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Article

Transforming social work research methods education through open textbook adaptation

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Abstract
Researchers conducted a quasi-experiment over two academic years comparing undergraduate students using a customized and free (i.e., open) textbook with those using a commercial textbook in an undergraduate research methods class. Quantitative results indicated students using the open textbook demonstrated similar gains in research knowledge to those using a commercial textbook. Specifically, students using an open educational resource (OER) earned higher final grades but showed fewer gains in research knowledge from pre-test to post-test. Focus groups—conceptualized, facilitated, and analyzed by students on the research team—uncovered themes that demonstrate the importance of customization of open textbooks by faculty. Students using the customized open textbook reported greater engagement and comprehension of textbook content, describing it as easy to understand, tailored to the course, and less boring than they expected, based on prior textbooks.

Keywords
BSW Education, open educational resources, social work research methods, student-engaged research, mixed methods research

Résumé
Les chercheurs ont mené une quasi-expérience sur deux années universitaires comparant des étudiants de premier cycle utilisant un manuel personnalisé et gratuit (c.-à-d. libre d'accès) à ceux utilisant un manuel commercial dans un cours de méthodes de recherche. Les résultats quantitatifs indiquent que les étudiants utilisant le manuel libre ont démontré des gains similaires en connaissances de recherche à ceux utilisant un manuel commercial. Plus précisément, les étudiants utilisant une ressource éducative libre (REL) ont obtenu des notes finales plus élevées, mais ont montré des gains moindres en connaissances de recherche entre le prétest et le post-test. Des groupes de discussion — conceptualisés, animés et analysés par des étudiants membres de l'équipe de recherche — ont permis de dégager des thèmes démontrant l'importance de la

personnalisation des manuels libres par les enseignants. Les étudiants ayant utilisé le manuel libre personnalisé ont signalé un engagement et une compréhension accrus du contenu, le décrivant comme facile à comprendre, adapté au cours et moins ennuyeux que prévu, comparativement aux manuels antérieurs.

Mots-clés
Formation en BSW, ressources éducatives libres, méthodes de recherche en travail social, recherche participative étudiante, recherche mixte

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Open textbooks and student learning in undergraduate social work research methods: A mixed-methods and student-engaged pilot evaluation

Undergraduate social work students exist in an environment of economic precariousness and oppression. According to the Council on Social Work Education (CSWE, 2025), nearly 35% of Bachelor of Social Work (BSW) students had loan debt at graduation. Among these students, the average individual had accumulated $28,284 in loan debt by the time they finished their degree. Over two-thirds of BSW students report that working part-time or full-time is necessary to afford college, with nearly 30% using credit cards to finance the cost of education (Yoon, 2010). Debt is likely to follow the student long-term, as the average salary of a BSW graduate in the United States is $53,203, affording little room for loan repayment and graduate education (Kim, 2025). Post-graduation, student debt is associated with bankruptcy, medical hardship, mental health problems, substance abuse, and suicide (Despard et al., 2016; Sweet et al., 2013).

Faculty cannot control the biggest source of student debt— tuition. However, academic freedom ensures that faculty and program administrators control a key contributor to student debt—the cost of textbooks and other required learning materials. The cost of college textbooks has increased 88% since 2006 and 1,041% since 1977 (Bureau of Labor Statistics, 2016; Popken, 2015). The average undergraduate student at a public or private institution is advised by the College Board (2019) to budget $1,240 for textbooks and other required course materials per academic year. Textbook costs are particularly burdensome because they are due all at once, draining student bank accounts at the beginning of the semester. Students commonly report delaying the purchase of textbooks until they make sure the professor will use them (National Association of College Stores (NACS), 2019). Students receiving financial aid, especially veterans, must wait weeks into the semester to receive financial aid to purchase textbooks (Agnihotri et al., 2017). In this way, textbook costs create a barrier to learning and academic achievement for all students and compound existing inequalities.

Students cannot learn from textbooks they cannot afford to buy. Open educational resources (OER) are one potential solution to make education more accessible. OER are free resources such as textbooks, assignments, videos, and case studies, that allow users to copy, edit, share, and remix content under a Creative Commons or other open license (Hewlett Foundation, 2019; Wiley, n.d.). OER, and open textbooks specifically, are touted as a social justice intervention, making college more accessible and equitable for students, particularly those from historically marginalized groups (Hodgkinson-Williams & Trotter, 2018; Willems & Bossu, 2012).

In a study of 21,822 students in introductory courses at the University of Georgia, students in courses using OER in place of commercial textbooks earned higher grades, with even larger gains in final grades achieved by non-white, Pell-eligible, and part-time students (Colvard et al., 2018). According to a survey of more than 21,000 students at Florida public colleges and universities, 64.2% of students have not purchased a textbook due to cost; moreover, textbook costs caused students to take fewer courses, avoid expensive courses, earn a poor grade, and withdraw from classes (Florida Virtual Campus, 2019). Meta-analyses of open textbook implementation studies, on the whole, find students using OER perform equivalently to students using a commercial textbook on measures of academic performance (Hilton, 2019) and are less likely to withdraw from courses (Clinton, 2019). Student perceptions of OER are generally positive, rating them to be of similar or better quality to commercial textbooks (e.g., Abramovich & McBride, 2018).

These empirical findings support the most well-developed hypothesis for OER's impact on student learning: the *access hypothesis*. This hypothesis posits that students who either could not or would not purchase expensive commercial textbooks are able to access the materials in an OER course that are needed to be successful (Grimaldi et al., 2019). Another pedagogical hypothesis for OER focuses on the opportunities afforded to students and faculty by the open license attached to OER. The *remix hypothesis* contends that "changes in student outcomes that occur in conjunction with OER adoption will correlate positively with faculty revising and remixing activities" (Wiley, 2015b, para. 9). This hypothesis applies only to faculty who use the open license to customize the materials, possibly with students as part of open pedagogy.

OER facilitates faculty collaboration, and the remix hypothesis holds that over time, this community-driven creation will yield more robust, personalized, and useful learning resources (Basu Malick et al., 2019). Wiley (2015a) hypothesizes little impact on learning outcomes, except for financially insecure students, on Level 0–replacing an expensive commercial textbook with an open textbook, teaching roughly the same course as before. Level 1, realigning, refers to stripping the course down to its learning objectives and finding the most relevant and highest quality openly licensed resources. Level 2, rethinking, allows faculty to create and remix their own resources, collaborate with students on revising and remixing resources, and collect data to target course redesign efforts and evaluate them. Wiley (2015b) posits that remixing open resources allow faculty to recontextualize information, personalize the learning experience for a new audience, while retaining the core scholarly content. Per Wiley (2015b), "no one wants to

reuse decontextualized resources that don't teach effectively," and "it's very difficult to reuse highly contextualized resources that do" teach effectively (para. 12).

Although the empirical evidence for the use of OER supports these hypotheses to some extent, there are a number of limitations in the OER literature that require further inquiry. Evaluations of OER are mixed to the extent to which they control for confounding variables (Clinton, 2019; Hilton, 2019). While there are a handful of high-power studies in the field (e.g., Colvard et al., 2018; Winitzky-Stephens & Pickavance, 2017), most empirical studies are small-scale evaluations which may not have enough statistical power to distinguish between modest changes in grades (e.g., improving a final grade from C to B) (Grimaldi et al., 2019).

In applying the extant OER literature to the social work discipline, there are additional relevant limitations. Many OER efficacy studies are conducted in large introductory undergraduate or community college classes, often using OpenStax textbooks, while social work classes are usually taken during junior and senior years. Additionally, efficacy and perceptions studies with students are almost entirely quantitative. Researchers who collect qualitative data from students (e.g., Cooney, 2017; Petrides et al., 2011) do so with a small minority of participants as part of a larger quantitative study. Finally, from a participatory perspective, research teams within OER studies rarely include students in the design, data collection, or data analysis processes of research, privileging the "expert" perspectives of professors and researchers over students in the scholarship of teaching and learning.

This pilot study was designed with these participatory and qualitative critiques in mind. It investigated the impact of *Scientific inquiry in social work* (an open textbook created by the lead author) on quantitative learning outcomes and qualitative experiences. Researchers hypothesized that (a) students using an open textbook would earn higher final grades and show greater improvements in research knowledge; (b) students would be frustrated by high textbook costs; and (c) students using an open textbook would demonstrate improvements in research-related attitudes and self-efficacy.

Methods

Participants

The 33 participants in this study were drawn from the lead author's undergraduate research methods courses at Radford University, a CSWE-accredited mid-size regional public university in a rural area of southwest Virginia. Assignment was not possible, as all students at the institution self-select their registration. Thus, treatments were spread across separate campuses and separate years.

Data were collected over two academic years. Three groups were convened across two campuses. The pilot group (n=5) was composed of part-time students on a satellite campus of Radford University in a nearby city, Roanoke. They received a pilot version of the open textbook. Concurrently, the comparison group (n=16) on the main campus used the same commercial textbook used in the reference syllabus for the past five years. During the next

academic year, the main campus classroom adopted the published version of the open textbook for the experimental group (n=12).

Procedure

In the first year of the study, the instructor piloted the experimental textbook on a satellite campus in Roanoke, Virginia to solicit initial feedback from a small five-student class and continued using the textbook of record in the class in the larger comparison group on the main campus in Radford, Virginia. Student feedback and subsequent revisions addressed unclear language, typographical errors, and reorganizing a particularly lengthy chapter. In the second year of the study, the instructor implemented the experimental textbook on a similarly-sized class on the main campus. The populations between campuses differ in one important way. Whereas main campus students were more likely to be traditional undergraduates, satellite campus students were all graduates of the local community college. In between the first and second year of the study, the lead author revised the textbook using pilot group feedback to fix typographical errors, clarify examples, and cut bloated chapter content. Student researchers on this project were not enrolled in the classes under evaluation.

Intervention

The Radford University Institutional Review Board approved both protocols associated with this project. Informed consent and confidentiality procedures were reviewed on the first day of class by the second author, a student researcher, who obscured student participation from the instructor until after final grades were submitted. Students in the comparison group were assigned the traditional textbook for the course, Engel and Schutt's (2017) *The practice of research in social work (4th edition)*, and the professor used publisher materials to create slideshows and quizzes tailored to that resource to use alongside original resources. The bookstore sold new editions of this textbook for about $200. The lead author's open textbook, *Scientific inquiry in social work* (DeCarlo, 2018), was assigned to the experimental group, and a beta edition was assigned to the pilot group.

The research team was composed of the lead author, one undergraduate researcher, and two graduate researchers. As part of an independent study, the undergraduate researcher conducted a literature review on OER research, created focus group questions, participated in instruction on moderating and analyzing focus groups, as well as facilitated and transcribed the comparison and pilot focus groups. A graduate researcher served as note-taker for these groups, coded data alongside the undergraduate researcher and lead author, and participated in a coding conference. After these two students graduated, a third graduate researcher facilitated focus groups for the experimental group and conducted a final round of qualitative data analysis in conference with the lead author.

Measures

To measure improvements in research knowledge, researchers assessed changes in pre- and post-test scores as well as final grades. Students completed a pre-test synchronously on the first day of class assessing baseline research knowledge using the Social Work Research Knowledge Assessment (RKA) developed by Secret et al. (2017). The RKA measures research knowledge in graduate social work students, but its six domains strongly overlap with undergraduate research methods. In place of a final exam, students completed the RKA post-test. All students were required to complete the pre- and post-test, each worth 2.5% of the final grade. Students who completed the pre-test were awarded full credit. The post-test was graded on a 22% curve. Students were not told of the impact the pre-test or post-test would have on their grade. They were simply urged to do their best on each assessment, providing an accurate measurement of their research knowledge. This report omits data from students who did not consent to the study.

Students in the experimental group received two additional quantitative measures. The first was a 10-item measure of self-efficacy in performing social work research tasks (Holden et al., 1999). The second was an original measure of research attitudes created using focus group data from the experimental and comparison groups. This nine-item scale asked students to rate the degree to which they felt research was interesting/boring, useless/useful in social work practice, easy/difficult to apply in social work practice, anxiety-provoking, among other items.

Student researchers conducted focus groups during the last class session of the semester. Groups of five or six students rotated into a private meeting room with student researchers who moderated and recorded the sessions. Focus group questions were created using the cost, outcomes, use, and perceptions (COUP) framework developed by Hilton et al. (2016). Focus groups used a semi-structured protocol that remained largely identical between conditions, save for questions about access and cost. Twenty-eight students participated in the focus groups.

Results

A total of 33 students participated in the study. Descriptive statistics for the full sample are provided in Table 1.

Table 1

Characteristics of the sample	
	Freq. (%)
Group	
Control	16 (48.50)
Pilot	5 (15.20)
Experimental	12 (36.40)
Gender	
Male	4 (12.10)
Female	29 (87.90)
Race/Ethnicity	
African-American	12 (36.40)
White	14 (42.40)
Hispanic	1 (3.00)
Multiple origins	6 (18.20)
Prior research course	
Yes	1 (3.0)
No	32 (97.00)
Prior statistics course	
Yes	6 (18.20)
No	27 (81.80)
Class year	
Junior	25 (75.80)
Senior	7 (21.20)
+4 year	1 (3.0)

Question 1: Learning outcomes

For this analysis, the pilot and experimental groups were combined (n=17) to allow for direct comparison between those who received OER and those who did not. Final grades served as the dependent variable and were notable for three outliers, each of which represented students who failed or withdrew from the course. Outliers were retained in the analysis, as those who failed the course may have failed in part because of the materials available to them. Researchers conducted a Mann-Whitney U test to compare the two groups since it is robust to the presence of outliers in data. Analyses revealed a significant difference in final grades between students using OER and those using a commercial textbook, U=80.00, p=0.04. The mean rank for the OER group (20.29) was higher than that of the non-OER group (13.50), as indicated in Table 2, thereby supporting the efficacy of OER.

Table 2

Mean ranks of research knowledge across groups

Textbook used	RKA-Pre-test	RKA-Post-test
Commercial	19.06	39.09
Open	41.06	34.26

Dissimilar results were found in the RKA pre- and post-test data. These results should be interpreted with caution, as the post-test for the experimental group was influenced by an emergency weather event that necessitated half of the students to complete the measure from home. Many students who completed the test remotely performed worse than their pre-test score. This disparity was reflected in the analysis, which found that on average, the level of knowledge exhibited by students using OER declined over time. Strong gains were made by students in the comparison group, though this is largely attributable to far lower pre-test scores, as indicated in Table 2.

The RKA variable was leptokurtotic and included important outliers that researchers did not want to lose in the analysis. As such, researchers sought a non-parametric alternative to a typical repeated measures ANOVA. Researchers selected the ANOVA-type statistic explained in Noguchi et al. (2012) because it allows for a longitudinal, factorial design to be analyzed when only two time-points are available, and it is robust to both small samples and outliers. This was analyzed using the R-statistical package "nparLR" and the "f1.ld.f1" function. The ANOVA-type showed significant main effects for time, $F(1) = 4.69$, $p=0.03$, though not for group, $F(1)=2.66$, $p=.013$. Additionally, there was a significant interaction between group and time, $F(1)=19.28$, $p<0.001$.

Question 2: Learning experience

Researchers analyzed focus group data using directed content analysis (Hsieh & Shannon, 2005). Building from Hilton et al.'s (2017) COUP framework, researchers coded responses related to costs, outcomes, use, and perceptions while also noting emergent codes within the dataset. During the final coding conference, codes coalesced into two groups—student experiences influenced by open textbook *adoption* and student experiences influenced by open textbook *adaptation*, which were interpreted using the *access* and *remix* hypotheses of OER efficacy, respectively. The coding matrix is pictured in Table 3.

Table 3

Coding matrix of student learning experiences when using open and commercial textbooks

Open textbook adoption experiences	Open textbook adaptation experiences
Cost	Customized
Access	Easy to understand
Quality	Personalized
	Engaging (less boring)

Open textbook adoption: Codes related to textbook adoption refer to the set of learning experiences that arise when professors replace a commercial textbook with an open textbook. Students using open and commercial textbooks differed with regard to their experiences with the cost of the textbook, accessing the textbook, and the perceptions they formed about textbook quality.

i. Cost:

In all groups, students reported that textbook costs were a very important concern and a source of annoyance. Students in all groups agreed, "I shouldn't have to pay an extreme amount for my books if I'm already paying a lot to be here to sit in the classes," (J, experimental focus group 1) and "I'm broke, okay? Radford takes all of my money" (T, experimental focus group 2). Students reported that in other classes professors "get mad at you for not buying the textbook and then you buy the textbook and they never use it so I waste[d] my money" (E, experimental focus group 1). Because of the high cost of the textbook in the bookstore, students in the comparison group delayed the purchase of textbooks until they knew the required books were required to succeed in the class. Other cost-cutting strategies included buying used books and using online retailers.

Student experiences regarding cost were, for obvious reasons, quite different between groups. The price of the commercial textbook (new) was approximately $200 in the bookstore. The commercial textbook was viewed as particularly expensive by students. "I think this book was a lot more expensive" than other books, and these costs add up across classes "because I had to get like 6 books in total and a couple of them I couldn't get" (H, comparison focus group 1). Students in the pilot condition expressed excitement and gratitude for the lack of cost, as one student related "I was just screaming hooray because I didn't have to pay for another book" (S., pilot focus group). Students using OER saved money, and reported spending it on rent, gas, groceries, bills, and other textbooks.

ii. Access:

The experimental group demonstrated less enthusiasm than the pilot group for the free resource because the two groups access the textbook in strikingly different ways. Most students in the pilot condition printed out each textbook chapter using a free printer in the computer lab. Students also used their mobile phones, for example while waiting to see a doctor. The PDF used in the pilot group made it difficult to access links, which frustrated some students. The one student in the pilot group who only used the digital edition was unaware of the free printer because she did not commonly take classes at the satellite campus. She suggested that the professor provide a low-cost print edition through the bookstore.

This suggestion was implemented with the experimental group on the main campus. Students were provided a link to the Hypertext Markup Language (HTML), Portable Document Format (PDF), and e-reader editions of the textbook via email and in the course syllabus. However, focus groups revealed students "didn't know it was free until after" (T, experimental focus group

1) purchasing the $50 print edition produced and sold through the campus bookstore. As a non-commercial work, it was printed at-cost by the bookstore's print-on-demand supplier with no remuneration to the author. Even after the professor posted the links to the website (HTML), PDF, and e-reader editions in the class shell of the learning management system in the fourth week of classes, most students did not use them at any point in the semester. To increase awareness of free editions, students in the comparison group suggested "emailing everybody…being like 'hey this is free online,'" (T, experimental focus group 1) or putting this information in "the bookstore page" (A, experimental focus group 1). The few students in the experimental group who used digital editions built access patterns early, clicking the same link in the initial email or syllabus to access the textbook each time they read.

While the experimental group purchased the textbook exclusively from the bookstore, few students in the comparison group did so. Opinions of the bookstore were negative. Students in the comparison group complained the textbook was out-of-stock at the beginning of each semester and they "had to go back in the bookstore to keep checking on it" (B, comparison focus group 2). Students in all groups described a similar textbook access process across courses, starting with the bookstore's listing of required textbooks and ending with online retailers. Students were frustrated that "with a lot of the social work classes you don't even see what your book is till like the week before class…so you don't even have time to order it online so you have to buy it from the bookstore," (A, experimental focus group 2) where it is more expensive. While this access pathway is disrupted with OER, as it was for students in the pilot group, students using OER reported needing more clarity in accessing the online textbook, downloading digital editions, as well as highlighting and annotating a digital textbook.

iii. Quality:

Student perceptions of quality were probed using questions about specific qualities such as visual appeal, organization, ease of use, and other attributes. Overall, students using both the commercial and open textbook found them well organized and easy to navigate, though "not appealing to look at" (J, comparison focus group 2). Students in the comparison group found that the "words run really close together…I guess to save space but it's kind of small for me" (K & B, agreeing in comparison focus group 2). Students using both the pilot and final edition of the OER textbook reported "it felt like a real official book" (W, experimental focus group 2). Some organizational issues and broken links were reported by pilot students but not by those in the experimental group. Both groups of students using OER found "grammar issues and typos in [the book] but it was overall good," (A, experimental focus group 1) indicating these errors did not detract from perceived quality.

Open textbook adaptation: While adoption can be described as simply choosing a different textbook, adaptation refers to a more in-depth process in which the faculty takes fuller advantage of the open license by revising textbook content. A consensus emerged among students that the open textbook was customized, personalized, and simplified, driving engagement and

comprehension. Students using the commercial textbook were split evenly, with half of the class describing the book as easy to understand and coherent with how content was presented in the class and the other half finding it unclear and disjointed.

i. Customized:

Students in the open textbook condition preferred customized resources because they only provide relevant information to students, promoting greater coherence and usefulness with in-class work. For students using OER, "there is no 'ignore this chapter, ignore that chapter,' you need it all and it's all applicable which is helpful" (C, pilot focus group). In comparison to "other classes, I don't feel like I've ever used a textbook as much as I have in this class" (N, experimental focus group 2). Students in the pilot group and some in the experimental group offered that the OER did not "drag on and on," (R, pilot focus group), "takes out all the fluff they usually put in there," (A, experimental focus group 1) and was "more concise than a normal textbook" (C, pilot focus group). Consensus was not unanimous, as one student in the experimental group felt the open textbook was too long as "the chapters are like a book itself" (B, experimental focus group 2). Customization helped students using OER complete weekly quizzes, as "when you read it, it fits the answer perfectly" (T, experimental focus group 2).

These quizzes were a source of frustration for half of the students using the commercial textbook. To students in one focus group, the commercial textbook contained irrelevant information that the professor and assignments did not focus on. The result, as one student relates, is "I felt like I'm wasting my time looking at the book. None of the stuff is really on the quiz because it would only be one or two questions and everything else…I don't know what the answer is" (B, comparison focus group 2). The student elaborated that some of the information in the commercial textbook "was irrelevant and not needed and…could be simplified, somewhat." This was related to the perception that research is overwhelming, as "you are learning a lot of things you haven't learned yet" (K, comparison focus group 2) and "a lot of definitions…start to look the same but you know it's not the same because there's so much in each chapter" (Q, comparison focus group 2). By contrast, students in the other comparison focus group offered that the commercial "book prepared us really well for the quizzes…If you read the chapter, I don't think the quizzes were really challenging" (T, comparison focus group 1).

ii. Easy to understand:

Students using the commercial textbooks were also conflicted on whether the textbook was easy to understand. One group found "the wording in the textbook" to be "right at our level for undergraduate students" (D, comparison focus group 1). Students did not require outside resources like Google to understand the content. Overall, this group found it to be "effective compared to other textbooks" (T, comparison focus group 1). However, the second focus group of the comparison group found definitions of key concepts to be hard to understand as "even some of the words that were used to explain a definition I didn't know" (K, comparison focus group 2) and "Google is always easier" (H, comparison focus group 2). Students said publisher-

created quiz questions were worded differently than the textbook, "like the definition in the book *could* be the answer on the quiz but then it could also be something else because it has like another definition as well in the book" (Q, comparison focus group 2).

Focus groups of students using OER were in consensus that the textbook was "easy to understand" (H, experimental focus group 1). Students compared the open textbook positively to textbooks from other classes, saying "it's easy language too, some textbooks you're reading through and … I don't know what any of this means" (C, pilot focus group). There was "no need for a dictionary or Google" (R, pilot focus group) because "it was simple to read, like I didn't have to think really hard about what [the author] was trying to get across" (N, experimental focus group 2). The link between comprehension and engagement was paramount in student experiences. As one student stated, the language in the open textbook was "a lot less boring than just sitting down and reading a normal textbook where they try to use all of these big words but you don't really understand what they are saying…so I thought [the open textbook] made it a lot more clear" (N, experimental group 2).

iii. Personalized:

Students using the open textbook talked about the importance of the professor's voice in the textbook. They liked how "he put examples of something that we're familiar with in there…like examples from his wife [and] personal experiences, so it wasn't a made-up case scenario" (E, pilot focus group). Personalized content made it seem like "you're less distanced from the writer of the book" (K, experimental focus group 2). It also influenced engagement and comprehension, as one student related, "I liked how he talked about himself…and the studies he was doing… too because I feel like a lot of like this had the potential to be like really really boring and like not understandable" (N, experimental focus group 2).

iv. Engaging (less boring):

Engagement was a key component of how students experienced the textbook. Students using the commercial textbook agreed it was "very dull," (R, comparison focus group 1) "not something I want to read" (S, comparison focus group 1). Despite some students' frustrations, they did not fault the textbook because research methods "is not super interesting so I don't know that there could have been like a better way to I guess make it more lively" or "attention-grabbing" (T, comparison focus group 1). By contrast, students using the open textbook stated that the book was "less boring" (N, experimental focus group 2) than other textbooks which made it "easier to read" (E, experimental focus group 1). They linked engagement with the other three adaptation themes, including customized content that was tailored to the class, ability to understand the language, and providing personal examples relevant to local communities and social work practice.

Question 3: Research attitudes and self-efficacy

Research attitudes were assessed in the experimental group using two measures. Because the attitudes post-test score had two outliers, Wilcoxon signed-rank test was utilized, though the difference was not significant ($z= -0.36$, $p=0.72$). Researchers tested whether those who were in the experimental OER group significantly improved in their self-efficacy. In this case, there was a significant improvement in self-efficacy over time ($z= -2.35$, $p =0.02$) such that the mean rank of self-efficacy post-test was 6.90 compared with the mean rank of the pre-test being 4.50.

In the focus group data, students across all groups expressed negative attitudes towards research methods. Students indicated they felt research was boring, difficult, useless, and anxiety-provoking. Perspectives of research tied into self-efficacy in student responses, as one student offered, "especially with a research class it's going to be really confusing and I'm not going to understand what in the world they're talking about" (N, experimental focus group 2). These results corroborate the quantitative findings, showing an improvement in perceived self-efficacy in those using the open textbook across the semester but consistent negative attitudes towards research as a topic.

Discussion

The quantitative impact of OER in this study is consistent with the broader OER literature indicating that students using OER achieve similar learning outcomes to those using commercial resources (Hilton, 2019). The mixed findings on efficacy are unsurprising, as simulation studies conducted by Grimaldi et al. (2017) find that small sample studies will not have enough statistical power to detect improvements in learning outcomes. They also reflect Clinton's (2019) critique that most OER implementation studies encounter important threats to internal validity. As such, the results of this pilot study should be interpreted with caution.

Internal validity

It is difficult to triangulate the efficacy of OER within the quantitative data due to noncomparable pre-test scores between groups and emergency weather events during the post-test. Future studies of OER should also endeavor to find a more coherent incentive structure for students to complete the pre- and post-test to the best of their ability. Low pre- and post-test scores observed were likely due to course fatigue, testing environment, and insufficient incentive, as the tests counted for only 2.5% towards the final grade. Based on these results, providing a financial incentive for students rather than using the measure as part of the final grade may elicit more genuine effort. Pre-tests are, in effect, a surprise exam on the first day of class which may negatively influence self-efficacy, attitudes towards research, and ecological validity.

Experimenter effects are also an important potential limitation, as having the same individual serve as lead author of the textbook and primary investigator on the study may have subjected the project to unconscious bias. The student-engaged design may have mitigated experimenter

bias to some extent by providing student perspectives from conceptualization through qualitative data analysis, but power imbalances between the professor and students remained.

Adaptation and research methods education

Because there are so few OER and open textbooks for social work, faculty who want to lower textbook costs or engage with open pedagogy will have to create or adapt their own content. The qualitative results support this practice, demonstrating that student learning—in particular engagement and comprehension—is impacted by the personalization and customization that professors undertake as part of adaptation. Personalization may reinforce the usefulness of research methods ideas by relating them to social work practice, similar to previous practice-focused engagement strategies (Cameron & Este, 2007). This was accomplished through localization and customization, rather than through partnerships with community agencies as in other studies (e.g., Knee, 2002). Personalization may have also facilitated a more authentic learning experience, which contemporary students value highly (Hostettler et al., 2013).

Just as students cannot learn from books they cannot afford to access, they cannot learn from books they cannot understand or find boring. While half of the students using the commercial textbook could understand it with little problem, they found it to be boring. With one exception, students using the open textbook reported it was understandable and all students found it to be engaging. Ease of understanding was mentioned alongside the vocabulary used matching their existing level of knowledge and the personal stories in the textbook that minimized psychological distance between student and professor. This reflects the importance of the remix hypothesis in impacting student learning as well as the social work adage to meet people where they are. The preference for more stripped down learning materials among students in the sample echoes the undergraduate student view of research methods in the literature as complex and overwhelming (Earley, 2012).

Greater engagement with the textbook did not improve student attitudes towards research, as they remained unchanged across the semester for students using OER. Research self-efficacy increased in students using OER. While this may be associated with greater engagement and comprehension of the open textbook, the lack of attitudes and self-efficacy data from students using commercial textbook makes interpreting these findings challenging, as does the lack of pilot testing for the research attitudes scale. Combined, OER improved only one component of attitudes and self-efficacy, echoing Adam et al.'s (2004) finding that "research…evokes the greatest amount of anxiety and the least sense of confidence among social work students" (p. 2). Future studies should explore the relationship between self-efficacy, research attitudes, engagement, and comprehension in research methods education, as the stickiness of negative attitudes towards research methods is a consistent finding across studies (Earley, 2014). Nevertheless, this study provides some evidence that the core textbook content may drive student disengagement from research methods classes. Distinct from previous technology studies, it measures the impact of an open online resource rather than online instruction in a closed course management system (e.g., Hisle-Gorman & Zuravin, 2006).

Access, agency, and choice

Students roundly identified textbook costs as a major stressor, with almost all rating textbook costs as "very important." They were frustrated with the upfront cost of the commercial textbook in this class, and the total spent on textbooks each semester. Student purchasing decisions were influenced by perceived risk of "wasted money," similar to other studies that find around one-third of students do not purchase the textbook by the first day of class because they do not know if the professor will use it (NACS, 2019). This phenomenon may be increasing, as Florida Virtual Campus (2019) found undergraduate students purchase 3.6 textbooks that are not used by professors, an increase of one book from students surveyed in 2016.

In this study, the beneficial effects of OER were likely undercut by the $50 paid by almost all students in the experimental group to access the free open textbook, unbeknownst to the professor. In addition to distributing textbook information via email and in the syllabus, links to open content should have been present in the learning management system from the first day of class. Moreover, the professor should have reviewed how to download, access, annotate, highlight, print, and otherwise use the various formats of the open textbook on the first day of class. Other studies of OER (e.g., Petrides et al., 2011) find OER can match the existing technological competency of students, but students in this study required additional help.

In addition to technological capacity, student access issues should be contextualized within multiple state's efforts to label OER courses in the course catalog, helping students make informed financial choices. While these efforts are commendable, OER labeling should be integrated into the campus bookstore with clear language indicating that while the textbook is required, digital editions are available for free from the professor and the print edition in the bookstore is optional. The campus bookstore was the primary method by which students acquired information about required materials in this study, rather than emails or the syllabus, which aligns with other studies of student textbook purchasing (NACS, 2019). If professors are unable to provide access instructions via the bookstore platform, economically insecure students will suffer.

Critiquing the OER literature

OER is transitioning from general education into more specialized and advanced areas like social work, but the empirical literature has only begun to investigate the use of OER in upper-level classes. This study is the first to investigate the impact of open textbooks on social work undergraduate students and is among only a few to study open textbooks in upper-level undergraduate coursework. Moreover, this study demonstrates the importance of mixed-methods and participatory (student-engaged) inquiry. The insider perspective offered through student conceptualization, facilitation, and analysis of focus group data was invaluable to uncovering the differential effects of adoption and adaptation in the sample. Yet, student-engaged research is not a common feature in open education research, in stark contrast to its participatory pedagogical orientation.

Conclusion

Students are heavily burdened by textbook costs. Similar to all undergraduate students, BSW students in this study reported that high costs prevent them from buying textbooks and cause them to perform worse or withdraw from classes (Florida Virtual Campus, 2019). For this reason, universities, systems, and governments increasingly fund and train faculty, facilitating the transition away from costly commercial resources that replicate social inequity. Although open textbooks are conceptualized as one of many affordability initiatives available in higher education, the qualitative data in this study provide evidence that open content has a unique pedagogical impact beyond cash savings–i.e., the remix hypothesis.

OER adaptation and creation are more work-intensive than simply adopting a resource, and there are sharp disparities in which groups can dedicate the often invisible, unpaid labor to produce open textbooks (Gong, 2024). The results of this study demonstrate that customizing and personalizing an open resource will have a unique impact on student learning versus simply adopting an existing no-cost resource. Adaptation and open licensing by faculty opens the door to further engagement with participatory and critical digital pedagogies, as students and faculty become co-creators of textbook content, ancillaries, and other resources designed to drive authentic engagement with a challenging topic (Mays, n.d.; Morris & Stommel, 2018; Wiley & Hilton, 2018). As a pilot study, the researchers encourage others to verify and replicate their findings using the data and measures in our Open Science Framework project.

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