

Students' Perceptions of OER Quality

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Abstract

For students planning to attend college immediately after high school, affordability is an increasingly important factor. Tuition increases, escalating room and board fees, financial aid qualifications, and rising textbook costs risk making higher education out of reach for some. The shift toward making traditional texts available as e-books, as well as expanded adoption of Open Education Resources (OERs) (which are typically free), have been effective methods to control historically rising textbook expenditures. A recently passed \$5 million federal OER pilot program may ease students' financial burden (Lieberman, 2018). However, quality of OERs appears as important to students as cost. This paper reports findings from a study of community college students' comparative perceptions of OER and traditional textbook quality.

Keywords: open education resources, e-books, textbook cost, community college

Introduction

This study examined community college students' insights about Open Education Resources (OER) quality. As a declining number of students purchase traditional textbooks due to cost (Florida Virtual Campus, 2016), an increasing number of faculty are committing to OER adoption. Students, remain concerned about quality of materials as much as cost. This paper reports findings from a study of community college students' comparative perceptions of OER and traditional textbook quality.

Review of Literature

History of OER and Impact on Affordability

Current research and studies encompassing OER are limited, but steadily increasing. OER is defined by the United Nations Educational, Scientific and Cultural Organization (UNESCO) as, "The open provision of educational resources, enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes" (UNESCO, 2002, p. 24). Moreover, OER includes free online textbooks, course materials, tests, software, audio/video lectures and other fundamental learning tools. More importantly, OER resources are located in the public domain, thus, OER is an often-free curriculum alternative for faculty in place of traditional textbooks. Progress in the OER movement is still in its early years, less than 20 years old. Massachusetts Institute of Technology (MIT) began the first OER initiative in 2001 with their revolutionary OpenCourseWare. MIT's OpenCourseWare, makes resources and learning materials available online where all faculty and students could use them, free of charge. Furthermore, these resources were not just available for free use, faculty could make changes and repurpose the materials to fit specific course outlines at no cost (Plotkin, 2010).

As textbook and tuition costs continue to rise, universities and students are becoming more open and interested in alternatives to traditional textbooks. A 2016 study by the Florida Virtual Campus of 22,000 students found textbook costs continue to trend higher, ultimately affecting student learning. Fifty-three (53.2%) percent of Florida university students spent \$300 or more on textbooks, and 17.9% spent \$500 or more during the spring 2016 term, an increase from their 2012 study. Moreover, increasing prices in textbooks and required materials may be causing students to forgo purchasing required traditional textbooks. Researchers found that 66.6% of students did not purchase required textbooks and 47.6% of students take fewer classes because of textbook prices. Additionally, some students reported purchasing required textbooks that were not used in class. On average, students tend to purchase 2.6 required textbooks that were not used in the course; this is up from 1.6 in the 2012 survey. Furthermore, students are resorting to different means to acquire required textbooks. Students are purchasing or renting textbooks from sources other than university bookstores (64%). A strong majority (84%) of students actively rent textbooks with 29.6% renting digital textbooks. Additionally, financial aid is covering less of textbook costs. Students indicated that 70.7% received financial aid assistance, down from 75% in 2012. Likewise, 29.2% of students reported having none of their textbook costs covered by financial aid, leaving them to pay out of pocket or take loans to purchase required books (Florida Virtual Campus, 2016).

Higher education faces many affordability challenges, such as rising tuition, financial aid availability, rent, and textbook costs. A study of community college students by Walburn, Guyot, Meier and Beavers (2016) examined student perceptions and attitudes toward e-books and OER as well as gauge current trends in textbook costs. Researchers administered surveys to a community college in the eastern United States that asked students about purchase amounts on class materials, use and familiarity of OER, and e-books. Findings showed that students spent much less on educational resources than national averages; 45% reported spending less than \$300 per semester. Furthermore, researchers found that the majority (93%) of student experiences with e-books were satisfactory or higher. Additionally, findings suggested overall low OER awareness among students and faculty. Eighty-three percent of students surveyed were unaware of Open Source and OER materials. Finally, the study indicated that fifty-seven of the 202 respondents (28%) reported that textbook cost would greatly impact their ability to attend an institution of higher learning. For future studies, these authors recommended a larger population of community colleges for further studies, as well as evaluating the quality of OER materials and the outcomes or perceptions students have of these materials.

Student and Faculty Perceptions of OER

Student perceptions and use of OER resources thus far have been overwhelmingly positive. A study by Cooney (2017) determined that students were able to approach and access OER resources with great ease; furthermore, students stated OER resources were comparable or improved upon course readings from traditional textbooks. Cooney's study questioned students from three separate sections of a New York health psychology course pertaining to three aspects: organization, navigation and methods used to complete the OER assignments. Students were also asked how OER compared to traditional textbooks as well as benefits and challenges. Cooney found that 70% of students accessed OER materials on their personal laptop/computer and 31% reported using their smartphones. When completing assignments, most students reported using their phones or laptops to complete readings and quizzes; however, students' ability to complete assignments relied on access to computers with internet access on campus or at home. Additionally, students found OER resources to be well organized and easy to navigate and expressed positive opinions on OER materials being located in one place. Ultimately, when comparing OER to traditional textbooks, students expressed satisfaction in the cost savings, convenience in access to materials, not having to worry about transportation, and avoiding renting or buying a textbook. Moreover, students disagreed that OER affected their grade or confidence in the course. Instead, students expressed that OER increased engagement in course lessons and overall enjoyment of the learning experience (Cooney, 2017).

A study of 320 undergrad students from British Columbia also found that OERs have little to no negative effects on students learning (Jhangiani R. & Jhangiani S., 2017). The survey gathered responses from faculty who had adopted OER textbooks in 2015. The researchers investigated different aspects of traditional textbook and student perceptions of OER textbooks. Researchers found that a majority of students accessed their OER textbook in a digital only format; (72%) downloaded and used a PDF file, (50%) used a computer online to read the PDF, with the remaining using smartphones or tablet devices. Forty-three percent of the student participants recorded using a print format of their OER by printing the entire OER or printing pages and chapters as needed. When questioned about the quality of OER, a large portion (63%)

of respondents rated their OER as above average or excellent quality with (33%) of students also judging the quality as average. Additionally, when asked whether they would have preferred to purchase a traditional textbook for their course, (56%) of respondents disagreed slightly or strongly, citing cost savings, immediate access, and convenience as positive factors (Jhangianai R. & Jhangiani S., 2017).

Faculty perceptions of OER are comparable to students, in that they are generally positive. A study conducted by Zhang and Li (2017) investigated aspects of OER in relation to online teaching experience of faculty members, and findings reinforced that generally faculty perceive OERs positively. The study conducted at Zhejiang University (ZJU) questioned 360 faculty members about online teaching and OER experience, as well as faculty perception of OER materials. Researchers found that (87.8%) of the faculty were interested in sharing their education materials and resources on the ZJU while (60%) of the faculty would be willing to share with outside websites. Furthermore, a sizable number (93%) of faculty surveyed agreed with the relative advantage of OER and compatibility of innovation (Zhang & Li, 2017).

Another study by Jung, Bauer, & Heaps (2017), focused on higher education faculty perceptions of OER adoption of a specific publisher, OpenStax. A total of 150 higher education faculty members completed the study of which (41%) were full-time faculty, (35%) were full-time tenured faculty; additionally, (43%) taught at community colleges and (43%) at a four-year university. Researchers found that according to faculty, cost is one of the most important factors for adopting OERs as between 50-90% of students always purchased traditional textbooks for their classes. Furthermore, (71%) of faculty reported having checked the price of their textbook in the last 11 months and (81%) believed each student would spend more than \$100 or more per course on required textbooks. When asked about preparation times with OER versus traditional textbooks, most faculty (82%) responded they spent about the same or less preparation time for OER courses. Additionally, (52%) of faculty reported little to no change in their instruction for courses while using OER. However, some faculty reported performance enhancements such as easy access, easy-to-use, and improved grades. Furthermore, (80%) of faculty believed using OER was at least as good or better than traditional textbooks with (87%) reporting they are likely to continue using them. Finally, regarding quality of OERs, (62%) of faculty reported that OER was about the same quality as traditional textbooks with (19%) indicating that OER was better in quality (Jung, Bauer, & Heaps 2017).

Students and Faculty tend to have favorable perceptions of OER. However, how do **students perceive faculty** who have implemented OER into the pedagogy? Research conducted by Vojtech and Grissett (2017) found that students reported great interest in taking courses from faculty who use open textbooks, cost being a major factor in their decision. Vojtech and Grissett's purpose was to conduct an experiment to determine student perceptions of faculty using OER. Twenty-three upper-level psychology students at a small public university completed an optional survey. The survey contained two separate scenarios about a fictional professor. Background information of the faculty differed between surveys; gender and length of teaching at the university were changed to diminish adverse variables. Moreover, one scenario involved the faculty using a traditional textbook and the second an open textbook. However, variables of the survey were controlled so that students received counterbalanced scenarios; thus, both scenarios involved equal gender and teaching length per survey. Researchers asked students to

rate the fictitious faculty on six characteristics: enthusiasm, patience, encouragement, creativity, kindness, and creativity, on a five-point Likert scale. Students viewed the open textbook teacher higher in kindness, encouragement and creativity; therefore, students indicated they were more likely to take a class with the open textbook teacher. Next, students were asked reasons and justifications for why they had these perceptions of faculty. Ultimately, students found both faculty to be the same in knowledgeable; however, they viewed the faculty using the open textbook as more flexible for allowing different methods that were easier on students. Moreover, these findings advocated the idea that students positively view faculty who show an openness to change (Voljtech & Grissett, 2017).

OER Effects on Student Outcomes

Studies have found that students and faculty tend to have positive perceptions of OERs; however, if OERs have negative effects they may not be worth implementing into courses. Hendricks, Reinsberg and Rieger (2017) surveyed 811 Canadian college Physics 101 students in the 2015-2016 academic year. Physics 101 instructors revised and structured an open textbook so class resources, homework and learning objectives were available to students and faculty on a single website. The purpose of the study was to determine if switching from traditional textbooks to OER affected student learning outcomes. The study found that adding open textbooks and research into pedagogy caused no dramatic change in students' final grades. Researchers found the exam average in the fall 2015 term was 63.1%, slightly higher than the previous two terms; however, the spring 2016 term showed the greatest improvement in exam scores with "A" grades reaching 51%, raised from spring 2015's 36%. Since grades were the result of multiple determinants, researchers determined final grade distributions showed no significant differences in semesters where students used traditional and open textbooks. Therefore, researchers concluded placement of open textbooks and resources into class curriculum caused no dramatic differences in final grades (Hendricks, Reinsberg, & Rieger, 2017).

Additionally, in a follow up to a previous study by Robinson (2015), Fischer et al. (2015) studied 16,727 students of seven different institutions participating in Kaleidoscope Open Course Initiative (KOCI) throughout fall 2013 and Spring 2014 in-class sections. Students enrolled in 15 different course sections were given OER and compared to control sections that were given traditional textbooks. Furthermore, course sections were only compared to the same courses, i.e. Biology 111 OER sections were only compared to Biology 111 traditional textbook sections. Researchers found that when comparing overall grades, ten of the classes taught with OER textbooks had no significant difference, four of the OER classes received slightly higher grades, and one OER section received considerably higher grades. Additionally, OER may have had an influence on students completing the course; students in two of the OER sections were more likely to complete the course when compared to traditional sections. Moreover, Fischer's study was unique at the time considering the large population size and the analysis of credits taken by students (Hilton, 2016).

Further studies affirmed the findings of Hendricks, Reinsberg and Riegers that introduction of OER seemed to have no effect on course outcomes for students. A study by Stephens and Pickavance (2017) at Salt Lake Community College (SLCC), investigated OER's impact on three aspects of student success: final course grade, pass rate and withdrawal rate.

Researchers collected data from semesters Fall 2012 through Spring 2016 if at least one of the sections was taught with OER. The resulting 37 courses varied widely in course subject. Researchers also included gender, age, race, student status, credits accumulated and GPA data. Overall, the study encompassed 23,430 unique student ID in that data with some students enrolled in multiple sections, thus, 30% were duplicates. Researchers found no significant differences in courses using OER versus traditional textbooks. Moreover, data suggested OER is not a factor in measures of course success, demographic, academic background and course-level indicators are more important factors in student success. However, courses taught with OER had lower pass rates and overall course grades in its first two semesters; nonetheless, OER courses promptly returned to the same status as traditional textbooks courses and became marginally higher. Additionally, the study suggested that OER was best implemented with first-time college students (Stephens & Pickavance, 2017).

OER and Quality

Few studies and little research have pertained to the quality of OER. According to UNESCO's "A Basic Guide to Open Educational Resources (OER)" (2015), faculty and educators adopting OER and open textbook resources into their pedagogy are ultimately responsible for assuring the quality of OER. Similarly to how faculty select traditional textbooks and materials, faculty must choose OER in the same fashion. Therefore, as faculty integrate OER into courses, the quality resides with how faculty choose the resources to use, adapt to the course, and make OER applicable to contextual differences in individual schools and programs. In addition, the question of who ensures the quality, or how quality of OER is defined, can be subjective and variable. Appropriateness and quality of materials will vary between contextual situations and personal preference. As educational institutions increasingly share OER resources, quality will remain an ongoing concern. Therefore, first-checks of quality assurance should come from institutions and parties contributing to OER. For now, quality assurance of materials used rests upon the faculty finding quality OER or open textbooks (Butcher, 2015).

Study

Methodology

A survey about textbook preferences was administered to students at a community college in the eastern United States. The community college offers both traditional face-to-face instruction, as well as distance learning. The survey instrument requested information about student expenditures for class materials as well as student use of e-books, traditional materials, and open education resources. The respondents were also asked to provide information about purchasing habits of materials, device use and preference, implications of financial aid status, and text material purchases as well as student's perceptions on quality of OER materials. The survey instrument contained a combination of Likert-Scale, multiple choice, and yes/no questions which were summarized using frequency distributions and cross tabulations. Additionally, a one-way ANOVA was performed using SPSS v.24 to analyze the data. The following hypotheses were tested in this study:

- H₁: There is no significant difference between males and females with respect to subject quality.
- H₂: There is no significant difference between business majors and other majors with respect to subject quality.

Findings

The findings for this study addressed the following:

1. Traditional textbook usage
2. Traditional textbook cost
3. E-book usage
4. Content quality results
5. Quality of OER vs. textbooks
6. Importance of price and quality
7. Concern for course content resource quality,
8. A one-way ANOVA comparing gender and major means for subject quality

Of the 238 respondents surveyed, 136 were male and 102 were female. Thirty-nine respondents declared themselves as business majors (16.4%), and 198 respondents were from other majors (83.2%). Respondents classified themselves as 144 freshmen (60.5%), 70 sophomores (29.4%), and 23 identified as other (9.7%) (See Table 1).

Table 1

Gender, Classification & Major

	<u>Gender</u>		<u>Classification</u>			<u>Major</u>	
	Male	Female	Freshman	Sophomore	Other	Business	Other
Frequency	136	102	144	70	23	39	198
Percent	57.1	42.9	60.5	29.4	9.7	16.4	83.2
Valid Percent	57.1	42.9	60.8	29.5	9.7	16.5	83.5
Total	136	102	144	70	23	39	198

According to Table 2, approximately 78% respondents reported using at least one traditional textbook. Also, fifty-three respondents (22%) did not use textbooks.

Table 2

Traditional Textbook Usage

	Frequency	Percent	Valid Percent	Cumulative Percent
0	53	22.3	22.3	22.3
1+	185	77.7	77.7	100.0

Total	238	100.0	100.0	
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In respect to traditional textbook cost, 53 respondents (22.3%) spent \$0 on traditional textbooks; whereas, 185 students (77.7%) who purchased textbooks materials spent in the range of \$1-151+ (see Table 3).

Table 3

Traditional Textbook Cost

	Frequency	Percent	Valid Percent	Cumulative Percent
\$0	53	22.3	22.3	22.3
\$1-50	10	4.2	4.2	26.5
\$51-100	19	8.0	8.0	34.5
\$101-150	38	16.0	16.0	50.4
\$151+	118	49.6	49.6	100.0
Total	238	100.0	100.0	

According to Table 4, one-hundred forty-three students (60.1%) reported not using any form of e-books, and five students (2.1%) reported using the maximum of three different e-books.

Table 4

E-book Usage

	Frequency	Percent	Valid Percent	Cumulative Percent
0	143	60.1	60.1	60.1
1	63	26.5	26.5	86.6
2	27	11.3	11.3	97.9
3	5	2.1	2.1	100.0
Total	238	100.0	100.0	

According to Table 5, the quality of OERs is also an important factor to consider. Two-hundred twenty of the 238 respondents (92.4%) indicated that quality of instructional materials is important or very important.

Table 5

Content Quality Results

	Frequency	Percent	Valid Percent	Cumulative Percent
Very Important	114	47.9	47.9	47.9
Important	106	44.5	44.5	92.4
Somewhat Important	17	7.1	7.1	99.6
Not Important	1	.4	.4	100.0
Total	238	100.0	100.0	

Ninety-five of 238 (40%) respondents reported having used OER instead of a textbook. In regard to quality of the content of OER, 79 (83%) of the 95 respondents who have used OER reported that OER was equally as good or better compared to textbooks (see Table 6).

Table 6

Quality of OER vs. Textbooks

Number of OER users	Better	Equally as good	Not as good	N/A. Have not used OERs
95	30	49	11	5

According to Table 7, 177 respondents (77.4%) reported that course quality of the course content was more important than the price of the textbook. Of the males, 59% agreed, likewise, 41% of females agreed.

Table 7

Importance of Price and Quality by Gender

Gender	Price of a textbook	Quality of the course content resource	Total
Male	32	104	136
Female	29	73	102
Total	61	177	238

Two hundred twenty (92.4%) of respondents believed that concern for course content resource quality was important or very important (see Table 8).

Table 8

Concern for Course Content Resource Quality

	Frequency	Percent	Cumulative Percent
Very Important	114	47.9	47.9
Important	106	44.5	92.4
Somewhat Important	17	7.1	99.6
Not Important	1	.4	100
Total	238	100.0	

Using SPSS v.24, a one-way ANOVA was performed with concern for quality of course content as the dependent variable. Independent variables were gender and major. The level of significance was 5%. There was no significant difference between males and females with respect to subject quality; therefore, H_1 was not rejected. Concerning H_2 , there was no significant difference between business majors and other majors with respect to subject quality; therefore, H_2 was not rejected. Statistical output appears in Table 9 (page 12).

Table 9

<i>A ONE-WAY ANOVA COMPARING GENDER AND MAJOR MEANS FOR SUBJECT QUALITY</i>					
Source	Type III Sum of Squares	df	Mean Square	F	Significance
Gender	.000	1	.000	.001	.975
Major	.142	1	.142	.345	.557
Gender * Major	.217	1	.217	.528	.468
Error	96.341	234	.412		
Total	183.000	238			
Corrected Total	97.080	237			

Level of significance = .05

LIMITATIONS AND FUTURE RESEARCH

Since this study used a student sample from one community college on the east coast, generalizing the results of this study to a broader population would not be a sound research practice. A larger population of community colleges should be sampled to provide results more reflective of the greater community college population.

This study explored the perceptions, satisfaction, cost-savings, traditional vs. OER, and quality of student instructional materials. New studies that evaluate the rate of OER adoption, effectiveness of learning achievement, cost-savings, and student satisfaction would prove useful to the developing body of knowledge. According to Lieberman (2018), "OER supporters scored a victory: \$5 million for a pilot program of creating and expanding OER textbooks at institutions well positioned to save students money" (Par. 2). Future research could review the efficacy of this \$5 million pilot program. Additional studies will be needed to enhance the review of literature for the use of textbooks, e-books, and OER for instructional purposes.

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