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## Open Educational Resource Textbooks and Teacher Education: A Descriptive Analysis of Student in Language/Literacy Development Courses

**Amanda Rutter**   
University of Northern Colorado, U.S.A.

**David Black**   
Clark Planetarium, U.S.A.

**Saadia Ali**   
Virginia Polytechnic Institute and State University, U.S.A.

**Margaret A. Berg**   
University of Northern Colorado, U.S.A.

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# Open Educational Resource Textbooks and Teacher Education: A Descriptive Analysis of Student in Language/Literacy Development Courses

Amanda Rutter, David Black, Saadia Ali, Margaret A. Berg

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## Abstract

This study examines Teacher Education students' perceptions of Open Education Resources (OER), specifically, textbooks in language/literacy courses. Participants in the study are two-hundred and eleven pre-service teachers and undergraduate students at a university in the western United States that admits 46% first-generation college students. The pre-service teachers completed a pre-survey about OER, studied in language/literacy courses using an Open Textbook (OTB), and completed a post-survey about their use of OER in the courses. Over the past two decades, the advantages and disadvantages of utilizing OER have been explored in research. Yet, there is a lack of research pertaining to language/literacy development courses in Teacher Education programs. Key findings of this study indicate that utilizing OER is new for many of the participants, the OTBs did assist them financially, and though some students chose not to read the text, the perceptions of OER were positive. The conclusion includes possible areas for future study.

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## Introduction

If students are “to become adept at using technology for their learning and in their lives, schools have a responsibility to teach those technology skills,” Wolsey and Grisham assert (2007, p. 30). Since universities have traditionally required students to purchase expensive textbooks, some professors who are concerned about the rising costs of education have made a move to Open Educational Resources (OER). OER can include many things such as websites, videos, articles, and textbooks. This examination into OER focuses on open textbooks (OTB). OTB can be found for different content areas such as science, mathematics, and language arts, however, few exist for the common language/literacy courses required in Teacher Education programs. Teacher Education programs have not led in producing and/or teaching with OER though educators are beginning to realize the need for, and benefits of, OER and OTB.

Over the past thirty years, the price for purchasing textbooks for a typical college student has risen much faster than the Consumer Price Index (Dennen & Bagdy, 2019; Grimaldi et al., 2019; Lumpkin, 2020), and over four times as fast as the rate of inflation in the last ten years alone (Kristof, 2018). With an average cost per course for materials at over \$153 (Kristof, 2018), students that enroll in full-time coursework often need to spend over \$1200

per year on textbooks and other required course materials, a significant portion of their total education expenses (Lumpkin, 2020).

Some students, unable to afford textbooks, try to get by without them even though they know this may adversely affect their grades (Hilton, 2016; Lumpkin, 2020). A series of studies at the Florida Virtual Campus show that 64.2% of students at some point in their college education decide not to purchase a required text due to high costs and 42.8% took fewer classes (Florida Virtual Campus, 2018). High textbook costs increase educational inequity since students from lower socioeconomic backgrounds—including many first-generation and minority college students—are adversely affected by the high cost of textbooks to a much greater extent than students from wealthier backgrounds (Lumpkin, 2020).

Students are either forced to do without or must turn to other, less viable sources to obtain access to textbooks, including buying a limited supply of used books, borrowing or sharing a textbook with a friend, renting books, checking them out of the school library, obtaining illegal copies, or trying to locate online book reviews or other sources from which they can infer the textbook's content (Lumpkin, 2020; Dennen & Bagdy, 2019). These alternate sources have limited copies available or access codes that expire and cannot be transferred after the semester ends (Kristof, 2018).

One solution to the growing costs of textbooks is for college professors to instruct with Open Educational Resource materials. We define OTB as the equivalent to a traditional textbook, however, located online and openly accessible without cost. This action research study examines the perceptions of undergraduate students regarding their use of OTB in Teacher Education classes for literacy development at a western university. Our guiding research questions are:

- 1) How do students use OTB?
- 2) What are Teacher Education student perceptions of OTB?

The questions align with an action research perspective that posits applied research is both action oriented and “a form of professional development” (Holly et al., 2005, 31). Although unanticipated, Covid-19 lockdowns shifted instruction to an online delivery mode. Prior to the pandemic, the Teacher Education program was delivered predominantly in a face-to-face format. The shift to OTB proved advantageous because students in the lockdown did not have to frantically scramble to obtain a paperbound textbook in a period of supply-chain problems. This emergency situation, in combination with the rising costs of textbooks, pushed the researchers to examine our own practice particularly in the materials required for student engagement with the course content.

## **Literature Review**

The original definition of Open Educational Resources (OER) comes from a UNESCO education conference in 2002 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 cited in Hilton, 2016). According to the Hewlett Foundation, OER are resources for teaching, learning, and research that are found in the public domain or are available under an intellectual property license such as Creative

Commons that allows free sharing and re-purposing by teachers (Pitt et al., 2020). Whether online or not, it is important that OER be free of cost and freely accessible (Open Textbook Alliance, n.d.). The flexibility to re-mix, mash-up, modify, and customize these resources is an important aspect of OER.

In addition to OER, there needs to be Open Educational Practices (OEP) that examine how to integrate OER into learning environments through the 5Rs: to Retain, Reuse, Revise, Remix, and Redistribute OER materials (Wiley, 2014). If the research demonstrates equivalent usage and preference for OTB, then the instructors would Retain, Reuse, and/or Revise the OTBs in the next semester's instructional cycle. Using clearly stated open licensing is essential to avoid copyright issues regarding Fair Use and to sidestep issues that occur in many college IT departments regarding the long-term storage and availability of educational resources on a school network (MacKinnon & Pasfield-Neofitou, 2016). These practices and pedagogies are based on the theories of Seymour Papert (Pitt et al., 2020; Salem, 2016).

There are many types of Open Educational Resources. The most basic are Open Textbooks (OTB), either directly modeled after traditional textbooks with rigidly numbered pages in PDF format or with re-flowable pages that allow for reformatting for different sizes and types of fonts, note-taking, and other digital features not found in a printed text. Other resources include supplementary materials such as additional readings and references materials (Zhang, 2018); videos that support the text and can be linked from it or that go beyond the text to demonstrate models of practice (Kwak, 2017); online ancillaries such as web links or quests, interactive quizzes, and other activities; and small-scale materials used to practice specific concepts (MacKinnon & Pasfield-Neofitou, 2016). For the purposes of this study, the OTB selected and used in classes were fairly traditional. The pages were in PDF format and included hyperlinks for extending student learning.

### **Advantages**

Using OTB can have many advantages, most obviously saving students hundreds of dollars in higher education expenses and saving trees as less printing is required (Pitt et al., 2020; Weller et al., 2015; Seaman & Seaman, 2018; Jhangiani, n.d.; Goubakouly, n.d.; Mackintosh, n.d.). OTB materials allow greater convenience and accessibility for students (Dennen & Bagdy, 2019) since they are typically accessed online through mobile devices and can be downloaded for offline viewing (Lin, 2019). Students do not have to carry around a heavy printed textbook, although they can have a copy printed at low cost if desired and are therefore more likely to access and read the text while on campus or at times when carrying a textbook is not feasible. Greater accessibility leads to greater equity and provides a basic human right to education (Goubakouly, n.d.).

OTBs are more closely aligned to students' needs and the requirements of specific courses because they can be revised, remixed, and customized by professors to meet local needs (Dennen & Bagdy, 2019). Because they are more easily modified, they can be more up-to-date than copyrighted textbooks that take years to go through revision cycles (Hilton et al., 2013). If OTB are available as e-textbooks which can be reformatted and will reflow depending on the device used, they can be adapted to meet specific student needs for readability by changing font size and color, making reading sections shorter, and adding accessibility functions for students with disabilities.

OTB are flexible and can be adapted or revised to meet individual professors' needs; thus, they can be used successfully within many different pedagogies and learning structures (Allen et al., 2015). OTB can include hyperlinks, interactives, and multimedia links beyond mere static text and images, they can enhance learning through more engaging content that uses multiple senses (Dennen & Bagdy, 2019). Since the students involved in this study are future teachers of language/literacy for elementary education and multiple content areas, they provide a broad perspective on the readability of these newer textbook sources as they learn about engagement with printed texts that is an OTB in this case.

One positive aspect of an OTB is that educators must engage in critical reflection of their pedagogy and practice as they revise their curricula to include OTB (Gay et al., 2020; Vojtech & Grissett, 2017; Weller et al., 2015). This continued development leads to increased student engagement and enthusiasm for the course. Since OTB are low or no cost, some students in informal educational settings can “try out” the materials without risk before deciding to formally enroll in a course, allowing more non-traditional students to participate in education (Weller et al., 2015).

OTB are also beneficial for faculty members. For example, since these texts are easily accessible, instructors can move more easily between face-to-face and online formats. Professors can download them and review them without having to order a desk or review copy from publishers. Additionally, OTB are downloadable in PDF and other formats, which means that they can be accessed on any device unlike some desk and review copies which require specific software and codes to access. Additionally, OTB are not time-limited regarding their access like other publisher-provided desk copies.

### **Disadvantages**

In addition to the advantages of OTB outlined above, there are several disadvantages or limitations according to the literature. A device and internet access are both necessary for using OER materials and the persistent problem of the “digital divide” requires policies to mitigate (van Dijk, 2020). OTB are often perceived as having inferior quality compared to traditional textbooks. It is assumed that if OTB are not written by professional authors or laid out by commercial publishing companies, then they will not have the same level of critical editorial review or quality assurance as a commercial textbook which must be of high quality to stay competitive (Jhangiani et al., 2018). Although some OER materials are mostly text with black and white photographs, the same can be found with commercial textbooks (Bliss, Robinson, Hilton & Wiley, 2013). An issue related to quality is the perceived lack of peer review and evaluation standards for OTB. Open Education initiatives and various foundations which support OER and OTB development are beginning to adopt evaluation standards and provide peer review services (Goubakouly, n. d.).

Some educators are concerned with the time and resources needed to develop their own OER and OTB materials, to revise and adapt existing OER and OTB to fit their classes, or to develop new curriculum aligned with existing OER and OTB (Krelja-Kurelovic, 2016; Kwak, 2018; Goubakouly, n.d.; Bliss, Robinson, Hilton & Wiley, 2013). Many universities do not provide financial resources or time for faculty to develop new OER and OTB, or to

sustain and update existing materials (Jhangiani, n.d.). Without financial incentives, which are provided by royalties from publishing companies, not many faculty members would undertake the task of writing their own textbook (Goubakouly, n.d.). Study in Jordan found that more established and financially comfortable university faculty are more likely to instruct with OER (Altawalbeh, 2023). Open Education initiatives are trying to address these issues by providing small grants for faculty willing to collaborate and create OER and OTB materials.

Not enough OER and OTB materials exist yet for populations of students with a diversity of needs. Education students studying to teach in PK-12 contexts have few OTB that address Special Education, English Language Learners, second language learning, and specialized fields (Goubakouly, n.d.; Krelja-Kurelovic, 2016; Zhang, 2018). It will take time and financial support for educators in these areas to develop the OER needed to provide equitable educational resources for these populations.

### **OER and Learning Outcomes**

Numerous studies have been conducted over the last fifteen years regarding the effectiveness of OER and OTB in replacing textbooks and if they provide the same or superior learning outcomes for students. Several early studies found that OER and OTB provided equal or slightly better results than traditional textbooks and materials, but drawing useful conclusions was hampered by inadequate experimental design. For example, students in a class during a semester that used traditional textbooks were often compared with students from the same course but in a different semester or with a different teacher. The classes were of limited comparability (Grimaldi et al., 2019; Weller et al., 2015; Feldstein et al., 2012; Hilton & Laman, 2012). In some cases, the courses were revised, and curriculum changed at the same time as the adoption of OER materials, causing a confounding of variables. However, these changes are normal when working toward a solution and making changes for the “the spiraling iterations in action research” (Gay et al., 2003, p. 269). Textbooks with only print and images were replaced with OER that included text, images, videos, hyperlinks, and ancillary interactives (Hilton, 2013; Hilton, 2016; Grimaldi et al., 2019; Feldstein et al., 2012; Fisher et al., 2015). Some studies compared completely different courses.

Early research studies used quasi-experimental or action research designs; since it is difficult to split a single section of a course into a control group with a traditional textbook and an experimental group with OER materials, the researchers were forced to compare different classes or semesters. In studies that examined student and teacher perceptions, the survey results were often discussed in terms of averages, without discussion of variance or significance (Bliss et al., 2013; Lindshield & Adhikari, 2013). One study did use z and t-tests but reported the significance of the results as a probability of less than 0.000, which is not possible (Feldstein et al., 2012). Despite these limitations, the findings were generally positive in relation to student perceptions about the use of OER and OTB.

More recently, studies with stronger experimental design and more sophisticated statistical analyses have been conducted which show consistent results (Winitzky-Stephens & Pickavance, 2017; Jhangiani et al., 2018; Clinton & Khan, 2019; Allen et al., 2015). Some methods used to improve the experimental design included providing

pre-and post-tests (Hilton, 2016), ensuring that the same instructors teach cross-compared classes (Allen et al., 2015), propensity matching of similar students across classes (Robinson, 2015; Fischer, Hilton, Robinson & Wiley, 2015), and multi-level regression modeling (Winitzky-Stephens & Pickavance, 2017). In these studies, the use of OER has led to either equal or slightly improved learning outcomes for students including final grades, exam scores, and lower course withdrawal rates. Where the studies have occurred over several years, the initial adoption of OER materials may lead to slightly lower outcomes (lower test scores, more withdrawals, etc.) for a semester or two as the students and teachers become adjusted to the new materials, but with time scores improve and exceed those of students using traditional textbooks (Winitzky-Stephens & Pickavance, 2017). These experimental design results in combination with more context-specific approaches such as action research with adjustment along the way convinced the authors that the shift in course materials was appropriate for their classes.

### **Perceptions of OER**

In addition to researching the effectiveness of OER for improving student learning outcomes, several studies researched student and faculty perceptions of OER. These studies report that, where faculty are aware of and using OER, they find them to compare favorably with traditional textbooks (Hilton, 2016; Bliss et al., 2013). They like that OER can be revised and customized due to the share-alike nature of Creative Commons licensing and that students are able to learn from the resources while being easily accessible (Aydin et al., 2021; Hilton, 2016). Faculty also report that adopting OER leads to increased reflective practice (Weller et al., 2015). Students consistently demonstrate positive perceptions of OER because the textbooks are low to no cost and easily accessible (Bliss et al., 2013; Cooney, 2017), yet in at least one study students disliked the limitations caused by poor internet speed and the absence of appeal to tactile and olfactory senses (Lin, 2019).

Some studies find that several barriers exist for the adoption of OER (Jhangiani, n.d.; MacKinnon & Pasfield-Neofitou, 2016). The first is a lack of awareness of OER by faculty, with only 52-54% reporting that they understand the nature of OER (Seaman & Seaman, 2018; Hilton, 2016; Dennen & Bagdy, 2019). Other faculty report that, although they understand the nature and usefulness of OER, they lack the time and financial incentives to create or incorporate OER into their courses (Bliss et al., 2013). Faculty are also concerned about copyright and how it applies to OER materials; they do not understand the nature of Creative Commons licensing (Kursun et al., 2014) though most universities, including authors' institution, have media specialist who can answer such questions.

### **OER and Language/Literacy Development Courses in Teacher Education**

More types and categories of OER are being produced each year, but there remain several disciplines where effective OER do not yet exist. The literature is sparse regarding OER usage in Teacher Education programs, especially for language acquisition and literacy courses. A study of Chinese university students training to be English as a Foreign Language teachers (Zhang, 2018) found that the mandatory state developed textbooks were inadequate to provide students with sufficient language acquisition theory. By finding and adapting materials on Systemic Functional Linguistics (SFL) theory, students were able to understand more of the theoretical context of

language learning. In this case, OER were used as a supplement to the mandatory textbook, not as a replacement.

A study in South Korea (Kwak, 2017) used an ethnographic approach to observe EFL teachers and classrooms. These teachers were required to use a mandatory state created set of OER that combined textbooks, workbooks, and videos of exemplary teachers. The researchers observed how the teachers incorporated the state materials into their pedagogies and classroom activities over several months and interviewed students and teachers. Students liked the mandatory OER materials and often preferred them (and the videos) to their actual teachers' teaching styles, which created resentment on the part of some teachers as they struggled to adapt. Others were more open to the new materials.

An article on student and teacher production of language materials using YouTube videos to practice language skills (McKinnon & Pasfield-Neofitou, 2016) referred to this type of mini-OER as “produsage.” This approach can provide more everyday examples of common language usage and practice beyond the usual drill exercises found in many language acquisition textbooks. The materials in this study are written in English and are designed for college students needing to complete coursework for state standards on language/literacy in Teacher Education programs at universities in North America.

## **Theoretical Framework**

This study is conducted using action research as our theoretical framework. Action research is defined as “a type of applied research that contributes to the generation of principles, and theories, and is at the same time action oriented. It is also a form of professional development” (Holly et al., 2005, p. 31). Key aspects of action research include: 1) creating pedagogy that is responsive to student’s needs; as the literature review shows, the financial burden to university students is becoming greater; 2) recognizing objectivity as illusion; as the cost of higher education has risen, empathy from faculty towards the current student experience becomes increasingly disconnected from past periods of greater taxpayer support to higher education; 3) including self-critique to improve the lives of others; the authors are investigating student experiences, as well as their own instructional practices that has depended on print-bound textbooks to confront the cost of higher education and maintain quality learning; 4) developing and testing theories about instructional work; research shows the benefits of OER and OTB, however, the authors were interested in their specific context of OTB use in language/literacy teacher preparation course, an area that is lacking in the research base; 5) improving instructional practices through action research; the replacement of a print-bound textbook should be an informed choice based on the questions asked in this study.

An important strength of action research is the fact that teachers in a particular situational context implement the study to inform instructional choices rather than relying on outsiders. The literature review informs our decision to implement reading assignments to achieve course objectives with an OTB. While we selected specific OTB to maintain the integrity of courses, as teaching depends upon students. The design plan with OTB required analysis of student perceptions and experiences within the courses, as student satisfaction is connected to persistence and retention. It is our goal to assist youth in completing their education to achieve their goals despite rising costs.



## **Need for the Study**

No studies could be found related to OTB, or other OER materials, in Teacher Education courses in the United States focused on language/literacy development. This study is meant to fill in that gap and provide information on the perceptions and preferences of undergraduate students who will one day be teachers with the potential to instruct with OTB.

We expected to find similar results to previous research (Cooney, 2017, Hilton, 2016; Bliss et al., 2013; Lin, 2019) that showed positive students' perceptions of OER and OTB materials including publication quality and cost savings. Teacher Education students may have a heightened sensitivity to cost savings since they have chosen a career path that does not provide the opportunity for substantial financial gain. As such, we hypothesize that students will be more appreciative of the cost savings from an OTB than seen in any of the above studies and expect more nuanced responses in relation to motivation for reading from students in courses dedicated to preparing them to teach language/literacy in schools. Theoretically, teacher educators could increase the number of OTB in their programs to assist students in their college costs, but perceptions are important in a field that has traditionally placed print texts at the center of the obligatory years of schooling. Teachers, however, could shift OTB and OER from the margins of acceptance to mainstream usage modeled in the early, elementary, and secondary years.

## **Method**

A medium-sized university in the western United States, that enrolls 46% first-generation undergraduate students, is the setting for this study on the perceptions of Education students who were assigned to read chapters from OER textbooks for language/literacy development courses. The IRB approved research was gathered during the 2020-2021 academic year when the fall semester was completely online followed by a second semester with different delivery formats including hybrid (face-to-face and online mixed), and fully online both synchronous and asynchronous. Eight language/literacy development courses, that are requirements in Teacher Education within the state, serve as the data for this study were offered.

All participants were students who were enrolled in a course that focused on Language/literacy development for a license to teach early learners (Birth to Grade 3), elementary learners (Kindergarten to Grade 6), or secondary learners (Grades 6-12). Individual participation demographics were not gathered. Participation was completely voluntary and unincentivized. The participants completed a baseline faculty-created survey consisting of one question—"Have you used an OER textbook from an online source before in another class?"—followed by a request to explain a "yes" response. At the end of the course, the students were asked to fill out a longer survey of 13 questions/prompts. The baseline was completed in Canvas quizzes with the survey tool. A simple frequency count was completed for the first question and the follow-up comments were read to determine the number of times an educational methods or literacy course was mentioned.

The final faculty-created survey was based on a Likert-scale that precluded a "neutral" so that the results would

be actionable for future teaching. If students did not have a dominant negative attitude toward OTB then we could Retain, Reuse, Revise, Remix, or Redistribute (the 5Rs) the OTB. The survey was accessed through a link in a module from the course Canvas shell and 211 students completed all, or a portion of, the survey in Qualtrics. The tools of Qualtrics provide the descriptive statistics for the Likert-style ratings, and a constant comparative approach (Merriam, 1998) was used to analyze the qualitative comments that followed. The mixed-methods approach was chosen for triangulation when “one set of data corroborates another” (Gay, 2003, p. 185). Both qualitative and quantitative methods were used throughout the study.

The three stages of the qualitative comparative approach included: first, reading the entire print-out of responses and jotting down notes and ideas; second, going back over notes and comments to develop possible groupings/categories; third, rereading the responses to compare the participants’ comments with the emergent categories. The researchers then discussed the categorization of comments and adjusted them if needed. For example, occasionally an overlap existed, and discussion led to either the assignment to a single category that represented the dominant theme of a long comment, or a reporting of the overlap as shown in findings on Question 7. Most typed comments in the open-ended questions were extremely brief and, thus, presented a straightforward categorization.

As the review of literature states, faculty may be motivated to pursue the use of OER through grants and both the first and final authors of this article were provided small grants to begin the process of a move to OER. Since research demonstrates that students do not suffer lowered grades or diminished outcomes, the authors decided to locate and implement OER materials though, as stated above, there are few resources available for language/literacy and Teacher Education. The authors have experience teaching undergraduate Education courses that focus on literacy and have also taught at the same levels of obligatory schooling for which they prepare teachers. The OER texts selected for use in the courses were not written by the authors of this article eliminating the bias mentioned in the literature review. The two OTB’s utilized were *The Inside, Outside, and Upside Downs of Children’s Literature: From Poets and Pop-ups to Princesses and Porridge* by Jenifer Jasinski Schneider (2016), and *Steps to Success: Crossing the Bridge Between Literacy Research and Practice* edited by Kristen A. Munger (2016).

## **Findings**

The pre-course survey (see Appendix A) asked students if they had used an OER textbook from an online source in another class; 211 people responded with eleven failing to complete part or all the survey. The most frequent response was “No” at 63% (132 people). Fourteen percent (30) responded “Yes,” and 18% (38) responded “Uncertain.” Of the 30 students who responded “Yes,” 90% followed-up the response with a course that used OER, but 17 of the responses were for courses involved in the initiative from this grant for Education and language/literacy. Of the remaining responses, five students mentioned science courses, one cited psychology and another sports/exercise science, and three students stated that they had used OER but provided no course name or number. Only 14% of the students at the start of the semester survey had used OER in any course. Faculty at this research institution indicate on their syllabi (including the hyperlinks) when OER and open textbooks (OTB) are

utilized, and this information is shared on the University bookstore site and public course schedule.

The post-course survey (see Appendix B) findings of Education students’ perceptions of OER textbooks demonstrate that they appreciate the financial savings provided with the online materials. A summary of the quantitative findings can be seen in Table 1. The quantitative results of the closed questions will be discussed briefly before expanding on the information for a more refined understanding gained through the qualitative findings from open-ended questions.

Table 1. Closed Questions

Question	Format	Student Responses N = 211	Mean	Standard Deviation	Variance
<b>Q1 - Roughly, how much did you spend on textbooks for your UNC courses this semester (US dollar amount)?</b>	Likert	\$1-\$100 – 74, 35.07% \$101 - \$150 – 36, 17.06% \$151 - \$200 – 48, 22.75% \$201 - \$250 – 20, 9.48% \$251 - \$300 – 10, 4.74% \$301 - \$350 – 12, 5.69% \$351 - \$401 – 9, 4.27% \$400+ 2, 0.95%	2.71	1.79	3.20
<b>Q2 - Did using an OER text assist you financially?</b>	Multiple Choice	Yes – 135, 63.98% Uncertain – 41, 19.43% No – 35, 16.59%	1.53	0.76	0.58
<b>Q4 - I would rate the quality of the OER text as</b>	Likert	Poor – 7, 3.31% Fair – 48, 22.75% Good – 103, 48.82% Excellent – 45, 21.32% Unanswered – 8, 3.80%	2.92	0.77	0.59
<b>Q6 - I chose to read the chapters from the free, online OER textbook</b>	Likert	Never – 16, 7.58% Sometimes – 71, 33.65% Often – 72, 34.12% Always – 44, 20.85% Unanswered – 8, 3.80%	2.71	0.89	0.80
<b>Q10 - What would you rate the readability of this textbook?</b>	Likert	Easy – 27, 12.80% Fairly easy – 108, 51.18% Somewhat difficult – 59, 27.96% Difficult – 9, 4.27% Unanswered – 8, 3.80%	2.75	0.74	0.54
<b>Q12 - How often did you use the hyperlinks within the OER textbook?</b>	Likert	Never – 82, 38.86% Sometimes – 95, 46.02% Often – 23, 10.90% Always – 3, 1.42% Unanswered – 8, 3.80%	1.74	0.71	0.51

The first question in the Qualtrics post-survey asked participants to reflect on how much they spent on textbooks for the semester. Seventy-four of the respondents (35%) indicated that they spent less than \$100; 36 respondents (17%) said they spent between \$101-\$150; 48 respondents (22%) said they spent between \$201-\$250; 20 respondents (9%) said they spent \$201-\$250; 10 respondents (5%) said they spent between \$251-\$300; 12 respondents (6%) said they spent between \$301-\$350; 9 respondents (4%) said they spent between \$351-\$400; and 2 respondents (1%) said they spent over \$400. The responses indicate that students are spending less than the national average on their textbooks, which could be attributed to the institution's advocacy for utilizing OER and being mindful of the extra costs, particularly for first-generation college students. Although the participants are spending less than the national average on textbooks, in Question 2 when asked if using the OER texts assisted them financially, the resounding response was "yes." Overall, 135 participants (64%) responded that using OER assists them financially, 41 respondents (19%) indicated that they were uncertain of the impact, and 31 respondents (17%) indicated that it did not assist them financially.

Question 3 asked students to "explain how an OER textbook helped you financially" and 122 students chose to type a response. Of those responding, eight participants replied in a way that was not applicable to the prompt either by (a) typing in "n/a" themselves, or (b) writing something that was not well explained such as "Because I will get taxes back." The 114 participants who provided an applicable response as to how the OER textbook helped provide a glimpse of the undergraduate students' lives. Since students did not have to buy textbooks, they planned to use the money on different expenses including the following: "fix my car," "groceries and rent," "food," "groceries and essentials," "to rent other textbooks," "food, rent, and utilities," "my family." A few students (eight) mentioned connected savings in relation to not having to pay for shipping or returning a book that was unneeded. Stress related to concerns over shipping issues and access was echoed in six responses. One student provided an opportunity cost connected to OER textbooks: "By having this text be free I was able to spend more time on my schoolwork rather than focused on finding hours to work." Another student stated that the costs of textbooks prohibit study: "I think this is a great resource to save money—a lot of times, I won't even buy the textbook because they cost too much money." Moral conflicts related to people's right to an education and the increasing costs of education were made as evident in this comment: "Information for the sake of education should be free, so this OER textbook has been a perfect agreement between my values and my wallet. Saving a potential \$50-\$100 for food or other necessities was amazing."

When asked in Question 4 about the quality of the textbook, the majority of the students in the language/literacy courses selected "good" as a response (103 students, 48.82%) followed by "fair" (48 students, 22.75%) and "excellent" (45 students, 21.32%). Only seven students (3.31%) viewed the textbooks as "poor." In the follow-up Question 5, the participants were asked to explain their quality rating. The responses demonstrated that most students of the 203 could provide a solid rationale for their rating, such as "the information was properly cited," "it contained good information and was well written," and "concise and easily understood." In a few cases, the respondents voiced a preference for paper-bound books (9 people, 4%), and several asserted they only skimmed and scanned the text as needed for a class (5; 2%) or did not read it at all (5; 2%).

When asked to reflect on how often participants chose to read the assigned materials, 16 respondents selected

“never” (7.58%), 71 selected “sometimes” (33.65%), 72 selected “often” (34.12%), 44 selected “always” (20.85%), and eight respondents (3.8%) did not answer the question. Despite some students being truthful about declining to read the OTB, the majority of the participants did in fact utilize the OTB on a frequent basis. The follow-up question asked students to explain what motivated them to read the OER text. The 203 typed responses separated into five categories—Non-applicable, Intrinsic, Extrinsic, Textbook, and Amotivation. Twenty-four comments (12%) were unusable or non-applicable with many students simply writing “n/a.” The second category with 37 responses (18%) was “Intrinsic” when students read because they want to “understand” or “gain information” for their own development as a learner/teacher. The third category is “Extrinsic” when a student chose to read because their motivation was regulated to avoid punishment or seek rewards such as meeting grading requirements and/or to enhance ego such as being “successful.” The written comments were dominated by this category with 95 statements (47%). The fourth category consisted of 38 responses (19%) and were “Textbook” determined because students mentioned something about the textbook that made them want to read it such as “it was accessible and easy to read.” Three students (1%) wrote long enough comments to bridge two categories and these two were “Intrinsic” and “Textbook.” These students perceive their self-identity as scholarly: “I am a student that always reads and completes required reading/chapters and assignments.” OER helped two of these students with motivation because it is “easily accessible and in a simple/clear format” and “free.” The third student stated a preference for “reading books more than reading on a computer screen, but I also like it being free.” Six students (3%), in a fifth category, made comments of amotivation/avolition to read. Question 7 has an underlying assumption that motivation will occur, and one student among the six addressed this directly with this response: “It did not. I had other interesting things to read and a job.”

The authors, anticipating that some students may not be motivated to read, addressed the issue directly with Question 8 that stated, “explain what de-motivated you from reading the OER textbook.” After removing the responses that were non-applicable for the study as described above, this survey question resulted in 178 responses that were coded into four categories: personal, medium, text, and no lack of motivation. The personal reasons for not reading, appearing 66 times in the data (37% of responses), include a lack of time (“Crucial assignments being due and limited time”), a lack of interest in learning (“Textbook reading is boring”), lack of extrinsic motivation (“We did not have a lot of assignments regarding the text”), and the existential crisis (“The same thing that demotivated me from getting out of bed in the morning, the dread of being alive in the early 21<sup>st</sup> century”). The “medium,” an electronic textbook or the workings of the textbook itself (e.g., “scrolling”), was mentioned 48 times as a demotivator (27% of comments). The “text” itself and the contents of it was mentioned 48 times (27%) with common descriptors as “long,” “repetitive,” and “tedious.” Finally, the assertion that a text for reading could demotivate learning was refuted by 16 students (9%) who responded with “Nothing” or “It didn’t!”

Question 9 asked, “Was using the online OER text beneficial or a hindrance to your learning, or both?” After removing four responses that consisted of a series of dots, an x, and topics unrelated to the prompt, 177 responses were categorized. The respondents who believe OER is beneficial is 121 (68%) with a word related to cost provided nine times. Hindrance is the response of nine participants (5%) with five mentioning the digital format in some way. Forty-seven students (27%) found the OER textbook both a combination of beneficial and hinderance with a common response being “both” with no explanation, or they were neutral in their leanings with

an entry that read “n/a.”

The participants, who had just finished the course on literacy, were also asked to rate the readability of the OTB in Question 10. Sixty-three percent of participants, 135, rated the OER source as being “easy” or “fairly easy” to read. Yet, in Question 12, when participants were asked to indicate how often they utilized the hyperlinks and extensions within the OTB, the majority, 177 or 84%, indicated that they never or only sometimes utilized the hyperlinks. Comparatively, 12.3% (26) of the participants indicated that they often or always utilized the hyperlinks.

## **Discussion and Conclusion**

Roughly 66% of the participants had not utilized OTB resources in coursework prior to the language/literacy Teacher Education classes in this research study. This provided the researchers with an opportunity to tap into some perspectives about OTB from future PK-12 teachers. Overall, the participants resoundingly (64%) identified that utilizing an OTB for the course assisted them financially. Participants reported being able to allocate the savings towards other financial aspects of their lives such as rent and bills. As previously mentioned, first-generation college students represent 46% of incoming undergraduate students at the research institute; thus, utilizing OER texts is a significant financial saving for them. This finding aligns with previous research results related to the costs of textbook materials.

### **Research Question 1: How do students use OTB?**

Despite the advantage of OTB being free and accessible, some participants responded that they either never or only sometimes chose to read the assigned chapters. This raised an interesting question not explored by the researchers about how the cost of college texts motivates or demotivates students in reading assigned materials. Based on participant responses of those that did read, they primarily chose to read because the readings were directly connected to course assignments. In other words, if the reading materials are not connected to class assignments whether that is quizzes, tests, or other course projects, students are more likely to skip reading. This finding was also echoed in the use of hyperlinks within OER texts. Some participants reported utilizing the OBT hyperlinks because they were eager to learn more. However, the majority of participants did not utilize the hyperlinks within the OER texts simply because they were not connected to course assignments. Although previous research (Dennen & Bagdey, 2019; Lin, 2019) makes an argument that students can experience more engaging learning from OTB hyperlinks and extensions, these tools did not lead to deeper learning experiences because most students did not choose to use these digital enhancements.

Several other findings from this study echoed the results of previous research regarding OER. Similar to the findings of Dennen and Bagdy (2019), this study found that the OER texts utilized within the courses did provide students with a multimodal digital learning experience. Despite the flexibility of OER, some participants reported not liking the use of an OTB due to being restricted to using an electronic device and looking at a screen for hours and scrolling endlessly. Yet it should be noted that increased screen time was exacerbated during the Covid-19

period. These participants may not have been aware of their printing privileges at the institution; thus, professors should intentionally share such information with students and, if possible, have a few copies of the OTB printed for those students that prefer a paper copy. Schaffhauser (2018) highlighted similar findings that although students can print OER materials at no to low cost, very few students elect to do so. Additionally, this illuminates the obvious downside to OER, that those students that appreciate more tactile experiences feel less engaged in the reading when only accessing OTB through electronic devices.

### **Research Question 2: What are Teacher Education student perceptions of OTB?**

As noted by Jhangiani et al. (2018), OER can be perceived as being inferior in quality. When asked about how they would rate the quality of the OER texts, 70% of participants rated the OTB as being good or excellent. However, 26% rated the OER texts as being poor or fair in quality. Interestingly, when exploring the lower ratings, many of the comments justifying the lower ratings had little to do with the OER texts themselves, and more to do with students' technology skills. For example, overwhelmingly the students indicated that the OER texts were easy to read, yet several of the comments related to assessing the OER quality pertained to the source being difficult to navigate, or not accessible offline. However, with the hyperlinks in the table of contents, and being able to download as a PDF to any electronic device, these comments demonstrate that students were confusing OTB quality with their own skills, and that instructors need to spend some time helping students navigate OER texts. Erwin and Mohammed (2022) suggest "strategic instructional strategies" while Bergeson and Beschoner (2020) argues for integration at the planning stage of teaching. With this lesson learned for instruction at least the earliest stages of use, all instructors agreed that the OTB would be employed the next semester for another cycle of action research that builds on these findings.

Overall, the researchers were able to conclude that students reported positive perceptions regarding the utilization of OER texts in the language/literacy courses that are required in the researchers' Teacher Education program. With the consistent rise in the cost of attending college, and more first-generation students attending college, it is important that resources such as OER texts be utilized and taken advantage of. However, this will also call for more OER texts to be developed across disciplines, particularly for classes that are beyond generalist courses or STEM fields. Despite education being a large field, the researchers found limited OER texts that fit their class content and objectives.

### **Recommendations**

Future research related to OER should continue to explore the differences in perceptions of OER between first-generation college students and non-first-generation students, particularly at Hispanic Serving Institutions (HSI). While Nusbaum et al. (2020) found that first generation students' perceptions of OER were not significantly different from non-first-generation students, the aforementioned study was also conducted prior to Covid-19 and the influx of OER materials for multiple disciplines, including Teacher Education. First-generation college students may lack the noted self-regulation skills to excel in college simply because these independent study skills have not been modeled for them and tend not to be developed automatically in online learning experiences

(Barnard-Brak et al, 2010; Williams & Hellman, 2004). Moreover, if a student is from a family without a college heritage, they may have no one to turn to while transitioning from secondary school to college. Additional research should explore the barriers professors encounter in developing new OER texts and strategies that colleges could implement to alleviate these barriers. For example, higher-education faculty evaluation systems tend to place heavier emphasis on peer-reviewed top-tier journal publications than on open access publications. Additionally, the 5Rs--Retain, Reuse, Revise, Remix, and Redistribute--brush up against concerns of plagiarism and/or self-plagiarism. Studies related to the link between OER and promotion/tenure will be necessary as issues of equity in higher education become more prevalent.

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### Author Information


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#### **Amanda Rutter**

 <https://orcid.org/0000-0002-5173-734X>


University of Northern Colorado  
School of Teacher Education; 2<sup>nd</sup> Floor McKee  
Greeley, CO 80639  
U.S.A.

#### **David Black**

 <https://orcid.org/0009-0004-9708-7823>


Clark Planetarium  
110 S. W St.  
Salt Lake City, UT 84101  
U.S.A.

#### **Saadia Ali**

 <https://orcid.org/0000-0002-8351-4343>

Virginia Polytechnic Institute and State University  
210 Burrus Hall / 800 Drillfield Drive  
Blacksburg, VA 24061  
U.S.A.

#### **Margaret A. Berg** (corresponding author)

 <http://orcid.org/0000-0002-7674-4730>

University of Northern Colorado  
School of Teacher Education; 2<sup>nd</sup> Floor McKee  
Greeley, CO 80639  
U.S.A.

Contact e-mail: *Margaret.Berg@unco.edu*

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## **Appendix A. Pre-survey Questions**

- 1) Which class are you enrolled in?
- 2) Have you used an Open Educational Resource textbook from an online source before in another class?
- 3) If “yes”, in what course(s) did you use OER in and what are your impressions of learning with these materials?
- 4) Have you used the online forum Packback in another class prior to this one?
- 5) If “yes”, please describe your impressions and experience with Packback.

## **Appendix B. Survey Questions**

- 1) Roughly, how much did you spend on textbooks for your UNC courses this semester (US dollar amount)?
- 2) Did using an OER text assist you financially?
- 3) Please explain how using an OER textbook has helped you financially.
- 4) I would rate the quality of the information in the OER textbook as:
  - a. Fair
  - b. Good
  - c. Excellent
- 5) Please explain your quality rating.
- 6) I chose to read the chapters from the free, online OER textbook
  - a. Never
  - b. Sometimes
  - c. Often
  - d. Always
- 7) Please explain what motivated you in reading the OER text?
- 8) Please explain what de-motivated you from reading the OER text?
- 9) Was using the online OER text beneficial or a hinderance to your learning, or both? Please explain.
- 10) What would you rate the readability of this textbook?
  - a. Difficult
  - b. Somewhat difficult
  - c. Fairly easy
  - d. Easy
- 11) What features of the OER textbook did you find useful and helpful when reading? (Example: charts, graphs, hyperlinks to additional resources, textboxes with examples or extensions, etc.)
- 12) How often did you use the hyperlinks within the OER textbook?
  - a. Never
  - b. Sometimes
  - c. Often
  - d. Always
- 13) Which hyperlinks did you find most useful? And why?
- 14) Explain your reasoning for why you did or why you did not utilize the hyperlinks within the OER textbook.
- 15) What chapter(s) provided the most useful information for extending your prior knowledge? Please explain.