# Research Projects for the Open Education Group's OER Research Fellowship 2018-19

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Umpqua Community College
November 21, 2019

# COUP Framework

- The William and Flora Hewlett Foundation sponsors OER Research Fellowships to do research on the impact of open educational resources on the
  - **Cost** of education,
  - student success **Outcomes**,
  - patterns of **Usage** of OER, and
  - **Perceptions** of OER.

https://openedgroup.org/fellowship

# OER Design, Creation, and Adoption:

## Comparing Student Outcomes, Retention, and Perceptions of a Traditional Text with a Newly Created OER

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# Background

- Community college in Oregon.
- Business Law instructor received library grant to create OER to replace commercial textbook.
- Wanted to save students money, include content specific to the course, keep the material current and relevant -- especially the cases and diagrams.

# OER Creation

- Created OER with two separate parts:
  - Textbook
  - Cases and diagrams
- Cases and diagrams referenced throughout the main text and included as an appendix allowing them to be updated easily.

# OER Creation Support

- OER librarian:
  - Project guidelines, campus OER adoption procedures, editing, copyright, format and access options, archiving in repository.
- Accessibility services department:
  - Ensure textbook met accessibility standards.
- Online learning department:
  - Integrate with learning management system.
- Bookstore:
  - Providing print version of OER for sale to students.

# OER Textbook

- Specifically covered course content.
- Created in Microsoft Word.
- PDF version placed in repository. Link to the textbook provided in the syllabus and links to specific chapters provided in learning management system.
- Print version offered for sale in the college bookstore at cost and at library on reserve.

# Implementation and Available Formats

The instructor taught two sections of the same course during Fall 2018:

- One section used the previously used commercial textbook.
  - Comercial textbook retailed new in print for $192.60 at the college bookstore during Fall Term 2018.
  - Ebook option for $56.99.
- One section used the newly created OER.
  - OER provided in PDF version via learning management system.
  - Print option available at the bookstore and on reserve at the library.

# Student Training on OER Usage

- OER Librarian visited the OER section of the class on the first day to teach students how to access and use the PDF version of the textbook and reference the cases and diagrams.
- Explained that print version available in the bookstore and on reserve at the library.

# Student Feedback to Instructor

- During the term, students in the OER section provided instructor and OER librarian with suggestions for improvements which they compiled and used to make changes for future terms.

- Received additional grant to revise the course over Summer Term 2019 based upon student feedback. Expanded support materials and worked with online learning department to further integrate the readings into the learning management system.

# Literature on Student Outcomes

- Studies controlling for both course-level and student-level variables found that students had same or better outcomes when using OER (Allen et al., 2015; Winitzky-Stephens & Pickavance, 2017; Clinton, 2018; Colvard, Watson, & Park, 2018; Jhangiani, Dastur, Le Grand, & Penner, 2018).
- Grissett & Huffman (2019) did quasi-experimental study controlling for course-level variables.
  - No significant differences in exam scores or final grades between students in the two sections.
  - Controlled for course, instructor, term, classroom, time of day, course delivery method, syllabus, in-class materials, sequencing of material, and exam questions.
  - Commercial textbook in print, OER in PDF format.

# Literature on Student Perceptions

- Most studies on student perceptions of OER quality have found that students perceive OER to quality to be the same or better than commercial textbooks.
- Most studies on student perceptions of the usefulness of OER in helping them achieve the outcomes for their course find that the majority of students perceive OER to be at least as useful as commercial textbooks.

# Research Questions

1.  Was there a significant difference in how students rated the quality and usefulness of the commercial text compared to the OER text?
2.  Was there a significant difference in student final course grades, withdrawal rates, or enrollment intensity the following term between students enrolled in the OER section and the commercial textbook section when controlling for course-level variables including instructor, term, course delivery method, textbook format, syllabus, sequencing of materials, in-class instructional material, writing assignments, and material covered in quizzes and exams (although not the questions on the quizzes and exams) and student-level variables including previous academic experience, prior GPA, and enrollment intensity at the beginning of the term?

# Current Study

- Compares differences in course grades, withdrawals, enrollment intensity the following term, and student perceptions of textbook quality and usefulness between OER and commercial textbook sections of the same course.
- Controls for instructor, term, course delivery method, textbook format, syllabus, sequencing of materials, in-class instructional material, writing assignments, and material covered in quizzes and exams (although not the questions on the quizzes and exams).
- Accounts for prior GPA, prior number of terms of college completed at the institution, prior transfer and College Now credits completed, and the number of credits enrolled in during the term.

# Project Proposal and Informed Consent

- Project proposal, student survey, and informed consent reviewed and approved by the college's office of institutional research and administration since the college did not have an IRB.

# Student Survey

Responses from 13 students assigned the commercial textbook and 22 students assigned the OER.

- "How would you rate the quality of this textbook compared to other textbooks that you have used in the past?"
  - (+1) Better quality than other textbooks, (0) Same quality as other textbooks, and (-1) Worse quality than other textbooks.
- "How useful was this textbook in helping you learn the course content and complete the coursework?"
  - (0) Not useful, (1) Somewhat useful, (2) Very useful. To gather qualitative data about student perceptions of the textbooks, the following two open-ended questions were also included: (1.)
- "What did you like about this textbook?"
- "What did you dislike about this textbook?"

# Student Outcome Data

- Collected from office of institutional research.
- 25 students in the section assigned the commercial textbook and 30 students in the section assigned the OER.
- Data collected for each student:
  - Final grade, whether the student withdrew, number of credits enrolled at the beginning of the second week of Fall Term 2018, number of credits enrolled at the beginning of the second week of Winter Term 2019, prior GPA, number of transfer, dual credits, and College Now credits, number of terms completed at the college (not including College Now).

# Data Analysis

- No confounding differences detected between the two course sections.
- Independent-samples t-tests used to compare the final grades (in GPA format) and enrollment intensity of the students assigned the OER and the students assigned the commercial textbook.
- Chi-square analysis used to compare the withdrawal rates across the two groups.
- Independent-samples t-tests used to compare the students' ratings of the quality and usefulness of the commercial and OER textbooks.
- The open-ended questions were coded and emerging themes were recorded.

# Results: Student Outcomes

Students assigned the commercial textbook did not differ from students assigned the OER with respect to:

- Final course grade in GPA format (commercial M = 3.26, SD = 1.21; OER M = 2.93, SD = 1.41), t(50) = 0.89, p = .378
- Enrollment intensity the following semester (commercial M = 7.16, SD = 6.44; OER M = 7.43, SD = 6.13), t(53) = -0.16, p = .873
- Withdrawal rates (commercial 8%; OER 3.3%), 2(1) = 0.58, p = .448

# Results: Student Perceptions

Quality
- Students assigned the OER rated the textbook significantly higher in quality (M = 0.57, SD = 0.60) than students assigned the commercial textbook (M = 0.15, SD = 0.38), t(32) = -2.25, p = .031.

Usefulness
- The difference in the two groups' ratings of the usefulness of the textbook did not differ significantly (OER M = 1.55, SD = 0.60, Commercial M = 1.85, SD = 0.38), t(33) = 1.63, p = .112.

# Results: Student Perceptions

OER
- Students liked: Accessible digitally, directly matching the course content, simple and clear language, examples, design, digital features, and that it was free.
- Students disliked: Flow of the content, errors, difficult vocabulary, and grayscale.

Commercial Textbook
- Students liked: Helpful for the course content, clear and direct, examples, color, format, and definitions of vocabulary.
- Students disliked: Flow of the content, outdated, unbound, and lacking multimedia.

# Discussion

- No significant differences in student grades, withdrawal rates, or number of credits enrolled in the following term.
- Students in the OER section rated their textbook as significantly higher in quality even though they reported disliking errors, formatting issues, the lack of a glossary to explain difficult vocabulary, and the grayscale in the text.
- Students in the OER section appreciated that the OER was accessible digitally, that it directly matched the course content, and used clear and simple language.
- No significant difference in how students in the two sections rated the usefulness of their respective textbooks for helping them learn the course content and complete the coursework.

# Discussion

OER Creation, Adoption and Modification:
● Importance of support structures and teams to help faculty through the process.

Customization:
● Designed specifically for students and the outcomes of the course. Easy to update with current, relevant content.

Revision:
● Ongoing process.

# Limitations

- Cannot show causality between the use of the OER or commercial textbook and student outcomes or perceptions.
- Small sample size.
- Short time period -- only one term.

# Future Research

- Build upon Colvard et al.'s (2018) study which looks at differences in student outcomes when using OER and traditional textbooks broken down by socioeconomic status, race, ethnicity, and first language.
  - Useful decision making to work toward equity in higher education.
- How faculty change their teaching when going through the OER design and creation process.
  - Useful for other faculty, staff who provide OER support services, and administrators looking to implement processes to support OER adoption.

# Conclusion

- Textbook creation is an ongoing process which requires feedback and revision.
- Support needed for faculty for the different aspects of textbook creation, adoption, and use that affect student success, including stipends or release time, best practices for design and creation, accessible formats, integration with online learning platforms, formats available to students, teaching students how to use the textbook, receiving feedback, and making revisions.
- This example shows how it can be done successfully in a way that saves students money while providing a quality source that allows them to be as successful.

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# Questions

# Encouraging a Culture of OER:

## Experiences and Perceptions of Faculty Innovators at Oregon Community Colleges

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# Background



Average course materials costs

From 2015-2017, the average cost of course materials dropped for the three main degree pathways in Oregon community colleges:

AAOT cost fell by $332.58, or 16%

AS cost fell by $293.41, or 15%

ASOT-BUS cost fell by $359.95, or 16%

Open Oregon Educational Resources. (2018, Jan. 17). Two years and a big difference: Transfer degree course materials costs are down at Oregon's community colleges. Retrieved from https://openoregon.org/two-years-and-a-big-difference/

# Research Questions

1. What has been the motivation to adopt OER for Oregon community college faculty who are early OER adopters/innovators?
2. What is their perception of the OER which they have adopted?
3. How have they adopted and used OER in their courses?
4. How has OER impacted or changed their instruction/pedagogy?
5. What is their perception of how use of OER has impacted student learning, motivation, and engagement?
6. How do they view institutional support for OER?
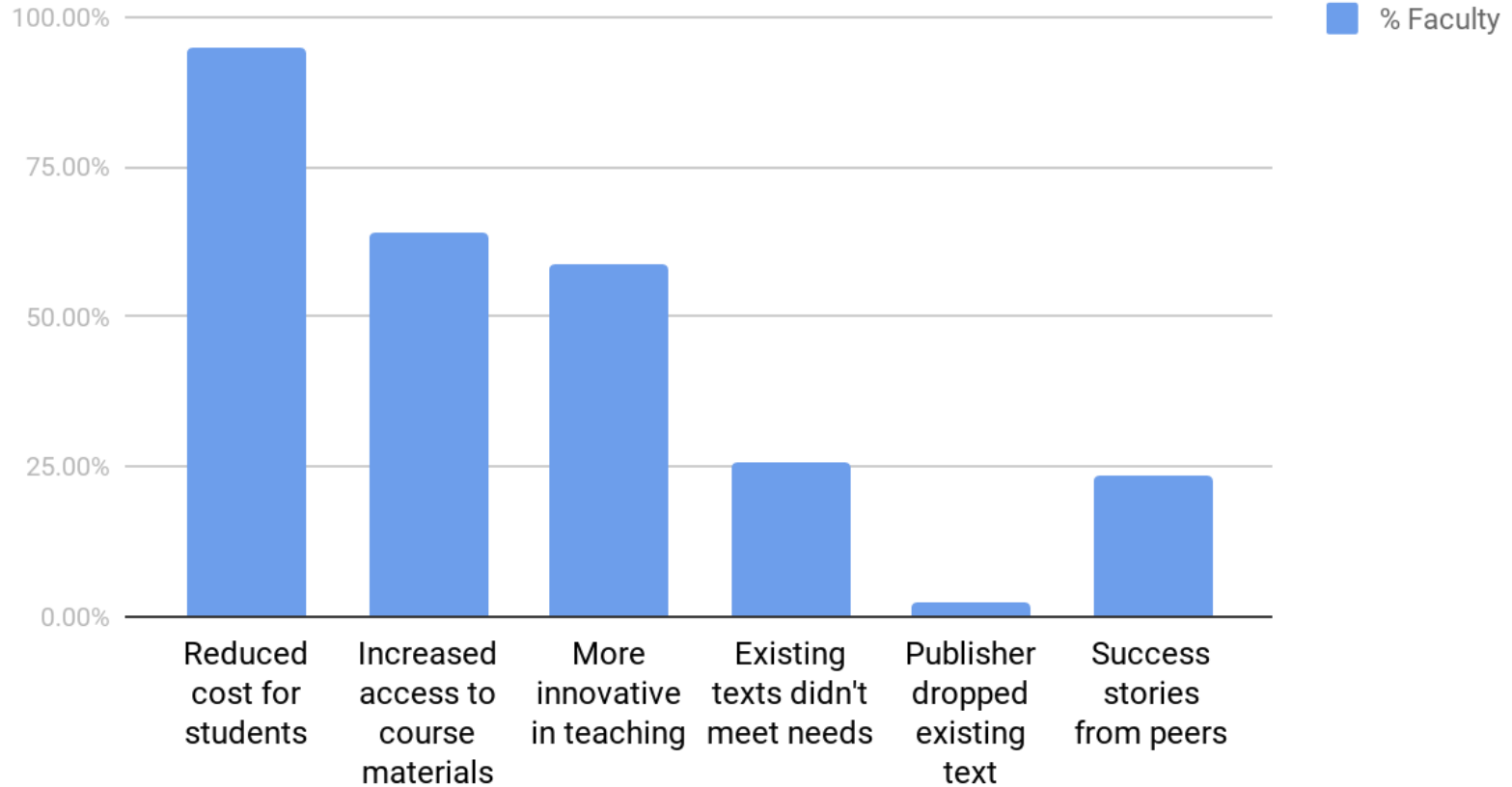7. How do they describe their OER "culture" on campus?

# Methodology

1. Research project, survey draft, and informed consent approved by Umpqua Community College Office of Institutional Research in lieu of IRB.

2. Survey emailed to faculty in Oregon's 17 community colleges who were **early -adopters/OER innovators** and who had indicated to Open Oregon Educational Resources that they were willing to be contacted about OER.
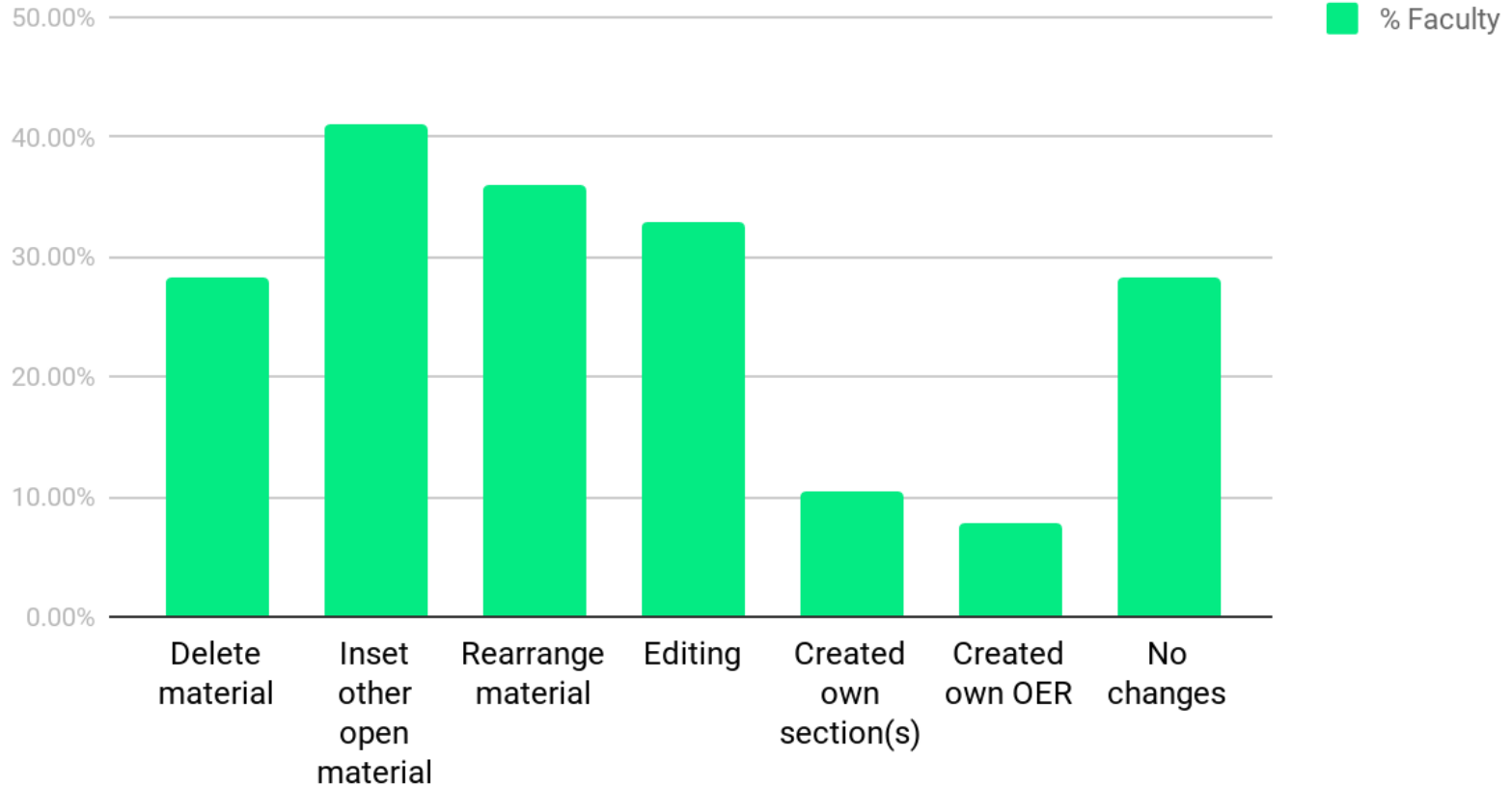
# Methodology

1. Received responses from 39 faculty from 16 of Oregon's community colleges in Fall 2018 in the following disciplines:
   - Science: 12
   - Math: 8
   - Humanities: 4
   - Writing: 4
   - Business 2
   - Developmental Education: 2
   - Health Science: 2
   - Social Science: 2
   - Technology: 2
   - Adult Basic Skills: 1
2. Open-ended questions coded, themes identified, number of respondents who mentioned each theme counted.
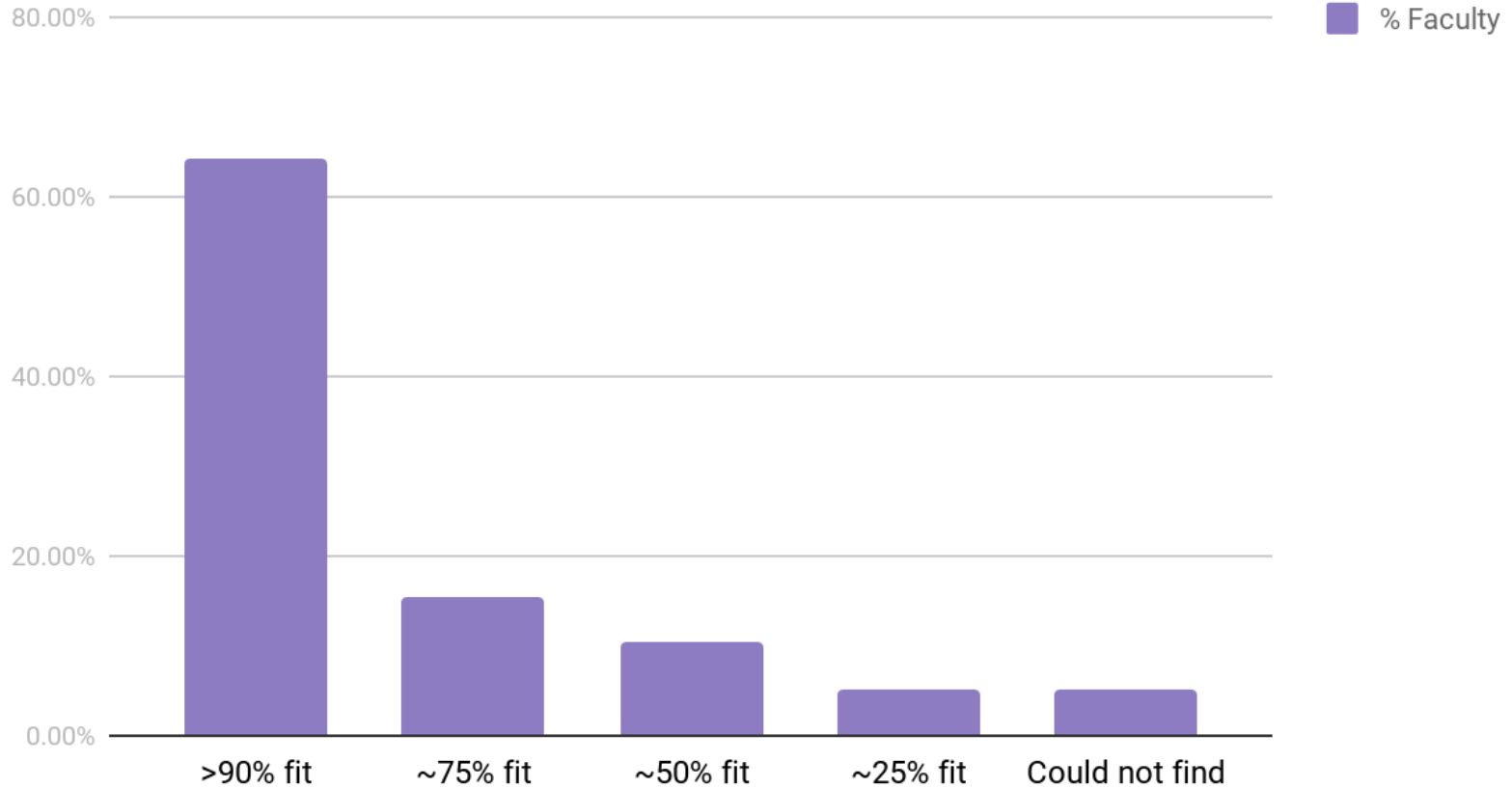
# Motivation for exploring and utilizing OER



n=39

# Faculty's OER adoption process included:



Bar chart showing % Faculty for each category:
- Delete material: ~28%
- Inset other open material: ~41%
- Rearrange material: ~36%
- Editing: ~33%
- Created own section(s): ~10.5%
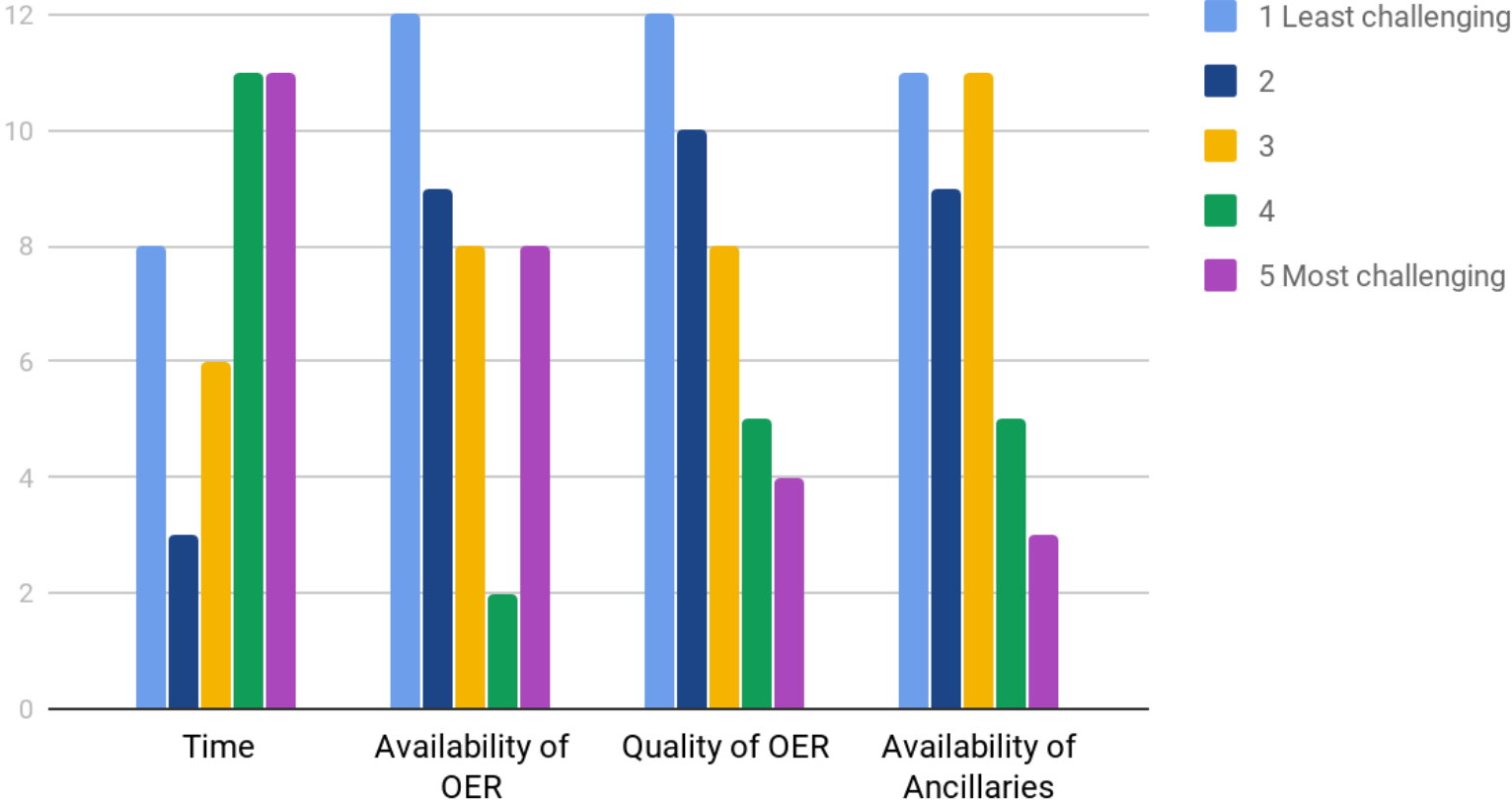- Created own OER: ~8%
- No changes: ~28%

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How well the OER fit the needs of their course:

Challenges during adoption process

# OER Adoption

- Time to adopt. (10 mentions, 26%)

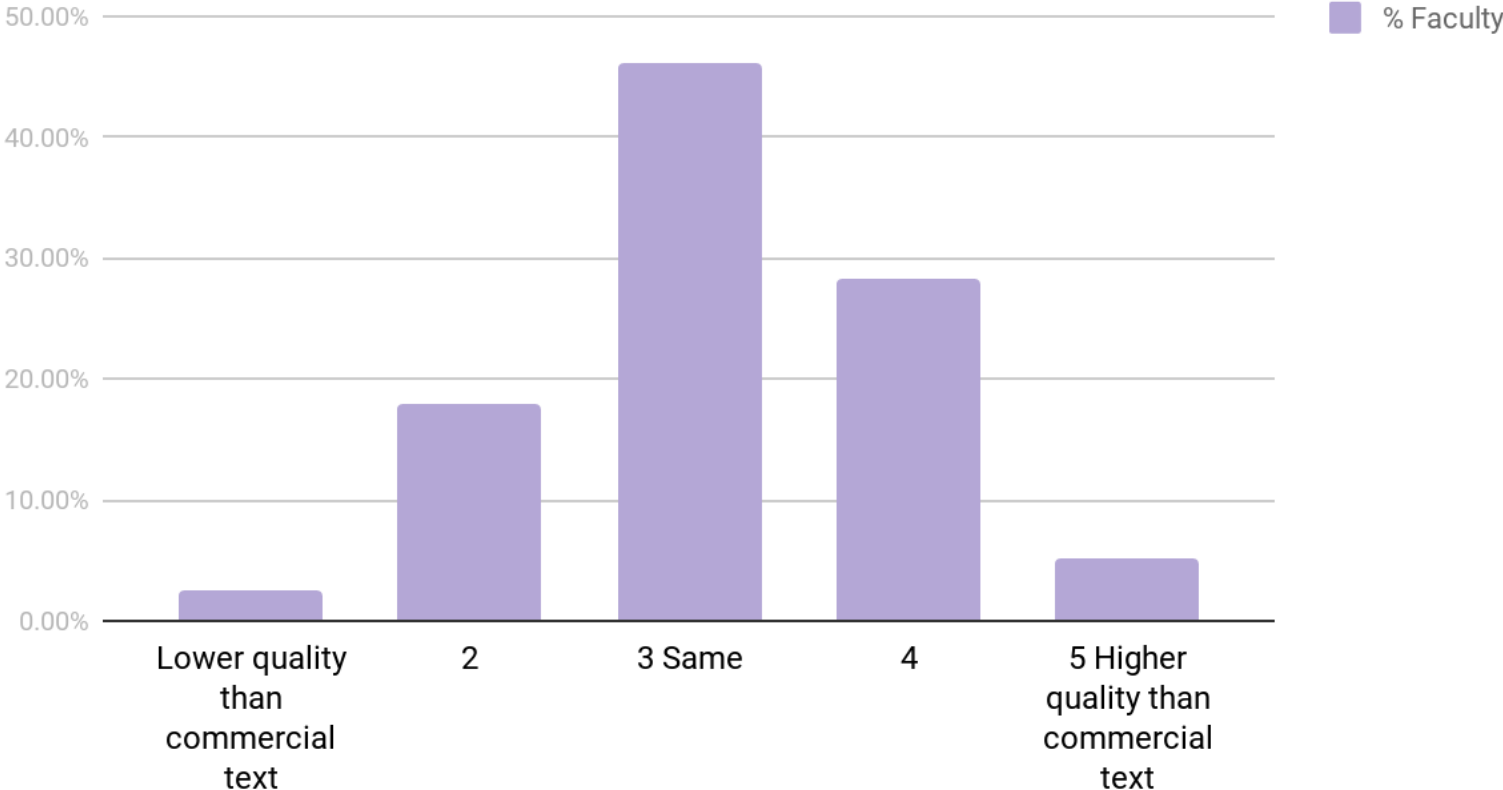- Create or modify content specifically for course so it's current, relevant. (20 mentions, 51%)

"This is my FAVORITE thing about using an OER book - I can edit it whenever I want, so I can clarify any issues with student understanding that come up. In fact, I wrote an entire chapter for my OER book based on primary literature because I wanted it to parallel what I was teaching in class."
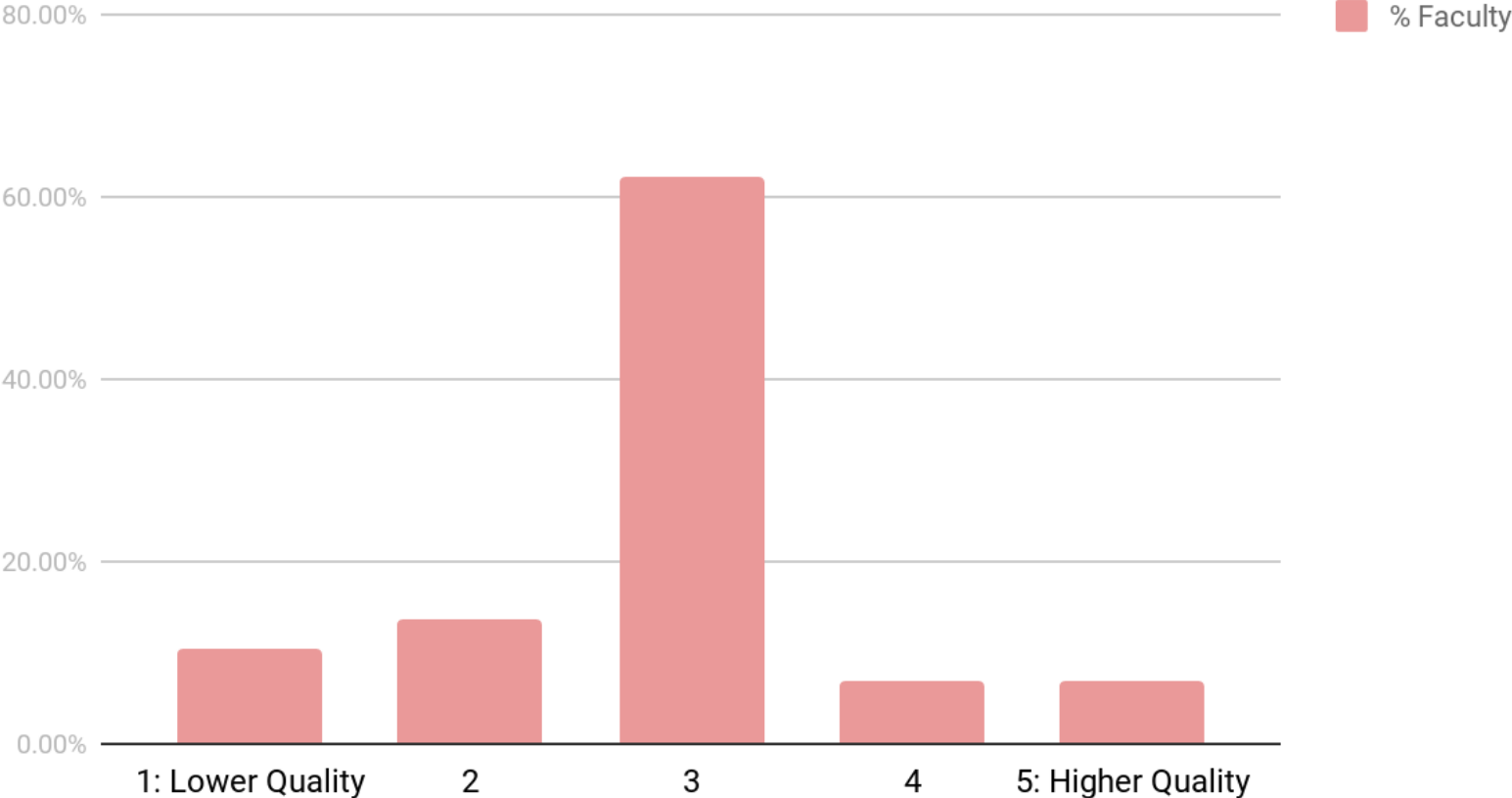
# OER Adoption

- Students want print format. (4 mentions, 10%)

- Student training needed for how to use OER/technology/features. (4 mentions, 10%)

"At first some students share problems they have getting materials. We solve the problem. I orient students to where they can find materials."

# Faculty perception of OER quality
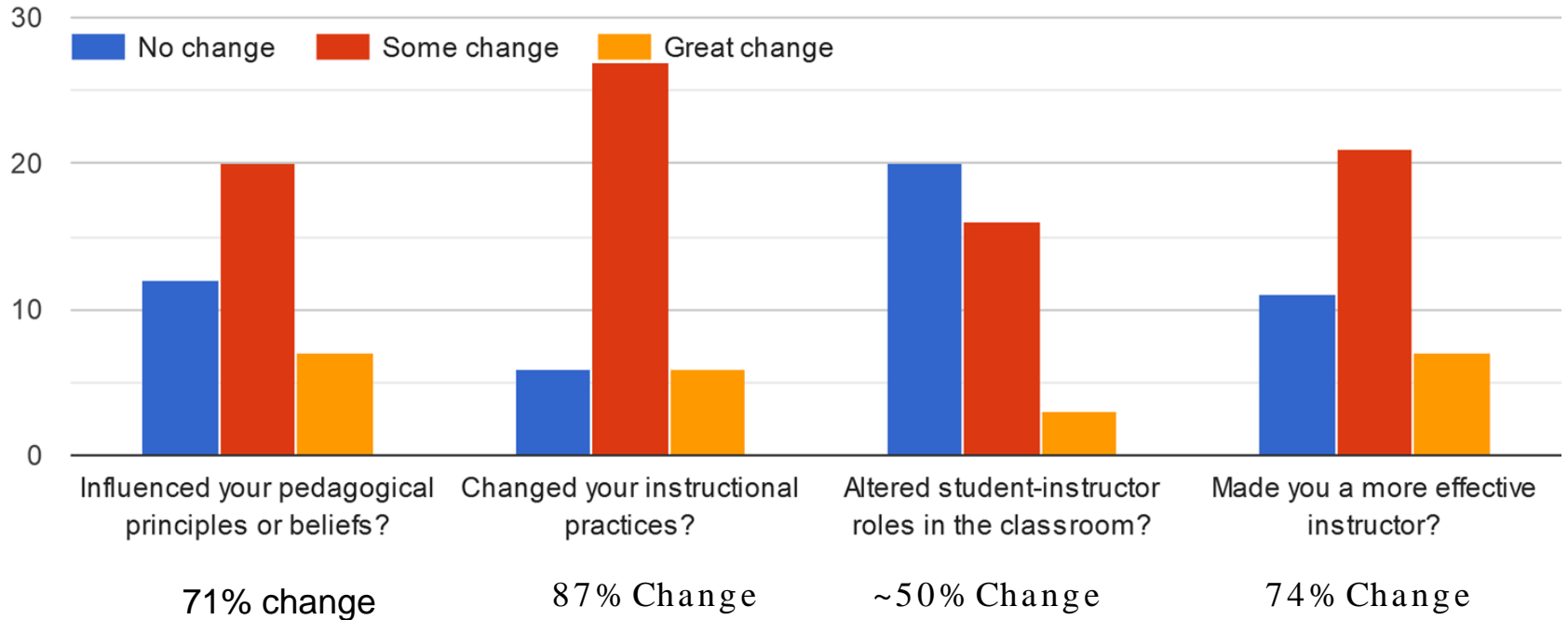


Bar chart legend: ■ % Faculty

Y-axis: 0.00%, 10.00%, 20.00%, 30.00%, 40.00%, 50.00%

X-axis categories:
- Lower quality than commercial text (~2.5%)
- 2 (~18%)
- 3 Same (~46%)
- 4 (~28%)
- 5 Higher quality than commercial text (~5%)

n=39

# Faculty perception of quality of OER ancillary course materials



Bar chart showing % Faculty ratings: 1: Lower Quality ≈10%, 2 ≈14%, 3 ≈62%, 4 ≈7%, 5: Higher Quality ≈7%. n=29

To what extent has OER... (Select one answer for each row.)

Influenced your pedagogical principles or beliefs? — 71% change

Changed your instructional practices? — 87% Change

Altered student-instructor roles in the classroom? — ~50% Change

Made you a more effective instructor? — 74% Change

# Pedagogy

- Assessments student -centered/hands -on. (9 mentions, 23%)

- Empower students to be self -directed. (2 mentions, 5%)

- Use OER in classroom using technology. (4 mentions, 10%)

"Open pedagogy makes me feel more confident creating my own assignments and encouraging students to find resources on their own. They are much more engaged when they get the green light to choose their own path."

# Faculty perception of students' level of preparedness after OER adoption



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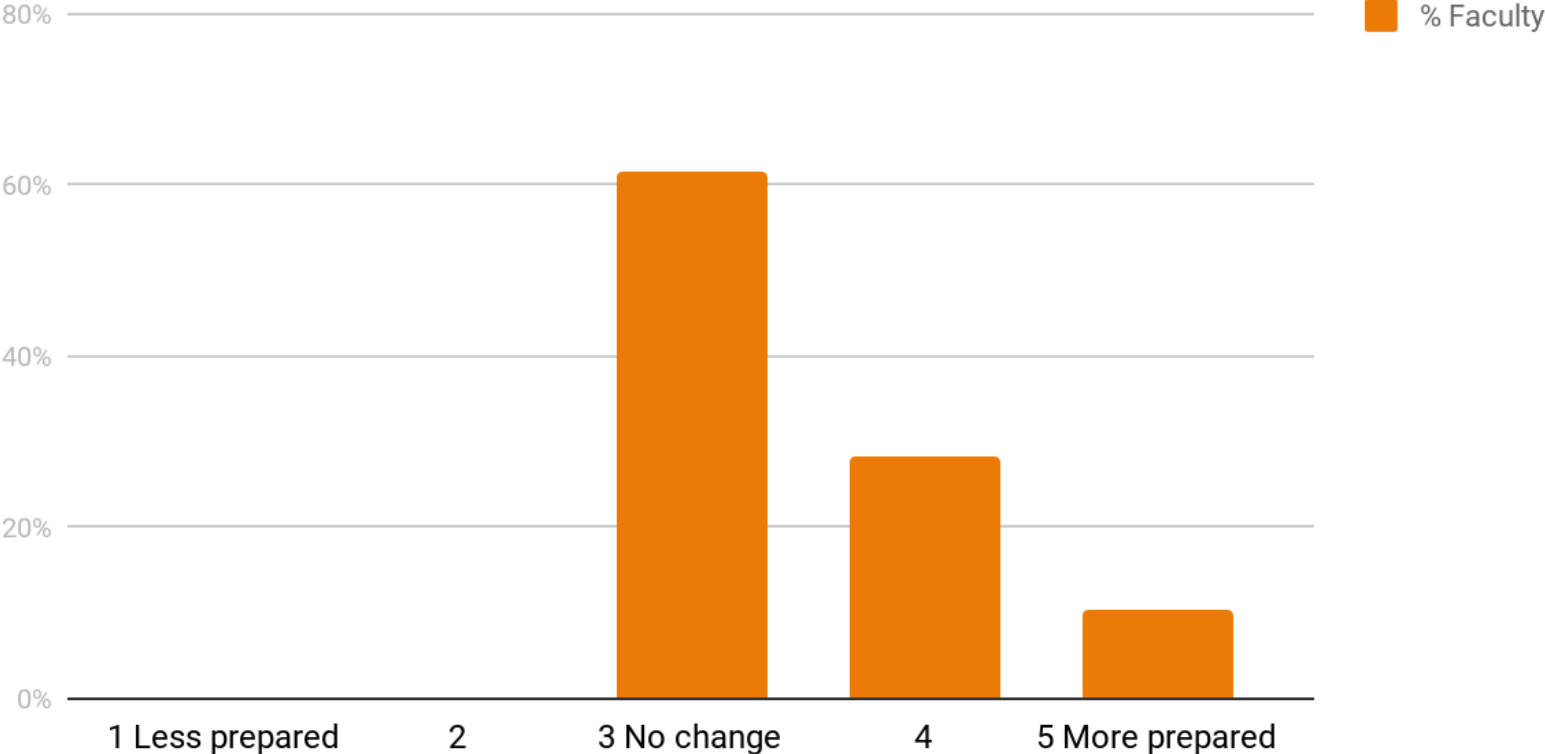
# Faculty perception of student engagement with the learning materials after OER adoption:
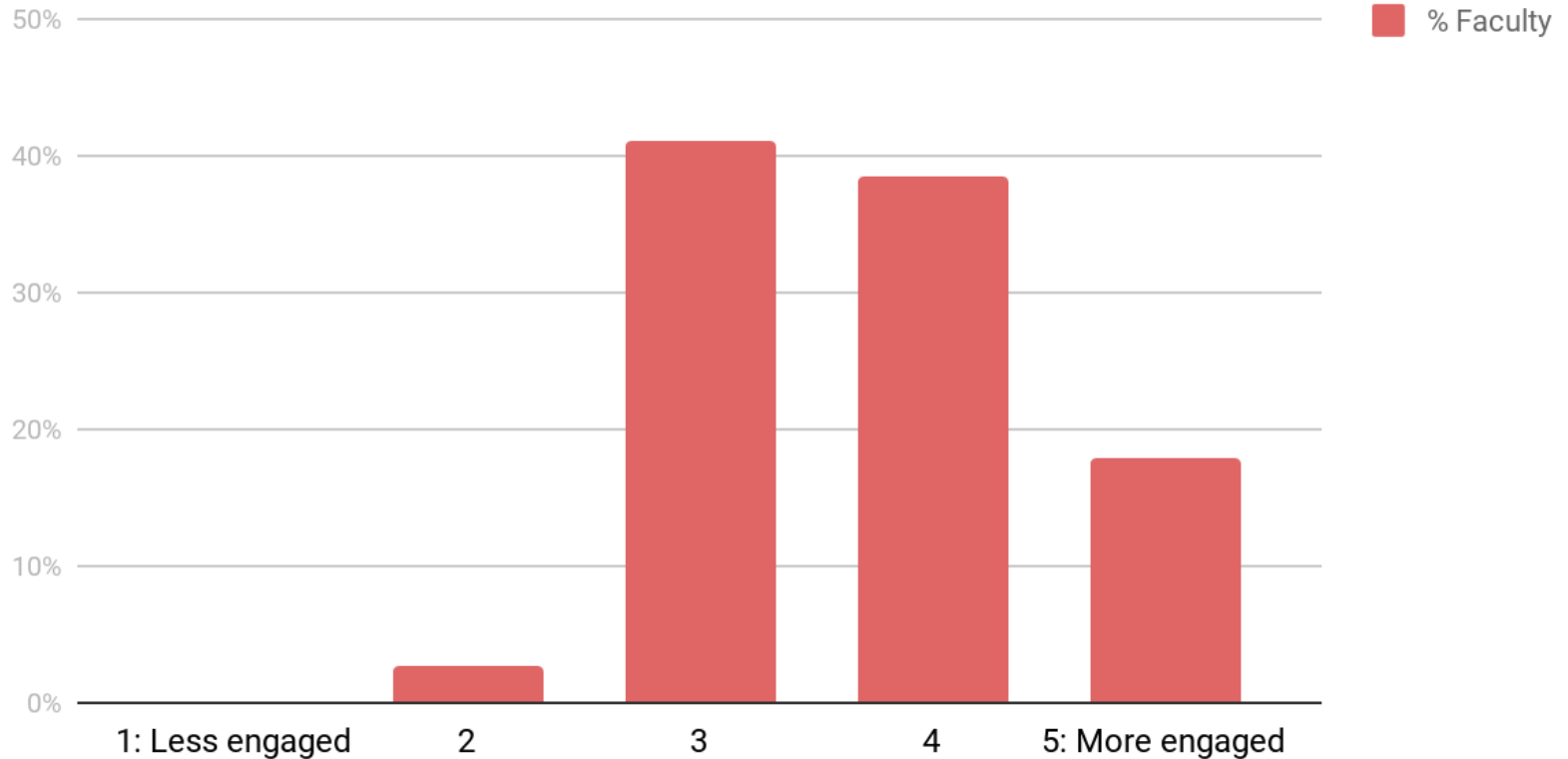


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# Equity

- Saves students money. (9 mentions, 23%)

- Equal access from first day of class. (7 mentions, 18%)

"Zero students don't have access to the text    ---that's an incredible shift from working with $ER."

- More/broader range of students engaged and reading the textbook. (4 mentions, 10%)

# Faculty Perceptions of Student Engagement

- Students like that OER were modified to directly match the course and contain relevant, current content. (5 mentions, 13%)

"My students really appreciate knowing that everything in the book is something that I think is important for them to know      -- there are no more questions about whether such and such section will be on the test (Yes, it will be, I have edited out anything that I don't think is important for this class)."

- Students like videos and self -assessments. (3 mentions, 8%)

# Faculty Perceptions of Student Engagement

- Students seem to read the textbook more because they can access it anywhere in a variety of formats and on different devices. (8 mentions, 21%)

"I have added sections to the book that we use in class for specific class activities. This makes students see the relevance of the book to the class. They also actually READ the book because they know that everything in it is something that I find important. I've never had so many students actually USE the book before."

"Students are more or less the same. They like not paying for books and using that money for things they need."
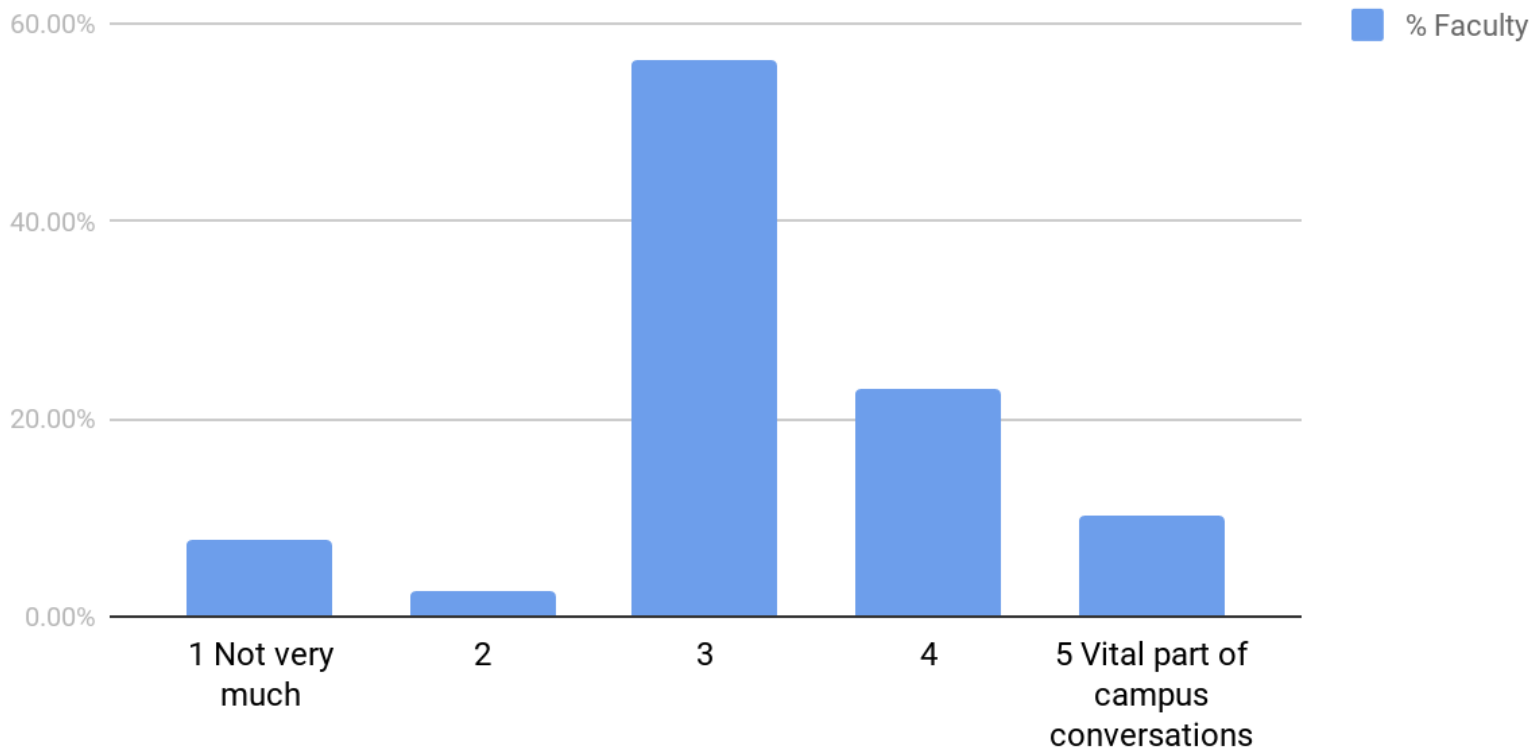
# Faculty Perceptions of Student Engagement

- Students feel connected to faculty and course content because they know faculty chose the OER because they care about their financial realities and want them to succeed. (2 mentions, 5%)
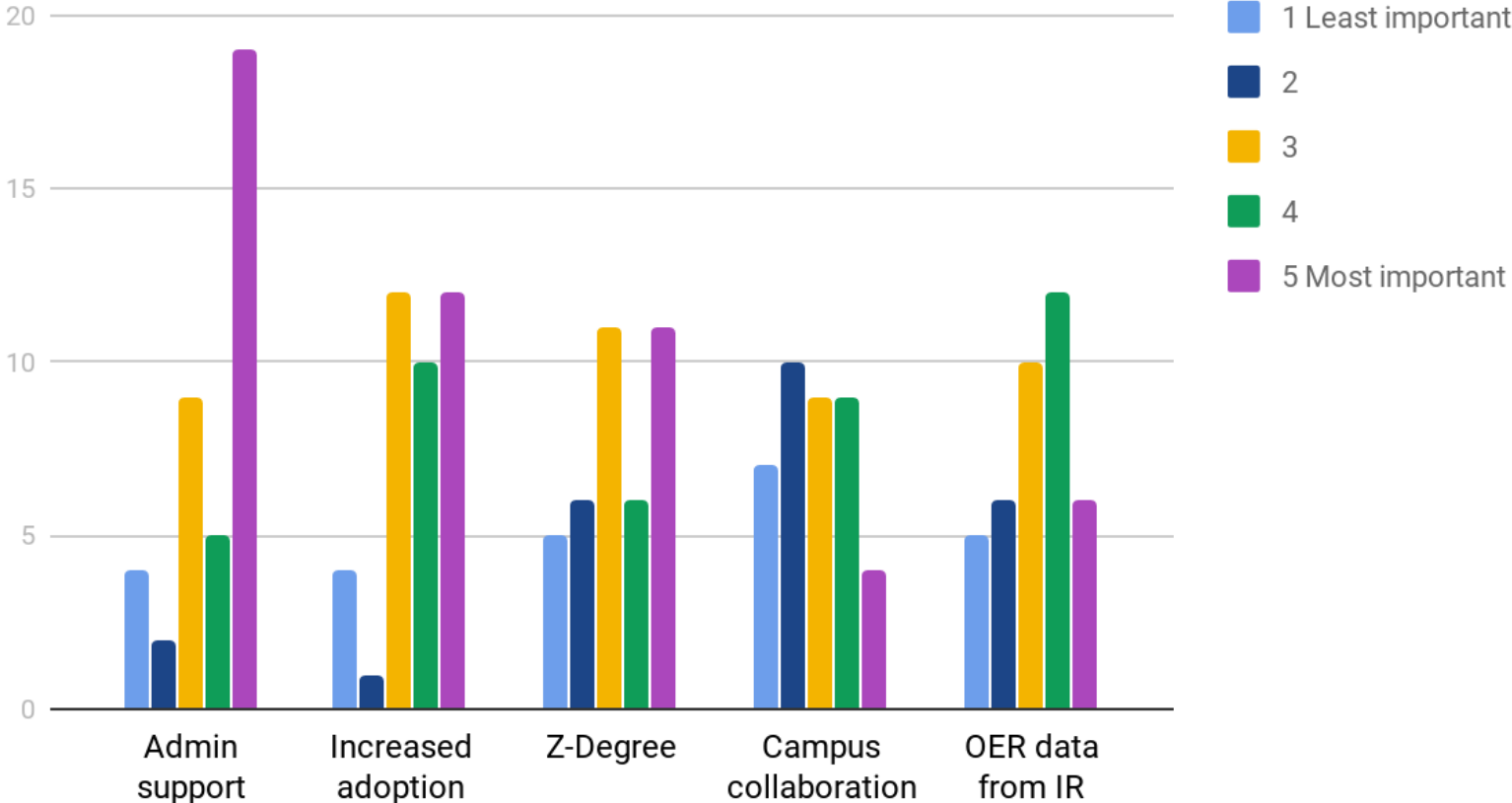
"...students understand that I chose OER because I care about them and their lives. And caring is the most effective way to engage people in learning."

- Students feel empowered when they can do more self-guided study. (2 mentions, 5%)

# Faculty perception that OER is a part of their campus conversations and organizational culture



n=39

**OER support that faculty want**

| | Admin support | Increased adoption | Z-Degree | Campus collaboration | OER data from IR |
|---|---|---|---|---|---|
| 1 Least important | 4 | 4 | 5 | 7 | 5 |
| 2 | 2 | 1 | 6 | 10 | 6 |
| 3 | 9 | 12 | 11 | 9 | 10 |
| 4 | 5 | 10 | 6 | 9 | 12 |
| 5 Most important | 19 | 12 | 11 | 4 | 6 |

# Institutional Support

- Sustained funding/time for adoption, modification, creation, and updates. (19 mentions, 49%)

- Sustainable process for bookstores to provide print versions for students. (5 mentions, 13%)

- Sustainable process for accurate course designations in schedule at time of registration. (1 mention, 3%)

- Sustained training for faculty about OER and associated technology. (11 mentions, 28%)

"Our school has funded some great projects. But then, it seems to stop. The sentiment feels like, "Hey, we did it!". When really, that funding was to create / find an OER for one or two classes. We need to think about big, constant funding and support to really change the environment."

# Institutional Support

- Cooperation and collaboration with departmental faculty. (12 mentions, 31%)

- Administration, deans and department chairs: Provide support while respecting and utilizing faculty input and allowing OER support staff to create processes. (18 mentions, 46%)

"Admin and some faculty are aware of my efforts. I would say that my work is generally valued, but I don't feel that I receive any special recognition for this work."

"I think it is recognized to some degree, but not really sure administrators understand the level of work we put in to benefit the students."

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# Questions