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Abstract

The results of the first cross-campus survey of student opinions on Zero Textbook Cost (ZTC) courses are in: City University of New York (CUNY) students like their ZTC courses, primarily for the cost savings and ease of access. The survey results yield rich data about how positively students feel about their Zero Textbook Cost (ZTC) courses as well as ways to improve the design and delivery of Zero Textbook Cost courses to make them more beneficial for student learning.

Keywords: OER; textbooks; student opinions

“Compared to all the other courses I have taken this semester and my entire college career, this class was the least stressful financially. I was able to focus on the class without worrying about being able to buy a textbook or only having access to material at the campus library reserves section.” - CUNY Student

Introduction

The promise of Open Educational Resources' (OER) pedagogical and cost benefits align directly with City University of New York's (CUNY) mission:

“as a vehicle for the upward mobility of the disadvantaged in the City of New York ... [to] remain responsive to the needs of its urban setting ... [while ensuring] equal access and opportunity to students, faculty and staff from all ethnic and racial groups and without regard to gender” (CUNY, 2018b).

Many CUNY undergraduate students qualify for financial aid: 54% are Pell Grant recipients, 37.1% have household incomes of less than \$20,000 per year (in one of the most expensive markets in the country), and 26.7% of CUNY undergraduate students work over 20 hours per week to support their family's income. The undergraduate student population is 32.3% Hispanic, 25.6% black, 21.1% Asian/Pacific Islander, and 20.7% white (CUNY Office of Institutional Research and Assessment, 2017).

In April of 2017 New York State Governor Andrew Cuomo announced \$8 million in funding for Open Educational Resources (OER) adoption across CUNY and State University of New York (SUNY) systems (in response to funding requests from librarians at both institutions). From these funds, CUNY was able to support programs for OER adoption at varying levels across all 24 campuses during the 2017–18 academic year. Funding was awarded to faculty to convert their courses to OER, with an emphasis on large-scale adoption across high enrollment general- education courses. Funding was also available to incentivize section instructors to adopt the OER courses created by awardees; CUNY's strong legacy and emphasis on academic freedom gave faculty the choice to opt-in or not. OER were adopted in 2,800 new course sections, impacting 76,000 students and resulting in \$9.5 million saved on textbooks (CUNY, 2018c). Since savings from OER grow over time and the second year of funding will expand the OER initiative, by spring 2019 the initiative is projected to impact 260,000 students for a total savings of \$28 million (New York State, Office of the Governor, 2018).

While the return on New York State's investment is clearly significant in terms of cost savings, we wanted to learn how students felt about these new course materials. These cross-campus survey results yield rich data about how positively students feel about their Zero Textbook Cost (ZTC) courses and insights on how to improve the design and delivery of Zero Textbook Cost courses based on student feedback.

Literature Review

Open Educational Resources (OER) can benefit students in myriad ways, some of which include eliminating the cost of the textbook, ensuring earlier access to course materials and enabling students to engage with course materials when and where they choose. The high cost of textbooks can be an impediment to academic success, especially among students with pressing economic concerns (Broton & Goldrick-Rab, 2016; Colvard, Watson & Park, 2018). Students from low-income families experience food and housing insecurity and have difficulty paying their bills. In a broadly cited survey of 22,000 public college and university students in Florida, 66.6% of students report not purchasing the required textbook for the course (Florida Virtual Campus, 2016). In another survey ($n = 3115$), students at Brigham Young University indicated that they would spend money saved from not purchasing a textbook on housing (28.86%) and food (28.32%) (Martin, Belikov,

Hilton, Wiley & Fisher, 2017). Students report that they have delayed or decided against making a textbook purchase despite anxiety over how that choice might negatively affect their course grade (Senack, 2014; Hilton, 2016; Martin et al., 2017; Stein, Hart, Keaney & White, 2017; Jhangiani & Jhangiani, 2017).

Beyond eliminating the cost of the textbook, OER materials are free and available on the first day of class and then continuously accessible at any time. First-day access to required course materials is extremely important to student learning. Research shows that when students have first-day access they do much better in a course, and when they have to wait (for a book to be delivered online, or for a financial aid check or book voucher to be processed) to access materials, they do not do as well in the course (Agnihotri, Essa & Baker, 2017). The Open University found that educators consider cost and access as critical factors influencing student retention (de los Arcos et al., 2014).

Relevant research has been done on student experience of OER, such as Cooney (2017), which found Health Psychology students at New York City College of Technology (one of CUNY's senior colleges) held positive opinions of the access afforded by and the quality of OER, but large-scale, cross-campus analysis has yet to be performed. The access to course materials that OER provides is particularly important for students who are commuters, which most CUNY students are. Regalado and Smale's (2015) research indicates that CUNY students spend 30-60 minutes each way commuting to school, meaning they likely spend "considerably more than the average length reported by NSSE of five hours per week" in transit to school. Students interviewed by Cooney also relayed that access to portable course materials is of crucial import for urban students, juggling multiple responsibilities, including long commutes (Cooney, 2017, p. 175).

The Hewlett Foundation defines OER as "teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others" (Hewlett Foundation, 2018). As such, OER does not have a standard look or feel that might be easily compared. Furthermore, an evaluation of Oregon's OER designation requirement revealed that students do not understand the terminology of OER and have a low awareness of OER offerings at their institution (Freed, Friedman, Lawlis & Stapleton, 2018). No consensus exists nationally regarding how to designate zero textbook cost sections. The recommendation from Freed et al. (2018) is to use a simple phrase that is easy to understand. The phrase "Zero Textbook Cost" is used as a course registration designation across CUNY through the CUNYFirst student information system for course registration. The guidelines developed by CUNY define Zero Textbook Cost course sections as "those that do not require students to purchase a textbook" (CUNY, 2018a). Instructions describe the requirements for ZTC courses and the procedures faculty should follow to have their courses indicated as ZTC via the Registrar's Office and the Bookstore. At CUNY, a ZTC course may include OER materials, as well as library materials or materials provided for free within copyright by the instructor, or simply be a course that does not have a textbook assigned. For the purposes of this survey and in this article, ZTC is the nomenclature used since it is both more easily understood by students and a more accurate reflection of the diverse materials used by CUNY ZTC course instructors.

Methodology

We created this survey for several reasons—to compare previous research done by other large scale university systems on student opinions of OER with student opinions at CUNY, and to draw out more specific answers to questions that relate to our local student population, as well as to

the questions CUNY faculty ask about OER. In the first case, we want to be able to see whether studies done (for instance) at Florida public institutions also relate to our students' needs in an urban public university system in New York City; in the second instance we wanted to focus on the specific needs and experiences of CUNY students –how do they feel about learning with digital materials in general and in their ZTC courses, more specifically? Exactly how and with what technology do they access their ZTC course materials and where do they do so? What do they like and dislike about their ZTC courses? To get a closer look at students' true opinions of these courses, we offered several open-ended questions on the survey. The Creative Commons-licensed CUNY ZTC Student Experience Survey (Brandle et al., 2018)¹ we developed was adapted from a previously administered survey conducted by Jean Amaral at CUNY's Borough of Manhattan Community College, and has been IRB approved for use across all CUNY campuses; the IRB also approved an open-data protocol for sharing the results.² The complete survey is available in Appendix 1.

The survey was administered at the end of the Spring 2018 semester. A link to the survey was circulated to the OER coordinators at each campus via a listserv, requesting that they forward the survey invitation to faculty teaching ZTC sections, who could then invite students to participate in the anonymous survey. 898 responses were received from 14 different CUNY campuses. Six of the responses collected indicated “no” to the age and consent question, so they were discarded without analysis. Two responses answered only the campus question, leaving all other questions blank, so they were also discarded, leaving a total n of 890.

In the five cases where “institution name” was not supplied by a student respondent, the instructor name that was supplied was used to infer the institution at which the course was taken.³ Students' responses were used to code a harmonized “course name” entry⁴ and a general subject area entry to facilitate data analysis. The general subject areas were Arts, Business, Education, Foreign Language, Interdisciplinary Studies, Library Studies, Humanities, Social Sciences, and STEM (Science, Technology, Engineering, and Math).⁵ In three cases where no course name was provided but faculty name was, the subject was coded based on the faculty name. There were ten cases in which no identifying information for course name or instructor name were supplied; these were coded as blank for the subject. In three cases, a student supplied the name and instructor of a course but chose the wrong campus from the drop-down menu, so the campus was corrected to match the course name and instructor the student supplied.

Three hundred and thirty-two (37.3%) responses are from students enrolled in ZTC courses at CUNY community colleges, 481(54%) are from traditional four-year colleges (some of which provide graduate level programs as well), and 77 (8.65%) represent coursework at the CUNY School of Professional Studies. The majority of responses (79%) are from students whose ZTC course was conducted entirely face-to-face, while 11% of responses come from students in hybrid (partially online and partially face-to-face) courses, and 9% of responses came from students in wholly online courses.

Results and Discussion

Early and Convenient Access to ZTC Materials

When asked when they first accessed the textbook and other materials for their ZTC course, 90% of respondents indicated they accessed materials either before the semester started (20%) or during the first week of classes (70%), as shown in Figure 1. 7% of respondents reported they never accessed their assigned ZTC materials during the course.

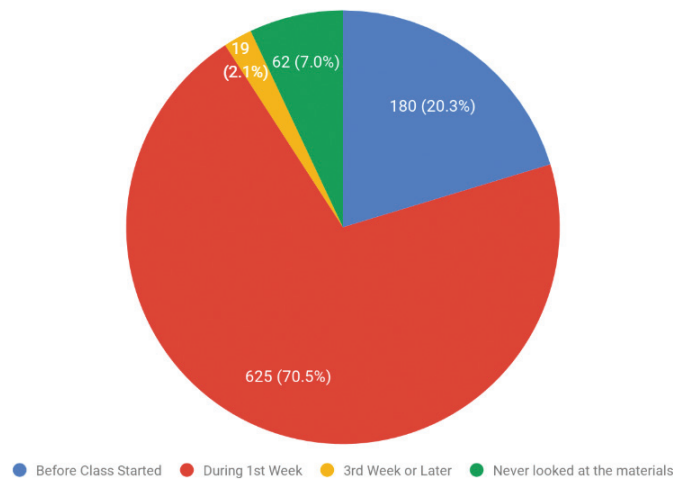


Figure 1: First Access of ZTC Materials

Not only did most students access the materials for the course early on, when asked to compare their ZTC class with most other classes they have taken, an overwhelming majority found the materials for their ZTC class easier to access than materials for prior courses, as shown in Figure 2. Of 887 responses to this question, 76% rated their ZTC materials easier to access, with an additional 21% saying they were about the same as accessing materials from most of their previous courses. Only 3% said the ZTC materials were more difficult to access than their previous materials. If we compare these results with the 2016 Florida Virtual Campus study, where 66.6% of students reported never having purchased their textbooks at all, this level of engagement is impressively high. Additionally, the 20% of students accessing their course materials before the semester begins demonstrates to CUNY faculty that our students wish to be proactively engaged with their learning materials.

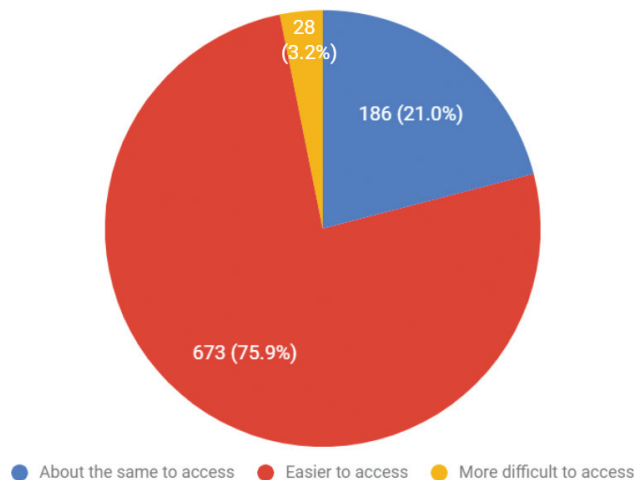


Figure 2: Student Opinions on Ease of Accessing ZTC Materials, Compared to Other Courses

Students were also given the option to expand on their answer to the question of ease of access if they wished to do so. Their responses were coded for common themes. Of the 188 students who offered an explanation for why they found their ZTC materials easier to access, the most frequent explanation (76 students, or 40%) was convenience and the overall ease of access for ZTC materials.

Students appreciate being able to access their ZTC materials anywhere, from any device, at any time, as this student points out:

I could see the course material pretty much anywhere I went, unless I was underground on the subway. I forget everything so I usually forget textbooks, but millennials these days NEVER forget their phones. So I always had my art history readings right in my front pocket!

Forty-three students (23% of respondents on this open-ended question) said their ZTC materials were easier to access because all of the materials were online and/or on Blackboard, while 25 students listed cost as the primary explanation for why they found their ZTC course easier to access. The 3% of students who responded that the materials were more difficult to access gave answers to the open-ended question reporting difficulty with their logins, materials that were slow to load, or a preference for a physical copy.

65% of respondents indicated they did all of the required reading/viewing (including texts, videos, podcasts, etc.) for their ZTC courses. Thirty-two percent said they did some of the required reading/viewing, and only 2.5% said they did none. Taken together, these results clearly show that when students have convenient, easy, cost-free access to their learning materials, they are likely to do more of their assigned reading and viewing work for their courses.

Where Students Accessed Course Materials

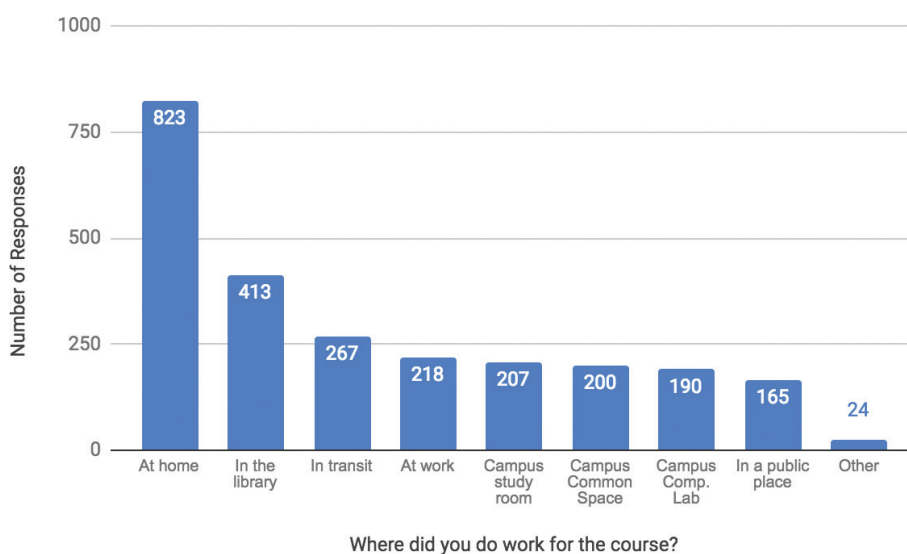


Figure 3: Where Did Students Do their Reading, Writing, and Studying for ZTC Courses?

We asked students where they accessed ZTC materials and on what devices. Their responses are summarized in Figure 3; 48% of respondents indicated three or more locations while 30% of students reported using only one location. While almost all students, 823 of 890 (92.5%), responded that they did their work at home, there were 1684 responses characterizing ZTC coursework in other places, including 267 responses about doing their schoolwork in transit, on a train or bus. Two hundred and eighteen students reported doing their ZTC course reading, writing, and studying while at their job. Many students reported doing their work somewhere on campus, either in the library (413), in a campus study room (207), in a computer lab on campus (190) or in a common space on campus (200). One hundred sixty five students said they did their work in a public place off campus, such as

a Starbucks or McDonalds. This evidence of CUNY students' mobility and habit of studying on the go is consistent with previous research, and highlights the need for ZTC materials to be portable and mobile-device optimized.

Technology Students Use to Access ZTC Materials

When we combine the results of the location question above (where did you access materials?) with a question asking what technology students used for ZTC access, we find even more evidence about the need for mobility and optimization for delivery across multiple devices. All 890 respondents provided at least one answer to the question, "What technology did you mostly use to access the course materials (readings, textbook, videos, etc.) for this course?" and 66% of responders gave 2 or more answers for what technology they primarily used. Figure 4 shows the 2058 responses students gave to the question.

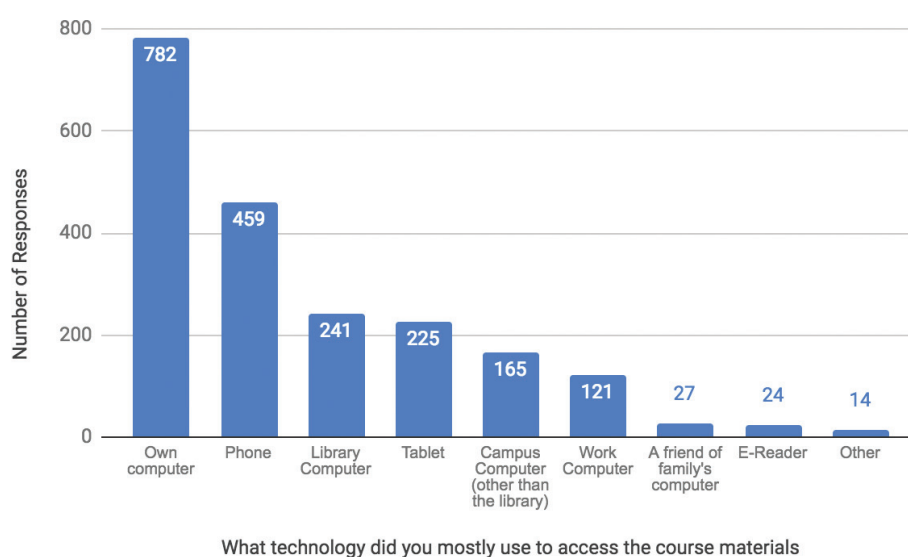


Figure 4: Technology Primarily Used to Access ZTC Course Materials

Students most often reported accessing course materials on their own computers, followed by their phone, and then library computers. These results are consistent with the findings of Smale, Regalado and Amaral (2018), who found that while most students owned smartphones and used them for some of their online and hybrid coursework, they largely relied on their home and campus computers for primary access. They summarized their study respondents' opinion as "It was clear they considered a smartphone to be insufficient as the sole device for their academic work" (p.8), which is also a fair summary of the present study's findings. Knowing how and where students access their ZTC materials provides useful data for those allocating infrastructure and tech fee budgets, as well as those designing course materials and/or selecting platforms for delivery.

Digital Learning

While the literature is divided regarding the effectiveness of learning from reading on paper vs. reading electronically (Niccoli, 2015), those who are skeptical about OER frequently express concern that OER means students will exclusively learn with digital materials (Green, 2016). We asked students to rate their own learning with digital materials and print materials. We phrased this question very

intentionally to ask students whether they felt they learned as well with digital materials, rather than with OER or ZTC materials, partly because this question speaks directly to questions teaching faculty tend to ask when considering OER, and partly because even in their traditionally-published textbook courses, students frequently turn to digital versions as the cheapest means of obtaining required books. A majority of respondents, 66%, said they feel they learn as well with digital materials as they do with print. Seventeen percent were not sure, and 17% of students reported that they do not learn as well with digital materials.

Printing

Students were asked to report how much of their ZTC materials they printed. This survey item was chosen to solicit additional student feedback on digital and analog methods of accessing the course materials, and is a relevant question addressing faculty concerns about the efficacy of learning with digital versus traditional print resources. While OER licensing permits printing and utilizing materials in formats other than electronic, students do not always have access to a printer and are not always aware that they can print the materials; some OER materials are not printable at all, such as video and audio content. Fifteen percent of respondents reported printing all of their ZTC materials, 43% printed some of their ZTC materials, and 41% of respondents printed none. Respondents who chose to print selected from multiple-choice options to indicate that they primarily wanted to take notes on the page and also that they prefer reading on paper. Even though many students appreciate the convenience and ease of digital materials, student motivations for printing tend to be nuanced and context-specific.

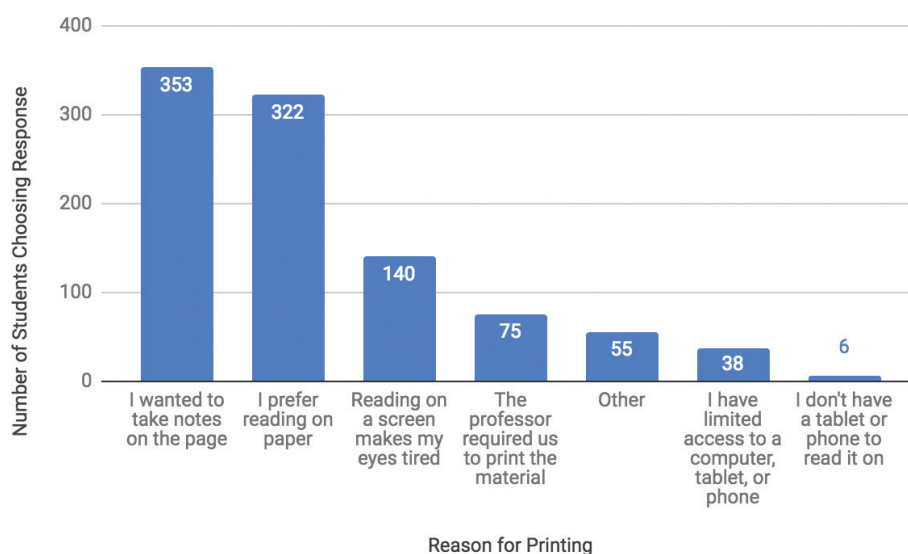


Figure 5: If Students Printed Materials, What Were Their Reasons for Printing?

While 41% of students reported printing none of their readings, 43% reported printing some with 15% saying they printed all of their assigned readings for their ZTC course. Students were asked to select as many reasons as they liked for why they printed their ZTC materials, which are summarized in Figure 5. There are important insights to draw from students' reasons for printing. The top choice at 353 responses is "I wanted to take notes on the page," with "I prefer reading on paper" a close second at 322 responses. Since skills and tools for reading and annotating online and digital texts exist in a variety of formats, there is an opportunity to improve student learning by

expanding faculty support for reading in digital spaces and exploring supporting technology including digital annotation tools.

Student Perceptions of ZTC Courses: Benefits

To understand student perspectives on their ZTC courses, we asked two open-ended questions to elicit feedback about the benefits and drawbacks of the open/free materials used in their course. Among the benefits, ease of access was clearly a major recurring theme in students' feedback. To provide better context about students' perceived benefits, each response was coded for one theme.⁶ Saving money and ease of access were the overwhelmingly dominant responses, as indicated in Figure 6.

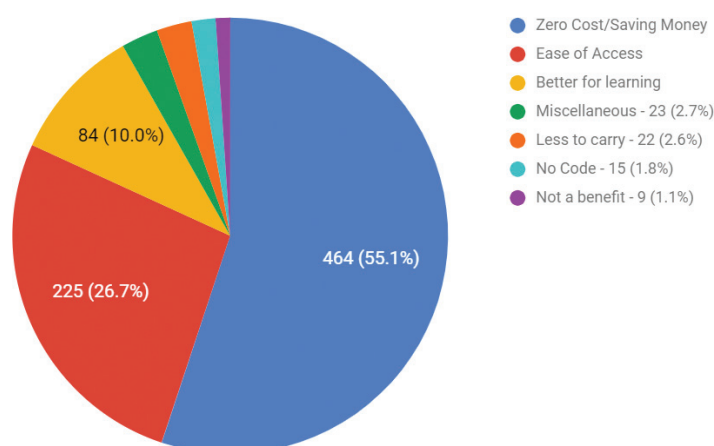


Figure 6: Themes from Open-Ended Answers on the Benefits of ZTC

The majority of respondents (55%) expressed cost savings as a benefit, followed by 27% for ease of access. Representative comments include, “I had access to them whenever I needed them” and “I was able to access the materials any where [sic] I wanted. If I wasn't home, I was still able to access the materials and do the work I needed to. I was not limited to a textbook and did not have to take the textbook everywhere I went in order to do my work.”

Students utilized the advantages of digital resources, such as the ability to electronically search their materials. Some noted the searchability of the materials as well as the ease of finding definitions of unknown words. These affordances can have positive implications with student populations, and is a significant benefit to students for whom English is not their primary language.

Improved pedagogy was another theme in the open-ended responses about benefits. As one student wrote, “I believe the benefits for having open materials for this course was that I felt the teacher was more engaged with what I was learning and attentive to understanding the written material given to us as students.”

In reviewing the responses to open-ended questions, the issue of stress came up consistently. When asked what the benefits of their ZTC course was, one student said “Less Stress. Much, Much Less Stress. Trust me I can tell I'm in college. I'm always stressed”, and another echoed the sentiment, “With various things in college that can stress you out from relationships to school work, having open/free materials helps mitigate it.” A third student pointed out both the lack of stress and the benefit of being able to retain their learning materials even after the end of the course, stating, “less stress and I now have it forever.”

Several respondents also mentioned the lowered environmental impact of their ZTC courses, as in “Saving money, saving paper,” “Save papers, reduce the weight we carry daily, able to do anything

that we want to the content,” “It save [*sic*] money and save paper,” and “The better for the environment and cheap.”

Student Perceptions of ZTC Courses: Drawbacks

We also asked students to tell us about the drawbacks of their ZTC courses, but in their comments answering this question, approximately half of students responded that there were no drawbacks to the use of ZTC in their course. The other half of students questioned the quality of materials and mentioned their difficulties with the Internet or accessing their course materials, as well as paper and printing concerns, which they also associated with highlighting and note-taking practices. The responses on quality of materials included a wide range of criticism that might be found on any end-of-course evaluation, such as a lack of student-teacher contact, that readings were primarily journal articles and did not provide a more textbook-like overview, or the perennial “too much reading.”

Mirroring some findings from the multiple choice survey questions, a fairly large percentage of drawbacks mentioned (27%) were related to the lack of print materials, as in “I don’t like studying off of a computer,” “I like more printed materials,” and “I prefer physical copies.” Students also noted challenges of highlighting, annotating, and note-taking digital learning materials; this subset accounts for 5% of the 304 actual drawback responses. The nine responses that mentioned eye strain from reading digital materials as a drawback of their ZTC course can be seen as related to the print-related criticisms as well, though they were coded separately. Issues with the technology, devices, or Internet connection required to access ZTC materials accounted for some drawbacks, such as “if there was no Internet access, it was difficult to learn the information” or “if you have no wifi it would be hard to get work done on time.”

Notably, only about a third of the students who took the survey mentioned any kind of drawback to the course at all. This is not surprising, perhaps, given that when students asked if they would recommend a course using zero-cost materials to other students, almost all respondents--95% of 883 responses--said that they would, and only 47 respondents said they would not. Respondents were able to provide an explanation if they wished, and 480 respondents provided an explanation for why they would recommend a ZTC course; these explanations were coded for common themes, which are summarized in Figure 7.

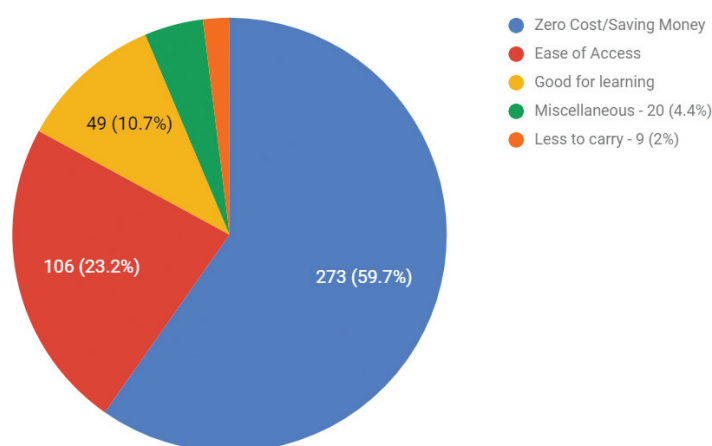


Figure 7: Reasons Given by Students for Recommending a ZTC Course

Sixty percent of responses regarding why students would recommend their ZTC course to a friend focused on the cost savings, the high cost of textbooks, or the financial pressures faced by students.

Further echoing comments related to benefits of ZTC courses, 23% of responses mentioned the convenience of accessing their course materials from wherever they were as the reason for positive recommendations to friends, and 11% said their positive recommendation would be based on the ZTC materials being good for learning. One student's response highlighted the benefits of their ZTC materials for students with disabilities:

The material is easier to read it being online or on your phone you can zoom in and out making the letters and print bigger to see. Which is awesome for me because I have vision problems and cannot see tiny prints if they were to be on a regular book or printed out. I can make it the size I am comfortable with reading and do not have to strain my eyes more.

This student saw the flexibility provided by digital materials as a major benefit, because it allowed them to manage their learning in the way that was best for them, without having to disclose their need to a professor or disability services office.

Only 47 respondents of 883 said they would not recommend their ZTC course to friends.

Study Limitations

Length of Time

At the time of writing this paper, the survey had run for only one semester, the first full semester of participation in the Open Educational Resources (OER) Initiative. The team will continue collecting results from the survey for an additional 2.5 years, as per IRB approval. During that time, we expect the results to remain largely static, but additional research will be done to see if this prediction bears out. The open-data set will be updated at the end of each future semester that the survey runs.

Inconsistent Faculty Participation

As described, the survey was distributed only to students enrolled in the OER course sections associated with the OER grant. Rather than distributing the survey through a faculty blast, or another non-specific distribution method, the researchers sent the survey to OER coordinators at each campus, who distributed the survey to the faculty course designers and section instructors involved in the grant, who then shared it with students. This delivery method was logistically feasible for a survey on such a large scale, and allowed us to increase the likelihood that only students who had actually taken a ZTC course would take the survey, but it did mean that we depended on faculty to offer the survey, which they may or may not have done. Future plans for distribution include face-to-face survey tables in libraries, and more collaboration with faculty stakeholders across the CUNY system.

Sample Size

This study was implemented with a convenience sample, though in this case purposefully so. The population was intentionally limited to students enrolled in OER courses associated with the OER grant so that we could study the targeted effects of the grant and how using OER materials instead of commercial materials affected our students' experience. The issues regarding inconsistent faculty participation created a situation where we did not reach every single student, however, the number of responses (890) captured during this first semester of study demonstrates the value of the findings.

Lack of Control or Comparison Group

Many of the questions in the present survey ask students to compare their experiences in ZTC classes to their own experiences with commercial materials. A future research initiative will compare the experience of students using OER and ZTC materials to that of students in a control group. However, the present findings are valuable as a measure of student experience with an innovative practice.

Conclusion

In this study, students overwhelmingly reported that their experience in a ZTC course was positive. Students would recommend ZTC courses because of their very nature--having no cost, but also because the materials are easier to access and students felt it was better for learning. Among the major findings of this study are that students were able to access course materials more easily in their ZTC courses than via traditional textbooks, and they typically accessed course materials during the first week of classes or before the semester started. This is in stark contrast to instances where a lag in financial-aid disbursement may force students to wait weeks into the semester to purchase course materials, or when financial pressures keep students from ever purchasing textbooks. Most students reported their experience in ZTC courses as positive, would overwhelmingly recommend ZTC courses, and felt they learned as well using digital materials as they have in the past with traditional print textbooks.

Students reported accessing their ZTC course materials primarily through their own computers and their mobile phones. The student-opinion data makes clear that whatever materials and platforms instructors use (including learning-management systems, links to websites, pdf files, etc.), the materials should be mobile-accessible and optimized.

Student responses also highlight the need for course materials to be print-optimized, in addition to mobile ready. Issues around printing were revealing and complex: Most students did not print their ZTC texts, but those who did had reasons worth considering. These students wanted to annotate their texts, preferred print, or found the technology cumbersome. Considerations for the needs of students who prefer print should include making sure ZTC course materials are printable, making print-on-demand options readily available (perhaps through a campus bookstore or copy shop that accepts book vouchers and financial aid as payment), or including digital reading and notetaking modeling, as well as skill-building exercises, in introductory and student-development courses.

For materials to be truly accessible to students who don't have guaranteed access to a computing device or a steady high-speed Internet connection at home, we must design for materials that can be delivered effectively on mobile devices and in print. This finding has implications for instruction, advocacy, platform design, and campus-wide systems management. Instructors and designers are presented with ever-growing options for ready-to-adapt lower cost, OER, and ZTC materials, including many "value-added" vendor options. The data presented here makes clear that whatever materials and platforms instructors select, they must prioritize materials that are optimized for mobile and print environments.

The importance of instructors modelling how to access, read, and annotate digital materials cannot be overstated. Many students mentioned their desire to highlight, difficulty taking notes with digital materials, or their preference for paper, compounded by a lack of experience with digital reading as downsides of their ZTC experience. Developing skills to read and take notes on digital materials is essential for 21st-century students. If instructors spend time early in their courses helping students develop online reading, annotating, and note-taking skills, and if colleges begin incorporating this into student orientations and student-development courses, students will likely have better learning experiences in all of their courses.

The student-opinion data analyzed here provide a lengthy to-do list for instructors and practitioners, which begs the question, how can they be supported in this work and how can they, in turn, support students working to build their digital competencies? What resources are needed to train and support instructors, and how can this professional development be maintained sustainably? Furthermore, when we make plans for facilities and student services we ought to be privileging considerations for space and infrastructure in support of the skills and facilities necessary for students to access and learn with their ZTC course materials. This is fundamental to students progressing through their studies. One approach to this end would be to ensure that student technology-fee expenditures are explicitly aligned to support student access to course materials. At a baseline, this includes access to reliable wifi, desktops, laptops, and tablets, options for free or low-cost print versions of course materials, and continuing opportunities to support digital literacy.

Acknowledgements

This research would not have been possible without the leadership of Ann Fiddler, Open Education Librarian at City University of New York, who connected the researchers and provided the supports that make OER possible at CUNY.

Endnotes

1. The survey instrument is available at goo.gl/ZY7ZcG.
2. The responses from the Spring 2018 survey (without identifying information for instructors' names) are available at <http://bit.ly/2A3P1ib>.
3. This was the case for 5 respondents--3 at Kingsborough Community College and 2 at Lehman College.
4. Respondents provided a number of variations on course titles, so the responses were used (in conjunction with college catalog listings as necessary) to supply the official course titles. For example, respondents from the same course listed it as "Written composition and prose fiction English 114," "ENG 114" and "ENG 114 939D," so it was coded as "Written composition and prose fiction". In the case where a respondent included two courses names but only one instructor, the course taught by the named instructor was recorded.
5. No categorization scheme is perfect, and there were several courses that were challenging to classify, especially considering the cross-campus nature of this survey. An explanation of the categorization schema along with the complete list of the categories and cleaned course names is available at <https://goo.gl/G14U4m>
6. All coding sheets for the open-ended questions are available at <https://goo.gl/J47NCK>

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Appendix 1: Survey Instrument

1. Campus dropdown (student selects their campus)
2. In what course are you taking this survey?
3. What is your professor's last name (surname)?
4. What type of course is this?
 - a. Face-to-face
 - b. Online only
 - c. Hybrid (combination of online and face-to-face)
5. When did you first access the textbook or other materials for this course?
 - a. Before classes started
 - b. In the first week of classes
 - c. In the second week of classes
 - d. In the third week of classes or later
6. Where did you do work (reading, writing, studying, etc.) for this course?
 - a. In transit, on the train or bus
 - b. At home
 - c. In the library
 - d. At work
 - e. In a public place with wifi (e.g. Starbucks or McDonalds)
 - f. Study rooms on campus
 - g. Common space on campus
 - h. Computer labs on campus
 - i. Other
7. What technology did you mostly use to access the materials (readings, textbook, videos, etc.) in this course?
 - a. Phone
 - b. Tablet
 - c. Your own computer
 - d. Your friend or family's computer
 - e. Your work computer
 - f. A library computer
 - g. A campus computer (location other than the library)
 - h. E-reader (Kindle, Nook, etc.)
 - i. Other (please specify)
8. Compared to most other courses you've taken, how would you rate access to the materials for this course?
 - a. Easier to access
 - b. About the same to access
 - c. More difficult to accessPlease explain
9. How much of the required reading/viewing (including texts, videos, podcasts, etc.) for this course were you able to do?
 - a. None of it
 - b. Some of it
 - c. All of it
10. How much of the course material did you print?
 - a. None of it
 - b. Some of it
 - c. All of it

11. If you printed material, why did you print? (Check all that apply)
 - a. I prefer reading on paper
 - b. I don't have a phone or tablet to read on
 - c. I wanted to take notes on the page
 - d. Reading on a screen makes my eyes tired
 - e. I have limited access to a computer, tablet, or phone
 - f. The professor required us to print the material
 - g. Other (please specify)
12. Do you think you learn as well with digital materials as you do with paper textbooks?
 - a. Yes
 - b. No
 - c. Not sure
13. What were the benefits for the open/free materials used in the course?
14. What were the drawbacks for the open/free materials used in the course?
15. Would you recommend a course using zero-cost materials like those offered in this course to other students? Explain your answer.