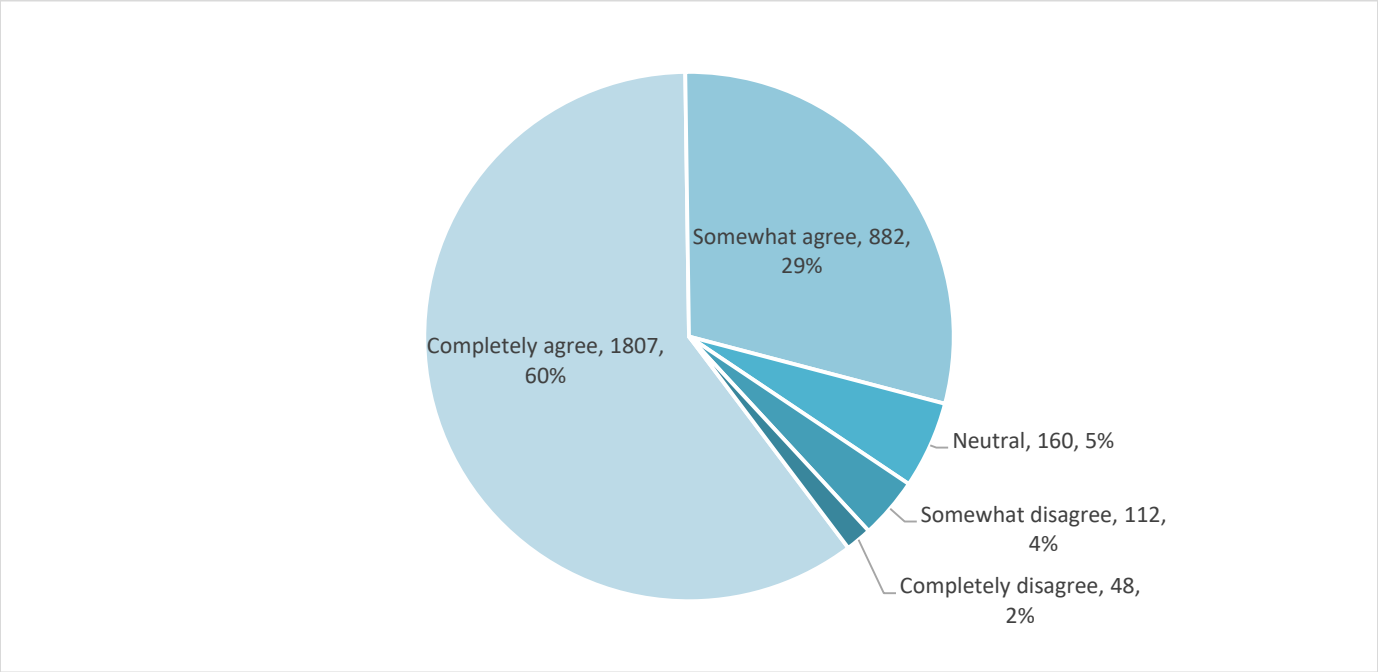
- **Engage the Students**
    - Student leaders and organizations are eager to reduce their educational costs. But they also understand that nothing is truly free. On many campuses, students have proposed collaborative solutions such as using student association fees to fund faculty OER grants, hosting open education events and gathering student input through surveys.
    - Bring to the table students with diverse perspectives and backgrounds to be sure you are serving the needs of the students who need it most.
    - Indicate zero-textbook-cost courses in student course catalogs so students have the ability to choose.
- **Empower Campus Champions**
    - Allow innovation to flourish at your institution. Change leaders can be found at every level in every department. Invite people to try new things without fear of failure. Foster an environment where people can ask for help and share their expertise.
    - Give individual faculty members the ability to choose their course materials and resources.
    - Examine internal processes that hamper progress. Ask, "Why do we do this?" and if the answer is "because that's how we've always done it," take another look. For example, are there barriers to transferring courses among Colorado institutions? Are there promotion and tenure incentives for faculty to publish in open journals?
    - Provide the support, release time and money faculty need to create and adopt OER and Open Textbooks.

- **Work Together**
    - Communicate with state policymakers to articulate ways your campus is working to reduce higher education costs for students. Propose Open Educational Resources and Open Textbook models that would work for your community.
    - Collaborate with other Colorado institutions. Look to national best practice for initiatives that work. People engaged in open education love to share.
    - Focus on one big project such as zero-textbook-cost concurrent enrollment courses, zero-textbook-cost general education courses, or one zero-textbook-cost degree.
    - Engage the K-12 community. Focus on students in middle and high school. Utilize Open Textbooks and OER in concurrent enrollment courses to reduce the financial burden on Colorado students and families.
    - Publish your success stories; tell the Colorado public all the good things you're doing for the state citizenry. Focus on the long-term needs of your community and state.

Appendix A. Solicitation of Individual Input Survey

Q1 Indicate your level of agreement with the following statement: "Textbook costs have become a serious affordability barrier to students attending Colorado's colleges anduniversities."

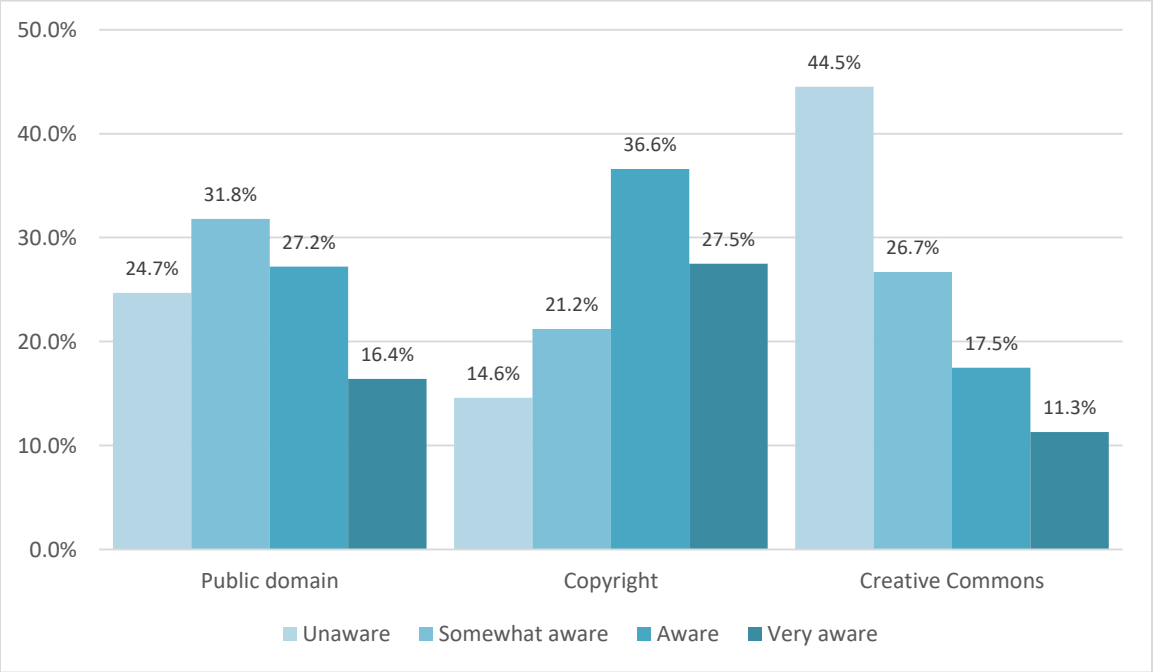
Answered: 3,009 *Skipped: 0*



ANSWER CHOICES	RESPONSES	
Completely agree	60.1%	1,807
Somewhat agree	29.3%	882
Neutral	5.3%	160
Somewhat disagree	3.7%	112
Completely disagree	1.6%	48
TOTAL		3,009

Q2 How aware are you of each of the following mechanisms for licensing academic content?

Answered: 3,009 *Skipped: 0*

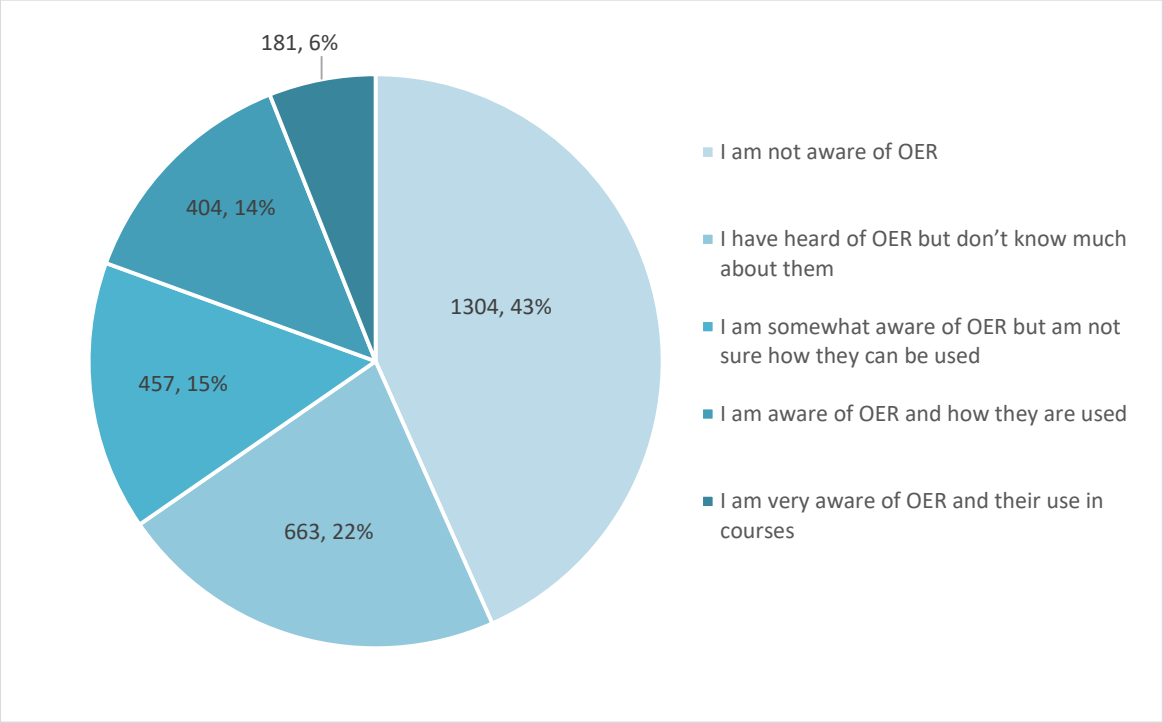


	UNAWARE	SOMEWHAT AWARE	AWARE	VERY AWARE	TOTAL	WEIGHTED AVERAGE
Public Domain	24.7%	31.8%	27.2%	16.4%		
	741	954	817	491	3,003	2.35
Copyright	14.6%	21.2%	36.6%	27.5%		
	439	637	1,099	825	3,000	2.77
Creative Commons	44.5%	26.7%	17.5%	11.3%		
	1,332	799	525	339	2,995	1.96

Q3 Generally, how aware are you of Open Educational Resources (OER)?

OER are defined as "teaching, learning and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others." Unlike traditionally copyrighted material, these resources are available for "open" use, which means users can edit, modify, customize and share them. This means that all students in a class have access to no- or low-cost learning materials on the first day of class.

Answered: 3,009 *Skipped: 0*



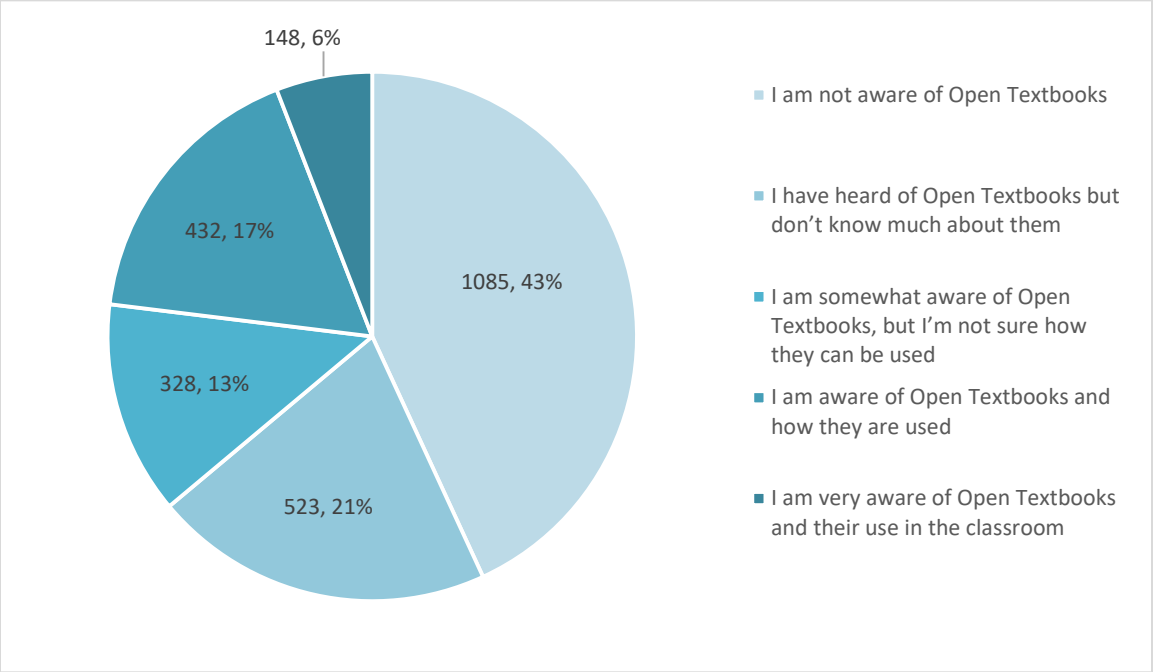
ANSWER CHOICES	RESPONSES	
I am not aware of OER	43.3%	1,304
I have heard of OER but don't know much about them	22.0%	663
I am somewhat aware of OER but am not sure how they can be used	15.2%	457
I am aware of OER and how they are used	13.4%	404
I am very aware of OER and their use in courses	6.0%	181
TOTAL		3,009

Q4 Generally, how aware are you of Open Textbooks?

Open Textbooks are textbooks that are freely available with non-restrictive licenses.

Covering a wide range of disciplines, Open Textbooks are available to download and print in various file formats from several websites and OER repositories. This means that all students in a class have access to no- or low-cost textbooks on the first day of class.

Answered: 2,516 *Skipped: 493*



ANSWER CHOICES	RESPONSES	
I am not aware of Open Textbooks	43.12%	1,085
I have heard of Open Textbooks but don't know much about them	20.79%	523
I am somewhat aware of Open Textbooks, but I'm not sure how they can be used	13.04%	328
I am aware of Open Textbooks and how they are used	17.17%	432
I am very aware of Open Textbooks and their use in the classroom	5.88%	148
TOTAL		2,516

Q5 What hopes, concerns or questions do you have about expanding the use of Open Educational Resources and Open Textbooks to improve student affordability while maintaining academic quality?

Answered: 1,308 Skipped: 1,701

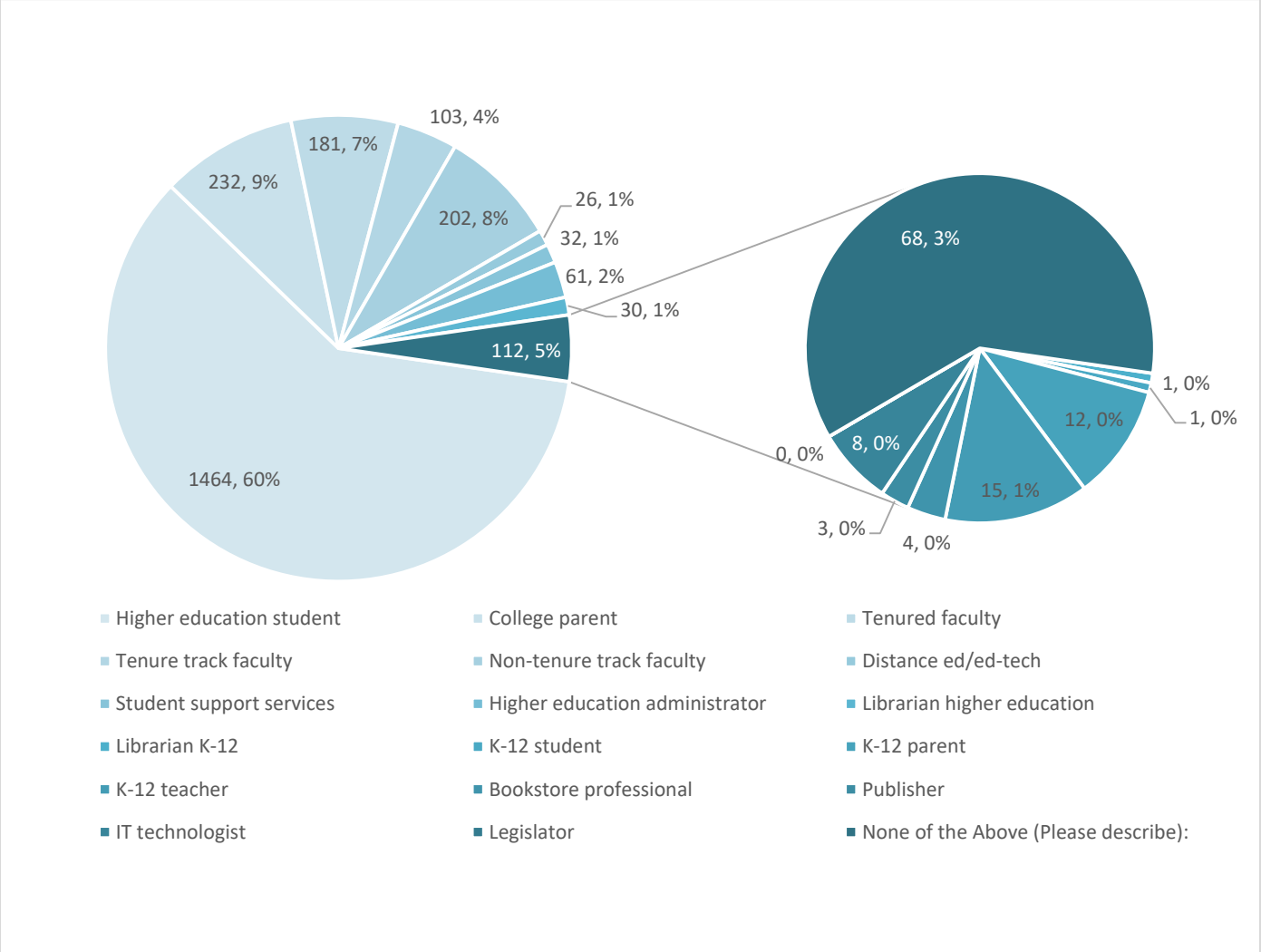
Q6 In your opinion, what are the challenges and barriers to increasing the adoption of Open Educational Resources and/or Open Textbooks? (4,000-character limit for responses)

Answered: 1,264 Skipped: 1,745

Q7 What advice would you like to give the Colorado Department of Higher Education OER Council, Colorado legislators, and college and university leadership on the topic of OER and Open Textbooks.

Answered: 1,113 Skipped: 1,896

Q8 Select the option that best describes your primary role in response to this survey:



Q8 continued

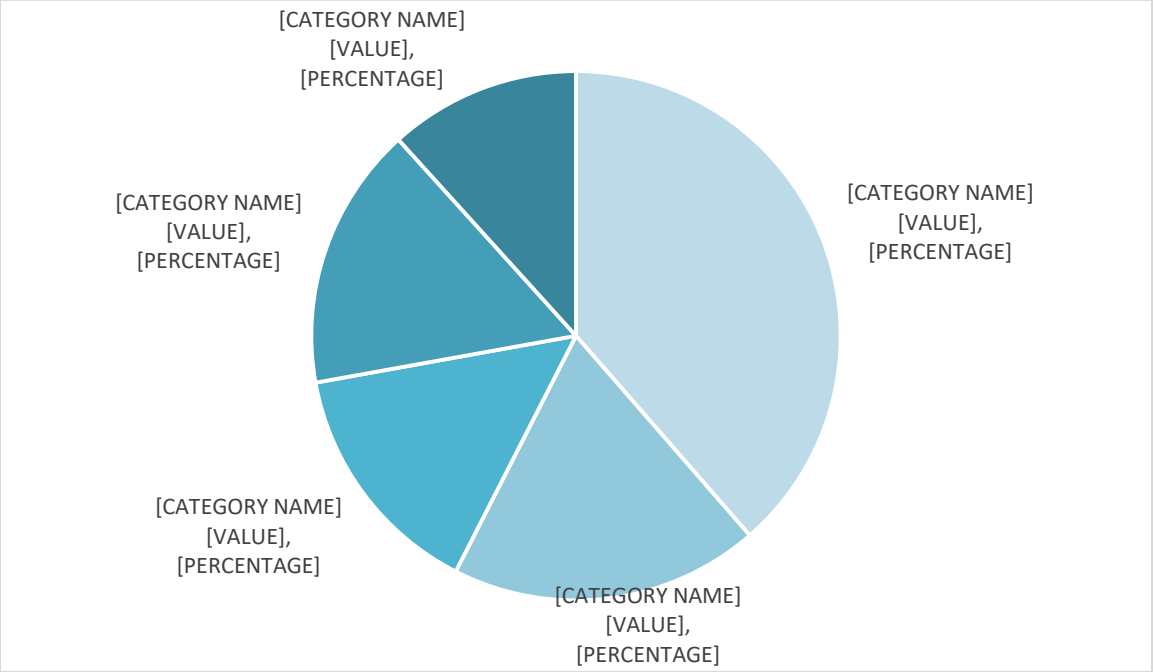
ANSWER CHOICES	RESPONSES	
Higher education student	59.9%	1,464
College parent	9.5%	232
Tenured faculty	7.4%	181
Tenure track faculty	4.2%	103
Non-tenure track faculty	8.3%	202
Distance ed/ed-tech	1.1%	26
Student support services	1.3%	32
Higher education administrator	2.5%	61
Librarian higher education	1.2%	30
Librarian K-12	0.0%	1
K-12 student	0.0%	1
K-12 parent	0.5%	12
K-12 teacher	0.6%	15
Bookstore professional	0.2%	4
Publisher	0.1%	3
IT technologist	0.3%	8
Legislator	0.0%	0
None of the Above (Please Describe)	2.8%	68

Q9 What is your job title, if applicable?

Answered: 1,085 *Skipped: 1,924*

Q10 What is your age?

Answered: 2,443 *Skipped: 566*



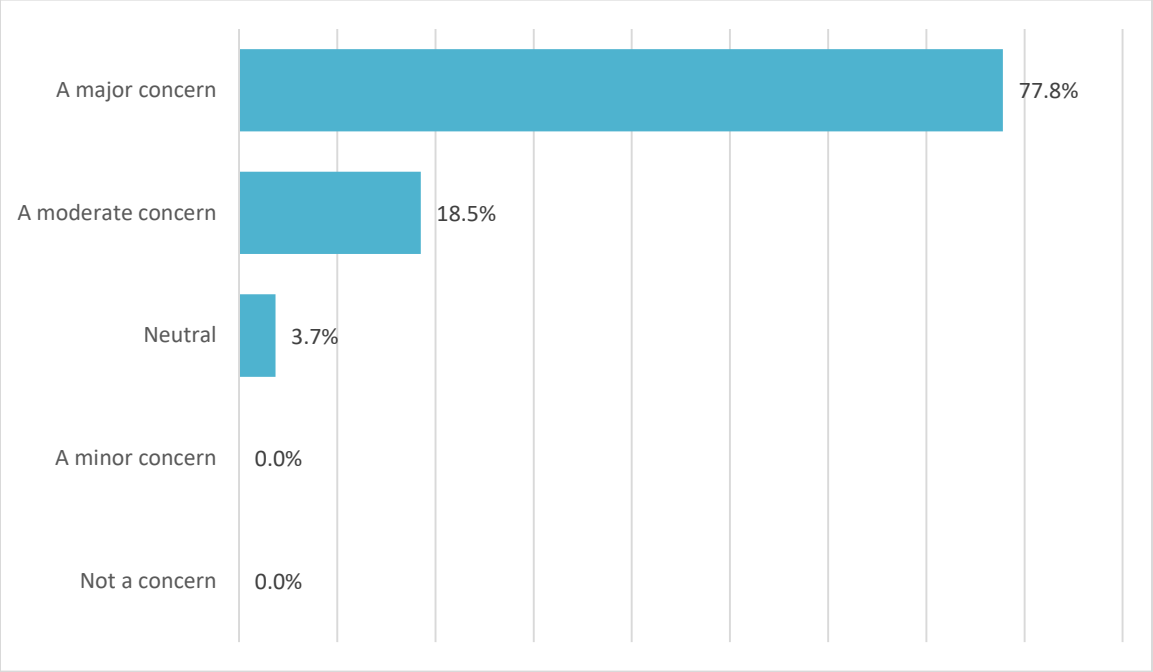
ANSWER CHOICES	RESPONSES	
Under 25	38.6%	943
25-34	18.9%	462
35-44	14.7%	358
45-54	16.1%	394
55+	11.7%	286
TOTAL		2,443

Appendix B. Institution Input Survey

Note: Question 1 removed for confidentiality purposes.

Q2 How important is reducing the cost students pay for higher education to your institution's board, president and senior administrators?

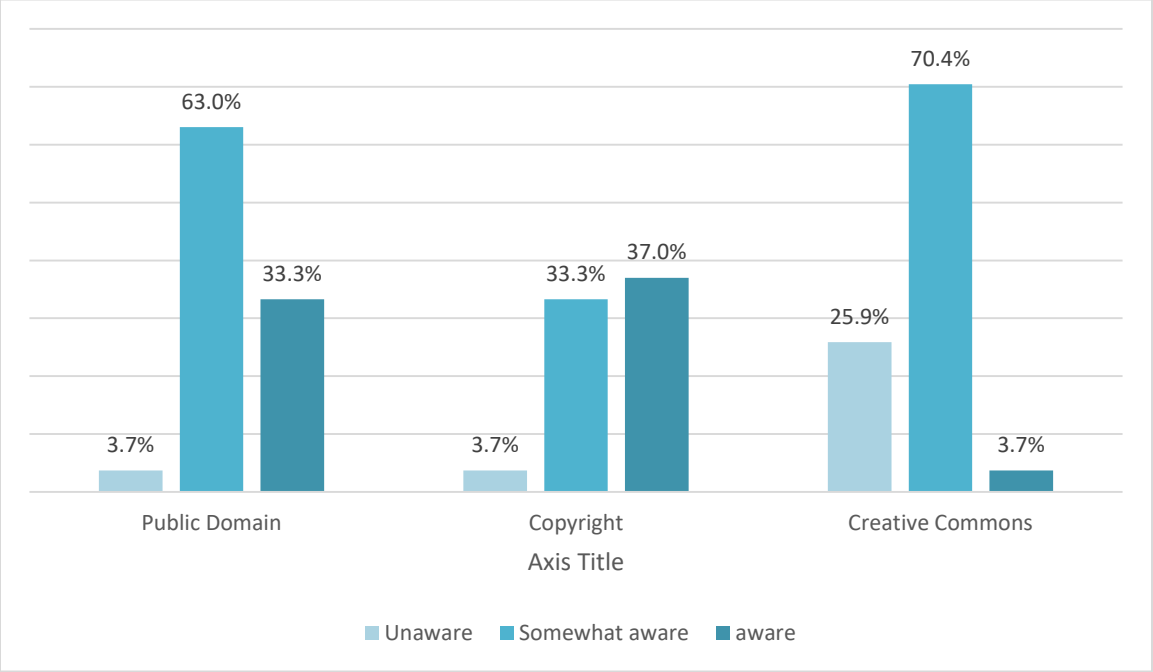
Answered: 27 Skipped: 0



ANSWER CHOICES	RESPONSES	
A major concern	77.8%	21
A moderate concern	18.5%	5
Neutral	3.7%	1
A minor concern	0.0%	0
Not a concern	0.0%	0
TOTAL		27

Q3 Generally, how aware is the majority of faculty, staff and administrators at your institution of each of the following mechanisms for licensing academic content?

Answered: 27 Skipped: 0

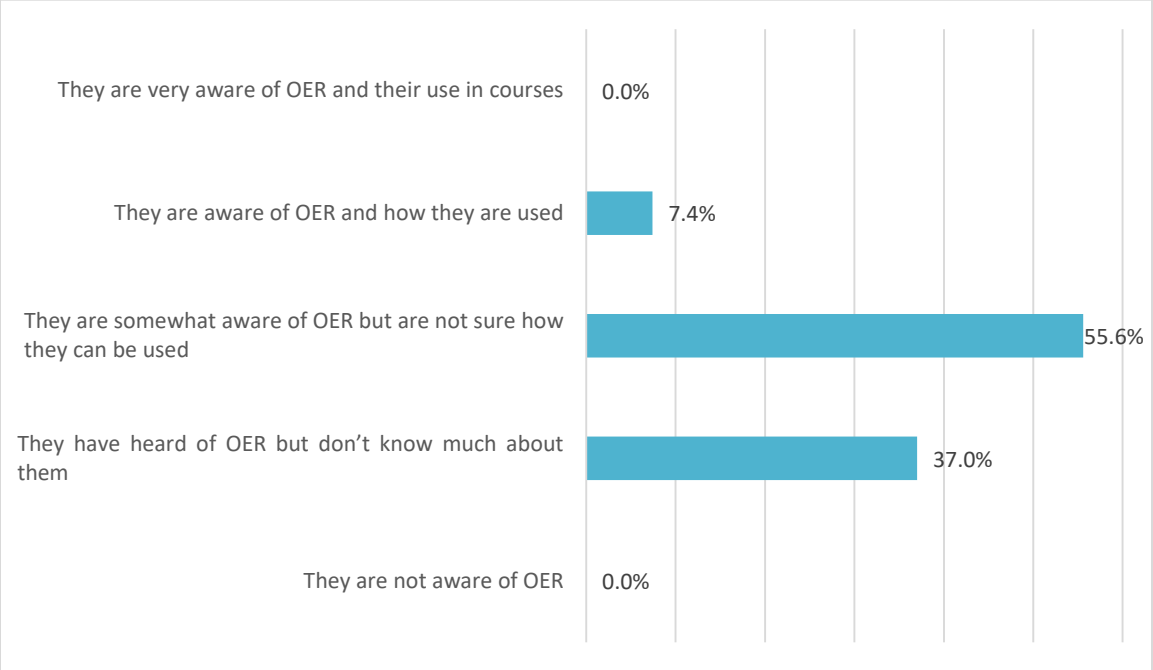


	UNAWARE	SOMEWHAT AWARE	AWARE	VERY AWARE	TOTAL	WEIGHTED AVERAGE
Public Domain	3.7%	63.0%	33.3%	0.0%		
	1	17	9	0	27	2.30
Copyright	3.7%	33.3%	37.0%	25.9%		
	1	9	10	7	27	2.85
Creative Commons	25.9%	70.4%	3.7%	0.0%		
	7	19	1	0	27	1.78

Q4 Generally, how aware is the majority of faculty, staff and administrators at your institution of Open Educational Resources (OER)?

OER are defined as "teaching, learning and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others." Unlike traditionally copyrighted material, these resources are available for "open" use, which means users can edit, modify, customize and share them so that all students in a class have access to no- or low-cost learning materials on the first day of class.

Answered: 27 Skipped: 0

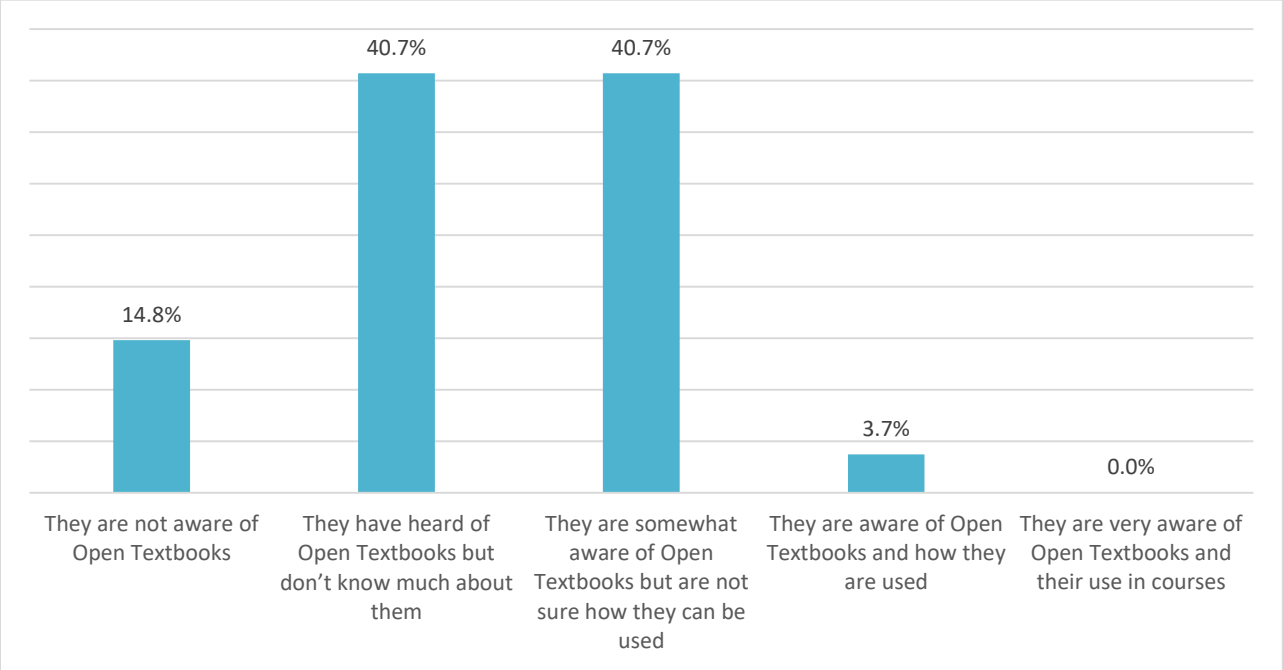


ANSWER CHOICES	RESPONSES	
They are not aware of OER	0%	0
They have heard of OER but don't know much about them	37.0%	10
They are somewhat aware of OER but are not sure how they can be used	55.6%	15
They are aware of OER and how they are used	7.4%	2
They are very aware of OER and their use in courses	0.0%	0
TOTAL		27

Q5 Generally, how aware is the majority of faculty, staff and administrators at your institution of Open Textbooks?

Open Textbooks are textbooks that are freely available with non-restrictive licenses. Covering a wide range of disciplines, open textbooks are available to download and print in various file formats from several websites and OER repositories. This means that all students in a class have access to no- or low-cost textbooks on the first day of class.

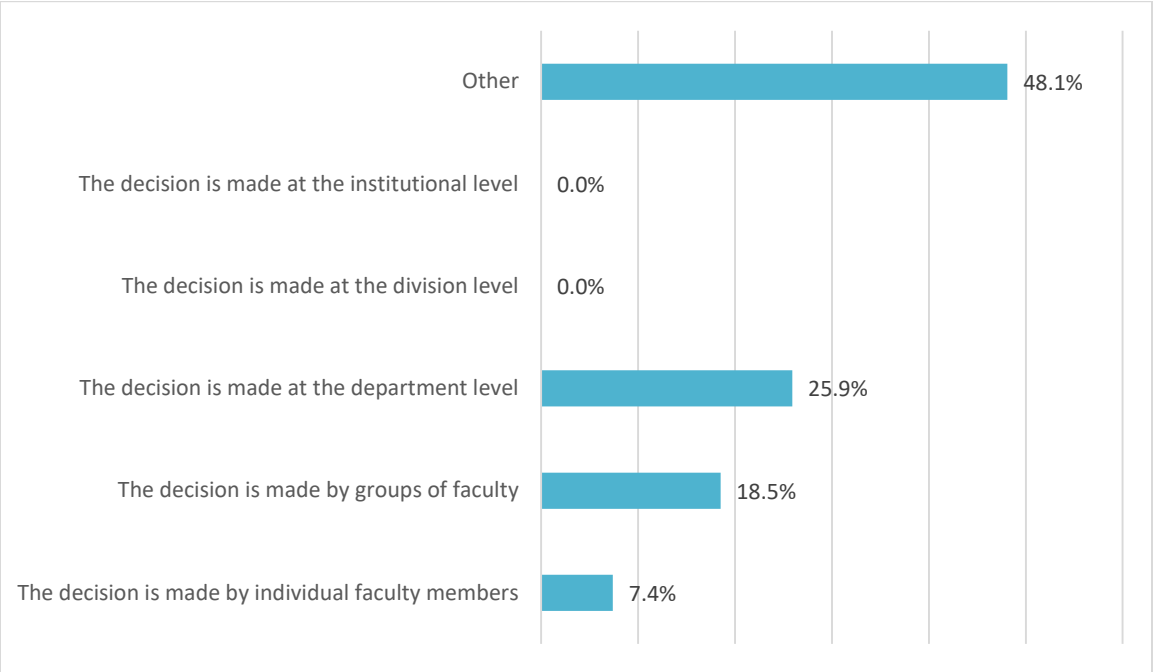
Answered: 27 Skipped: 0



ANSWER CHOICES	RESPONSES	
They are not aware of Open Textbooks	14.8%	4
They have heard of Open Textbooks but don't know much about them	40.7%	11
They are somewhat aware of Open Textbooks but are not sure how they can be used	40.7%	11
They are aware of Open Textbooks and how they are used	3.7%	1
They are very aware of Open Textbooks and their use in courses	0.0%	0
TOTAL		27

Q6 Who makes the decision to create a new course/modify a course/select new required course materials at your institution?

Answered: 27 Skipped: 0



ANSWER CHOICES	RESPONSES	
The decision is made by individual faculty members	7.4%	2
The decision is made by groups of faculty	18.5%	5
The decision is made at the department level	25.9%	7
The decision is made at the division level	0.0%	0
The decision is made at the institutional level	0.0%	0
Other, please explain (100 character limit)	48.1%	13
TOTAL		27

Responses in “Other” category:

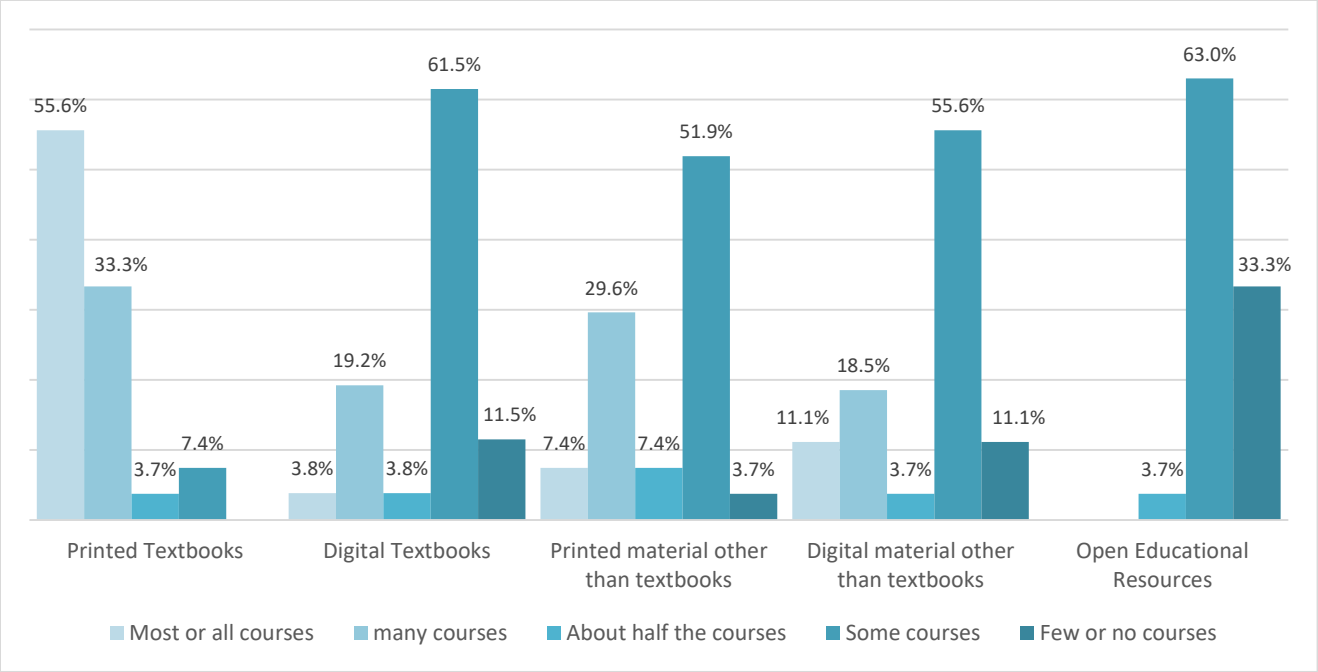
- Several responses above imply decisions depend on whether development of a new course is being addressed, or required materials for a course is being addressed. Development of a new course often begins with an individual but requires departmental and college (division) and faculty senate approval, i.e. there must be significant 'buy in' at multiple levels from individual faculty to institutional approval. Regarding texts and resources, for many courses that are taught by a single instructor, especially in a

specialty area, the decision of textbook may lie with that individual instructor; for courses that involve multiple sections and numerous faculty, that decision is typically made by the faculty in that area that may have been tasked with making that recommendation at the departmental level - i.e. for course materials/resources, that decision is primarily with individual faculty or at the departmental level.

- Course materials are selected by faculty following procedures established by the dept./disciplinary area.
- Courses are primarily determined by the advisory committee. Instructional staff consults their respective industry partners on content. Instructor then looks for curriculum that meets industry needs, presents the curriculum and then the committee votes.
- To create a new course the final decision is made at the CCCS system level. To modify a course the final approval is also made at the CCCS system level. To select new materials for a course the decision is made at the faculty level.
- All of the above – varies by course and department.
- Course material coordination is decentralized. The first three options are all correct (individual faculty, groups of faculty and departmental level).
- Faculty can request to create or modify a course, but CCCS has common course numbering. Either must first pass our local curriculum committee and then are submitted to the CCCS Faculty Curriculum Committee.
- Faculty may propose new courses but must be approved by the institution curriculum committee. If the course is not part of the system's common course numbering system then it must be proposed and approved at the state level by the discipline group first, then statewide curriculum committee then VPIs.
- Our college has a curriculum committee that reviews proposals in collaboration with deans of instruction.
- It varies by department. In some departments (e.g., math), the decision is made at the department level. In others, the decision is made by course leads or individual faculty.
- The most accurate answer is individual faculty in some instances (e.g., discipline/major courses) and groups of faculty in others (e.g., essential learning - general education).
- Depends on the department – sometimes, the decision is made by an individual faculty member. Sometimes, a group of faculty make the decision. If the latter, it is still the individual faculty member who acts on behalf of the group to specify the content for his or her course section.
- It depends on the course and department. However, most courses and instructional materials are designed by individual faculty members.

Q7 What types of learning materials are currently required for courses at your institution?

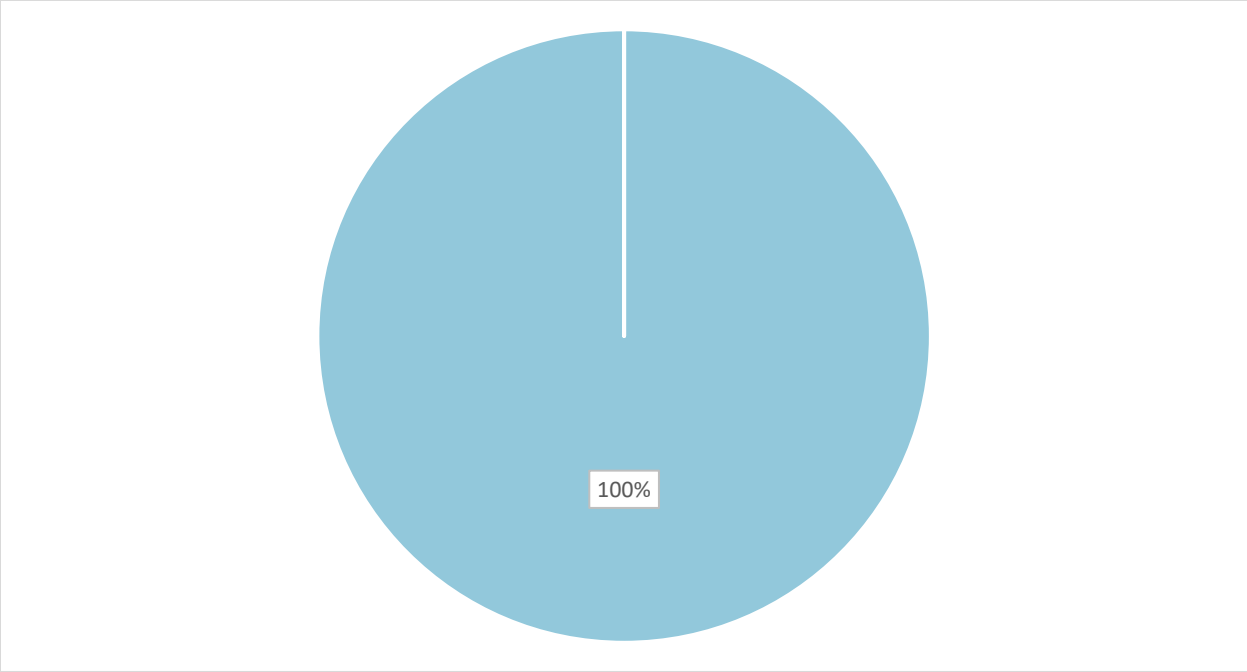
Answered: 27 Skipped: 0



	Most or all courses	Many courses	About half the courses	Some courses	Few or no courses	Total	Weighted average
Printed Textbooks	55.6%	33.3%	3.7%	7.4%	0.0%		
	15	9	1	2	0	27	4.37
Digital Textbooks	3.8%	19.2%	3.8%	61.5%	11.5%		
	1	5	1	16	3	26	2.42
Printed material other than textbooks	7.4%	29.6%	7.4%	51.9%	3.7%		
	2	8	2	14	1	27	2.85
Digital material other than textbooks	11.1%	18.5%	3.7%	55.6%	11.1%		
	3	5	1	15	3	27	2.63
Open Educational Resources	0.0%	0.0%	3.7%	63.0%	33.3%		
	0	0	1	17	9	27	1.70

Q8 Does your institution have any policies regarding the use, publication or implementation of OER?

Answered: 27 Skipped: 0



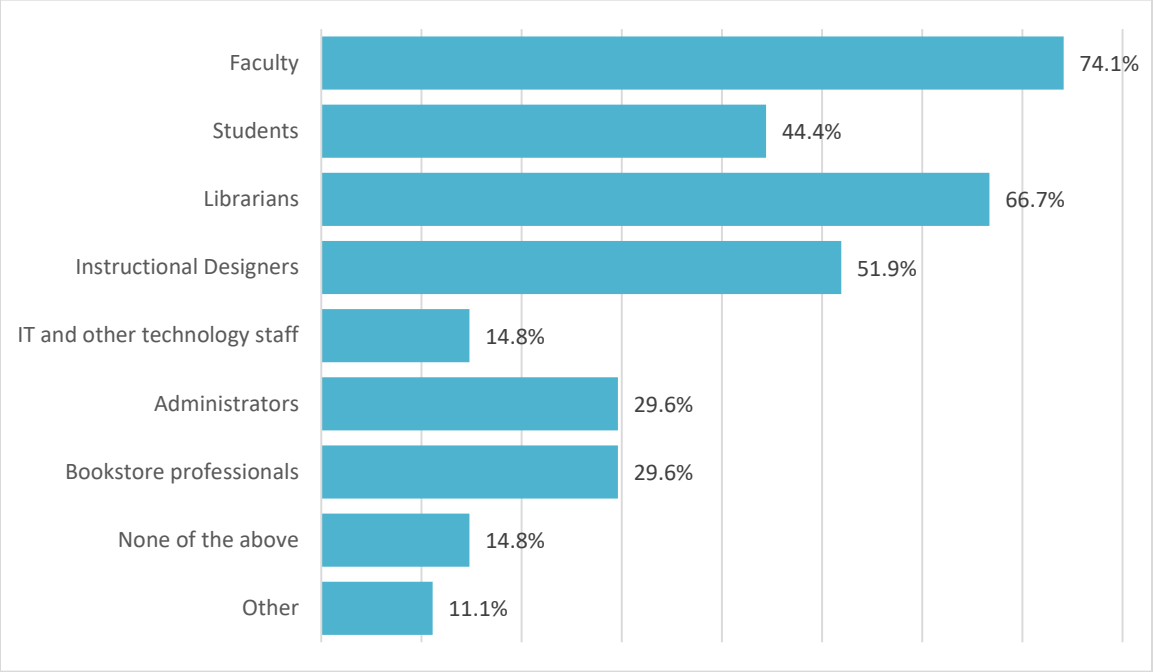
ANSWER CHOICES	RESPONSES	
Yes	0.0%	0
No	100%	27
TOTAL		27

If yes, please describe and provide a link to the policy. (100-character limit on response)

- Although we answered no, it is important to note that we do have contracts regarding our relationship with our current bookstore vendor. We have agreed to not compete with the sale of books and so a conversation around OER would need to include how institutions have contracted with third-party bookstore vendors.
- Please note, answer on question 7 is a variation of all the above and cannot be quantified at this time.

Q9 Please select all of your institution's constituents that are currently using, adopting, adapting, producing, archiving or promoting Open Educational Resources and/or Open Textbooks:

Answered: 27 Skipped: 0



ANSWER CHOICES		RESPONSES
Faculty	74.1%	20
Students	44.4%	12
Librarians	66.7%	18
Instructional Designers	51.9%	14
IT and other technology staff	14.8%	4
Administrators	29.6%	8
Bookstore professionals	29.6%	8
None of the above	14.8%	4
Other, please specify (100 character limit)	11.1%	3
Total Respondents: 27		

If Other, please describe.

- Bookstore staff assist with development of low-cost course packets.
- At the Anschutz campus, the Academy of Medical Educators (AME) will be promoting and educating about OER on Sept. 21. That event will be about Free Open Access Medical Education (FOAM).
- eLearning staff

Q10 Please share any stories (and weblinks) you may have about OER and/or Open Textbooks on your campus.

Answered: 27 Skipped: 0

- Several faculty have created their own Open Textbooks (e.g. engineering prof has written two intro texts, a math prof has created an upper-level text and an intro stats text); others have created extensive OER not quite at the level of text (e.g history prof created extensive workbook w/original sources). OER adoption includes more faculty, e.g. the business school faculty often use OER, and others have piloted texts from e.g. OpenStax.
- Dr. Oscar Levin, a faculty member in UNC's School of Mathematical Sciences, has written an open source textbook in discrete mathematics that is being used here at UNC and at several other institutions around the country, including the Air Force Academy. This text is available through the American Institute of Mathematics Open Textbook Initiative. (https://aimath.org/textbooks) All UNC instructors may submit teaching materials such as full lesson plans, individual activities, textbooks, media and games to UNC's Institutional Repository. Currently, there are several items in OER: Information Literacy (http://digscholarship.unco.edu/infolit) that have been recognized nationally and repurposed at other universities.
- We are starting our campus effort in promoting OER. In April 2017, we joined other five universities in greater Denver area to host a multi-campus event, Colorado Open Scholarship Summit (http://libguides.mines.edu/coss). One of the campus sessions was on OER by Nicole Allen, the OER director of SPARC. Many faculty and students attended the session and we opened up the campus conversation on the topic. We also published a guide page for OER at http://libguides.mines.edu/oer to facilitate the education about OER on campus. We also have a few champions who created their versions of open resources for teaching, for example, a suite of instruction videos posted on YouTube by Professor Toberer (https://www.youtube.com/channel/UCmYihgd-MXI8oCUN5MIt86g/videos), sets of class podcasts posted by Professor Shoery (http://inside.mines.edu/~cshorey/pages/sygn.html), and open source learning management software (e.g. LON-CAPA and iOLabs) used by a few classes on campus. Although these initial efforts are not yet crafted and licensed properly as OER, they could become our early champions for adoption and creation of OER.
- Unavailable at this time
- TAACT grants - OER was a requirement of instructional design.

- Anschutz Campus • Grad School 1. using GitHub to teach statistical analysis in an open science environment (BIOS 6623) 2. Debashis Ghosh (Biostats) – For our programming class, one of our books is fully available as a website (http://adv-r.had.co.nz/) • BIOS 6611 – Instructor does not require any textbooks because no one book was sufficient. She did look for Open Textbooks and found a couple that she points her students to as supplementary material. She also uses videos from Khan Academy and YouTube. • Denver Campus (Auraria Library) 1. Brad Hinson is a champion of OER activities. 2. Faculty have adopted OpenStax textbooks, with varying degrees of success. (Debbie Evercloud, Economics; Kimberly Regier, Biology; Charlene Shelton, Sociology; Douglas Shepherd, Math) 3. Jordan Hill contributed to the respected OER history text, American Yawp Information and Learning Technologies program encompasses teaching the value and use of OER. 4. Library offers OER Guide offering consultation support, resource recommendations and strategies for locating OER materials.
- Various types of Open Educational Resources are in use in UCCS classes. We give a few examples here. 1. In some English literature courses, online, digitized versions of out-of-copyright books (such as a novel published in the 19th century) are available for student use at no cost. 2. Research methods course for future science teachers covers statistics using a combination of free, electronic lecture notes by the professor and a free, supplemental (optional) statistics textbook from the OpenStax College site. 3. For a variety of classes, digitized portions of books that are still under copyright can be posted on password-protected learning management system websites under Fair Use practices. No cost to the student, but the institution must be careful to comply with the legal restrictions of copyright law. 4. Many books and scholarly articles are available through databases and electronic resources available through our library. These do not often replace a textbook but do provide supplemental material at no cost to the student.
- None
- We have been using textbooks by OpenStax in some courses since they were originally published. http://libguides.colorado.edu/oer; CU Teach Engineering - https://www.oercommons.org/search?f.search=CU+Boulder; PHET Interactive Simulation - https://phet.colorado.edu/; Advancing Coherent and Equitable Systems of Science Education - https://thejournal.com/articles/2017/02/14/ngss-gets-oer-pd-for-making-science-accessible.aspx; Introduction to Autonomous Robots - https://open.umn.edu/opentextbooks/BookDetail.aspx?bookId=53; CU Boulder Coursera MOOCS - https://www.coursera.org/boulder
- I did a quick survey of our fulltime faculty and of those that replied, two are using OER materials, three have spent time researching and review materials and several haven't but plan to research them in the near future.
- I have tried incorporating OER in one of my courses, but students had issues with downloads. I also found that several of the texts I considered were not as high a quality or as thorough as our traditional textbook.
- No stories to share at this time.
- https://www.ccd.edu/administration/non-academic-departments/teaching-learning-center/resources
- We have just begun this work. One College Algebra class is using an OT.

- https://msudenver.edu/tlts/symposiumtracks/ from our Teaching and Learning with Technology annual symposium
- English 121 is using OER for some sections. There is some interest in growing this practice. A recent committee has recommended an Educational Procedure to support such pilots.
- We have been pushing OER for several years now, are members of the Open Textbook Network, have conducted workshops on Open Textbooks for about 100 interested faculty and have gotten some adoption, but the adoptions are distressingly small.
- Since Fall Semester 2016, CMC has piloted on their Steamboat Springs campus a flat-rate access fee program for course materials so that 100 percent of students have 100 percent of required learning materials the first day of class based on a library-like access model. The CLMP (CMC Learning Materials Program) is innovative and directly addresses the issues CMC has seen in regards to trends related to textbooks and learning materials. CMC has prioritized a goal that 100 percent of students have 100 percent of their materials at the lowest possible costs per student. Students have indicated some reasons why they do not have their textbooks and required materials which include: 1. Loss of financial aid and unexpected costs and not budgeting for the unexpected high costs related to learning materials 2. Inability to quickly get the materials needed due to "shopping around" or shipment delays 3. Other reasons related to communication regarding what is required of students surveyed; over 81 percent indicated they know having their required textbooks and materials correlates to higher grades and success in their courses.

Q11 What are the challenges and barriers to increasing the adoption of Open Educational Resources and/or Open Textbooks at your institution?

Answered: 27 Skipped: 0

- To some extent, inertia; in some disciplines there is interest but no readily known available text (e.g. art history); numerous publishers have made resources available (e.g. ppt slides and other summary materials for instructors that relate to the text, online homework) that is not yet available w/much OER.
- Several factors present significant obstacles to adoptions of OER content at UNC including faculty time investment, concerns about the quality of open resources and a shortage of personnel to support understanding and adoption of OER. Within their increasingly busy schedules, faculty are challenged to set aside time for exploring OER while maintaining their commitments to teaching, research and service. Despite the existence of numerous excellent repositories and portals for OER, discoverability and assessment leading to adoption of OER presents a substantial initial investment of time. Identifying the appropriate materials for a specific set of learning objectives is labor and time intensive. Additionally, there is a significant time investment required to identify or newly create the appropriate supplementary materials, namely handouts, worksheets, problem sets, lesson plans, videos, assignments and tests. Secondly, many faculty have significant concerns about the quality of open resources based on their perceptions of the review process. Overcoming these perceptions requires education and again, a dedication of time, to understand how OER are created and vetted in the

various disciplinary areas. The final obstacle of note is the challenge of identifying personnel with time to reassign or take on the additional roles related to a robust OER initiative on campus. For broader adoption of OER at UNC, personnel must be identified to undertake university-wide educational initiatives to inform faculty about the OER as well as to assist faculty in identifying appropriate OER for their individual courses. In addition, personnel are needed to support faculty in re-purposing of course materials and integrating them into the Course Management System.

- 1. Quality of OER varies depending on the sources and disciplines. 2. Availability of OER varies depending on disciplines; it is difficult to find ones applicable to our specialized courses and graduate level courses. 3. Faculty members lack time and resources to evaluate, adopt and maintain OER. 4. Sustainability of an OER item depends on its creator, platform and community. Adopting one now means taking the risk of spending more time to find a replacement in the future when it's no longer updated. 5. "Someone needs to pay for it." There may not be enough trust of stability and sustainability in the OER ecosystem. 6. Using too many resources openly available may threaten the distinctiveness and value of our education. 7. There is no immediate return on investment from effort putting into creating OER, both for individual faculty members and the institution as a whole.
- Understanding all the available options out there.
- Awareness and perceived or real quality. Interactive support modules and course activities. Faculty are hesitant to try new materials. They are comfortable with the content they currently use and are reluctant to create something new. Having the quality pictures needed for health care. Quality and design of the OER materials.
- Anschutz Campus 1. Time to look for or create OER and/or Open Textbooks. 2. Time to adapt currently available OER and/or Open Textbooks. 3. Knowledge about available OER and Open Textbooks and their level of quality. 4. Credit/incentives in relation to promotion and tenure for creating OER and or Open Textbooks. Denver Campus (Auraria Library) concerns about: 1. Quality of material 2. Time needed to select OER Materials 3. Needs being supported in terms of technical, software and design needs related to OER creation, adaptation and/or storage 4. Being certain that OER use would be formally approved 5. Being certain that OER use would not harm accreditation or positive program/department review 6. Potential inability to count creation or review of OER materials toward fulfilling service and/or research goals
- Challenges to the use Open Educational Resources include: 1. Lack of faculty knowledge of where to find available resources. This changes rapidly as new sites appear and some other sites disappear or merge with other resource sites. 2. Quality of available Open Educational Resources. Some faculty have examined open resource options but have not found the quality of the textbooks to be comparable to the textbooks which are purchased. It is important for student learning that appropriate material is covered in a high-quality and pedagogically sound manner. 3. In introductory courses, many publishers provide a wide array of supplemental materials and support structures that may not be available from open resources. These additional materials can enhance student learning. 4. Advanced courses require much more specialized content which is often not available as Open Educational Resources. This is particularly true in upper-division undergraduate classes and in graduate classes.

- Limited time at a teaching institution for adoption.
- Time to research options. Lack of training
- I believe that the biggest challenge would just be the time needed to adopt, review and revise the materials. Faculty currently have a lot on their plates given the small size of our faculty. We have been working to address current initiative fatigue, and I believe we might see some resistance, simply due to overload.
- Educating faculty about the existence of open materials (OER, textbooks, etc.) and convincing faculty to restructure their courses accordingly.
- The University of Colorado Boulder is herein abbreviated as the UCB. 1. Three librarians are committed to furthering OER awareness, education and support on campus but they are developing this work in balance with their other primary position responsibilities. 2. The need to develop a UCB working group focused on OER and with broad stakeholder representation of students, faculty, the bookstore, instructional designers, librarians, administrators, etc. (The three librarians may initiate such a group, depending on near-term developments related to the increased focus on OER in Colorado.) 3. A current need to develop a closer working relationship and dialogue with the UCB's students and student government, in relation to OER. (The three librarians who are working on OER are initiating conversation with members of the student government executive). 4. A current need to identify those UCB faculty/instructors who are aware of and using OER in their teaching, and who could share their experiences and diverse perspectives with colleagues. Ideally, the Colorado OER Council's current other survey may increase our knowledge of campus OER adopters, supporters and advocates. 5. The likelihood that the UCB bookstore's leadership may perceive of OER as a threat, and the need to engage them as partners in supporting OER adoption by faculty/instructors. The bookstore is supporting the inclusive-access model of providing commercial course materials*, but on a still-limited scale at this time. The bookstore's leadership may feel that OER are specifically a threat to this new model and the increased adoption of it by UCB faculty/instructors. *The inclusive-access model is intended to provide all course-enrolled students in a given course with access to the instructor's selected commercial course materials, from the first day of the class and at a reduced price (because all students in the course – and not only some – will pay for this course materials access). Students must (legally) have the option to decline these materials but they must do so individually and proactively by the university's census date for the given semester, or be charged for continuing to use the materials. 6. The potential difficulty of providing UCB faculty/instructors with information/education about the different affordances of adopting OER for use in teaching, as compared to adopting the inclusive-access model of providing commercial course materials at a reduced cost to students, if the inclusive-access model is promoted without accompanying education about OER. While the all-inclusive model may positively facilitate course materials cost savings for students – just as OER greatly reduce or eliminate course materials costs for students – OER also present distinct and additional affordances due to their open licenses. These distinct, potential benefits of OER and their open licensing include, for example, different pedagogical possibilities for the faculty/instructors who use OER in their teaching and students' ability to retain and use OER indefinitely (such as when taking subsequent courses, or during their post-university working lives).

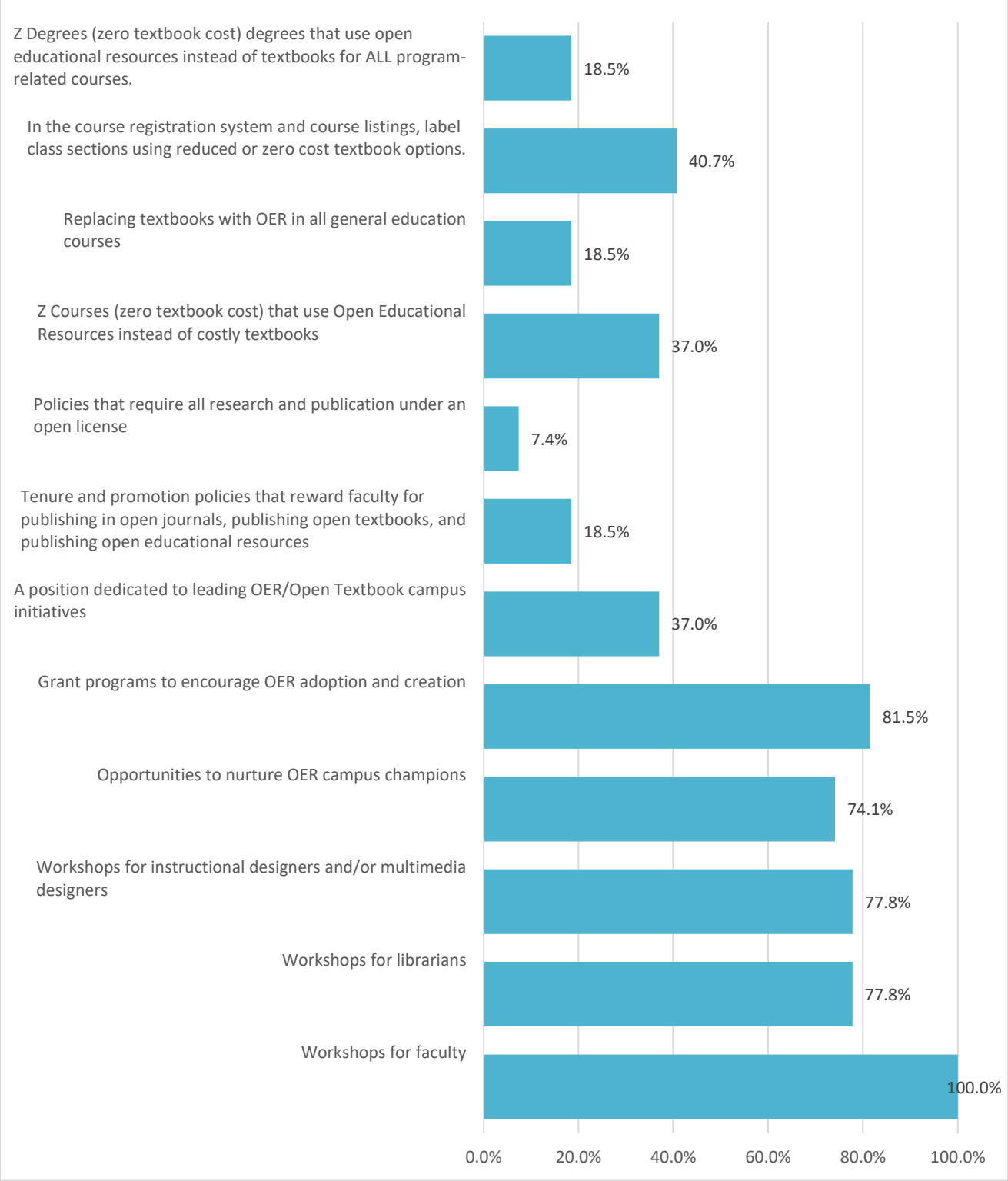
When OER and the inclusive-access model for commercial course materials are discussed only in terms of cost savings to students, the distinct and additional benefits of OER and their open licensing can be misunderstood or overlooked. 7. The need to identify human and other resources to support the creation/publication of high-quality, openly licensed OER by UCB faculty/instructors and others. The University Press of Colorado might be explored as a potential partner. 8. The need to explore and identify funding sources to support and encourage OER adoption and creation/publication by UCB faculty/instructors and others. This funding could support education for faculty/instructors and others about OER and related considerations such as open licensing, as well as support OER adoption and creation/publication with grant funds, course release time and more. 9. The need to explore with UCB faculty and other stakeholders the possibility of recognizing OER creation/publication, and perhaps even adoption, in tenure and promotion processes.

- Faculty are slowing migrating towards OER materials. No real obstacles or challenges.
- Limits instructor course design options and flattens the instructional perspective. 1. One of the challenges would be that not all students have access to the internet. 2. Implementation and faculty buy-in 83. I am aware of OER but lack the time to properly research and review material for adoption. I would like to move in this direction. 4. I would happily consider them now that I am aware of their existence. I think the biggest barrier will be just making instructors aware of their existence and then having instructors take the time to explore the options available. 5. Mostly time for me. For students, it may be getting printed versions. 6. I have tried incorporating OER in one of my courses, but students had issues with downloads. I also found that several of the texts I considered were not as high a quality or as thorough as our traditional textbook. I believe this will improve as the concept becomes more invested in and quality improves. 7. None that I can think of. 9. If OER are to be used in place of textbooks for courses taught in many sections, there will need to be some standardization and re-evaluation of OER availability and new resources each semester (a good practice anyway). This is not or is less the case if only a handful of full time faculty are using OER, as they will do this anyway 10.Quality and the textbook which fits the course material. Often the best textbook is not "open". 11. Finding quality textbooks that contain all competencies required for the course. 12.I'm not sure, but I suspect that many teachers aren't aware of OER or believe that the quality of OER resources are less than regular publisher's materials. I myself feel that way – if I had to choose a biology textbook without knowing the price, I would use Campbell or Mader (~$200), hands down. It is only because I know that my students have financial difficulties that I would choose to use OpenSTAX Biology which is free digitally or $30 in print. Also, I'm not sure that financial aid will pay for OER.
- Knowledge about them and how to use them and if the information in them is accurate
- Lack of knowledge on availability
- Training for faculty and adjunct members, and for students.
- Giving faculty the resources and time to examine Open Educational Resources.
- Staff support, training resources, faculty awareness and ability to maintain OER once identified for use in a course.
- Resources.

- The challenge for us is lack of information.
- Understanding of Open Textbooks and the challenge of changing.
- Assurance that materials are ADA compliant!
- Concerns over effectiveness. Most students still prefer hard copy for reading (survey data). Open Textbooks is not yet a topic on campus.
- The biggest barrier is lack of faculty awareness, even though we have tried for years to get them engaged. Another barrier is that the OER solution is not bundled as a complete solution and given to the faculty: textbook, solutions manual, lecture notes, teaching manual.
- Open resources can be less effective for students if not carefully reviewed and vetted for content and material appropriate for the course. Some open resources are poorly constructed and of poor quality.
- Would take time to be sure the materials are what fits the purpose.

Q12 Please select all of the OER and/or Open Textbook activities your leadership would encourage on your campus if you had adequate funding and support.

Answered: 27 Skipped: 0



Question 12 continued

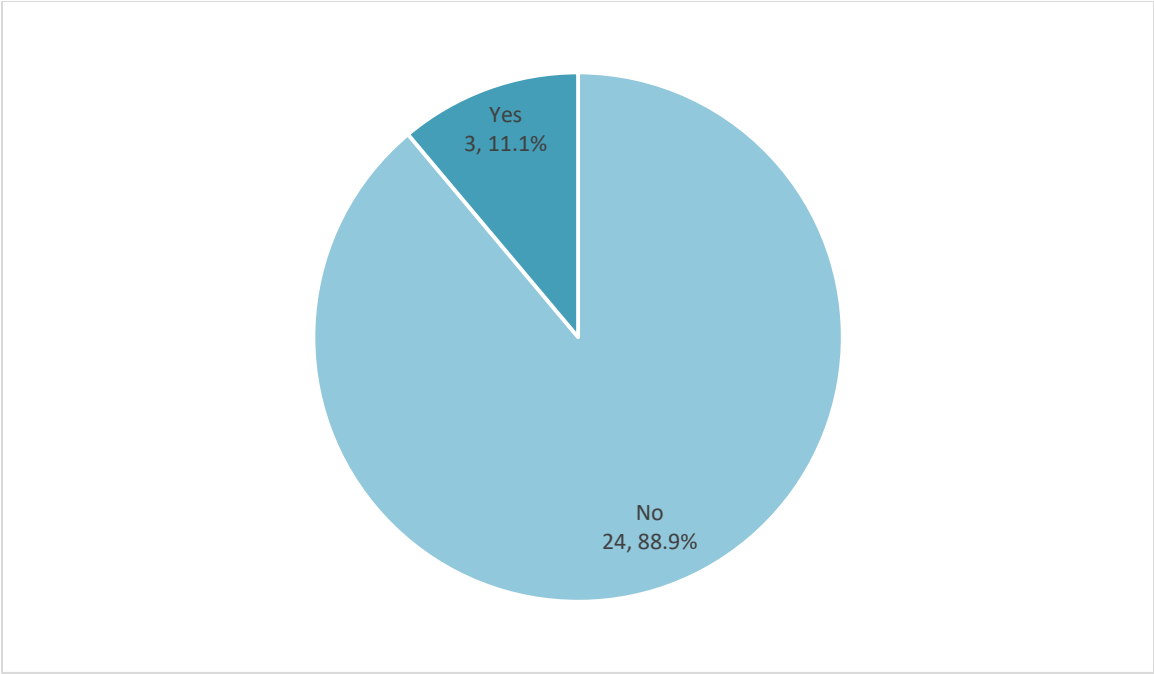
ANSWER CHOICES		RESPONSES
Workshops for faculty	100%	27
Workshops for librarians	77.8%	21
Workshops for instructional designers and/or multimedia designers	77.8%	21
Opportunities to nurture OER campus champions	74.1%	20
Grant programs to encourage OER adoption and creation	81.5%	22
A position dedicated to leading OER/Open Textbook campus initiatives	37.0%	10
Tenure and promotion policies that reward faculty for publishing in open journals, publishing open textbooks, and publishing open educational resources	18.5%	5
Policies that require all research and publication under an open license	7.4%	2
Z Courses (zero-textbook-cost) that use Open Educational Resources instead of costly textbooks	37.0%	10
Replacing textbooks with OER in all general education courses	18.5%	5
In the course registration system and course listings, label class sections using reduced or zero cost textbook options.	40.7%	11
Z Degrees (zero-textbook-cost) degrees that use open educational resources instead of textbooks for ALL program-related courses.	18.5%	5
Total Respondents: 27		

If other, please describe.

- Faculty to develop add-ons beyond OER texts, e.g. online homework question banks that can be graded online
- We might consider indicating OER materials in our printed class schedule. We already do that for classes that use eBooks.
- One of our librarians, Meg Brown-Sica, is also a trained OTN presenter, and travels around the country with a second OTN instructor to give OTN trainings and workshops. We also host the OTN content in our Dspace digital repository, including cataloguing and preservation.

Q13 If applicable, is your campus currently tracking the amount of money students save on textbook costs as a result of replacing publisher textbooks with Open Educational Resources and/or Open Textbooks?

Answered: 27 Skipped: 0



ANSWER CHOICES		RESPONSES
Yes	11.1%	3
No	88.9%	24
Total Respondents: 27		

If you answered yes, please provide the annual student cost savings and methodology.

- We have a pilot program that is run jointly through our library in conjunction with our Center for Teaching and Learning; there are no formal data yet.
- No, but we do track it for eBook usage.
- Yes, we are trying, but we are unable to obtain a representative estimate for this, as we do not have an agreed-upon methodology to gather displaced costs. We do not know the fraction of purchases of new texts, used texts, texts bought back and the buy-back pricing that depends on the condition of the book.

Appendix C. System Input Survey

Note: Question 1 and 8 removed for confidentiality purposes.

Q2 How important is reducing the cost students pay for higher education to your system office's leadership?

Answered: 2 Skipped: 0

- A major concern
- Neutral

Q3 Does your system have any policies regarding the use, publication, or implementation of OER?

Answered: 2 Skipped: 0

- Yes
- No

Q4 Please share any stories (and weblinks) you may have about OER and/or Open Textbooks at your system office. Do not give examples of initiatives at individual institutions. All Colorado public institutions of higher education will receive separate surveys.(4,000 character limit for responses)

Answered: 2 Skipped: 0

- CCCOnline is the online consortium of the 13 colleges in the Colorado Community College System (CCCS). CCCOnline has an OER Taskforce which is creating guidelines for the use and implementation of OER at CCCOnline. They have developed operational definitions and implementation workflows for CCCOnline which will be shared with CCCS colleges through the Learning Technology Council. The CCCS Learning Technology Council is in the early stages of developing shared best practices related to OER and learning objects.
- Academic matters are governed by the faculty and thus handled at the campus/school/dept level. We have no formal policies, but our libraries and various faculty are champions of OER.

Q5 What are the challenges and barriers to increasing the adoption of Open Educational Resources and/or Open Textbooks throughout your system? (4,000 character limit for responses)

Answered: 2 Skipped: 0

- CCCS has funding several System Innovation Grants which involve OER. Red Rocks, Community College of Denver, and CCCOnline received an Innovation Grant for integrating WebWorks, an OER math resource. CCCOnline has received two Innovation Grants involving OER content. One in Liberal Arts and one in Biology courses. In addition to the Innovation Grants, CCCOnline has been providing OER courses since 2013. Effective Spring 2018, CCCOnline expects to have 40 OER courses which require no textbook or digital content fees to students. CCCOnline is also working on the branding for OER courses, as well as student education regarding what to expect when taking an OER course. Effective Summer 2018, CCCOnline will launch a suite of Early Childhood Education courses that will be OER as well. In October 2017, CCCOnline and CCCS will feature OER expert Dr. Cable Green as the keynote

and consultant at the annual Connect Conference. The Colorado Community College System has set a strategic priority for the system to "increase the use of learning object repositories in three statewide disciplines per year" and is currently setting up the CCCS Learning Object Repository. This will facilitate the use and sharing of OER learning objects across CCCS, and will hopefully remove barriers for faculty interested in adopting OER at all our System Colleges. Several our CCCS employees are MERLOT members, as contributors or reviewers, and others belong to other OER sites such as Community of Online Research Assignments (CORA), an OER for faculty and librarians. CCCS learning objects, such as the TAA CHAMP Project, NANSLO Gas Chromatograph, CCCS COETC Career Coach Reports, and Technical Math for Industry MOOC, are licensed with Creative Commons BY to contribute to the OER movement. CCCS employee and System College faculty participate as peer reviewers for OpenStax and other peer-reviewed OER textbooks and resources.
- The system has helped organize the librarians from the four campuses, some faculty and other staff to discuss OER and understand the best ways to encourage and support faculty who want to use OER and/or Open Textbooks.

Q6 Please select all of the Open Educational Resources and/or Open Textbook activities your leadership would encourage in your system if you had adequate funding and support? (Select all that apply)

Answered: 2 Skipped: 0

- Workshops for faculty (2)
- Workshops for librarians (2)
- Opportunities to nurture OER campus champions (2)
- Workshops for instructional designers and/or multimedia designers
- Grant programs to encourage OER adoption and creation
- Z Courses (zero textbook cost) that use Open Educational Resources instead of costly textbooks
- Other: We would encourage use, but would consider it a perversion of processes to mandate use of OER, mandate publishing in open access venues, or making any connection between Open anything and tenure, etc. It is extremely important that OER/Open Texts discussions are NOT conflated with open access publishing. These are two very different issues and should not be discussed together.

Q7 If applicable, is your system currently tracking the amount of money students save on textbook costs as a result of replacing publisher textbooks with Open Educational Resources and/or Open Textbooks?

Answered: 2 Skipped: 0

- Yes
- No

If you answered Yes, please provide the annual student cost savings and methodology. (100 character limit)

- CCCOnline is tracking cost saving to students through the OER Initiatives. For example, for the Fall 2017 semester (so far) it is estimated that OER courses are saving CCCOnline students an aggregated $300,714 for the semester.

- This is VERY difficult to make meaningful. Student borrow books, buy used books, use previous editions when changes are small, get editions from outside the US at greatly reduced prices, etc. An inflated estimate is easy, but also meaningless.