

Equitable Access: A Participant v. Non-Participant Course Completion Rate Analysis from 2-Year Institutions

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Abstract: The course materials acquisition and delivery process is experiencing a transformational period driven, in part, by equitable access course materials models. No studies exist that examine the impact of equitable access course materials models on student outcomes. This study examined the course completion rates of participants and non-participants of an equitable access course materials model at two two-year institutions. It sought to understand if there was a statistically significant relationship between success rates and a student's participation status in an equitable access course materials program. Results of the study indicated statistical significance in all 13 demographic categories including a 15.58% increase in course completion rate in the total population, a 21.06% increase in course completion rate for Black students, and a 17.46% increase in course completion rate for Native American students when comparing participant and non-participant populations. Furthermore, all category demographics analyzed were statistically significant at $p < .01$. The results of this study suggest that participants in an equitable access course materials model are much more likely to complete a course than non-participants.

Keywords: Course materials, Textbooks, Equitable access, Course completion, Student outcomes

Introduction

The course materials landscape is experiencing unprecedented transformation. The traditional course materials options of new, used, rental, and digital are just a part of the new course materials paradigm (Hurley, 2020; Vietz, 2020). Despite the current period of transformation, the most prevalent course materials acquisitions model of “find and acquire” still requires students to determine what materials they need, where they are located, and find the money to acquire them (David et al., 2015). Generally, a student can find which course materials are required through their

instructor, the instructor's syllabus, the learning management system, or in-person at the campus bookstore. After a student discovers which course materials are required, they must then source them through their campus bookstore, online sellers, or through friends or classmates (Buczynski, 2006; U.S. Government Accountability Office, 2005; 2013). By now there is a general awareness that the cost of course materials is forcing students to forego their materials or impacting their decisions on which courses to take (Buczynski, 2007; David et al., 2015; Florida Virtual Campus, 2016; 2018; Martin, et al., 2017; Senack, 2014a; Senack, 2014b; Sikorski et al., 2002; Vitez, 2018). Therefore, the most problematic part of the course materials acquisitions process for students is ensuring they have the financial means to acquire the materials.

The current transformational period within course materials has seen the rapid adoption of course materials models aimed at reducing costs of course materials for students while simultaneously increasing access. This includes inclusive access course materials models and equitable access course materials models (Blumenstyk, 2019; D'Agostino, 2022; McKenzie, 2017). Those with a vested interest in course materials are familiar with these terms, but the public and some higher education observers and participants may not be.

In the simplest terms, inclusive and equitable access course materials models are course material acquisition models that provide students with their required course materials on or before the first day of class through digital delivery via the learning management system, or physical delivery in some cases, without the student having to engage in the process of sourcing their required course materials (Anaya & Yankelewitz, 2020; Conole et al., 2020; Cuillier, 2018). Through inclusive and equitable access programs, students are charged for their course materials through a fee or as part of tuition (Conole et al., 2020; Hurley & Hallmark, 2020; OmniEssence, n.d.; Spica, 2021). This reduces the need for students to pay out of pocket for the cost of the materials as the billing mechanism charges their Bursar accounts and allows those with financial aid to put their aid

towards course materials costs (Anaya & Yankelewitz, 2020; Cuillier, 2018). While delivery mechanisms are the same, there is a uniqueness to both models.

Inclusive access is a 'by course' model where students enrolled in sections of a course are provided their required course materials on or before the first day of class (Anderson, 2019). In inclusive access course materials models, costs are dependent on the specific materials being used by the instructor but can be up to 80% off the cost of purchasing a new physical textbook (ENMU-Ruidoso, 2023; OhioLink, 2022; RedShelf, 2021; UC Davis Stores, 2022a). Course materials content in inclusive access models are largely publisher driven content (McKenzie, 2017). Additionally, students can opt out of the program to source materials on their own and receive a refund for the course materials or tuition fee (Budnik & Schneider, 2022; Cuillier, 2018).

Equitable access differs from inclusive access because it is a campus-wide model where every student in every section of every course across the institution has their required course materials provided for them on or before the first day of class. The content available in an equitable access model also differs from inclusive access. Where inclusive access models usually only include publisher driven content, equitable access models incorporate both publisher content as well as open educational resources (OER) (McKenzie, 2017; UC Davis Stores, 2022b). Equitable access is a campus-wide model, so the inclusion of all content options supports faculty academic freedom and choice. In an equitable access course materials model, prices are negotiated by credit hour or a single flat fee to determine one price paid by every student regardless of major or program (Anderson, 2019; Budnik & Schneider, 2022; UC Davis Stores, 2022b). When a student opts out of an equitable access model, they are opting out of all course materials for all courses and must source all their own required course materials. Regardless of model, the reduced cost that students pay is negotiated between the institution, bookstore vendors, and/or publishers (Cuillier, 2018).

Literature Review

This study sought to fill the void in the literature with respect to the use of equitable access course materials models and their impact on student outcomes. Where other studies on inclusive access course materials models focused on success rates or improvements in letter grade C or better (Hurley & Fekrazad, 2020; Moore, 2021; Moore & Piazza, 2022; Williams et al., 2020), this study is focused on course completion rates. Course completion rates are an important metric because some believe they are a measurement of the overall effectiveness of institutions of higher education (Decosta, 2013). The following literature review will provide a brief overview of the effectiveness of inclusive access course materials models as well as an overview of what higher education research considers as criteria for course completion rate metrics.

Effectiveness Research

There are only a handful of studies that examine the impact on student outcomes with the use of inclusive access course materials models. Apart from Spica (2021), who uses DFW rates (letter grade D, letter grade F, and Withdrawals) as a measure, most of the available effectiveness research on the use of inclusive access course materials models shows positive increases in student success rates and statistically significant results for many of the student demographics reported (Hurley & Fekrazad, 2020; Moore, 2021; Moore & Piazza, 2022; Williams et al., 2020). The results of these studies are important for considering the adoption of inclusive access course materials models, but they are a different program from equitable access and the topic of this paper. There are no current studies on the use of equitable access course materials models and their impact on student outcomes, which positions this paper as the first to examine an equitable access course materials model and its impact on student outcomes.

Much of the effectiveness research on course materials interventions is focused on the improvement in/of student success rates (Chiorescu, 2017; Hilton III et al., 2016; Hurley, 2020;

Moore & Piazza, 2022; Ryan, 2019). Success rate is a measure of performance that includes students who receive a letter grade of C or better in the course. Another measure of the impact of course materials interventions on student outcomes is the analysis of DFW rates. In this instance, DFW rates are D letter grades, F letter grades, and Withdrawal (Colvard et al, 2018; Feldstein et al., 2012; Spica, 2021). Few studies on the effectiveness of course materials interventions investigate course completions rates (Graydon et al., 2011; Grewe & Davis, 2017; Ryan, 2019).

Course Completion Rates

Not only is there a lack of course materials intervention effectiveness research examining course completion rates, the studies that do exist do not agree on where the grade line of demarcation is or do not draw a line. Grewe and Davis (2017) do not provide an explanation of which grades are considered in course completion rates, Ryan (2019) suggests course completion rates include letter grades A through C, while Graydon et al. (2011) indicated course completion rates should include letter grades A through D.

Further confounding which letter grades should be considered in course completion rates, higher education researchers across disciplines and research topics do not agree or provide context for a course completion metric (Huston & Stewart, 2017; McClenney, 2013; Park-Gaghan et al., 2020; Restiano, 2015). Evans (2020) identifies A through D as course completion in examining instructor personalities in introductory courses and course completion. Murphy and Steward (2017) provide letter grades A through C as their course completion rate metric in examining course completion rates for on-campus students taking online courses. Thistoll and Yates (2016) do not provide any guidance on which grades they used to define course completion rates in their study on improving course completion rates in distance education. Atchley et al. (2013), use the terms completion rates and retainment interchangeably in a study comparing student performance through online and traditional courses. While not explicitly expressed, it appears their use of course

completion rates include those who receive letter grades A through F. When considering which letter grade cut-off point is to be used to define course completion rates, both Huston and Minton (2016) and Evans (2020) suggest the term course completion rate can be interpreted differently at different institutions and that it is unlikely a uniform standard of course completion rate could be applied generally across higher education.

Given the lack of agreement as to a standard letter grade cut-off for course completion rates and no current literature on the use of equitable access course materials models, this study will attempt to define the letter grade cut-off for course completion rates when using equitable access course materials models for current and future research.

Purpose and Research Questions

The purpose of this study was to examine the use of an equitable access course materials model and its impact on the course completion rates of participants and non-participants of the model at two 2-year institutions. The use of multiple terms post course materials intervention and the use of multiple campus sites has been a future research recommendation from previous studies that examined the use of inclusive access course materials models, which are similar in mechanism to equitable access (Moore, 2021; Moore & Piazza, 2022, Spica, 2021). Non-participants for this study were students who voluntarily opted out of the equitable access program. Therefore, participants were provided with their required course materials on or before the first day of class as part of an equitable access course materials model while non-participants were responsible for sourcing their own required course materials by virtue of opting out of the program.

The central research question that guided this study was:

1. When comparing participants and non-participants of an equitable access course materials model, is there a statistically significant relationship between participation status in an equitable access course materials model and course completion rate?

To answer the central research question, this study considered course completion as receiving a letter grade of A through D. Additionally, receiving a letter grade of D is considered completing the course at both institutions that provided data for the study.

Method

Study Design

Onondaga Community College, part of The State University of New York system, and the Technical College of the Lowcountry in South Carolina responded to a direct email inquiry to participate in research examining the impact of their equitable access course materials models on student outcomes. Onondaga Community College provided data from the Fall 2020, Spring 2021, and Fall 2021 terms and Technical College of the Lowcountry provided data from the Fall 2021 and Spring 2022 terms. The design of this study was purposeful and intentional to address concerns of previous research on course materials interventions (Gurung, 2017; 2018; Spica, 2021; Moore, 2021; Moore & Piazza, 2022). Most studies on course materials interventions either compare open educational resources to traditional textbooks or examine before and after intervention implementation (Gurung, 2018; Hilton III, 2016; Moore & Piazza, 2022; Spica, 2021; Ryan, 2019). These studies have limitations in terms of changes in exam content, course redesign, or other changes in assessment before or after the intervention was introduced (Gurung, 2018; Hilton III, 2016). This study is a participant vs. non-participant design which means that both populations took the same quizzes, the same tests, and were assessed the same way. Modality of course delivery is not a relevant issue in this study because the study compared students within the same course regardless of whether it was in-person, online, or hybrid. What was different between the populations was one group (participants) was provided with their course materials and the other group (non-participants) chose to voluntarily opt out of the program and source their own required course materials. By definition, participants had their course materials for the course. It is not known if non-participants

secured their own course materials for the course. This is the essence of the study, to determine how a student’s course completion rate is affected by their participation or non-participation in an equitable access course materials model.

Participants

The total population for this study was N= 23,415; n= 5,288 were non-participants of an equitable access course materials model and n=18,127 were participants in an equitable access course materials model. Non-participants were those students who voluntarily opted-out of the program and were responsible for sourcing their own required course materials. The racial/ethnic characteristics for both populations were similar in their percentage of the total population for their respective participant status population. Both non-participant and participant populations leaned heavily towards traditional age (Students ≤ Age 24) students and female. Table 1 provides a breakdown of participants into two groups: Non-participants and Participants – within those groups are the demographic breakdowns of each group.

Table 1. Participants Characteristics

Characteristics	Non-Participants		Participants	
Gender				
Male	2308	43.65%	7205	39.75%
Female	2980	56.35%	10922	60.25%
Total	5288		18127	
Race/Ethnicity				
White	2926	55.33%	10139	55.93%
Black	1032	19.52%	3488	19.24%
Hispanic	393	7.43%	1219	6.72%
Asian	240	4.54%	817	4.51%
Native American	70	1.32%	252	1.39%
2+ Races	233	4.41%	1061	5.85%
Other	394	7.45%	1151	6.35%
Total	5288		18127	
Age				
Students Age ≤ 24	3825	72.33%	14353	79.18%
Students Age ≥ 25	1463	27.67%	3774	20.82%
Total	5288		18127	

Pell Grant Status				
Yes	1971	37.27%	8752	48.28%
No	3317	62.73%	9375	51.72%
Total	5288		18127	

Data Collection

Data used for this study were historical and stored in the institutional student information system. Data requested and received included deidentified student demographic data of age, gender, race/ethnicity, federal Pell Grant status, and grade received in a course. Student identification numbers were masked or randomized when extracted from the student information system by the institution providing the data. Raw deidentified student data were transferred from the participating institutions to the researcher via a secure UNH Box. The UNH Box was accessible only to the researcher and designated institutional representative. Researcher applied for and received IRB approval from UNH and the participating institutions. However, this study used no human subjects and was exempt from IRB.

Data Analysis

This study used multiple 2x2 chi-square tests of independence with one degree of freedom to determine if there was a statistically significant difference in course completion rates between non-participants, those who voluntarily opted out of the equitable access model, and participants, those who stayed in the model. Previous research on course materials interventions and student outcomes have used chi-square tests of independence to test statistically significant relationships, as the variables are categorical (Fischer et al., 2015, Moore, 2021; Moore & Piazza, 2022, Pallant, 2016). This study used a p-value of .05 for chi-square tests of independence.

Results

The purpose of this study was to compare course completion rates of non-participants to the course completion rates of participants of an equitable access course materials model and to test if there

was a statistically significant difference between the populations. The total population of the study was 23,415 students. Of the 23,415 students, 5,288 students were considered non-participants as they had voluntarily opted out of the equitable access course materials model and had to source their own required course materials and 18,127 students were considered participants because they did not opt out of the equitable access course materials model.

Grade Distribution

Results of the grade distribution analysis within the non-participant and participant populations are provided in Table 2. While the grade distribution between the populations was not germane to the central research question, recent studies on inclusive access, a similar course materials model, have provided comparisons (Moore, 2021; Moore & Piazza, 2022).

Table 2. Grade Distribution and Course Withdrawal

Grade	Non-Participant		Participant		% Difference
	<i>n</i>	%	<i>n</i>	%	
A	1376	26.02%	5696	31.42%	5.40%
B	904	17.10%	3983	21.97%	4.88%
C	530	10.02%	2536	13.99%	3.97%
D	188	3.56%	885	4.88%	1.33%
F	1043	19.72%	3315	18.29%	-1.44%
W/I	1247	23.58%	1712	9.44%	-14.14%

The participant population of the equitable access course materials model had 5.40% more students receive a letter grade A and 4.88% more students receive a letter grade B compared to the non-participant population. Non-participants of the equitable access model were 14% more likely to withdraw from a course than participants.

Central Research Question

To answer the central research question of when comparing participants and non-participants of an equitable access course materials model, is there a statically significant relationship between

participation status and course completion rate, a 2x2 chi-square test of independence was performed to compare the total number of non-participants who completed a course and the total number of participants who completed a course. A 2x2 chi-square test of independence was then performed for each category of student demographic to compare the number of non-participants in that category who completed a course and the number of participants in the same category who completed a course. The categories for comparison were total population, gender, race/ethnicity, learner age, and federal Pell Grant status. Table 3 shows the results of the chi-square tests along with the course completion rate of non-participants and participants in their corresponding demographic categories.

Table 3. Course Completion Rate by Category

Category	Non-Participant CC Rate	Participant CC Rate	Percentage Change	Course Completion χ^2	Significant at $p < .05$
Total Population	56.69%	72.27%	15.58%	$p = .001$	Yes
Pell Grant Students	50.43%	67.66%	17.23%	$p = .001$	Yes
Male	53.99%	72.53%	18.54%	$p = .001$	Yes
Female	58.79%	72.09%	13.30%	$p = .001$	Yes
White Students	63.19%	77.34%	14.15%	$p = .001$	Yes
Black Students	38.95%	60.01%	21.06%	$p = .001$	Yes
Hispanic Students	45.55%	61.12%	15.57%	$p = .001$	Yes
Asian Students	65.42%	79.07%	13.65%	$p = .001$	Yes
Native American	42.86%	60.32%	17.46%	$p = .009$	Yes
2± Races	44.64%	66.92%	22.28%	$p = .001$	Yes
Other Students	70.30%	79.32%	9.02%	$p = .001$	Yes

Students Age \leq 24	52.21%	71.70%	19.49%	$p = .001$	Yes
Students Age \geq 25	68.42%	74.43%	6.01%	$p = .001$	Yes

Category Results

In the total population of the study, a chi-square test of independence showed that there was a significant association between a student's participant status in an equitable access course materials model and completing a course, ($\chi^2 (1, N=23415) = 462.1, p = .001$). Students who did not opt out (participants) were more likely to complete a course than those who did opt out (non-participants). A chi-square test of independence showed that there was a significant association between a Pell Grant student's participation status in an equitable access course materials model and completing a course, ($\chi^2 (1, N=10723) = 208.6, p = .001$). Pell Grant students who did not opt out were more likely to complete a course than those who did opt out. With respect to gender, both male participants ($\chi^2 (1, N=9513) = 276.5, p = .001$) and female participants ($\chi^2 (1, N=13902) = 191.6, p = .001$) were more likely to complete a course than male non-participants and female non-participants. A chi-square test of independence showed that there was a significant association between a participant's age and completing a course, Students Age \leq 24 ($\chi^2 (1, N=18178) = 523.8, p = .001$) and Students Age \geq 25 ($\chi^2 (1, N=5237) = 19.21, p = .001$). Both age categories who did not opt out were more likely to complete a course than those in learner age categories that did opt out. A chi-square test of independence showed that in each of the seven race/ethnicity categories, White students ($\chi^2 (1, N=13065) = 238.6, p = .001$), Black students ($\chi^2 (1, N=4520) = 142.7, p = .001$), Hispanic students ($\chi^2 (1, N=1612) = 29.44, p = .001$), Asian students ($\chi^2 (1, N=1057) = 18.94, p = .001$), Native American students ($\chi^2 (1, N=322) = 6.80, p < .009$), 2+ Race students ($\chi^2 (1, N=1294) = 40.65, p < .001$), and the combined race/ethnicity category of Other students ($\chi^2 (1,$

N=1545) = 13.49, $p < .001$), participants were more likely to complete a course than non-participants.

Discussion and Implications

This study compared the course completion rates of participants and non-participants in an equitable access course materials model to determine if there was a statistically significant relationship between a student's participation status and course completion rate. For this study, completing a course required a student to have received a letter grade between A and D. All results of the chi-square tests of independence showed statistically significant results that indicated, for all categories, participants in an equitable access course materials model were more likely to complete a course than non-participants – those who had voluntarily opted out of the equitable access course materials model. As there are no other available research studies on equitable access, there are no comparisons to be made to previous research on equitable access course materials models, regardless of metric used for analysis. However, research studies on the use of inclusive access, a similar model, does provide an opportunity to draw parallels to certain category results.

Race/Ethnicity

Previous research on inclusive access course materials models has shown large increases in success rates, letter grade C or better, for Black student populations. These increases range from 8.5% to just over 13% (Moore, 2021; Moore & Piazza, 2022; Williams et al., 2020). In two of these studies, Black students experienced an increase nearly 10% higher than the other race/ethnicity categories (Moore, 2021; Moore & Piazza, 2022). In this participant vs. non-participant equitable access study, participating Black students (+21.06%) and students who identify as two or more races (+22.28%) saw increases in course completion rate 4-5% higher than Hispanic students (+15.57%) and Native American students (+17.46%), which were the next highest. All participant race/ethnicity categories in this study experienced significant increases in course completion rates

over non-participant race/ethnicity categories, but the much higher rate for Black students continues to support the growing evidence that inclusive and equitable access programs have a unique impact for Black students (Moore, 2021; Moore & Piazza, 2022). Spica (2021) suggested that the nature of inclusive access (and equitable access) ostensibly helps remove inequalities in the course materials acquisitions process for underrepresented student populations that allow them to achieve academic success like that of their more well-resourced peers. Moore and Piazza (2022) suggested that inclusive access, and equitable access by similarity of mechanisms, removes unconscious institutional structural barriers beyond the traditionally noted challenges for Black students in higher education (Bartman, 2015; Wood, 2014; Wood & Harris, 2015; Zamani, 2003).

It is possible that there are elements of cultural capital deficiencies that are corrected or leveled by ensuring equal access to the materials (Godfrey et al., 2016; Hinchey, 2010; Yosso, 2005). Where underrepresented student populations may have been disadvantaged in the past, removing barriers to accessing course materials may provide the opportunity to succeed and demonstrate their capabilities. Equitable access course materials models remove the barriers to course materials acquisition by removing up front, out of pocket costs, reducing the necessity to locate or travel to campus to acquire the materials, and ensuring students have what they need to begin the learning process on day one of class. These are important considerations that researchers, practitioners, and campus administrators need to consider about the effectiveness of inclusive and equitable access course materials models and their implementation.

This study is the first inclusive/equitable access course materials model research study to expand race/ethnicity analysis to include students who identify as Asian, Native American, and 2+ Races as their own standalone categories for analysis. Only two previous studies on inclusive access even identified Asian students as a race/ethnicity within a study population (Spica, 2021, Williams et al., 2020). No studies on course materials interventions have recognized Native American or 2 or

More Race students in the studies. The recognition of Native American student populations is especially important given this population is often left out of postsecondary research and data (Postsecondary National Policy Institute, 2021).

As this is the first study to identify these populations, this study will serve as a benchmark in course completion rates at two-year institutions for Asian students (+13.65%), Native American students (+17.46%), and students who identify as 2 or More Races (+22.28%). There are no conclusions or inferences to draw for these student populations, but the results do speak to the need to include them in any future analysis of inclusive or equitable access course materials models.

Pell Grant Students – Impact

There has been only one study on the use of inclusive access course materials models and its impact on student outcomes that examines students who receive a federal Pell Grant as a category. Spica (2021) found that Pell Grant students were 1% more likely to pass with a letter grade of C or better in a Fall 2019 pilot semester of inclusive access compared to the two previous Fall (FA17/FA18) terms – this result was not statistically significant in the study. However, this equitable access study showed that Pell Grant students who participated in an equitable access course materials model had a 17.23% increase in course completion compared to Pell Grant students who voluntarily opted out. Non-participant Pell Grant students had a course completion rate of 50.43% while participant Pell Grant students had a course completion rate of 67.66%. This difference was statistically significant at $p = .001$. As with the findings for Asian, Native American, and 2 or More Race students, this study has no comparison and serves as a benchmark for course completion rates for students who received a federal Pell grant.

Pell Grant Students – Observations

Post-hoc analysis of non-participant and participant Pell Grant status by age revealed some findings that may be of interest and point to the importance of access for students receiving Pell Grant – see

Table 4. As Delisle (2017) and Spica (2021) point out, while flawed, Pell Grant status has been used as a proxy or place holder for socio-economic status. Meaning, that higher education identifies low-income students by using Pell Grant status as the measure. Anecdotally, it's known that if a student is low-income, they are likely to have challenges affording the cost of higher education – especially course materials. In a “find & acquire” model, Pell Grant students may need to wait for financial aid refunds to obtain their course materials. Sometimes this can be 2-3 weeks into the term. Therefore, it is not a stretch to say that Pell eligible students who get their course materials late and are perpetually behind in their coursework.

Table 4. Pell Grant Status by Participation Status and Race/Ethnicity

Non-Participant (NP) Pell Status				Participant (P) Pell Status			
Race	NP Total	NP Pell	%	Race	P Total	P Pell	%
White	2926	880	30.08%	White	10139	3995	39.40%
Black	1032	539	52.23%	Black	3488	2279	65.34%
Hispanic	393	197	50.13%	Hispanic	1219	843	69.16%
Asian	240	121	50.42%	Asian	817	492	60.22%
NA	70	38	54.29%	NA	252	143	56.75%
2+ Races	233	120	51.50%	2+ Races	1061	341	32.14%

This leads to some observations pertaining to the impact of opting out of an equitable access program for Pell Grant recipients but could also be applied to race/ethnicity categories. The percentage of Pell Grant students in the non-participant sample is smaller than the participant sample. This means there may be fewer students in each demographic group that experience the course materials acquisition challenge mentioned previously. With fewer Pell Grant students, fewer students in each demographic in the non-participant sample start from behind. Therefore, they have less collective potential for average improvement within each demographic. Conversely, with a greater percentage of Pell Grant students in the participant sample who may have started from behind without equitable access, there is greater collective potential for average improvement within each demographic.

Another way to think about this is to say if a small portion of a group is Pell Grant eligible, fewer among the group is faced with the course materials acquisitions challenge. Therefore, fewer students start from behind and there is less potential for improvement when the acquisition challenge is removed. Conversely, if a large portion of a group is Pell Grant eligible, more among the group is faced with the course materials acquisitions challenge. More students may start from behind but have greater potential for improvement when the acquisition challenge is removed. This could explain why non-White race/ethnicity categories saw more improvement than White students because there were less Pell Grant eligible White students.

Achievement Gap

When discussing race/ethnicity results, it is important to consider how the results compare within each race/ethnicity category and to other race/ethnicity categories. This discussion focused mostly on comparing results within each race/ethnicity category by participant and non-participant status. However, there are implications for closing the achievement gap in higher education for underrepresented student populations – especially at 2-year institutions (Bensimon, 2005; 2012; Gooblar, 2020; Mangan, 2018; Merolla & Jackson, 2019). In this study, participating White students had a course completion rate of 77.34% and non-participating White students had a course completion rate of 63.19%. For comparison, participating Black students had a course completion rate of 60.01% and participating Hispanic students had a course completion rate of 61.12%. Neither participating Black or Hispanic student categories achieved the non-participating White student course completion rate.

While the constraints of the data in this study limits generalization across higher education, it does indicate that ensuring students are provided with their required course materials may improve outcomes. A more robust or longitudinal sample may show that non-White and traditionally underserved student populations can reach the same levels of academic success as their White peers

when provided the support and opportunity. Ultimately, it could be an indication that one of the strongest academic interventions that can be undertaken in higher education is to provide students with their required course materials on or before the first day of class. This is because if there are structural barriers for underrepresented student populations, these course materials models could tear them down.

College Completion

College completion has been, and remains, a focus in higher education, especially at two-year institutions (Deye, 2022; Levesque, 2018; Remote, 2022). According to the National Student Clearinghouse (2022) the six-year national college completion rate hit 62.2% for the Fall 2015 cohort, just over one percentage point increase compared to the Fall 2014 and 2013 cohorts. While the overall six-year completion rate hit a high, there are still large gaps between college completion rates and race/ethnicity. At 2-year institutions, Black students are only completing college in six years at a 30.1% rate compared to their White peers who complete college within six years at a 49.7% rate. The nearly 19% difference in college completion rates between Black and White students mirrors the difference in this study between course completion rates for Black students (60.1%) and White students (77.34%) who participate in an equitable access course materials model.

While it is only one of several possible interventions to address the achievement gap and college completion, equitable access course materials models may serve as one of the more immediate and impactful interventions available. Access to course materials has been part of the varying approaches institutions have taken to address college completion (Deye, 2022). When discussing college completion at two-year institutions, time is the enemy of completion. The longer a student stays enrolled, the less likely they are to complete their degree (Remote, 2022). The results of this study indicate that if students participate in an equitable access course materials model, they are more likely to complete a course than non-participants which may allow them to move through their

programs of study quicker. Further research is needed to validate whether equitable access course materials models impact college completion, but it is not a stretch to say if students are completing more courses, they will spend less time retaking courses or delaying required courses necessary to attain their degree.

It is important to note that inclusive access and equitable access are not the only programs that aim to reduce the cost of and increase access to course materials. There are open educational resources, textbook rental, and e-text rental programs in place at various institutions across the country (Hilton, 2016; Hurley & Carter, 2020; Medley-Rath, 2018; University Bookstore, 2022). While their aims are the same, this paper's focus was limited to exploring equitable access.

Limitations

This study had some limitations that deserve mentioning beyond the possibilities of data errors during extraction, formatting, analysis, and reporting. This study utilized data from two 2-year institutions which prevents the generalizability of the results to other institutions of higher education. This study did not attempt to understand if non-participants secured their required course materials. Furthermore, the study did not attempt to understand the motivation for voluntarily opting out of the equitable access course materials model for non-participants. There was no attempt to measure or analyze how the cost of course materials may or may not have impacted participants or non-participants. The study did not attempt to understand how instructors used or engaged the course materials nor how students used or engaged in the course materials.

Future Research

While previous inclusive access course materials models research (Moore, 2021; Moore & Piazza, 2022; Williams et al., 2020) has consistently shown considerable improvements in success rates for Black students compared to other race/ethnicity categories studied, this study is the first to examine the impact of an equitable access course materials model on course completion rates. Future

research on equitable access course materials models and their impact on course completion rates are needed to gain a deeper understanding as to whether this study was a one off or if equitable access course materials models consistently impact course completion rates between participants and non-participants.

One area of focus for future research would be continuing to drill down on demographic data. All available research, including this study, on course materials acquisition models (Hurley & Fekrazad, 2020; Spica, 2021, Moore, 2021; Moore & Piazza, 2022; Williams et al., 2020) stops analyzing race/ethnicity data at the superficial level. Given what we know about the challenges underrepresented student populations face in higher education, a deeper dive into the racial/ethnic demographics would be justified (Chen, 2017; Jobe, 2013; Kern, 2000; Shannon, 2021; Wood, 2014; Wood & Harris, 2015). This deeper dive means looking at each race/ethnicity by gender and/or age. How does race/ethnicity course completion rates change by gender? How do race/ethnicity course completion rates change by age? Or Pell Grant status? This suggestion may seem unwarranted to some, but in the battle to retain students and provide them with the resources to persist to degree attainment, it seems a worthwhile endeavor.

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