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Association Between Embedded No-Cost Materials and Student Success for Undergraduate Students in For-profit Universities

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This is to certify that the doctoral dissertation by

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has been found to be complete and satisfactory in all respects,
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Walden University
2025

Abstract

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by

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MA, University of Kansas, 2003

BS, MidAmerica Nazarene University, 2000

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Educational Technology and Design

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Abstract

Purchasing educational materials adds to college costs. The problem addressed in this study is the lack of research on the association between student success and the use of no-cost educational materials in for-profit universities. Grounded in Rawls' principles of justice, the purpose of this quantitative study was to investigate the association between student success as measured by pass/fail outcomes and the use of embedded no-cost educational and open educational resources (OER) materials in undergraduate courses at a for-profit university. Academic outcomes of 751 undergraduate students across three courses were analyzed using the chi-square test of association. Results showed a weak but statistically significant association in English/communication courses ($\chi^2(1, N = 254) = 5.150, p = .023, \varphi = .142$), but no association in sociology ($\chi^2(1, N = 205) = 1.320, p = .251$) or philosophy courses ($\chi^2(1, N = 292) = .492, p = .483$). These findings reflect mixed results from similar studies in non-profit universities and suggest that no-cost and OER materials do not directly influence student success. It is recommended that further studies be conducted in for-profit universities to incorporate additional variables, such as demographic data and enrollment trends, as well as students' perceptions and engagement with no-cost and OER materials. Given the unique socioeconomic profile of for-profit university students, this study has important social change implications. Specifically, it can guide universities in reviewing institutional textbook cost policies and allocating financial resources.

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Dedication

To my mom, who inspired me by paving the way and urging me to pursue my dreams. To my children, so they know education is important and worth pursuing, no matter how old they are. And to my husband, who is my rock and without whom none of this would be possible.

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I could not have completed this degree without my husband Matt's unconditional love and patience. Honey, thank you for taking over so many tasks and not complaining about the state of the house while I wrote my dissertation.

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Chapter 1: Introduction to the Study

The cost of higher education in the United States has increased significantly over the last 25 years (Looney, 2024). As a result, the federal government has taken steps to help. In May 2024, the Congressional Budget Office passed the College Cost Reduction Act, which reformed student loans and Pell Grant programs (Shohfi et al., 2024). Many higher education institutions have also been implementing strategies to reduce the financial burden on students. For example, in 2022, the New York Times reported that since 2020, some colleges have begun making tuition cuts (Hartocollis, 2022). Another strategy some universities have implemented to lower costs is embedding no-cost materials in classrooms to lessen the financial burden of earning a bachelor's degree and to strive toward equity in education. The Florida Virtual Campus surveys more than 13,000 students at Florida's public universities annually. They reported that in 2022, 44% of students surveyed were offered open educational resources (OER) as a choice in their courses (Florida Virtual Campus, 2022). In the last 5 years, much research has been done on the academic impacts that embedding OER and no-cost educational materials into classrooms has on students. A Google Scholar search for the words *OER* + no-cost materials + higher education yielded over 17,000 hits from 2021 to 2025. However, no current research has been conducted on the impact of providing no-cost educational materials in undergraduate courses in for-profit universities.

Examining the relationship between embedded, first-day access to no-cost educational materials and student outcomes is crucial for for-profit universities. Educational equity may be especially important for this student population, given their characteristics, which will be discussed in this chapter. My study was designed to fill that gap in the literature by focusing on the for-profit undergraduate population, examining the impact that OER and no-cost material can have on student success, and discussing how lowering the cost of education through no-cost materials is an issue of justice and equity. Nusbaum et al. (2020) discussed how even if the results of a study on the academic benefits of OER and no-cost educational materials are statistically non-significant, it is undeniable that no-cost materials help students who cannot purchase paid textbooks. Furthermore, even if only a few students benefit financially from embedded no-cost materials, the practical and positive impact on these students should not be underestimated. As Colvard et al. (2018) noted in a seminal study on no-cost and OER resources, having access to a free book from the first day of class can be significant.

This chapter provides additional background on educational costs and discusses the unique characteristics of students at private for-profit 4-year universities. In this chapter, I examine no-cost and OER materials as an equity strategy and their impact on student outcomes. The statements of the research problem and purpose, the research questions (RQs), and the hypotheses follow. In addition, this chapter contains the theoretical background, the nature of the research, and the definitions of some of the significant terminology used throughout the study. Finally, it discusses the assumptions, scope, delimitations, and limitations of the research and its potential significance to the field of education.

Background

Free educational materials for college students have been around for almost 30 years (Bliss & Smith, 2017), beginning with the creation of OpenCourseWare to make quality courses and materials freely available to students (Carlisle-Johnston, 2023). By the early 2000s, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) defined OER as any educational materials that could be distributed to the public under an open license. These materials would allow no-cost access, re-use, repurpose, adaptation, and redistribution by others (GEM Report UNESCO, 2023). Today, in addition to OER, any free materials included in a classroom can be designated as no-cost educational materials (Cozart et al., 2021). To ensure clarity, I used the terms no-cost and OER materials to refer to OER and other no-cost materials unless explicitly referring to one or the other.

In 2015, the United Nations included a goal to achieve inclusive and equitable education in its 30-year plan, which gave OER advocates the energy to push their agenda (Carlisle-Johnston, 2023). By 2018, almost half of colleges in the USA were using OER textbooks in their online courses (Ruth, 2018), just as the percentage of students in the USA who reported not purchasing the required textbook for their classes due to cost was increasing (Watson & Rush-Marlowe, 2023). Some research showed that some students, such as students from lower incomes in community colleges and minoritized students, were more likely to delay the purchase of materials due to their cost, which impacted their success in the course (Lo et al., 2023; Spica & Biddix, 2021).

Other research has examined the impact of exchanging paid educational materials for embedded no-cost educational materials on student success in various types of higher learning institutions, such as non-profit public (Chang, 2020) and private 4-year universities (Collins et al., 2020), as well as community colleges (Becker et al., 2023). However, little is known about how embedding no-cost educational materials affects undergraduate students in 4-year for-profit universities, which have the highest number of students with Pell Grants, ethnic minorities, first-generation students, and students who default on their educational debt (Cahalan et al., 2024; FirstGen Forward, 2023). These students have higher financial needs, and purchasing a textbook can be an added educational burden when money is scarce.

Problem Statement

Between 1993 and 2020, the cost of higher education in the United States increased by about 38% (Looney, 2024), impacting some educational institutions and their students more than others. In 2022-2023, the average cost for a college education was twice as high or more for private universities, both non-profit and for-profit, than for 4-year public universities (Cahalan et al., 2024). The disparity is a concern given that for-profit universities enroll more economically vulnerable students (FirstGen Forward, 2023) and have a higher percentage of Pell recipients (Cahalan et al., 2024). Students' socioeconomic status affects several aspects of their education, such as the amount of money they need to borrow, whether they need federal help to pursue their degrees (White House, 2022), and how the fluctuating cost of living affects them (Looney, 2024). Race and ethnicity also impact how students fare financially in college. Black and

Hispanic students take federal aid and loans at greater percentages than other students (Cahalan et al., 2024), and Black, Indigenous, and other people of color (BIPOC) students enroll in for-profit universities in larger percentages than their white and Asian counterparts (Nam, 2024; Winograd, 2024).

Given the socioeconomic characteristics of students in for-profit universities, lowering student costs through strategies such as providing no-cost materials for students would be a reasonable approach. Ruth (2018) reported that in 2018, 48% of higher learning institutions were using no-cost materials in their courses. However, there is very little, if any, research on how for-profit universities coped with that shift or how many were part of the 48% of higher learning institutions mentioned. Research into the impact of no-cost materials in higher education classrooms has covered student outcomes (Tlili et al., 2023) and how no-cost materials impact the equity gap (Ryan & Nawalaniec, 2022), but not in for-profit universities. The problem addressed in this study is the lack of research on the association between student success and the use of no-cost educational materials in for-profit universities. In addition, I aimed to examine how embedding no-cost educational materials into courses may address the educational equity gap.

Purpose of the Study

The purpose of this quantitative study was to investigate the association between student success as measured by pass/fail outcomes and the use of embedded no-cost educational and open educational resources (OER) materials in undergraduate courses at a for-profit university. To investigate this association, I examined the success outcomes of undergraduate students who took a 3000-level English course, a 2000-level communication course, a 4000-level sociology course, or a 2000-level philosophy course with paid educational materials in a large, online, for-profit higher education institution and students who took the same course with embedded, no-cost educational materials. I chose an array of courses to diversify the results of the analysis. I did not want the course type or level to be potential confounding variables because studies like Fischer et al. (2021) have found a significant relationship between course level and the use of no-cost or OER materials. The researchers found that while there is a negative relationship between course level and course grade, the availability of OER materials blunted the impact of this relationship. My study was also limited to courses in which paid textbooks had recently been replaced with embedded no-cost alternatives, as the available data had only been recorded since 2022. For example, the department's math and science courses were created with no-cost materials. There were no sections with no-cost materials to compare, so these courses could not be used. I also chose courses with moderate to high enrollment to have a significant sample size. Because the English courses tend to have fewer students, I combined the English sections with the communication course sections for the study. These courses have similar course and learning outcomes.

Research Questions and Hypotheses

The research questions and hypotheses that guided this study were as follows:

RQ1: What is the association between undergraduate student success in online English/Communication courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not?

$H_0$1: There is no association between undergraduate student success in online English/Communication courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not.

H_a1: There is a significant association between undergraduate student success in online English/Communication courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not.

RQ2: What is the association between undergraduate student success in online philosophy courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not?

$H_0$2: There is no association between undergraduate student success in online philosophy courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not.

H_a2: There is a significant association between undergraduate student success in online philosophy courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not.

RQ 3: What is the association between undergraduate student success in online sociology courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not?

$H_0 3$: There is no association between undergraduate student success in online sociology courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not.

$H_a 3$: There is a significant association between undergraduate student success in online sociology courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not.

Theoretical Framework for the Study

My theoretical framework was Rawls' (1971) theory of justice, which focuses on the economic equality of the less fortunate as a lens to critique and reform social institutions. Rawls recognized the inevitable inequalities within a society and how social institutions may perpetuate these inequalities. He posited his two principles, the liberty principle and the difference principle, to provide a framework for addressing such inequalities.

Rawls (1971) ordered his principles by their importance. The liberty principle is first, stating that every person should have equal rights to the most extensive basic freedoms and opportunities. The second principle, the difference principle, postulates that when there are social and economic inequalities, they should be arranged so that they are "(a) to the greatest benefit of the least advantaged, consistent with the just savings principle, and (b) attached to offices and positions open to all under conditions of fair equality" (p. 302). Rawls (1971) intended these principles to be foundational when assigning rights and duties and distributing social and economic advantages. His idea of justice as fairness stemmed from the understanding that genuine equality of opportunity came from giving more attention to the least advantaged in society. Rawls (1971) stated that due to the role of a system like education in providing the necessary skills for a person to be a productive member of society, those in authority to enact change should consider the difference principle to “allocate resources in education, say, so as to improve the long-term expectation of the least favored” (p. 101).

As discussed in the background section, undergraduate students in for-profit universities are affected by educational debt at higher rates than undergraduate students in non-profit universities *(*Armona et al., 2022*).* Rawls’ (1971) principles of justice provide a framework to examine how embedding no-cost materials in non-profit undergraduate courses to lessen students’ financial burden could create a more equitable system. Chapter 2 will provide a more detailed explanation of my theoretical framework and its application to my study.

Nature of the Study

This study was a correlational quantitative design to measure association. I used archival data of pass/fail outcomes from four online courses taught between Winter 2022 and Winter 2024 at For-Profit University (FPU; pseudonym). While the courses were different, I collected data from the course’s offerings that required students to purchase a textbook and the offerings for the same course but with embedded no-cost material for students. The data were analyzed with IBM SPSS 30 using the Chi-square test of association (2x2) to answer the research questions. I used the Chi-square test of association to determine if there was an association between two nominal variables: whether the students were enrolled in a course with embedded no-cost materials (yes/no) and whether they passed the class (yes/no). Due to the categorical nature of the variables, the Chi-square test was the best option to examine the association (Laerd Statistics, n.d.).

Definitions

I defined a few concepts essential to this study's discussion.

Open Educational Resources: OER, officially defined by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 2002, as any learning, teaching, or research material in any format or medium that is licensed to be used for public use or copyrighted under an open license that allows no-cost access, re-use, repurpose, distribution, or adaptation by other people (GEM Report UNESCO, 2023.).

No-cost educational materials: No-cost describes something that is free of charge and does not require the exchange of money to be secured (Merriam-Webster, n.d.). As such, in this study, any materials embedded into an online classroom that are readily available to students on the first day of the course, free of charge, will be referred to as no-cost educational materials.

First-day access: In the conversation about no-cost educational materials for students, a textbook sales model called inclusive access has become popular with colleges and universities. It is a model in which the cost of embedded digital material is automatically included in the student's tuition and fees and is available to them from the first day of class. The material is considered rented, and students typically lose access after the course ends (Inclusive Access.org, n.d.). Federal regulations require that students be given an opt-out option. Depending on the institution, this model goes by many different names. First-Day Access is one of those names. However, when this study referred to first-day access, it referred to having embedded materials readily available in an online class from the first day of the course. The definition used in this study does not describe the First-Day Access program, the sales model, which is not a no-cost option for students.

Pell Grant: A Pell Grant is a federal grant offered to undergraduate students from low-income households. It does not have to be repaid; the amount received is based on demonstrated financial need (Federal Student Aid, n.d.).

For-profit universities: For-profit universities are privately owned businesses with investors and shareholders. They focus on revenue and use tuition for marketing and recruiting (Beeck, 2021).

Non-profit universities: Non-profit universities are community organizations funded by tuition, government funding, endowments, and donations. They may be public or private, but any revenue is used to reinvest in the institution (College Board, 2024).

Broad access institutions: A broad access institution admits 80% or more applicants and has no significant or stringent entry requirements (National Center for Educational Statistics, 2023b).

Marginalized students: This study will refer to marginalized students when discussing students who belong to ethnic, cultural, linguistic, and/or socioeconomic groups that have historically been underrepresented and have had less sociopolitical power compared to the dominant group, regardless of their population size (Cheah et al., 2023).

Assumptions

Chapter 3 details the two specific assumptions associated with the Chi-square test. However, in this chapter, I discuss some assumptions I made about the courses to move forward with the study. The first assumption was that the students enrolled in the embedded no-cost material courses used the materials to complete their assignments. The second assumption was that students in paid textbook courses and embedded no-cost material courses completed graded work for the course.

Scope and Delimitations

The scope of this study was undergraduate students enrolled in a fully online private for-profit 4-year institution of higher learning in the United States. This institution's characteristics reflect those of other for-profit private 4-year universities. Students must be at least 21 years old to enroll in this institution unless they are on active duty in the military. This institution requires a particular first-term course for new students. Since I did not use data from that specific course, I know none of the students in my study were taking a college course for the first time. They may have been at this institution since the start of their degree, or they may be transfer students from a different institution. However, they may be new to online learning or have taken college courses many years ago.

The four courses chosen for data were in the general education program. While none are required, each course could fulfill the general education requirements for its subject matter: English, communication, sociology, and philosophy. Students have some options as to what courses to take to fulfill a general education requirement. All four of these courses were revised to replace the paid textbook with no-cost and OER materials sometime between the Winter of 2022 and the Winter of 2024. Archival data on the number of students who passed the course were collected for each offering of the examined courses taught between the Winter of 2022 and the Winter of 2024.

While the courses were taught by various faculty, each course was the same from term to term: same syllabus, same assignments, same discussions, same point values. Faculty entered the classroom, facilitated online activities, and assessed student work using the curriculum and standardized assessment materials within the course shell. This consistency helped account for curricular changes that could affect my study. The students who took the course with the paid textbook and those who took it with the no-cost materials had roughly the same experience otherwise. This study had some limitations, which will be discussed in the next section.

Limitations

One limitation of the study was that students self-selected the courses rather than being randomly assigned to a course. Some students may have been repeating the course. Other students may have been able to afford the textbooks without problem; hence, the intervention would not have made a difference for them. There was no way to avoid their data being grouped with those students for whom the embedded no-cost materials made a difference in access. According to Rawls' (1971) difference principle, no-cost materials should be provided to benefit those who need them most, even if they are also available to students who can afford to pay for them.

In addition, the courses were taught by different instructors each time. While the curriculum remained the same from course to course, it is undeniable that an instructor's style, grading leniency, and pedagogical choices can impact a student's experience and success. Finally, when a course is revised from paid materials to embedded no-cost materials, unavoidable tweaks must be made to graded tasks and directions to account for the new materials provided. I chose courses where the course outcomes remained unchanged, and the weekly learning outcomes remained the same before and after the revision. I hope this minimized the impact of those tweaks on students' experience and success in the class.

I requested nominal data because this study was meant to be a first step into researching the impact of no-cost and OER materials on for-profit university students. I asked for the number of students who took each course during a particular term and each student's final course outcome (pass/fail) for that course. I did not request demographic information, such as students' gender, ethnicity, socioeconomic status, grade point averages, or test scores. I conducted a Chi-square test of association as an initial step toward more in-depth research and analysis of data on embedding no-cost educational materials in for-profit university courses.

Significance

This study was significant in that research on the association of embedding no-cost educational materials with student outcomes has predominantly focused on non-profit public and private universities. My study, hence, filled a critical gap by examining this intervention within a population that has not yet been explored: for-profit undergraduate students. This population was essential to study because students in for-profit universities have the most significant financial need among college students. These students tend to be the highest proportion of Federal Grant and Pell Grant recipients, borrow the most money for education, and default on those loans at higher rates. Through this study, I aimed to see if there was an association between having embedded no-cost materials in the classroom and student success in for-profit online undergraduate classrooms. However, the characteristics of the population studied suggest that embedding no-cost materials for first-day access could help narrow the educational equity gap by removing the financial burden of a paid textbook from these students.

Moreover, my research can serve as a springboard for further research. The data analysis indicated a weak but significant association between students with access to the embedded no-cost materials. Hence, embedding no-cost educational materials into for-profit online courses could be further investigated in other for-profit universities. However, even if the analysis did not find a significant association, including no-cost educational materials in for-profit courses provides equal and free access to educational materials to all students in the course. When the materials are embedded and of no cost to students, students who struggle financially can budget better, knowing that the course cost will be what is posted for tuition and fees and nothing more. Since textbook costs vary by course and by textbook, quantifying how many students choose not to take a course because of the cost of the textbook would be difficult. Embedding no-cost materials for first-day access helps reduce educational attainment disparity between students, further shrinking the equity gap.

Summary

This first chapter introduced the background of the movement to provide free, online educational materials for college students, including no-cost educational materials, such as OER and other resources free to embed. The introduction traced the movement from its beginnings in the late 90s to its growth after 2002. Furthermore, I discussed how textbook costs affected students, considering the rising cost of secondary education. Marginalized students, such as low-income students and Black and Hispanic students, most profoundly felt this impact. Research in the field has shown that these students are more affected by the cost of textbooks than others because not purchasing a textbook and not having the textbook available for the first day of class impact academic markers. Thus, the burden placed on students by the cost of textbooks became an equity issue in education.

Looking at equity in education, the chapter outlined the differences in the student population between for-profit and non-profit universities. Statistics on borrowing, loan default, and federal aid trends showed that students in for-profit universities are the most economically affected by educational costs. In addition, for-profit universities' student bodies are mainly comprised of Black and Hispanic students. These groups have the lowest socioeconomic markers, such as family median income. However, very little research has been conducted on how embedding no-cost materials in for-profit undergraduate classrooms would benefit these students academically and financially.

The current study was designed to fill that gap by examining the impact of OER and no-cost materials on student success and discussing how lowering the cost of education through no-cost materials is an issue of justice and equity. Rawls' (1971) theory of justice served as a theoretical foundation for discussing why embedding no-cost materials in online courses can help close the educational equity gap.

The methodology was a correlational quantitative design to measure the association between student success in four courses: English, communication, philosophy, and sociology. Data were collected from Winter 2022 to Winter 2024 for four courses, both before and after they were revised to replace purchased textbooks with embedded no-cost and OER materials. Student success was measured as passing or failing the course. The scope and delimitations, limitations, and significance were also discussed in this chapter. Chapter 2 reviews the current research in the literature compiled during the research process, including an analysis and a summary of how the current body of research may benefit from this study.

Chapter 2: Literature Review

Much research has been published over the last 5 years examining the impact of using no-cost and OER materials in undergraduate courses. I will synthesize the research throughout this chapter. For example, several studies have investigated the relationship between no-cost or OER materials and student grades with various results (Baker & Sibona, 2022; Becker et al., 2023; Bol et al., 2022; Clinton-Lisell, 2023; Clobes et al., 2022; Dempsey, 2021; Fischer et al., 2021; Panday-Shukla, 2024; Suriano, 2024). Other variables associated with no-cost or OER materials examined in recent literature were students' perception of the quality and cost of materials (Appedu et al., 2021; Cozart et al., 2021; Lo et al., 2023; Nguyen & Herron, 2021; Vollman, 2023; Wynants, 2022), student engagement with the material (Panday-Shukla, 2024), withdrawal rate differences (Suriano, 2024), and persistence (Bol et al., 2022). However, most of this research was conducted in community colleges (Becker et al., 2023; Bol et al., 2022; Dempsey, 2021; Fischer et al., 2021; Vollman, 2023), private non-profit universities (Appedu et al., 2021), and public universities (Baker & Sibona, 2022; Clinton-Lisell, 2023; Clobes et al., 2022; Cozart et al., 2021; Lo et al., 2023; Nguyen & Herron, 2021; Panday-Shukla, 2024; Suriano, 2024; Wynants, 2022). Little research has been done on the impact of offering no-cost and OER materials in for-profit universities. Research on OER in the context of for-profit universities has not yielded empirical data on student outcomes (Neely et al., 2016). Undergraduate students in for-profit universities have been significantly underrepresented in the current literature on no-cost and OER materials.

The lack of research on the impact of no-cost and OER materials in for-profit universities exposes a significant gap in understanding whether embedding these materials in online courses can address this vulnerable population's unique needs and challenges. Students in for-profit universities often face higher barriers to a college education, pay higher tuition, and have less access to federal aid than their peers in public universities, community colleges, and non-profit private universities (Cahalan et al., 2024). There is a critical need for research on how no-cost material and first-day access to educational resources can impact the academic performance and overall success of economically disadvantaged students, such as students in for-profit universities (Lo et al., 2023). In this study, I addressed this gap by examining the impact of first-day access to no-cost materials on student outcomes in online courses at a for-profit university.

This chapter is divided into five sections. The first section will focus on the research strategies I used to find the sources for the literature review, including keywords and databases. The second section will discuss the theoretical frameworks that support this study: Rawls' (1971) theory of justice. The third section will cover the background of students in for-profit universities, and the fifth section will cover no-cost and OER materials. I will discuss their background, the research highlighting students' and faculty's perceptions of these materials, and the effects of textbook costs on students. In addition, this section will explore research on the impact of no-cost and OER materials on student success outcomes and the impact of first-day access to materials. Finally, I will explore introducing no-cost and OER materials as an alternative to paid textbooks.

Literature Search Strategy

There has been considerable research from the 2000s on using no-cost educational materials in higher education. However, I was looking for research that focused on using no-cost educational materials in for-profit, 4-year universities due to the unique characteristics of these students. My research strategy involved a variety of search engines. I used Google to help me find institutional data on different universities, student demographics, and socioeconomic data on educational debt. I used Google Scholar to guide me in finding peer-reviewed studies from 2021 to 2024. I also searched databases ERIC, EBSCO, SAGE, primarily, and ProQuest Dissertations. The keywords and keyword phrase combinations I used repeatedly were *for-profit universities, for-profit universities, for-profit college, profit college, non-profit universities, non-profit universities, private non-profit universities, private non-profit universities, public universities, OER, open educational resources, open textbooks, open access resources, open access journals, no-cost resources, zero-cost resources, student success, academic achievement, academic performance, academic success, student completion, equity gap, educational justice theories,* and *Rawls' theory of justice.* I used the bibliographies of relevant articles to do citation chaining. I also used Google Scholar's cited-by tool to find newer articles based on articles older than four years. I stored and organized my literature using the Zotero reference library. I also used Zotero to insert citations and format the reference list.

Theoretical Foundation

The theoretical foundation for this study was Rawls' (1971) theory of justice. Rawls' (1971) theory focuses on the equitable distribution of fundamental freedoms and opportunities to benefit the most in need and recognizes how social institutions may perpetuate these inequalities. For-profit universities disproportionately enroll more federal aid recipients than other universities. In 2021, for example, 68% of full-time, first-time students in for-profit, 4-year universities received Pell Grants, compared to 49% of students in public universities and 41% of students in private, non-profit universities. (Cahalan et al., 2024). For-profit universities also enroll more students of color than other higher education institutions (Looney, 2024; National Center for Educational Statistics, 2023c). As of 2023, the population of students of color in private for-profit universities represented 57% of all higher education students enrolled (Nam, 2024). Further, students of color comprise most federal aid recipients (Cahalan et al., 2024). Given the intersection of race, gender, and socioeconomic status in the for-profit student population, a theoretical foundation that addresses how the financial cost of materials impacts this sector of students academically is useful.

Rawls' (1971) Theory of Justice

John Rawls (1921-2002) was an Ivy League-educated American liberal political philosopher best known for his theory of justice. He was born and raised in Maryland by two activist parents (Wenar, 2021). He wrote his theory of justice in 1971, partly as a response to the pervasive utilitarianism that had plagued Europe during World War II and partly to address the American thinking in our involvement in Vietnam (Nussbaum, 2001). Utilitarianism emphasized the good of the masses over the rights of the individual, and Rawls believed that the individual's rights are inalienable (Saleem, 2020). In addition, Rawls is considered a transcendentalist, committed to finding the ideal institutional justice (Labude & Pogge, 2010). His transcendentalism brought criticism from comparativist philosophers like Sen (2009), who disliked that Rawls' (1971) theory did not take every person into account but instead focused on a particular group: the least advantaged (Sen, 2009).

This tenet of Rawls' (1971) theory of justice made it suitable for this study because it focuses on a particular group. He defined the least advantaged as those with the lowest authority and income. My study focuses on students in for-profit universities, who research shows are the least advantaged in higher education. The theory of justice has a few important components to describe and explain as they relate to this study.

Original Position

In his theory, Rawls (1971) posited that humans and institutions should think about principles of justice based on the idea that nobody should be advantaged or disadvantaged due to their natural fortune or social condition. If principles of justice were designed from the perspective that all people are free and equal, those principles would be as unbiased as possible and give people the best initial chances in life (Das, 2018). Ackerly (2006) added that when individuals adhere to this original position, they will design institutions that also adhere to this position and "will thereby be just and promote stability and continued social cooperation" (p. 75). Such institutions will choose principles of justice empathetically from the perspective of those in most need in society (Berger et al., 2023).

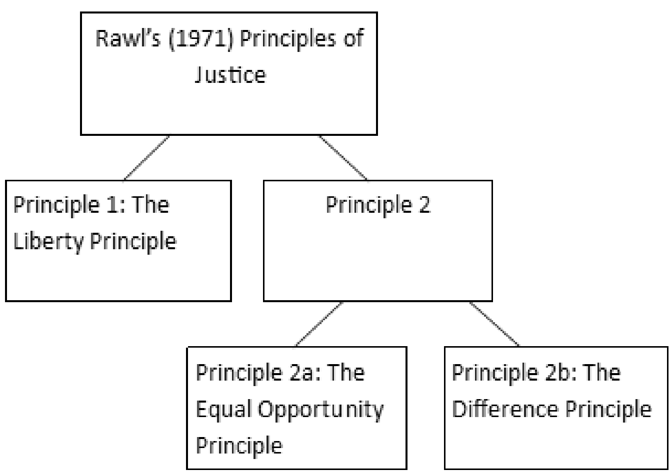
From the establishment of higher education in this country, these principles of justice have been exemplified in the desire to close the gap between those with advantages and those who do not have them. This idea led universities such as Harvard to provide the earliest known scholarship in 1643 (Pallardy, 2020) and the federal government to establish the National Defense Education Act of 1958, which provided subsidized educational loans (New America, n.d.). However, over the last 20 years, the rising cost of higher education and textbook costs have not kept up with the cost of living, with dire subsequent consequences in enrollment and student debt, particularly among students in for-profit universities (Cahalan et al., 2024; Looney, 2024).

Rawls believed that if an institution failed to create a system that was close to the ideal of justice, reform needed to be introduced (Beattie, 1982). Understanding what a just institution would look like allows practitioners to identify the structural injustices perpetuated in their institutions and enact reforms to tackle them (Ferretti, 2022). While no-cost and OER materials have surfaced in educational research as one possible strategy to fight educational costs, in 2022-2023, only 26% of faculty in the United States reported using OER as required material in their classrooms (Seaman & Seaman, 2024). The goal of the current study was to bring more awareness of the impact of no-cost and OER materials on making education more affordable and on academic success, particularly among students in for-profit universities who are not well-represented in the current no-cost and OER materials research.

Based on this original position, Rawls (1971) established two principles, which he identified as the principles that would result from people and institutions taking the original position. The first principle is often known as the liberty principle. The second principle has two distinct clauses: the difference principle (2a) and the equal opportunity principle (2b; Rawls, 1971). See Figure 1 for a visual explanation of the relationship between the principles.

Figure 1

Relationship Between Rawls' (1971) Principles of Justice



Rawls' (1971) Principles of Justice

The first principle, the liberty principle, guaranteed equality of citizenship and advocated for every person to have equal rights and access to what Rawls (1971) considered basic liberties: the right to vote, freedom of speech and thought, the right to have personal property, and freedom from arbitrary arrest (Beattie, 1982). This principle concerned people's political standing in the eyes of the law and the government.

The second principle provided theoretical support for this study. The first clause of the second principle (2a), the equal opportunity principle, concerns people having the same opportunities for offices and positions (Rawls, 1971). In addition to the basic rights outlined by principle one, the theory of justice stresses that access to equal education, regardless of one's economic background, is imperative to equal career opportunities (Tuffour et al., 2022). Since the original theory emerged in 1971, expansions to the original theory have been published to include elements like equal high-quality education through college as an essential liberty (Peffer, 2010). Education is necessary to fulfill a person's life plan.

Rawls (1971) identified self-respect as an important life characteristic that allows a person to lead a truly human life and fulfill their life plan (McKenna et al., 1990; Runcheva, 2013). However, if wealth precludes someone from access to quality and equal education as their more well-off counterparts, it could also undermine their self-respect (McKenna et al., 1990). Some research into students' inability to purchase materials has created barriers to a sense of belonging in the classroom as they watch their wealthier counterparts purchase books, achieve better grades, and maybe be invited to study groups (Nguyen & Herron, 2021). A sense of belonging is tied closely to self-esteem and self-respect (Leary, 2021). Lack of access to textbooks may have more than socioeconomic consequences for students. Rawls' (1971) difference principle speaks of a more egalitarian distribution of resources like educational materials.

The second part of Rawls' (1971) second principle (2b), the difference principle, is a principle of egalitarian economics (Ackerly, 2006). It stated that the distribution of primary goods and resources should be done to improve the condition of the least advantaged (Rawls, 1971). Here, Rawls (1971) used resources for education as an example of a resource that must be allotted to “enrich the personal and social life of citizens, including here the less favored” (p. 107). Hence, according to Rawls, the education system must be designed to eliminate class barriers (Pijanowski, 2015).

Literature Review Related to Key Variables and/or Concepts

Cost of Education and Impact on Students

The cost of higher education in the United States has been increasing for the last several years. A report by the Brookings Institution from the summer of 2024 found that posted tuition prices for a bachelor’s degree across U.S. universities have increased by about 38% between 1993 and 2020 (Looney, 2024). This increase has impacted some universities more than others. The Pell Institute, the research arm of the Council for Opportunity in Education, publishes a comprehensive yearly report of indicators of higher education equity in the United States. In their 2024 edition, the authors reported that in 2022-2023, the average cost for a college education was twice as high or more for private universities, both non-profit and for-profit, than for 4-year public universities (Cahalan et al., 2024). This assertion was supported by data from the National Center for Educational Statistics (2023a), which showed that in the 2022-2023 academic year, the average tuition and fees for a public 4-year university was $9834, while a non-profit private 4-year university could cost $40, 713 and a for-profit, 4-year institution could cost $18, 241. This disparity is of concern because 63% of Pell recipients are enrolled in a broad-access university (Cahalan et al., 2024), and for-profit universities are generally considered broad-access (Hillman, 2020). A broad access institution admits 80% or more of applicants and has no significant or stringent entry requirements (National Center for Educational Statistics, 2023b). For example, in the Fall of 2021, for-profit universities admitted 97% of applicants (National Center for Educational Statistics, 2023b). Examining the characteristics of students who attend different types of universities is also a key component in understanding how education costs affect them.

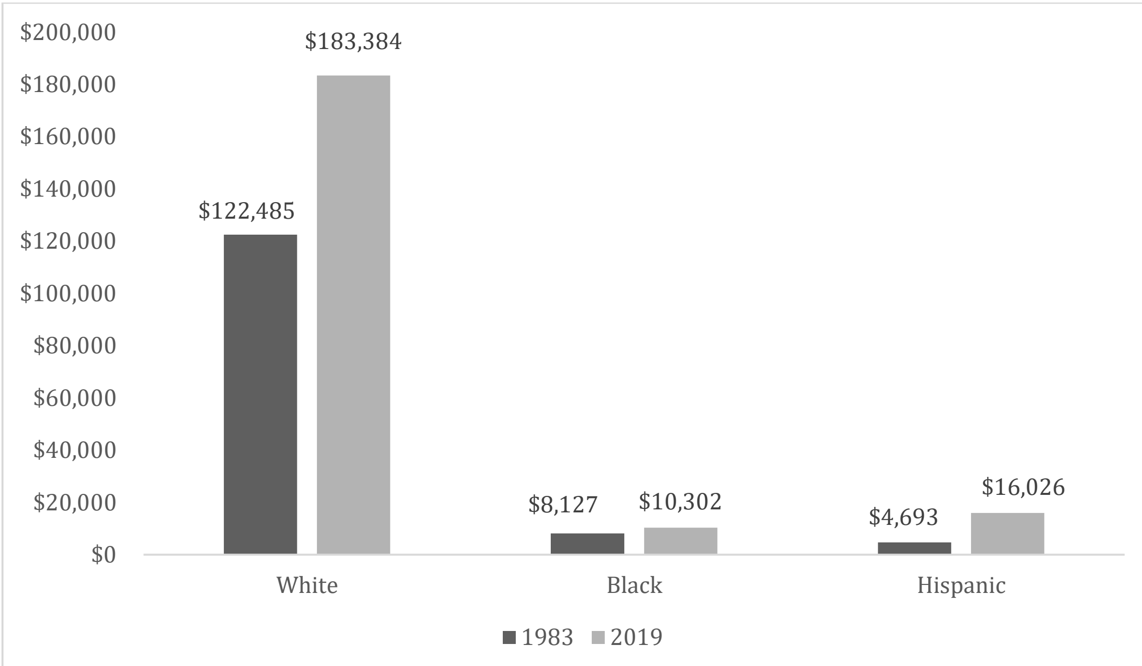
Socioeconomic Inequity in Higher Education

The Pell Institute's report paints a vivid picture of the socioeconomic inequity in the United States and the effect this inequity has on pursuing a bachelor's degree. For example, their data showed that a dependent, full-time, low-income student would need 90% of his family's income to pay for a college education without financial aid. In contrast, a dependent, full-time student in the highest income quartile would require 13% of their family income if financial aid were unavailable (Cahalan et al., 2024).

Another indicator of inequity is the overall median family wealth. While the overall median family wealth increased by 23% between 1983 and 2019, the differences in wealth by ethnicity are considerable. Figure 2 shows that in 2019, the White median family wealth was $183,384, 18 times higher than the Black median family wealth and 11 times higher than the Hispanic median family wealth in the same year (Cahalan et al., 2024).

Figure 2

Median Family Wealth in Constant Dollars



Note. This figure presents data on the median wealth of families by race/ethnicity in 2022 constant dollars. Adapted from "Indicators of Higher Education Equity in the United States 2024: 50-Year Historical Trend Report" by M.W. Cahalan, N. Brunt, T. Vaughan III, E. Montenegro, S. Breen, E. Ruffin, & L.W. Perna, L. W., 2024, Washington, DC: The Pell Institute for the Study of Opportunity in Higher Education, Council for Opportunity in Education (COE) and Alliance for Higher Education and Democracy of the University of Pennsylvania (Penn AHEAD).

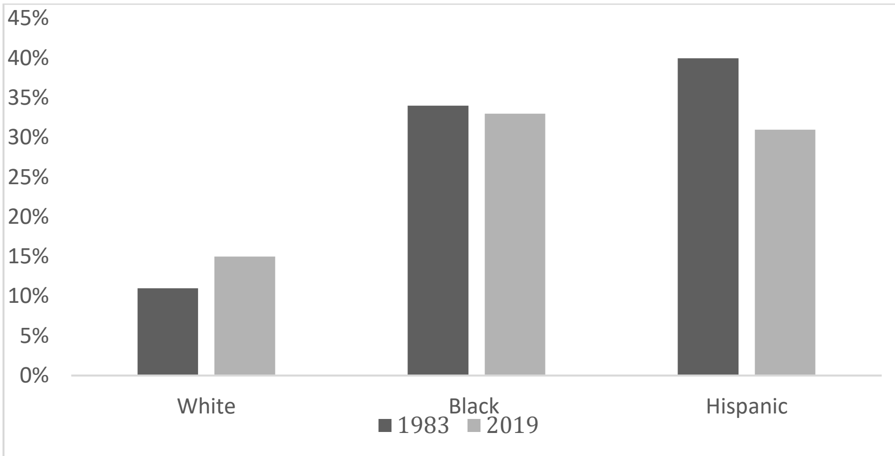
These wealth differences by ethnicity affect how students can finance their degree pursuit. For example, according to a report by the White House (2022), in 2022, 71% of Black undergraduate students who borrowed money for education also received a Pell Grant. Among Hispanic undergraduate borrowers, 65% were also Pell Grant recipients. A

Pell Grant is need-based and only covers around 25% of the average college cost. In 2022-2023, a student’s maximum Pell Grant was $6895 (Cahalan et al., 2024). Of note is that living expenses for bachelor’s degree students have increased by 24% since 2000 (Looney, 2024). The rising cost of education, increased cost of living, and financial need have also increased student borrowing. Looney (2024) reported that the annual student borrowing for undergraduate students increased by 170% between 1993 and 2020. In 2020, 61% of bachelor’s degree completers borrowed money to finish their education (Cahalan et al., 2024).

Borrowing money to pursue an education when there is already inequity in wealth can further the divide. The Pell Institute reported that in 2019, 33% of Black and 31% of Hispanic families had negative wealth, meaning they owed more than they had in assets (Cahalan et al., 2024). See Figure 3. Four years after finishing their bachelor’s degree, 48% of Black students owed more than they borrowed. Their debt had increased by about 6%, and they owed, on average, $64,256. As shown in Figure 3, only 17% of White students who completed their bachelor’s degree borrowed money. Four years later, their debt had reduced by 10%, and they owed, on average, $34,810 (Cahalan et al., 2024).

Figure 3

Percent by Negative Wealth by Ethnicity 1983-2019

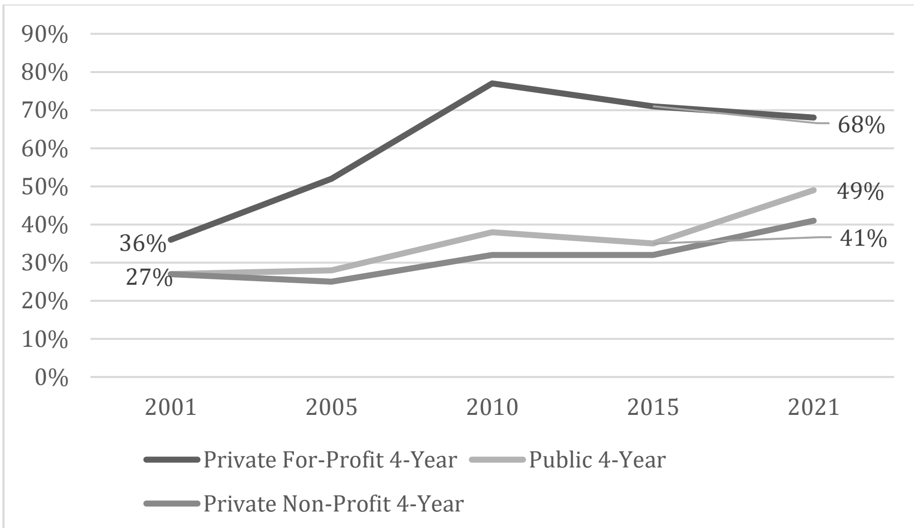


Note. This figure presents data on the median wealth of families by race/ethnicity in 2022 constant dollars. Also given is the percentage of families with zero or "negative" wealth (meaning the value of their debts exceeds the value of their assets). Adapted from "Indicators of Higher Education Equity in the United States 2024: 50-Year Historical Trend Report" by M.W. Cahalan, N. Brunt, T. Vaughan III, E. Montenegro, S. Breen, E. Ruffin, & L.W. Perna, L. W., 2024, Washington, DC: The Pell Institute for the Study of Opportunity in Higher Education, Council for Opportunity in Education (COE) and Alliance for Higher Education and Democracy of the University of Pennsylvania (Penn AHEAD).

Socioeconomic and racial inequity are further highlighted when examining the data by institution type. For example, the Pell Institute stated that universities with a higher percentage of Black and Hispanic students report higher numbers in categories like the percentage of students in need of federal aid, the rate of students who borrow money, and the percentage of students who default on their loans (Cahalan et al., 2024). For-profit universities are at the top of this list. Between 2000 and 2012, for-profit college enrollment tripled, primarily due to the addition of historically underrepresented students such as low-income students, first-generation students, and Black, Hispanic, female, and older students who enroll disproportionately at for-profit universities (Looney, 2024; Winograd, 2024). By 2023, the BIPOC student population of private for-profit 4-year universities represented 57% of all higher education students. By comparison, in private non-profit 4-year universities, that number was 37%, and 42% in public 4-year universities (Nam, 2024). This disparity in enrollment also means a disparity in federal aid. Figure 4 depicts the percentage of students who received any type of federal aid by institution type. Disaggregated by institution type, 49% of undergraduates at public 4-year universities received federal aid compared to 41% of undergraduate students at private non-profit 4-year universities. In private for-profit 4-year universities, 68% of undergraduate students received federal aid. This difference is notable because for-profit universities enroll only about 5% of all undergraduate students in the United States (Cahalan et al., 2024).

Figure 4

Percentage of Full-Time, First-Time (FTFT) Degree/Certificate Seeking Undergraduate Students Receiving Pell or Other Federal Grants by Institutional Level and Control 2001-2021

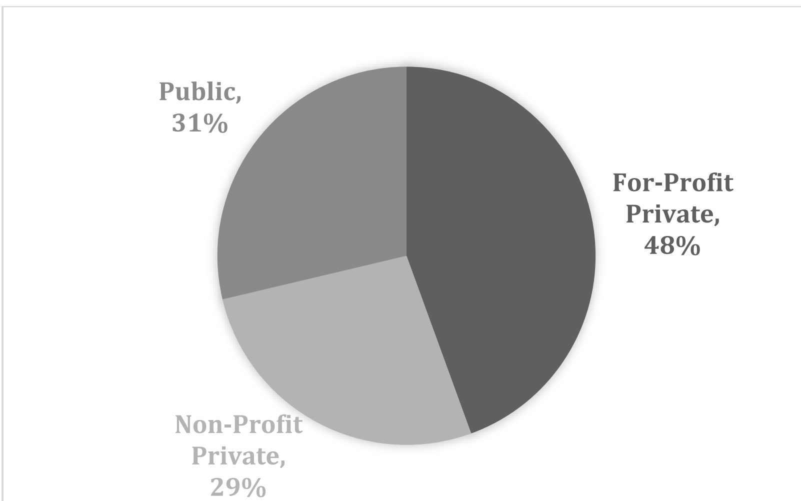


Note. Federal Grant aid for undergraduates is comprised primarily of Pell Grants but also includes Federal Supplemental Educational Opportunity Grants (FSEOG) and grants from federal agencies other than the U.S. Department of Education, such as the Department of Veterans Affairs and Department of Labor. This figure also includes Federal Grants for undergraduates related to the COVID pandemic. From "Indicators of Higher Education Equity in the United States 2024: 50-Year Historical Trend Report" by M.W. Cahalan, N. Brunt, T. Vaughan III, E. Montenegro, S. Breen, E. Ruffin, & L.W. Perna, L. W., 2024, Washington, DC: The Pell Institute for the Study of Opportunity in Higher Education, Council for Opportunity in Education (COE) and Alliance for Higher Education and Democracy of the University of Pennsylvania (Penn AHEAD).

Looking specifically at Pell Grants as federal aid, 48% of degree-seeking bachelor students at for-profit 4-year universities receive Pell Grants compared to 31% of students enrolled in public 4-year universities and 29% of private non-profit universities (National Center for Educational Statistics, 2022a), as shown in Figure 5.

Figure 5

Percent of Students Who Receive a Pell Grant by Institution Type



Note. From "Indicators of Higher Education Equity in the United States 2024: 50-Year Historical Trend Report" by M.W. Cahalan, N. Brunt, T. Vaughan III, E. Montenegro, S. Breen, E. Ruffin, & L.W. Perna, L. W., 2024, Washington, DC: The Pell Institute for the Study of Opportunity in Higher Education, Council for Opportunity in Education (COE) and Alliance for Higher Education and Democracy of the University of Pennsylvania (Penn AHEAD).

Institution types also affected borrowing trends for students. The Pell Institute report stated that 82% percent of students in private for-profit universities borrowed, compared to 61% of private non-profit university students and 59% of public university students (Cahalan et al., 2024). Not only did for-profit university students borrow at higher rates, but they also defaulted on loans at higher rates than public and private non-profit students (Armona et al., 2022), causing them further financial stress.

Additionally, Pell Grant recipients borrowed more and were more likely to borrow. In 2020, 82% of Pell recipients borrowed money to earn a degree, compared to 51% of non-Pell recipients. Four years after graduation, Pell Grant recipients owed an average of $51,124 compared to non-Pell recipients, who owed approximately $33,701 (Cahalan et al., 2024). The Pell Grant Institute report also pointed out that, in general, Pell Grant recipients in 4-year public, private, and for-profit universities had lower completion rates six years after starting their degree than non-Pell Grant recipients. In 4-year private non-profit universities, the completion rate for Pell Grant recipients six years after starting a bachelor's degree was only 28% compared to 37% of non-Pell Grant recipients (Cahalan et al., 2024).

Cost of Textbooks and Impact on Students

It is important to note that tuition is only a part of the cost of higher education, as educational supplies, fees, and living costs also contribute to students' financial strain. According to the U.S. Bureau of Labor Statistics (2023), educational supplies, including college textbooks, were 1.4% more expensive in 2023 than in 2020. In addition, from January 2020 to June 2022, the inflation rate in the United States was 74.4%, while the cost of textbooks increased by 162% during the same period (Perry, 2022). In 2022, the average book and supplies fee for a 2-year institution was $1460 (Ma & Pender, 2022), while in 2024, the average textbook for a college class cost about $174, and the average student paid around $285 in textbooks per academic year (Hanson, 2024).

The additional cost of educational materials and fees can cause students financial stress. In 2018, 64.2% of students in the USA reported not purchasing the required textbook for their class (Watson & Rush-Marlowe, 2023), citing course materials as their top source of financial stress after tuition (Cengage Group, 2018). By 2020, the number of students who reported not purchasing a textbook because of cost was 65%, according to a 2021 U.S. PIRG Education Fund report of a national survey of more than 5,000 college students (Vitez & Nagle, 2021). Given that almost 85% of students were responsible for paying for their required educational materials (deNoyelles & Raible, 2021), the high rate of students not purchasing a textbook is not surprising. Current research into textbook costs reported that students are not purchasing textbooks necessary for courses due to costs that would require them to forgo a necessity such as rent or food (Hanson, 2024). One study found that 87% of students polled stated that the textbook cost was critical to deciding whether to purchase it (Davis & Mckee, 2022), while other researchers reported that when students were offered the choice between purchasing a traditional textbook or going without one, they preferred to do without a book (Cozart et al., 2021). Conversely, some research showed that students perceived using OER materials to decrease their financial burden (Vollman, 2023). Current research suggests that no-cost and OER materials may help alleviate economic disparities and create a more inclusive learning environment as the usage of textbooks increases when the price of textbooks decreases (Stanberry, 2022).

Not having a textbook also affects students' academic outcomes. Hanson (2024) reported that 20% of students fail college due to the all-encompassing cost of tuition, fees, and textbooks. The 2021 U.S. PIRG Education Fund report stated that 90% of the students who did not purchase a textbook due to cost were concerned about the negative impact of this choice on their grades (Vitez & Nagle, 2021). The current literature supports students' concerns as research into the consequences of not having the required textbook for a class showed that without the course materials, students tended to drop a needed class, not enroll in a needed class, or earn lower grades than students who had the materials (Jenkins et al., 2020; Lo et al., 2023; Nusbaum et al., 2020). Surveying undergraduate students for their opinions, Suriano (2024) found that students felt that not having to worry about working more hours to afford their textbooks allowed them more time to focus on their studies (Suriano, 2024), which can improve academic outcomes.

The impact of the high cost of textbooks has also deepened the education equity gap. In a study to examine the impact of no-cost and OER materials in courses that have high percentages of marginalized students enrolled, the researchers found that the marginalized students were significantly more negatively affected by the cost of the course materials and more likely not to purchase the materials due to cost than their White peers (Sergiadis et al., 2024). Other research has indicated that students who received financial aid were less likely to purchase required textbooks than students who did not receive aid (Angelopoulou et al., 2022) and that 20% of students polled would use the money they saved on textbooks to purchase food or pay rent (deNoyelles & Raible, 2021). Shelley and Scott (2023) found that 43% of Black students at a large state university had to use the money they earned working to pay for educational materials, compared to 34% of White students who did the same.

Given that the cost of textbooks affects marginalized students financially more than it does other students, it is not surprising that the academic outcomes of this education equity gap are also greater among marginalized students. Financially disadvantaged students are more often affected academically by the cost of textbooks, receiving lower grades, and failing courses at higher rates due to being unable to afford the textbooks (Spica & Biddix, 2021). Accordingly, Pell Grant recipients and first-generation students have more significant difficulties affording their materials and may suffer the consequences of not having course materials more often than their counterparts (Appedu et al., 2021). These students tend to drop or not take a needed class due to the textbook's cost, affecting their grades and/or completion (Jenkins et al., 2020; Nusbaum et al., 2020). Other research found a significant association between ethnicity and how much students budget for textbooks, reporting, for example, that Hispanic students took fewer courses, did not register for a course, or earned lower grades than their counterparts due to textbook cost (Lo et al., 2023). The situation is so dire that California passed a law requiring that community colleges and public universities prominently display on their course websites the estimated cost for the required materials and fees related to the materials for transparency starting in 2025 (Open Educational Resources Initiative, n.d.). California has a high percentage of historically underserved students and low-income, minoritized Pell Grant recipients, first-generation and part-time students, many of whom work full-time while completing their degrees (Correa & Bozarth, 2023). In addition, California is providing grants for public universities to create zero-textbook cost degree programs to help students address the cost barrier that textbooks provide (Open Educational Resources Initiative, n.d.).

Unfortunately, the traditional textbook adoption system in higher education has put faculty who want to find the best materials for their students and students who cannot afford them at odds. Leonard (2022) described the process that many faculty go through while choosing course textbooks. She stated that textbook representatives often do not mention the cost of the materials to the faculty choosing, but rather focus on the content and quality. The textbook is chosen based on content, and the student is left to deal with the price and how to pay for the materials.

The current study is significant because there is no current research on the impact of textbook costs on for-profit education students, yet for-profit universities enroll the largest percentage of Pell Grant recipients, first-generation and ethnic minority students, compared to other universities (FirstGen Forward, 2023; National Center for Educational Statistics, 2023c). Students in for-profit universities also incur higher educational debt and default on their debt at higher rates than non-profit students (Armona et al., 2022). These students have higher financial needs, and purchasing a textbook can be an added educational burden when money is scarce. When considering the effects of textbook costs on the student population, students in for-profit universities are the benchmark of Rawls' (1971) least advantaged population among college students. Jenkins et al. (2020) have categorized the textbook cost disparity as a social justice issue, defined as a person's fair and equal rights to opportunities. Therborn (2012) would likely call it an inequality because it violates a moral norm established among human beings: equal access to what is necessary for a good life. This study contributes to the current body of research by highlighting students in for-profit universities, a population underrepresented in the literature, and for whom the cost of textbooks may be a more difficult barrier to cross.

No-cost and OER Materials

The notion of providing free, online educational materials for college students goes back to 1997, when California State University created the Multimedia Education Resource for Learning and Online Teaching (MERLOT), the first repository of free online educational resources. In 1998, David Wiley from Utah State University proposed licensing this type of material with a copyright license, allowing free and open use by students and educators (Bliss & Smith, 2017). In 2001, the Massachusetts Institute of Technology created OpenCourseWare to advance knowledge and make education more accessible by providing open access to quality courses and materials (Carlisle-Johnston, 2023).

In 2002, the United Nations Educational, Scientific and Cultural Organization (GEM Report UNESCO, 2023) held a global forum on open courseware in Paris. During this forum, a group of stakeholders coined and defined the term open educational resources (OER) as "learning, teaching and research materials in any format and medium that reside in the public domain or are under copyright that have been released under an open license, that permit no-cost access, re-use, re-purpose, adaptation and redistribution by others" (GEM Report UNESCO, 2023., para. 1). Hence, OER refers specifically to educational materials copyrighted under an open license, which became the emblem of open and accessible educational materials for students. These materials can include textbooks, lesson plans, multimedia materials, software, assessment tools, data, collaboration tools, and ancillary resources (Kenchakkanavar et al., 2024).

OER is only a segment of a movement in higher education that offers no-cost educational materials for students to close the equity gap. Whether those materials are in the public domain, open-licensed textbooks and journal articles, news sites, or video clips such as TED Talks, *no-cost educational materials* refer to materials that are embedded into the course at no cost to the students, ready for first-day access (Cozart et al., 2021). OER differs from other no-cost materials in that OER materials are characterized by the 5Rs: permission to retain, reuse, revise, remix, and redistribute, which come with a Creative Commons license (Creative Commons, 2017; Hilton et al., n.d.). A *free* educational material does not always mean an object that can be adapted for use as an *open* one can (Werth & Williams, 2022). Another term that may be found in the research is *zero-cost learning materials,* which can also encompass all materials that do not cost the students, regardless of licensing (Shelley & Scott, 2023).

Most researchers focused exclusively on OER textbooks and materials in the existing literature on the impact of embedded no-cost educational materials on students' success. Both Baker and Sibona (2022) and Bol et al. (2022) studied the impact of OER on students' learning outcomes, while Cho and Permzadian (2024) examined the impact of OER on academic success as measured by passing rates and course completion. Other research, such as Cozart et al. (2021) and Squibb et al. (2023), looked at the impact of embedded no-cost educational materials regardless of the format, including any material provided for the students without cost (zero-cost material), even if it did not fit the definition of OER. The current study will also take that approach. To ensure clarity, I will use the terms *no-cost and OER materials* to refer to OER and other no-cost materials as a whole unless explicitly referring to OER only.

In the years since the Paris Forum, the importance of providing quality and accessible education has continued to move forward. In 2015, the United Nations adopted the 2030 Agenda for Sustainable Development, which included a goal to achieve quality education. This goal called explicitly for inclusive and equitable education, making equal access to higher education a human right and giving renewed energy to advocates of putting OER in online courses to pursue their cause (Carlisle-Johnston, 2023). No-cost and OER materials have been advocated as a strategy to promote equity in education (Griffiths et al., 2022; Illowsky & Watson, 2021; Tillinghast, 2021).

By 2018, 48% of colleges in the USA began to embed OER textbooks in their online courses to remove obstacles to accessibility and equity in education in response to the rising cost of education over the last 50 years (Ruth, 2018). More than two billion works are licensed with a Creative Commons license (Carlisle-Johnston, 2023) and available for classroom use. Nevertheless, not all higher learning institutions have widely adopted no-cost and OER materials yet. For the last 13 years, Bay View Analytics has published a yearly report on educational resources in U.S. higher education. In 2024, they found that 78% of faculty nationwide require a textbook for their courses. However, in 2022-2023, only 26% of faculty reported using OER as required material in their classrooms (Seaman & Seaman, 2024). More research is needed to increase faculty and academic leaders’ awareness of the effects of no-cost materials on higher education institutions’ academic, socioeconomic, and equity outcomes. I hope to add to this body of research through this study.

Quality of No-cost and OER Materials

The quality of no-cost and OER materials is an important aspect to consider when introducing them into classrooms because they are widely available, free for distribution, and can be created or adapted by anyone (de Oliveira et al., 2021). Part of UNESCO’s (2019) recommendations for the use and development of OER materials was that the governments or universities supporting the efforts develop strategies to ensure the quality of the materials. As such, the largest and most popular OER repositories, such as OpenStax, MERLOT, and Commos, have an established and published process to curate their materials, including peer reviewing (Perifanou & Economides, 2023b). Unfortunately, that is not the case for all OER providers (Cheung et al., 2023), which means that the majority of OER resources available have not necessarily been reviewed by anyone (Perifanou & Economides, 2023b) since most OER materials available outside these large repositories have been created by teachers (Adil et al., 2024). In addition, without standard oversight, materials can be created by organizations with agendas and be introduced to the classroom by unsuspecting teachers (Atenas et al., 2024).

Lübben et al. (2023) pointed out that, currently, there is no universally accepted process for evaluating OER materials. For example, some research on OER materials’ quality relied on faculty or students’ opinions of the quality of the OER materials (Cubides et al., 2024) rather than on measurable outcomes. Other research relied on OER users as raters to evaluate OER quality. Stein et al. (2023) found that pairs of user evaluators in their study had significant discrepancies and low levels of agreement on the quality of an OER.

The lack of universal agreement on how to assess OER materials' quality means that there is also a lack of reliable assessments to standardize the evaluation of these materials (Zawacki-Richter et al., 2022). However, in the last few years, several published studies have assessed tools and created frameworks to improve the quality of OER materials more methodically. In 2013, Vladoiu and Constantinescu created a socio-constructivist quality model to assess OER materials with 70 criteria grouped into four categories (Vladoiu & Constantinescu, 2013). Romero-Pelaez et al. (2019) proposed a framework to evaluate the quality of OER, called Quality4OER, which Romero-Pelaez and Solano (2020) used to develop a prototype for a search feature for OER to facilitate user selection. Kessler and Pérez-Berenguer (2023) reported on the development of an authoring tool to help OER creators ensure their materials are accessible to people with disabilities. Zawacki-Richter et al. (2022) reviewed current quality assurance systems, proposed an instrument to ensure the quality of OER materials, and discussed its integration into assessing these materials. This instrument, the Instrument for Quality Assurance of OER (IQOER), was tested by Lübben et al. (2023) and found promising. However, as the researchers stated, no instrument will be effective unless it is systematically used. It must also be universally accepted because repositories still have many inconsistencies in their process (Lübben et al., 2023). The literature on overcoming this obstacle is promising.

In addition to quality issues, OER materials can have accessibility issues. Some OER textbooks, for example, do not meet Web Content Accessibility Guidelines (WCAG), which can harm students with specific disabilities (Bagar-Fraley, 2022). The same research pointed to the fact that when students only have a virtual textbook, those students with internet accessibility issues are at a disadvantage. Repositories that contain content builder tools, such as MERLOT, include tools that help the creator ensure accessibility (MERLOT, n.d.). Perifanou and Economides (2023a) examined 13 popular OER repositories for accessibility using different Web Accessibility tools and found that, generally, their accessibility was good, with some room for improvement.

The opinion, however subjective, that no-cost and OER materials are not of as good quality as paid materials has been identified as one of the reasons for the low usage rate (Ponte et al., 2021; Zawacki-Richter et al., 2022). This negative view of no-cost materials and OER is common in the USA and many other countries worldwide (Marín et al., 2022). However, other research has found that the quality of the material was the least important concern for faculty who did not use no-cost and educational materials in their courses (Bond et al., 2021).

Perception of No-Cost and OER Materials

The Creative Commons establishment of open licenses to share educational materials in 2002 is considered the advent of embedding open educational materials into classrooms (Carlisle-Johnston, 2023). That would make embedding no-cost resources in classrooms an innovation that is only a little over 20 years old. Moving an innovation from knowledge to adoption can be lengthy, and the first stage is knowledge (Rogers, 2003). As of 2022, about 60% of faculty in the USA stated they were aware of no-cost and OER materials (Seaman & Seaman, 2024). Persuasion and adoption follow knowledge before implementation happens (Rogers, 2003). Over the last five years, research has examined how faculty and students perceive no-cost and OER materials. A favorable or unfavorable view of the innovation will impact its adoption and implementation (Rogers, 2003). Understanding what keeps or encourages users to adopt an innovation is challenging but essential to the process (Menzli et al., 2022).

Faculty Perception

Research into the perception of no-cost and OER materials by universities' faculty and staff showed that, in general, faculty and staff look favorably on these types of materials and that there is a desire among faculty in many areas to use no-cost and OER materials in their courses (Hollister & Patton, 2022; Kimmel et al., 2024; Tillinghast, 2021). Faculty have also reported that implementing and using no-cost and OER materials has improved their teaching practices (Lazzara, 2024; McBride & Abramovich, 2022). Research into faculty perception of no-cost and OER materials has examined how educators perceive the effectiveness and scholarship of no-cost and OER materials compared to paid textbooks. This research reported that most faculty surveyed found the no-cost and OER materials equally scholarly (Bond et al., 2021). Other research found that the interaction with no-cost and OER materials increased positive attitudes from faculty and academic staff toward the quality of the materials and academic value (Baas et al., 2022; Otto, 2021; Tang & Tseng, 2023). These findings support Rogers' (2003) theory of innovation, which states that knowledge can lead to persuasion when it comes to innovations. Collectively, these studies show the importance of stakeholders' awareness of no-cost and OER materials to their positive attitudes toward them.

Some of the concerns teachers shared about implementing no-cost and OER in their classrooms are the cost in time and money of re-designing their courses to fit the new materials framework (Baas et al., 2022; Shelley & Scott, 2023) and the difficulty in finding quality materials (Bagar-Fraley, 2022). Faculty want support from their universities to implement no-cost and OER materials in their courses (Otto, 2022; Zapata & Ribota, 2021). Partnering with the larger institution to receive grants or time off to work on the revisions may help faculty feel more invested in this process. For example, a large public university in California provided faculty with workshops to learn how to assess no-cost and OER materials for quality (Chaudhuri, 2024). In addition, faculty also desire training in best practices to use no-cost and OER materials (Lantrip & Ray, 2021). Some faculty also found the accessibility and cost of no-cost and OER materials for students to be a motivating factor in implementing these materials in their classes (Adedoyin et al., 2025; Shelley & Scott, 2023). These faculty members understood that students' experience with these materials was essential to their success.

Student Perception

Some research found that students perceived no-cost and OER materials to be as effective or more effective and accessible than paid materials. (Angelopoulou et al., 2022; Sanchez et al., 2022; Vollman, 2023) Moreover, some research showed that no-cost and OER materials enhance student engagement with the class's content (Varma &

Ren, 2023; Verkuyl et al., 2021). Other research reported that students found no-cost and OER materials as trustworthy in quality and as effective for learning purposes as paid textbooks (Cheung et al., 2023; Oelfke et al., 2021; Wynants, 2022). Students related that the reliability and quality (Lo et al., 2023; Sanchez et al., 2022), as well as price and first-day accessibility of online materials (Adedoyin & Altinay, 2023; Cubides et al., 2024; Hillman et al., 2021), were important to them. One study showed that 84% of the students surveyed were interested in no-cost and OER as an alternative to paid textbooks (Varma & Ren, 2021), and in another study, 88% of students polled recommended the continued use of no-cost and OER materials in their program (Collins et al., 2020). In addition, students felt that paid textbooks were often outdated and uninteresting (Panday-Shukla, 2024).

Some of the drawbacks mentioned in the literature were related to technological issues, such as poor connectivity, which made the textbook download slowly, or personal preferences for using the online textbook, such as preferring online textbooks with highlighting tools (Vollman, 2023). In addition, some faculty worry that when students read on a screen, they do not comprehend as well (Clobes et al., 2022; Shelley & Scott, 2023). Even so, as discussed in this section, the research comparing the quality of no-cost and OER materials to paid materials has shown that no-cost and OER materials may be a suitable option to replace paid materials.

Accessibility

The quality of no-cost and OER materials is not the only characteristic that makes them a suitable option for replacing paid materials. Research has focused on how the accessibility of embedded no-cost materials can contribute to providing quality education for those students, no matter their income level or geographical location (Atenas et al., 2024). Even students who can afford the textbooks benefit from having the materials on the first day of class and being prepared for the learning process (Leonard, 2022). Moreover, a systematic review of current research has shown that students and faculty identify saving money and immediate access as the main benefits of no-cost and OER materials (Mullens & Hoffman, 2023).

No-Cost and OER Materials in Content Areas

Since the creation of the MERLOT repository in 1997, the number of repositories for OER materials has grown tremendously. Today, at least 20 major repositories are used (Perifanou & Economides, 2023c). MERLOT alone has over 100,000 learning resources available to the public (MERLOT, n.d.), while OER Commons, another popular repository, has over 50,000 (OER Commons, n.d.). The availability of repositories translates into a diversity of content areas addressed. OER Commons, for example, has OER materials for 12 different subject areas, such as applied science, arts and humanities, education, social science, career and technical education, law, and more (OER Commons, n.d.). In California, in 2022-2023, a large public university revised 34 courses from 24 different content areas to have no-cost and OER materials instead of paid materials with positive results (Chaudhuri, 2024). However, one issue that came up during the revision process is that faculty reported that, depending on the content area, the availability of no-cost and OER materials varied (Chaudhuri, 2024).

In the last 5 years, some research has discussed using no-cost and OER materials in particular content areas. For example, in the field of science, many studies have examined the impact of no-cost and OER materials in nursing with positive results. Some research showed significant financial savings for students, as nursing books can be expensive (Ernstmeyer & Christman, 2023). Academic outcomes, student engagement, and communication competence were also positively associated with using no-cost and OER materials in nursing courses (Connolly & Svoboda, 2023; Ernstmeyer & Christman, 2023; Wittenberg et al., 2021). In algebra courses, the passing rate between students in the no-cost and OER sections and students in the paid textbook sections remained equal, but students with no-cost and OER materials earned higher end-of-course grades than their peers (Ryan & Nawalaniec, 2022). Other research in math courses showed that one advantage of OER materials, in particular, was the ability to correct mistakes found in the textbook, which is not possible with printed, paid textbooks (Kimmel et al., 2024). OER materials are flexible because their license permits adaptation and repurposing (GEM Report UNESCO, 2023). This same flexibility allowed faculty in social sciences to include interactive maps, statistics, and other elements of research and methodology in their courses (Atenas et al., 2024).

Some studies focused on the humanities. Research on teacher preparation programs showed that using no-cost and OER materials positively increased knowledge and enhanced skills in future teachers (Shemy & Al-Habsi, 2021). Foreign language courses' research showed a positive effect on the use of authentic communication in the target language, improved academic outcomes, and increased investment in learning when students interacted with no-cost and OER materials (Burrows et al., 2022; Panday-Shukla, 2024; Zapata & Ribota, 2021). Research into geography courses showed a significant decrease in student withdrawal rates and improved academic performance in courses with no-cost and OER materials compared to courses with paid materials (Suriano, 2024). Research into art history courses showed that the flexibility of OER licensing allowed teachers to implement some best practices in historical education, such as introducing a diversity of voices, a wider variety of art from around the world, and allowing students to have power over what they wanted to learn (Chtena, 2021). This flexibility also meant that in countries like Germany, where tuition fees and materials costs are minimal but copyright laws are strict, OER materials are considered worth implementing (Ebner et al., 2022).

For this study, I chose English, Communication, Philosophy, and Sociology because those courses received a revision to remove the paid materials from the course and replace them with embedded no-cost and OER materials. There were no science courses that fit that requirement. However, my study can contribute to the breadth of research into the impact of no-cost and OER materials in language arts and social sciences.

No-Cost and OER Materials and Student Success Outcomes

The body of research on no-cost and OER materials has grown in the last few years due to increased interest in the impact of these materials on students (Cho & Permzadian, 2024). Most current research on the impact of no-cost and OER materials on higher education courses has focused on measuring student success using academic outcomes.

Engagement

Some studies examined the effect of no-cost and OER materials on student engagement with mixed results. In a study of community college students, Vollman (2023) found that students who used OER materials felt more engaged with the course materials than their non-OER counterparts because they could access the materials from anywhere the internet was available. Similarly, Clobes et al. (2022) found that public university students who interacted with no-cost and OER materials reported engaging more frequently with the materials than students in traditional textbook courses. The researchers considered that this was related to the immediate availability of these resources at the start of the course (Clobes et al., 2022). Conversely, other research found that even though all students could access the no-cost and OER textbooks, the frequency of their engagement was inconsistent (Griswold, 2022).

Discussion on engagement in studies that showed increased student engagement with no-cost and OER materials attributed increased engagement to students feeling like the information presented in the OER materials was more relevant to them (Griffiths et al., 2022) or students' perception that the OER materials were more interesting than the traditional textbook (Panday-Shukla, 2024). Conversely, other research found that the level of use and engagement with educational material, whether free or paid, was linked to student perception of the need for the materials to succeed in the class rather than the student's financial ability to purchase them (Wu, 2022). In studies where engagement was not found to be significantly different, some researchers reported that nearly half of the students surveyed did not use the interactive features that make OER materials appealing, such as highlighting and notetaking (Hillman et al., 2021), possibly due to technology or connectivity issues (Vollman, 2023) or screen fatigue (Sanchez et al., 2022; Verkuyl et al., 2021).

Research into no-cost and OER materials investigated the effect of these materials on withdrawal rates with mixed results. Some researchers found that students in no-cost and OER materials were significantly less likely to withdraw from a course than students in paid textbook courses (Suriano, 2024). These findings concur with educational research into the impact of engagement with course material on withdrawal rates, which reported that levels of engagement with the course subject were significantly related to course completion (Semenova, 2022). In contrast, other research showed no significant difference in withdrawal rate between the groups (Clinton-Lisell, 2023). These results contradict previous research (see Clinton & Khan, 2019). The discrepancy was attributed to the overall low withdrawal rate in the dataset, which was inconsistent with average course withdrawal rates (Clinton-Lisell, 2023)

First-Day Access

Along with engagement, research showed that having early access to materials and not having to wait for the paid textbook to be delivered or financial aid to come through was beneficial for students' academic success in class (Cozart et al., 2021; Makhmalbaf, 2023). First-day accessibility is crucial, as research reported that students in paid textbook courses could receive their textbooks as late as the second week of class, delaying their learning (Vollman, 2023). With half of the students in Ryan and Nawalaniec's (2022) study of students at a large public university saying they have skipped purchasing a textbook for a course due to cost, and a quarter of the students saying they never purchased a textbook, the accessibility of no-cost and OER materials becomes an important educational strategy. This issue is particularly pervasive among non-white students, who tend to receive lower grades than their white peers due to not having the textbook (Harris et al., 2023; Hillman et al., 2021). Additionally, a study on the value of OER textbooks in undergraduate courses found that students from lower socioeconomic groups purchased the textbook as late as they could, or not at all, to cope with the costs at higher rates than students from higher incomes (Wu, 2022). These students often receive Pell Grants, and more than half of Pell Grant recipients reported that their financial aid does not cover the cost of materials (Appedu et al., 2021). Pell Grant recipients are also more likely to experience poor grades and fail courses due to the lack of textbook access (Spica & Biddix, 2021). Some data and research also reported that between 38% and 53% of college students did not register for a specific course due to the cost of the textbook (Florida Virtual Campus, 2022; Lo et al., 2023), and that a third of college students have withdrawn from a course after seeing the cost of the materials.

The importance of first-day accessibility of no-cost and OER materials is also sensed by students, who reported that the availability of no-cost and OER materials was important to them and that they had been affected by the lack of accessibility of a paid textbook (Appedu et al., 2021; Ryan & Nawalaniec, 2022). A survey by the UT Arlington

Libraries Assessment (UTA) done in 2023 reported that 95% of students surveyed felt that the most important quality of OER materials was their accessibility, followed by the no-cost aspect (53%) (UTA, 2023). This finding was consistent with other research on students' perception of the importance of availability (Hillman et al., 2021; Sanchez et al., 2022). The following section will discuss the research examining the impact of access to course materials on academic outcomes.

Academic Success

The impact of no-cost and OER materials on academic success has been examined using a variety of variables, such as learning outcomes, passing rates, and final grades, with mixed results. For example, research on how no-cost and OER materials have impacted learning outcomes has been inconsistent. Some researchers have found that students in courses with no-cost and OER materials had significantly higher scores on attaining learning outcomes than those in courses with paid materials (Baker & Sibona, 2022). In contrast, other research showed that performance in learning outcomes between students in no-cost and OER materials was roughly equal (Panday-Shukla, 2024), which the researchers found consistent with earlier research (see Clinton et al., 2019; Fialkowski et al., 2020; Nusbaum et al., 2020).

The impact of no-cost and OER materials on passing rates and final grades has been regularly examined over the last few years. Studies on passing rates have shown that no-cost and OER materials positively impact whether students pass a course (Becker et al., 2023; Disha & Vollman, 2023). However, other researchers found no significant differences in failure rates observed while final grades were higher for no-cost and OER students (Ryan & Nawalaniec, 2022).

Studies that have examined the impact of no-cost and OER materials on final grade distribution (Ryan & Nawalaniec, 2022) and final course grades (Clobes et al., 2022; Makhmalbaf, 2023) found a significant improvement when using no-cost and OER materials instead of paid materials. Other research found a slight improvement in final grades but not a statistically significant one (Bol et al., 2022). Conversely, several studies found no significant differences in final grades (Cozart et al., 2021; Sansom et al., 2021) or final exam grades (Tila & Levy, 2023). These studies found that students performed equally whether they had a paid textbook or a no-cost or OER version.

Final Grades by Student Types

The research on final grades was more nuanced when looking at studies that disaggregated results by student type. Some research found that while the success rate of the general population of students was slightly lower with no-cost and OER materials than that of students in a paid material or mixed materials course, Pell Grant recipients had a significant positive increase in success rate and a significant reduction in withdrawal rate when exposed to an OER course (Faith & Breaux, 2023). Other research reported that the average final grade for Black/African American students decreased slightly in OER courses but increased for Hispanic/Latino and White students (Dempsey, 2021). Research that showed that OER made a significant difference in closing the academic success gap between White and non-White students (Marsh et al., 2022) is particularly relevant to this study.

Given the research showing significant improvement in final course grades and overall course success for marginalized students when using OER, recent research has called for further investigation of the equity and access impact of embedding no-cost and OER materials in courses on marginalized students (Lo et al., 2023). Research on a broader context than community colleges and public and private non-profit universities is needed to consider whether no-cost and OER materials can be considered an equity strategy in higher education (Colvard et al., 2018). This study intended to do as much to fill the gap in the literature when it comes to for-profit universities, which enroll more marginalized students than other universities (Looney, 2024).

While this study will focus exclusively on academic success and cost-benefit as a possible way to close the equity gap, the current literature examined in this chapter showed that there might be many possible positive, measurable outcomes of implementing no-cost and OER materials into a class beyond academic success. Other possible benefits observed have been effects on convenience, prolonged access to materials beyond the end of the course, time management goodness, and even students' emotional and mental well-being (Vollman, 2023). Regardless of whether this study found that the use of no-cost and OER materials was positively associated with student success as measured by passing the course, it is possible that implementing no-cost and OER materials into the classroom will have other benefits that were not explicitly examined in this study.

No-Cost and OER Materials as an Alternative

Over the years, a few possible options have emerged to combat the cost and accessibility of paid textbooks. One option that surfaced in 2016 was using textbook codes, which allowed students to use the textbook in digital form, not have to buy a hardbound copy, and have immediate access to the materials (Ravipati, 2016). The codes were supposed to be cheaper than hardbound books, although they still averaged $100 and have other drawbacks (Senack et al., 2016). More recent literature examining the impact of textbook codes reported that students who had to use the library to access online courses for their degree encountered issues of digital licensing restrictions with these paid e-books and could not access them (Lambert & Fadel, 2022).

In 2008, the concept of "no harm" educational interventions was coined by Lovett et al. (2008), who examined the impact of students taking a face-to-face course versus online on their in-class exam scores and found no significant differences in student success. Lovett et al. (2008) expressed that since moving courses to an online format did not negatively affect students' course grades, the intervention could be said to "do no harm" regarding academic outcomes. Another way of saying this, is there is no evidence of harm. Studies on no-cost and OER materials have also categorized embedding no-cost or OER materials as "no harm" interventions when there was no significant negative effect (Hilton et al., 2013). In the current body of literature, many researchers who found no significant negative effects of not-cost and OER materials on student success included in the discussion that these materials could be considered as an alternative to paid textbooks (Bol et al., 2022; Dempsey, 2021; Tila & Levy, 2023), while others described it as saving students time and stress as well as money (Sansom et al., 2021). Some researchers who found a positive effect on student success wrote explicitly in their discussions that no-cost and OER materials could be considered a suitable alternative (Cozart et al., 2021). It is worth noting that the no evidence of harm here pertains to economic equity. Since students seem to do as well with no-cost and OER materials as with paid textbooks, there is room for conversation about removing the cost burden. More research is needed to investigate other variables in students' experiences with no-cost and OER materials and how they are affected.

Connection to the Theoretical Framework

While the cost of higher education affects all students, there are some students who, due to their socioeconomic status, may be more deeply affected than others. Among student populations, students in for-profit universities are the most disadvantaged due to the combination of their socioeconomic characteristics and the cost of for-profit universities (Cahalan et al., 2024; Looney, 2024). When Rawls (1971) referred to the least advantaged in his theory of justice, the students in for-profit universities can exemplify this concept. Rawls' (1971) second principle suggested that resources necessary for quality of life be distributed so that the least advantaged can benefit. As was discussed in this chapter, quality and accessible educational materials are important for student success. Following Rawls' (1971) principle, these materials should be available even for students who cannot afford educational materials on top of tuition. Enhanced accessibility can come by embedding the materials into the online classroom and making them available to students at no cost.

One of the criticisms of Rawls' (1971) theory of justice is that it focuses on the least advantaged, sometimes to the detriment of the rest of the population (Sen, 2009). However, Rawls' (1971) original principle of equality stated that social and economic inequalities should be arranged to everyone's advantage. He defined injustice as "inequalities not to the benefit of all" (p.62). Rawls (1971) saw using the least advantaged people as the measure of justice to accomplish the goal of equality. His theory did not imply that only the disadvantaged would benefit, but that systems should be arranged so everyone did. Grimaldi et al. (2019) developed their access theory in a critical work in no-cost and OER research. This theory posits that research into no-cost and OER material cannot account for access rates before the implementation of OER. In other words, the data would not isolate that effect unless researchers know how many students had access to the paid textbook before the intervention and, hence, did not need the intervention. Including these students can affect the outcome of the analysis. However, suppose there is no adverse impact to embedding no-cost materials into courses. In that case, the intervention will help the least advantaged students with educational costs while not harming students who could have afforded the materials regardless. It will save money for both groups. As Rawls (1971) expected, this would be an intervention to everyone's advantage.

Stemming from Rawls' (1971) concept that removing inequalities should benefit everyone, this study reviewed the idea that removing the cost of educational materials could help not only students who cannot afford textbooks but also students who can. If the academic outcomes of the no-cost material are equal to or better than those achieved with the paid options, having the textbook embedded into the classroom would remove a barrier to learning and help students be prepared (Hillman et al., 2021; Swain & Pathak, 2024).

Summary and Conclusions

The literature review in this chapter covered the impact of embedding no-cost and OER materials into undergraduate classrooms. Research has been done on the quality of no-cost and OER materials (Cubides et al., 2024; de Oliveira et al., 2021; Ponte et al., 2021; Suriano, 2024; Vollman, 2023; Zawacki-Richter et al., 2022), faculty perception of these materials (Baas et al., 2022; Bond et al., 2021; Hollister & Patton, 2022; Kimmel et al., 2024; Lazzara, 2024; McBride & Abramovich, 2022; Otto, 2021; Tang & Tseng, 2023; Tillinghast, 2021), student perception of the materials (Angelopoulou et al., 2022; Cheung et al., 2023; Lo et al., 2023; Oelfke et al., 2021; Sanchez et al., 2022; Varma & Ren, 2023; Verkuyl et al., 2021; Vollman, 2023; Wynants, 2022), and the wide use of no-cost and OER materials across content areas (Burrows et al., 2022; Chtena, 2021; Connolly & Svoboda, 2023; Ebner et al., 2022; Ernstmeyer & Christman, 2023; Kimmel et al., 2024; Panday-Shukla, 2024; Ryan & Nawalaniec, 2022; Wittenberg et al., 2021; Zapata & Ribota, 2021). These are some of the areas that have been studied over the last 5 years. However, the research area that pertains to this study is the research on no-cost and OER materials' impact on student academic outcomes in for-profit universities.

The research in the area of student success with the use of no-cost and OER materials has been vast and has had mixed results when looking at student engagement (Clobes et al., 2022; Griffiths et al., 2022; Panday-Shukla, 2024; Vollman, 2023; Wu, 2022), withdrawal rates (Clinton-Lisell, 2023; Semenova, 2022; Suriano, 2024); passing rates (Becker et al., 2023; Bol et al., 2022; Clobes et al., 2022; Cozart et al., 2021; Disha & Vollman, 2023; Makhmalbaf, 2023; Ryan & Nawalaniec, 2022; Sansom et al., 2021; Tila & Levy, 2023) and final grades differences (Baker & Sibona, 2022; Panday-Shukla, 2024). However, the research has shown either no difference or a positive difference in these academic outcomes. One exception is research into the impact of the first-day accessibility of no-cost and OER materials, which all showed positive benefits (Appedu et al., 2021; Cozart et al., 2021; Hillman et al., 2021; Makhmalbaf, 2023; Ryan & Nawalaniec, 2022). Because the research has found mostly that no-cost and OER materials make a positive difference in student outcomes or that there is no difference between no-cost and OER materials and paid materials, many researchers have suggested no-cost and OER materials as a viable replacement for paid materials, to help students with the financial burden of their education (Atenas et al., 2024; Bol et al., 2022; Cozart et al., 2021; Dempsey, 2021; Hilton et al., 2013; Sansom et al., 2021; Tila & Levy, 2023).

As discussed in this chapter, the vast majority of research into no-cost and OER materials has been conducted in community colleges (Becker et al., 2023; Bol et al., 2022; Dempsey, 2021; Fischer et al., 2021; Vollman, 2023), private non-profit universities (Appedu et al., 2021) and public universities (Baker & Sibona, 2022; Clinton-Lisell, 2023; Clobes et al., 2022; Cozart et al., 2021; Lo et al., 2023; Nguyen & Herron, 2021; Panday-Shukla, 2024; Suriano, 2024; Wynants, 2022). No current research has been done on the impact of offering no-cost and OER materials in for-profit organizations, and any past research has not yielded empirical data on student outcomes

(Neely et al., 2016). However, research showed that textbook costs impact students in general (Cengage Group, 2018; Davis & Mckee, 2022; Vitez & Nagle, 2021; Watson & Rush-Marlowe, 2023) and that marginalized students are even more deeply impacted (Jenkins et al., 2020; Lo et al., 2023; Nusbaum et al., 2020; Sergiadis et al., 2024). This inequity can hinder equal access to education for all (Therborn, 2012).

For-profit universities tend to enroll a more significant percentage of marginalized students, making this population unique (Cahalan et al., 2024; FirstGen Forward, 2023; Looney, 2024; National Center for Educational Statistics, 2022a; Winograd, 2024). This population fits Rawls' (1971) category of the least advantaged and, hence, when discussing whether no-cost and OER materials could help narrow the educational gap, students in for-profit universities should be represented in the research body. The uniqueness of this study was that I examined student academic outcomes using no-cost and OER materials in for-profit universities, which other research has examined in non-profit private, public, and community colleges. Specifically, I examined the association between the use of no-cost and OER materials and students passing the course.

In Chapter 3, I discuss the methodology used in this quantitative study. I used a 2x2 Chi-Square analysis to examine the association between having embedded no-cost and OER materials in the classroom or not having embedded no-cost and OER materials in the classroom and passing or failing the four undergraduate courses chosen for this study: a 3000-level English course, a 2000-level communication course, a 4000-level sociology course, or a 2000-level philosophy between Winter 2022 and Winter 2024. The results may help for-profit universities reflect on the use of no-cost and OER materials in their undergraduate courses and think about narrowing the equity gap that textbook cost can create, especially among marginalized populations.

Chapter 3: Research Method

The purpose of this quantitative study was to investigate the association between student success as measured by pass/fail outcomes and the use of embedded no-cost educational and open educational resources (OER) materials in undergraduate courses at a for-profit university. To investigate this association, I examined the success outcomes of students who took a 3000-level English course, a 2000-level communication course, a 4000-level sociology course, or a 2000-level philosophy course with paid educational materials at FPU and students who took the same course with embedded, no-cost and OER educational materials, between the Winter of 2022 and the Winter of 2024.

First, this chapter covers the research questions, research design, rationale for the study, and the variables. Next, I discuss the methodology for the study, including the population, data collection procedures, and the analysis procedures that I followed. Finally, I consider the threats to the study's validity and the process of gaining permission to collect the data and conduct this analysis.

Research Design and Rationale

To answer the study's research questions, I chose a quantitative correlational design as quantitative research seeks to assess behaviors and issues using numerical data (Cox, 2020). I used a 2x2 Chi-square test of association to examine the association between two categorical variables: use of materials (use of embedded no-cost and OER materials/not use of embedded no-cost and OER materials) and student success (pass course/not pass course). The Chi-square is an effective test to examine how datasets of categorical variables relate to each other compared to expectations (Becker et al., 2023; McHugh, 2013).

I used archival data, which are data that already exist (Milanesi, 2020), collected from four undergraduate online courses at FPU: a 2000-level communication course, a 4000-level sociology course, a 2000-level philosophy course, and a 3000-level English course. The courses were chosen based on whether data were available to examine before embedding no-cost educational materials into the course and after embedding no-cost educational materials. Also, to minimize the possible confounding variables, I chose courses that were revised only to exchange paid materials for no-cost and OER materials rather than undergo significant content revisions. I could not include some courses because of the conditions required to include a course in this study. For example, all the math and science courses in the department hosting these courses were created with no-cost and OER materials and were never taught with paid textbooks. Hence, there was no data to compare.

I used four different types of courses at different levels to account for any influence the content of the course may have on the association between having embedded no-cost and OER materials and student success. I chose not to use any 1000-level courses, which are usually taken during a student's first year in college, to avoid the possibility of confounding variables such as a student's newness to the college experience or lack of familiarity with the online platform, which can influence a student's success in a course. For example, Lambert and Fadel (2022) found that experienced college students decided whether to purchase the textbook more strategically than new students due to their understanding of the academic system. Therefore, I chose four types of courses at different levels to diversify the analysis results, but left out 1000-level courses. I did not want the course type or level to be a potential confounding variable (Fischer et al., 2021). I also chose courses with moderate to high enrollment for a significant sample size. Because the English course tends to have fewer students and is taught every other term, I combined the English course with the communication course for the study. These courses have similar course outcomes and learning outcomes, and they are taught during opposing terms. Since Chi-square relies on a large sample size to be reliable, having a large number of students will benefit my study (Walker & Maddan, 2013).

Chi-square has been used in research into textbook cost and student success before. For example, Becker et al. (2023) conducted a study using the Chi-square test of association, as I propose to do, to find the relationship between the cost of textbooks and student success rates in a community college. However, the population in Becker et al.'s (2023) study was community college students rather than for-profit university students.

Methodology

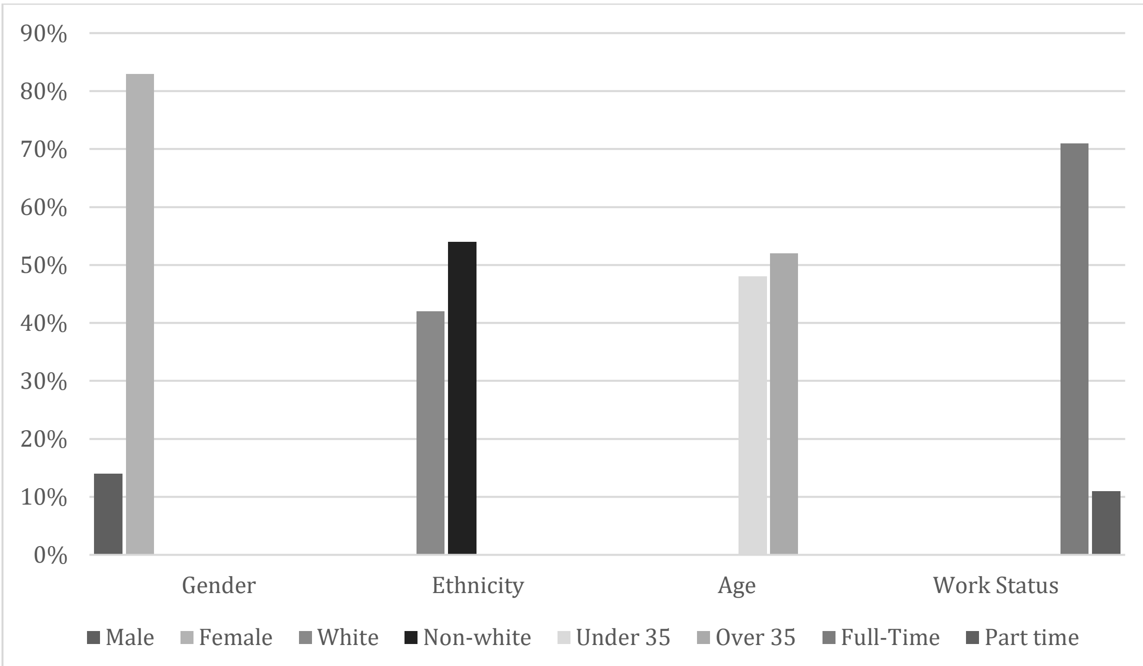
In this section, I describe the population target for my study and the sampling procedures. In addition, I discuss the procedures for data collection methods, usage, and protection. The section also contains a detailed plan for data analysis, including the software used for data analysis, the specific statistical tests, and assumptions. The final section covers the operationalization of the variables, possible threats to validity, and any ethical considerations that should be considered.

Population

The population for this study was undergraduate students at a 4-year, for-profit university who have taken courses with no-cost and OER materials and with no-cost and OER materials. Specifically for this study, the population was students who took the examined courses (communication, English, sociology, and philosophy). There are 2,279 for-profit universities in the U.S. (National Center for Educational Statistics, 2022b). For-profit universities are characterized by a significant proportion of female students, students of color, Pell Grant recipients, GED holders, and first-generation, full-time workers, single parents, less likely to complete their program and graduate with more debt than students in other types of universities (Center for Analysis of Postsecondary Education and Employment, 2018; Ji Hye et al., 2024). FPU's demographics follow the same trends, as shown in their publicly reported student demographic data, as seen in Figure 6 (FPU, 2023). In addition, FPU has reported that 51% of their students receive Pell Grants and 88% of their students receive financial aid of some sort.

Figure 6

FPU's Public Undergraduate Student Demographics



I looked at all available offerings of the examined courses (a 2000-level communication course, a 4000-level sociology course, a 2000-level philosophy course, and a 3000-level English course), taught with paid materials and those taught with embedded no-cost materials. At FPU, each course is taught approximately eight times during the calendar year, twice in each academic quarter. Based on when the courses were revised to replace paid textbooks with no-cost and OER materials, I had data for three academic quarters of the English and Communication courses with paid educational materials, and five academic quarters of these courses with embedded no-cost and OER materials. I had 67 students in the paid materials group and 187 in the embedded no-cost and OER materials group.

For the sociology course, I gathered data for five academic quarters with paid materials and five with embedded no-cost and OER materials. There were 126 students in the paid educational materials group and 88 students in the embedded no-cost and OER materials group. The data for the philosophy course came from three academic quarters of the course being taught with a paid textbook and six academic quarters of the same course taught with embedded no-cost and OER materials. This resulted in 90 students in the paid textbook group and 202 in the embedded no-cost and OER materials group. Hence, the study comprised 751 students.

Sampling and Sampling Procedures

FPU changed its learning management system in 2021, so all course data have only been available since 2022. The sample was the courses I chose to examine (communication/English, philosophy, and sociology). I requested data available for those courses from Winter 2022 to Winter 2024 to encompass all the available offerings for these courses with paid textbooks and with no-cost and OER materials. Using G *Power 3.1 I determined that the target sample for participants should be 88 participants (see Faul et al., 2009), with an alpha level of .05, a medium effect size (.3), power level (.8), and one degree of freedom. See Appendix A. The degrees of freedom for a Chi-square grid are calculated by using the number of rows minus one and multiplying the answer by the number of columns minus one: (R-1)*(C-1) (Walker & Maddan, 2013). An alpha level of .05 is conventionally used in most research, and a power level of .8 is considered a reasonable minimum (Warner, 2021). Cohen (1992) suggests using a medium effect size to find the sample size with one degree of freedom for a power level of .8 and alpha at

.05. Using Cohen's (1992) parameters, the recommended sample size is 88, which approximates G*Power's determination.

Procedures for Data Collection

I received an Excel spreadsheet with de-identified data for students' academic achievement from FPU's research manager for these four courses: a 2000-level communication course, a 4000-level sociology course, a 2000-level philosophy course, and a 3000-level English course, from Winter 2022 to Winter 2024. The data provided allowed me to place the students in the embedded no-cost and OER materials group or the non-embedded no-cost and OER materials group. Although courses at FPU are student-selected, the versions with embedded no-cost and OER materials and those without were not offered concurrently. Students could not have taken both the course with paid materials and the course with free materials simultaneously. In addition, they could not choose which type of course to take. The data were archival, as these courses were finished.

Archival Data Use

Since I did not ask for identifying or demographic information about the students, I did not need to ask for students' consent. As a student at Walden University, I asked Walden's Internal Review Board (IRB) to grant me permission to receive and analyze the data. I also requested permission from the research department at FPU to receive the data once I had IRB approval from both universities. Only data on students enrolled in the requested courses (communication, English, sociology, and philosophy) during the requested time were included. The data were labeled with the name of the course and the dates the course spanned, which guided me to designate the course as having embedded no-cost and OER materials or as not having embedded no-cost and OER materials based on the date the course was revised to replace the paid textbook with the no-cost and OER materials. I had the academic success outcome for each de-identified student in the courses to designate them as having passed or failed the class.

Operationalization of Variables

The three research questions that guided this study were based on the courses examined (communication/English, sociology, and philosophy). Each research question contained two categorical variables. The dependent variable for each question was pass/fail. Participants were placed in the pass category if they received anything other than an F or a W (for withdrawal) in the examined courses (communication/English, sociology, and philosophy), as that is the passing threshold of FPU. The independent variable was the group, those who did not have embedded no-cost and OER materials and those who did, for each examined course (communication/ English, sociology, and philosophy). I did a Chi-square analysis for each course to answer the three research questions I proposed.

Data Analysis Plan

The research questions and hypotheses for this study were as follows:

RQ1: What is the association between undergraduate student success in online English/Communication courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not?

$H_0$1: There is no association between undergraduate student success in online English/Communication courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not.

H_a1: There is a significant association between undergraduate student success in online English/Communication courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not.

RQ2: What is the association between undergraduate student success in online philosophy courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not?

$H_0$2: There is no association between undergraduate student success in online philosophy courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not.

H_a2: There is a significant association between undergraduate student success in online philosophy courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not.

RQ 3: What is the association between undergraduate student success in online sociology courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not?

$H_0$3: There is no association between undergraduate student success in online sociology courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not.

H_a3: There is a significant association between undergraduate student success in online sociology courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not.

I received an Excel spreadsheet containing the requested data from the research manager at FPU. I requested the academic score for each de-identified student enrolled in a 2000-level communication course, a 4000-level sociology course, a 2000-level philosophy course, and a 3000-level English course from Winter 2022 to Winter 2024. I assigned all the de-identified students on the dataset a 0 if they were enrolled in an *embedded no-cost and OER materials* course and a 1 if they were enrolled in a *course without embedded*, *no-cost and OER materials*. Similarly, I assigned a 1 for the de-identified students who passed the course and a 0 for those who did not pass or withdrew and received a W on their transcript. Only students who have passed, failed, or withdrawn from the course were included in the study (a score of *Blank* was not included in the study).

Inferential statistics were used to determine whether a statistically significant association existed between the students’ course success outcome (pass/fail) and the use of no-cost and OER materials. Considering that both the dependent variable (course outcome as pass/fail) and the independent variable (use of embedded no-cost and OER materials, yes/no) are nominal, the Chi-square test of association was the appropriate statistical analysis for these data. This nonparametric test is suitable as it assesses the association between two categorical variables without assuming a normal data distribution.

I used IBM SPSS Statistics version 30 software to conduct a 2x2 Chi-square test for each research question to determine the association between the use of embedded no-cost and OER textbooks and student success in the examined courses (communication/English, sociology, and philosophy). Chi-square assumes that at least 80% of the expected cells have frequencies greater than five (Walker & Maddan, 2013). Based on the number of students I had, the requirements were met.

Threats to Validity

Validity in quantitative research refers to how accurately the findings reflect the issue studied (Stewart & Hitchcock, 2020). While using archival data minimizes many potential threats to validity (Shultz et al., 2005), there may still be some threats to be considered. One potential threat to the study's internal validity was the lack of information about the students. For example, I did not know if a student was repeating the course. I also did not know if the student was a repeater because they failed the course the first time or because they dropped out and are now trying to complete it. Retaking the course could impact the student's success in the course (Davis & Pucino, 2024). In addition, I did not have information on what percentage of the students in the courses could afford the paid textbooks if they wanted to, how many chose not to purchase the textbook, and how many did not read it, whether free or paid. Grimaldi et al. (2019) argued that not considering the textbook access rate before removing the paid materials and replacing them with no-cost and OER materials can affect the study of the effect of these materials on student outcomes. Grimaldi et al. (2019) referred to this as the access hypothesis and questioned whether researchers can truly know the number of students who benefit from the intervention if they do not know how many students would not have needed it first. However, other researchers, such as Nusbaum et al. (2020), countered this idea with the notion that, regardless of how many students could have paid for the textbook, exchanging paid textbooks for no-cost and OER materials is still immensely important for those students who could not afford the textbook.

One potential threat to the study's external validity was the potential differences in the instructors' skills. This discrepancy could be considered a context-dependent mediation threat, as the instructor's skill may affect student success (Stewart & Hitchcock, 2020). This threat may be mitigated by the fact that the courses without embedded no-cost and OER materials contained the same content as their counterpart courses with embedded no-cost and OER materials. The only difference was the instructor. In addition, I considered alternative explanations for the findings in the discussion to mitigate any potential threats to validity.

Ethical Procedures

Since I used archival data, there were no ethical concerns related to participant intervention activities. I received only anonymous data; there were no confidentiality issues, as no student's personal information was collected. I included documentation to show IRB approval in the Appendix. To protect that data, I have stored it in a password-protected file storage system and ensured my laptop is also password-protected. After 5 years, I will permanently delete the data to ensure its continuous confidentiality and security. While I am a faculty member at FPU, I did not teach any of the courses requested for this study.

Summary

This chapter describes the methodology I used to examine the association between student success (as measured by passing a course) with paid textbooks and embedded no-cost and OER materials. I provided the research questions and hypotheses, explained the rationale for the statistical test that I used for the analysis, and discussed the ethical implications and protective measures I took and will take in the future to ensure the participants' anonymity and the data's security. The next chapter will provide the study's results.

Chapter 4: Results

The purpose of this quantitative study was to investigate the association between student success as measured by pass/fail outcomes and the use of embedded no-cost educational and open educational resources (OER) materials in undergraduate courses at a for-profit university. To investigate this association, I examined the success outcomes of students who took a 3000-level English course, a 2000-level communication course, a 4000-level sociology course, or a 2000-level philosophy course with paid educational materials at FPU and students who took the same course with embedded, no-cost and OER educational materials, between the Winter of 2022 and the Winter of 2024. I used the Chi-square test of association to analyze nominal archival data on students' academic success in courses originally taught with paid materials and later revised to include embedded no-cost and OER materials. The research questions and hypotheses that guided this study were as follows:

RQ1: What is the association between undergraduate student success in online English/Communication courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not?

> $H_0 1$: There is no association between undergraduate student success in online English/Communication courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not.

H_a1: There is a significant association between undergraduate student success in online English/Communication courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not.

RQ2: What is the association between undergraduate student success in online philosophy courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not?

H_02: There is no association between undergraduate student success in online philosophy courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not.

H_a2: There is a significant association between undergraduate student success in online philosophy courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not.

RQ 3: What is the association between undergraduate student success in online sociology courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not?

H_03: There is no association between undergraduate student success in online sociology courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not.

H_a3: There is a significant association between undergraduate student success in online sociology courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not.

In this chapter, I describe the data collection process, provide descriptive statistics of my sample, discuss the population and how representative it was of the larger population, and discuss the challenges faced during this study phase. Finally, I provide the results of the Chi-square test of association performed and discuss how they impact the research questions and hypotheses.

Data Collection

No live participants were recruited for this study because I used archival, nominal data, and the data I requested did not contain any demographic characteristics of the participants. I received data for the academic success of every student in every section of the English, communication, sociology, and philosophy taught between the Winter term of 2022 and the Winter term of 2024. The raw data were provided to me by the Associate Dean of the general education department of FPU, a week after I received approval from the IRB of both Walden University and FPU (reference number 06-10-25-1135095), which I received on May 10, 2025. The total number of students represented in the archival data set was 751.

Because the data were de-identified for the students' personal information, I do not have biographical information on the participants, such as gender, age, race, ethnic background, or academic level. However, all participants were undergraduates at FPU during the academic terms between the Winter of 2022 and the Winter of 2024. They represent the target population of my study: undergraduate students in large for-profit universities. I was able to access public information on the broad makeup of FPU's undergraduate student population, and I will discuss it in more detail in Chapter 5. In the following sections, I describe the data analysis and the results.

Data Analysis

Once I received the data on an Excel sheet, I cleaned it and organized it. I labeled the courses according to whether they were taught with paid textbooks or embedded no-cost and OER materials. Within each course, I grouped all students who received an A, B, C, or D as their final grade into the "pass" group and students who received an F or W (for withdrawal) as their final grade into the "fail" group. I removed one grade labeled *Blank* from the sample due to a lack of information. I found no discrepancies prior to data analysis due to the archival nature of my data. Three separate Chi-square tests of association were performed to answer the research questions. The results are discussed in the next section.

Results

I chose the Chi-square test of association because this is the appropriate test when the researcher is trying to determine if the values of categorical variables are independent (Laerd Statistics, n.d.). My data met the three assumptions of the Chi-square test of association as outlined by Laerd Statistics (n.d.):

- The variables are categorical. My variables were measured as pass/fail (yes/no) and paid materials/no-cost materials (yes/no), which fulfilled this assumption.
- That there is independence of observation. Since students could not take both the paid and no-cost textbook courses simultaneously, and could not pass and fail a course simultaneously, all the cases were observed independently.
- That all cells have an expected count greater than five. All expected cell frequencies were greater than five, as shown under each research question's section.

Based on Cohen's (1992) parameters, the recommended sample size for this study was 88 cases.

Table 1

Distribution of Students in Courses According to Materials Status

Course	English/Comm RQ1	Sociology RQ2	Philosophy RQ3
Paid materials	67	126	90
No-cost and OER materials	187	79	202
Total	254	205	292

In addition, I calculated the percentage of students who passed each examined course by type of material. Next, I will discuss the Chi-square test results for each research question and include information on the differences between passing percentages for each course.

Research Question 1

RQ1: What is the association between undergraduate student success in online English/Communication courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not? To answer this question, a Chi-square test for association was conducted between success in an English/Communication course as measured by pass/fail and the type of course materials (paid/no-cost). All expected cell frequencies were greater than five. The data for observed and expected cases are confidential and are not included.

There was a statistically significant association between success and type of course materials, $\chi^2(1, N = 254) = 5.150$, $p = .023$. The effect size of the association between the two variables (materials cost and student success) was $\varphi = .142$, $p = .023$, which, according to Sapra and Saluja (2021), is a weak association. The null hypothesis was rejected. While the association was significant but weak, there was a slight increase of 12% in the percentage of students who passed the course with embedded no-cost and OER materials compared to students in the paid textbook version of the course.

Research Question 2

RQ2: What is the association between undergraduate student success in online philosophy courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not? To answer this question, A Chi-square test for association was conducted between success in a Sociology course as measured by pass/fail and the type of course materials (paid/no-cost). All expected cell frequencies were greater than five. The data for observed and expected cases are confidential and are not included.

There was no statistically significant association between success and type of course materials, $\chi^2(1, N = 205) = 1.320, p = .251$, which means that the two variables (material cost and student success) were independent from each other. The null hypothesis was, thus, accepted. While the association was not statistically significant, there was a slight increase of 5% in the percentage of students who passed the course with embedded no-cost and OER materials compared to students in the paid textbook version of the course.

Research Question 3

RQ 3: What is the association between undergraduate student success in online sociology courses at a for-profit university, as measured by pass/fail outcomes, for students who had embedded no-cost and OER materials and students who did not? To answer this question, a Chi-square test for association was conducted between success in a Philosophy course as measured by pass/fail and the type of course materials (paid/no-cost). All expected cell frequencies were greater than five. The data for observed and expected cases are confidential and are not included.

No statistically significant association between success and type of course materials was found, $\chi^2(1, N = 292) = .492, p = .483$. In this case, the null hypothesis was also accepted. In this case, the association was not statistically significant, and there was a slight decrease of 3% in the percentage of students who passed the course with embedded no-cost and OER materials compared to students in the paid textbook sections.

Summary

Chi-square association tests used to investigate this study's research questions yielded mixed results. For RQ1, the test found a weak yet statistically significant association between the variables. However, the tests for RQ2 and RQ3 resulted in no significant association between the variables. When the percentage of students who passed the courses with paid textbooks was compared to the percentage of students who passed the courses with no-cost and OER materials, there was a slight increase in passing rates in the courses with no-cost and OER materials for two of the three RQs (RQ1 and RQ2). The test to examine the third RQ, showed a slight decrease in passing percentage in courses with no-cost and OER materials (RQ3).

This study follows in the footsteps of Mayer (2023), who used a chi-square test of association to examine the relationship between student academic outcomes of course passing and the use of OER in a non-profit, public university. Mayer (2023) found a significant association between students' passing rates and the use of OER. My goal in emulating Mayer's research with the present study was to take a first step into researching how OER impacts students in for-profit universities, given the limited research on no-cost and OER materials in for-profit universities. In providing this research, I hope to encourage more comprehensive research on the impact of embedding no-cost and OER materials in for-profit universities' classrooms. In so doing, this study also fills a gap in the research on no-cost and OER materials as an equity strategy in higher education, because most of that research has been done in the context of community colleges and public and private non-profit universities only (Colvard et al., 2018). As discussed in Chapter 2, for-profit universities have a unique population compared to non-profit public and private universities. Hence, whether or not embedding no-cost and OER materials has a direct, quantifiable effect on student success as measured by pass/fail metrics, there are other considerations to be discussed, such as the educational gap further enlarged by race and socioeconomic status (Credentials of Value, 2023).

While the current study aimed to examine academic success, it was also intended to raise awareness of the impact of no-cost and OER materials on educational affordability, particularly for students in for-profit universities who are underrepresented in existing research. In the next chapter, I interpret the findings, discuss the study's limitations, and provide recommendations for further research on academic measures and equity in education.

Chapter 5: Discussion, Conclusions, and Recommendations

The problem that guided this study was the lack of research on the association between student success and the use of no-cost educational materials in for-profit universities. The investigation of the association was conducted using a 3000-level English course, a 2000-level communication course, a 4000-level sociology course, and a 2000-level philosophy course at a for-profit university, FPU. The purpose of this quantitative study was to investigate the association between student success as measured by pass/fail outcomes and the use of embedded no-cost educational and open educational resources (OER) materials in undergraduate courses at a for-profit university. Archival data on academic success were collected for undergraduate students at FPU who took the courses with paid educational materials and students who took the same course revised to embedded, no-cost and OER educational materials, between the Winter of 2022 and the Winter of 2024. The archival data set was accessed with IRB permission from Walden University and FPU (#06-10-25-1135095). To examine the data in keeping with the three research questions and hypotheses that guided this study and the nominal nature of the data, I conducted Chi-square tests of association for my statistical analysis. In this chapter, I discuss the key findings related to each association, the study's limitations, and provide recommendations for further research.

For RQ1, which considered the association between academic success (pass or fail) and type of materials (paid or embedded no-cost and OER materials) using data from the combined English/communication cases, the test showed a statistically significant yet weak association. For RQ2, which considered the same association in a sociology course, the test showed no significant association. Finally, for RQ3, which considered the same association in a philosophy course, the association was not significant.

Interpretation of the Findings

The findings of this study contribute to the current research on how courses with paid textbooks impact student success outcomes compared to courses with no-cost and OER materials in institutions of higher education. More specifically, this study adds to the current gap in the literature on examining how no-cost and OER materials impact students in for-profit universities, as there is limited research on the for-profit university population. In this section, I discuss how the statistical analysis findings supported accepting or rejecting the null for RQ1, RQ2, and RQ3 and compare the study results to the literature discussed in Chapter 2.

Discussion of Findings on Student Success and Material Cost

Current research on the impact of no-cost and OER materials on academic outcomes, such as final course grades, pass rates, and grade distributions, among students at non-profit public and private universities has produced mixed results. The findings of my study, focused on for-profit university students, mirror this pattern and extend the existing literature by incorporating for-profit academic institutions. For instance, one group of researchers, like Becker et al. (2023), found significant associations between textbook cost and student success as measured by passing or failing at all course levels. Similarly, Disha and Vollman (2023) and Mayer (2023) found a statistically significant relationship between students passing a course and whether the course had OER materials. My study partially confirms these findings, because the results of the Chi-square of association using the English/communication course data (RQ1) indicated a weak yet statistically significant association between passing the course and the type of materials used (paid textbook or no-cost and OER materials).

Conversely, data from my study also confirm other studies in non-profit public and private universities that show that grades are not significantly affected by the availability of no-cost and OER materials. For example, Ryan and Nawalaniec (2022) found a significant difference in grade distribution, but they did not find statistically significant differences in passing rates between courses with OER materials and courses without them. Other researchers like Cozart et al. (2021) and Sansom et al. (2021) found no significant differences in final grades between students in courses with no-cost or OER materials and students in courses with paid textbooks. The Chi-square tests of association used to examine RQ2, the sociology course, and RQ3, the philosophy course in my study, also showed no significant differences in passing for students in the no-cost and OER sections, thus confirming the research previously done in non-profit universities.

One possible explanation for the lack of significance in the current study is that it was executed using courses from a well-established online institution. Well-established online universities may be knowledgeable of the unique socioeconomic needs of their student population and create a supportive learning environment where students can pass regardless of whether they can afford the textbook. The courses chosen for this study had high passing rates before the paid textbook was replaced by no-cost and OER materials. The content of the course material may have been strong enough that exchanging the paid textbooks for embedded no-cost and OER materials did not make much difference in passing rates. Ryan and Nawalaniec's (2022) study on grade distribution may be a natural follow-up for the current study, as they found no significant differences in passing rates but a significant difference in grade distribution. Passing a course does not necessarily equal passing with a high grade.

Another possibility is that students may have opted not to enroll in sections requiring paid textbooks due to the associated costs, potentially altering the composition of the student population under study. A national survey on course material affordability performed in 2023 showed that more than half of the students surveyed would not register for a course due to the cost of the materials (Bay View Analytics, 2023). In addition, the survey also found that almost half of the students chose their institution or major based on the cost of the required materials. It is possible that the students who enrolled in the paid sections of the courses were more likely to have the means to pay for the textbook.

In summary, the primary finding of my study is that no-cost and OER materials cannot be linked directly with student success outcomes in this context. Consequently, I cannot recommend embedding no-cost and OER materials as a strategy to positively impact student success outcomes, such as passing or not passing the course. Nevertheless, some researchers, such as Cozart et al. (2021), Ryan and Nawalaniec (2022), and Sansom et al. (2021), characterized the lack of significant differences between paid textbooks and no-cost and OER textbooks as evidence that replacing paid textbooks with no-cost materials would not negatively affect student outcomes in non-profit public and private universities. Similarly, my study, conducted at a for-profit university, found only a weak or non-significant association between paid or no-cost educational materials and student success outcomes. These findings extend the existing literature by suggesting that no-cost and OER materials placed in for-profit universities' classrooms would not negatively affect student outcomes. Furthermore, given that 68% of for-profit university students required financial help to pursue their education (Cahalan et al., 2024), no-cost materials may also help to increase affordability for this unique population and contribute to narrowing the educational equity gap.

No-Cost and OER Materials as a Strategy to Support the Student Experience

In the field of OER, some researchers have adopted Lovett et al.'s (2008) 'no harm' framework to describe findings in which the use of no-cost and OER materials showed neither a significant positive nor negative effect on student success (Hilton et al., 2013). Similarly, other researchers have hypothesized that student success would not differ with or without the use of no-cost and OER materials (Tila & Levy, 2023). As mentioned in Chapter 2, the "no harm" concept in this area of research pertains to economic equity. The underlying idea is that, because numerous studies have found that students perform comparably with no-cost and OER materials as with paid textbooks, there is an opportunity to consider alleviating the financial burden on students (Otto, 2021). Measurable student academic success is not the only important factor when deciding whether to replace a textbook with no-cost and OER materials. Researchers like Tila and Levy (2023) and Otto (2021) considered no-cost and OER materials as an alternative to paid textbooks because no-cost and OER materials undeniably help all students save money. The discussion on embedding no-cost and OER materials in courses to help students cut costs is particularly important to students in for-profit universities, which makes this study a place to begin the conversation on equity in education in for-profit universities.

Research has shown that marginalized students are less likely to purchase the textbook and more likely to be affected by not having the materials on the first day of the course (Sergiadis et al., 2024). For example, students of color were more significantly affected when passing or failing the course than white students due to textbook cost (Jenkins et al., 2020). Pell Grant recipients were likelier to experience poor grades and fail courses due to the lack of textbook access (Spica & Biddix, 2021). Students of color, particularly Black and Hispanic, comprise most Pell Grant recipients (White House, 2022). For-profit universities enroll only about 5% of all undergraduate students yet have the most significant percentage of students who receive financial aid of any other type of university (Cahalan et al., 2024) as well as a disproportional percentage of students of color, women, and first-generation when compared to non-profit private and public universities (Looney, 2024; Winograd, 2024).

FPU follows the same pattern, as discussed in Chapter 3. FPU is representative of for-profit universities in its disproportional percentage of students who receive aid and students of color compared to non-profit public and private universities. While I did not request demographic data on the students who took the courses examined, these students are representative of the university. Hence, it would be expected that the makeup of the students who took the courses would mirror the makeup of the larger student body. For-profit university students often pay higher tuition, incur more educational debt, and default on more educational debt (Armona et al., 2022). In addition, they have less access to federal aid than their peers in public universities, community colleges, and non-profit private universities (Cahalan et al., 2024). Purchasing a textbook can be an added educational burden for them. The current study extends what is understood about the use of no-cost and OER materials as an equity strategy in higher education, as Colvard et al. (2018) suggested. Therefore, no-cost and OER materials placed in for-profit university classrooms can be seen as a matter of equity in education because these materials reduce student costs. In addition, as Vollman (2023) pointed out in her research, embedded no-cost and OER materials have other benefits. One of those benefits is allowing students who do not have the means to purchase a traditional textbook to have the necessary materials on the first day of class, which positively affects their academic success (Appedu et al., 2021).

Connection to Theoretical Framework

In the second part of Rawls' (1971) second principle, the difference principle, Rawls asserted that the distribution of essential goods and resources should be done to improve the conditions of the least advantaged. Education is considered an essential resource, and, according to Rawls, it should be designed to eliminate barriers created by class or socioeconomic status (Pijanowski, 2015). As discussed in Chapter 1, students in for-profit universities can be seen as the least advantaged of the college students, due to their socioeconomic characteristics and financial consequences. The concern about the cost of textbooks has become more prominent among research into the equity gap in education, due to the increase in the cost of educational materials in the last 20 years, which has not kept up with the cost of living (Cahalan et al., 2024). The impact has been felt particularly by students in for-profit universities (Looney, 2024). Rawls (1971) challenged institutions to consider the perspective of the most needy when creating systems and writing principles that affect this group the most (Berger et al., 2023). As discussed in Chapter 2, there is much research on the impact of no-cost and OER materials on students' academic success outcomes in community colleges (Becker et al., 2023; Bol et al., 2022; Dempsey, 2021; Fischer et al., 2021; Vollman, 2023), private non-profit universities (Appedu et al., 2021) and public universities (Baker & Sibona, 2022; Clinton-Lisell, 2023; Clobes et al., 2022; Cozart et al., 2021; Lo et al., 2023; Nguyen & Herron, 2021; Panday-Shukla, 2024; Suriano, 2024; Wynants, 2022). The current study provides a first look into the impact of no-cost and OER materials in a for-profit university's classroom. However, more research is needed to continue to understand the financial burden that the cost of textbooks places on students at for-profit universities and how that burden may affect academic success.

Limitations of the Study

A limitation of the study is that instructors' proficiency may have influenced the success of students, as the courses were taught by a variety of individuals. In addition, courses were selected that retained the same course and learning objectives after being revised to include no-cost and OER materials; however, minor adjustments were made to align tasks with the revised materials, which may have influenced student success. Another limitation of this study was that the students self-selected into the courses, rather than being randomly assigned. All students enrolled in the course were included in the sample, without consideration of whether the course was being repeated, whether the paid materials could be afforded, or whether the intervention would have been beneficial. As such, further research into the population of students in for-profit universities could gather data on previous experience with the class and qualitative data on whether students felt they could afford the textbook.

I did not request demographic student data for this study, because it was intended as a first step to begin a conversation about no-cost and OER materials in for-profit universities. However, this study's absence of demographic information presents future research opportunities. Many studies on the relationship between no-cost and OER materials and student success in non-profit public and private universities have included how demographics such as race, gender, and socioeconomic status impacted the outcomes. Researchers like Harris et al. (2023), Disha and Vollman (2023), and Spica and Biddix (2021), for example, have found that students' ethnic background, socioeconomic status, gender, and first-generation status play a role in the academic success of students in classrooms with paid textbooks versus no-cost and OER materials. Thus, further research into paid textbooks and no-cost and OER materials in for-profit universities could investigate how this unique group of students' demographic data impacts student success outcomes.

Recommendations

This study was meant to be an exploration into research focused on students in for-profit universities, which is a population largely ignored in current research on no-cost and OER materials. Thus, the limitations of this study can serve as a catalyst to guide future research. In this section, I will provide three recommendations for further research on the impact of no-cost and OER materials on for-profit universities' students.

Recommendation 1: Replicate Existing Research

Given the limited research on for-profit universities, it is recommended that existing studies on no-cost and OER materials previously conducted with students at non-profit public and private universities be replicated with populations from for-profit universities to enable comparative analysis. For example, while Ryan and Nawalaniec (2022) did not find a significant difference in passing rates between sections of an algebra class with a paid textbook and sections with an OER textbook at a large state university, they did find a significant change in grade distribution. More students earned higher grades in the OER sections than in the paid textbook sections. The current study focused on student success as measured by pass or fail. However, a similar study to Ryan and Nawalaniec's (2022) could be conducted to examine if grade distribution would be equally impacted in a for-profit university's classroom.

Recommendation 2: Demographics and Other Variables

In addition to replicating current research focused on non-profit public and private university students' success outcomes, future research should replicate studies that specifically examine how specific student demographics impact how the cost and availability of educational materials affect them (Hilton, 2020). For example, Spica and Biddix (2021) conducted a study to examine how the cost of materials affected community college students' academic achievement and progress to graduation. They found that traditionally underserved and underrepresented students were more significantly affected by the cost of materials than their peers. For-profit universities enroll a higher percentage of traditionally underserved and underrepresented students (Cahalan et al., 2024; FirstGen Forward, 2023; Looney, 2024; National Center for Educational Statistics, 2022a; Winograd, 2024) than non-profit public and private universities. Given the unique characteristics of the population of for-profit universities, replicating studies that disaggregate demographic student data may be vital to understand how no-cost and OER materials are impacting this population of students.

Similarly, other independent variables could be considered, such as the students' socioeconomic status as a predictor of enrollment. New research could focus on how advertising no-cost and OER or zero-textbook cost courses impacts enrollment in for-profit universities, now that for-profit and non-profit universities have begun advertising zero-textbook cost programs.

Recommendation 3: Research On The Role of Student Perception and Engagement

Although the quantitative findings of this study did not reveal a statistically significant association between no-cost and OER materials and student success, future research into for-profit university students may investigate alternative factors that could influence this relationship. For example, some researchers who study the impact of course material on students in non-profit public and private universities have found that students engage infrequently or not at all with the course materials, regardless of cost, if they do not feel their engagement is necessary for their success (Griswold, 2022; Wu, 2022). Through focus groups or interviews, qualitative research could explore how for-profit universities' students' perception of the importance of no-cost and OER materials impacts their engagement with the materials.

Other research into engagement with course materials in non-profit universities has found that when the cost of the textbook decreases, the usage of the textbook increases (Stanberry, 2022). Considering the distinctive socioeconomic characteristics of students enrolled in for-profit universities, further research examining whether the cost of instructional materials influences engagement among this population would be valuable.

Implications

The purpose of this quantitative study was to investigate the association between student success as measured by pass/fail outcomes and the use of embedded no-cost educational and open educational resources (OER) materials in undergraduate courses at a for-profit university. This study is significant, in part, because the current research on the association of these variables has predominantly focused on non-profit public and private universities. At the same time, for-profit universities have been mostly ignored. Given that the population of for-profit universities is uniquely different from the populations of non-profit, private, and public universities, this study provides a first look at the impact of the use of no-cost and OER materials on this population, as well as recommendations for future research. Although this study did not find a significant association between the use of no-cost and OER materials and student success outcomes, exploring this topic contributes meaningfully to the broader discourse on educational access and equity. For-profit universities enroll a disproportionately high number of marginalized and economically disadvantaged students. It is essential to investigate whether reducing educational costs by replacing paid materials with embedded no-cost alternatives could enhance academic success metrics. Even without strong empirical support from this study, the topic may inform ongoing dialogues in curriculum planning and resource allocation. In addition, this study may foster awareness of the importance of for-profit universities reviewing institutional policies related to textbook costs, considering the percentage of students from marginalized or economically disadvantaged backgrounds.

The weak association between embedded no-cost and OER materials and student success found in the current study's results does not warrant the recommendation that no-cost and OER materials be included in for-profit universities' classrooms to improve student success outcomes. However, one objective of the current study was to bring more awareness of the impact of the cost of educational materials on the overall affordability of education. Building on the work of Ernstmeyer and Christman (2023), who examined the adoption of OER as an equity strategy in a non-profit public institution, further research is needed on the impact of no-cost materials as a tool for equity in for-profit universities. Such research is important because of the socioeconomic differences between students in for-profit and non-profit universities, as discussed throughout this paper.

Using research tools developed to look at the implications and possible solutions of the educational gap could be helpful in the practical application of findings. While Rawls (1971) provided a theoretical foundation for this study, other frameworks are well-suited for research on equity strategies in for-profit universities as well. One tool is the leading for equity theoretical framework. It was developed in 2019 by the National

Equity Project, and it was meant to provide leaders with a frame of reference to address equity challenges in their organizations (National Equity Project, 2019).

Leading for equity comprises three intersecting domains of leadership: *equity* involves using the lens of systemic oppression to recognize a cause of inequity in education systems and commit to repairing it (Osta, 2024). *Complexity* seeks to understand the nature and implications of the problem to develop appropriate solutions (Osta, 2024). Finally, *design* fosters the creation of conditions to implement the solutions developed and to shift power dynamics and innovative practices to solve the problem (Osta, 2024).

Another valuable tool for further research into inequity in education in for-profit universities would be Bensimon's (2005) equity scorecard, which was developed to highlight how racial and ethnic groups historically discriminated against in higher education were affected unequally by educational outcomes. It is designed to encourage educational leaders to change their cognitive frames from diversity and deficit to equity. Leaders would then focus on how the system contributes to racial minority students' educational issues and achievement gaps rather than attributing the problems to students' deficiencies or a result of their socioeconomic and cultural background. It adopts five presuppositions needed to enact organizational change through the equity lens. Bensimon and Malcom (2012) described the suppositions: First, those engaged in the academic community seek to do good for their students. Second, those engaged in the academic community must be willing to partner to eliminate student inequity. Third, those engaged in the academic community realize that trying to correct students' academic deficiencies without addressing institutional failures has perpetuated inequity in higher education. Fourth, the strategies developed institutionally to fight inequity should be tailored to the institution's academic culture. The fifth presupposition is that the best outcomes for students come from changes within the control of institutional leaders. This model teaches participants not to focus on what the students can do to facilitate better academic outcomes in their education. Instead, the focus is on what institutional cultures, practices, and structures perpetuate inequity of outcomes, particularly for racially marginalized populations (Bensimon & Malcom, 2012). The equity scorecard allows researchers and stakeholders in higher education to attend to race-based inequalities and consider them a problem that requires institutional action rather than a student-based issue (Burmicky et al., 2024). Since for-profit universities have a higher percentage of students of color than non-profit private and public universities, the equity scorecard could be a helpful tool for research.

Conclusion

The current study examined the association between embedding no-cost educational materials and student academic outcomes in a for-profit university's undergraduate classrooms. Four courses that initially required paid textbooks and were later revised to offer no-cost and OER materials at FPU were selected: a combined English/communication course, a philosophy course, and a sociology course. Statistical comparisons of student success outcomes indicated a significant but weak association between the type of educational material and student success in the English/communication course, with no significant association in the philosophy and sociology courses. Limitations included grouping students who could not afford the textbook with students who could, a lack of random assignment of students to courses, and potential instructor effects. As a first step into this area of inquiry for for-profit universities, this study highlighted opportunities for further investigation. Future research could replicate and extend with for-profit university populations, existing studies conducted in non-profit public and private universities, incorporating demographic data, and exploring student engagement with the educational materials through qualitative methods.

The mixed results of this study align with existing literature on no-cost and OER materials at non-profit public and private universities, as well as community colleges. The findings indicated a weak but statistically significant association between the cost of materials and student success outcomes in English/communication courses, whereas no significant association was observed in sociology and philosophy courses. However, because the significant association was both weak and nondirectional, there was no meaningful change in student success outcomes, either positive or negative. While these findings do not support the recommendation of adopting no-cost and OER materials in for-profit university courses solely to improve student success, no-cost and OER materials may have other benefits that would improve the overall student experience.

In particular, the potential benefits of no-cost and OER materials for marginalized populations of students remain significant. For-profit universities enroll the highest proportion of marginalized students, many of whom face financial constraints and increased reliance on government assistance to earn their degree compared to their peers in non-profit universities (FirstGen Forward, 2023; Winograd, 2024). The cost of educational materials intensifies the already high cost of a college education. Marginalized students are disproportionately affected academically by the inability to access or purchase textbooks compared to their non-marginalized peers (Lo et al., 2023). Further research is needed to determine whether embedding no-cost and OER materials in for-profit university courses could help reduce educational inequities. This study is a first step in highlighting how for-profit universities can serve the needs of their inordinate number of marginalized students. Access to quality education is a fundamental right that impacts a person's life. In line with Rawls's (1971) principle that institutions should ensure the least advantaged have access to the same opportunities as the most advantaged, providing no-cost and OER materials could guarantee all students first-day access to the resources essential for academic success.

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Appendix: G*Power Calculation