

5-2018

Online Learning with In-Person Technology: Student & Faculty Experiences in Hybrid/Online Courses at CUNY

Maura A. Smale
CUNY New York City College of Technology

Mariana Regalado
CUNY Brooklyn College

Jean Amaral
CUNY Borough of Manhattan Community College

How does access to this work benefit you? Let us know!

Follow this and additional works at: https://academicworks.cuny.edu/ny_pubs

 Part of the [Instructional Media Design Commons](#), and the [Online and Distance Education Commons](#)

Recommended Citation

Smale, Maura A.; Regalado, Mariana; and Amaral, Jean, "Online Learning with In-Person Technology: Student & Faculty Experiences in Hybrid/Online Courses at CUNY" (2018). *CUNY Academic Works*.
https://academicworks.cuny.edu/ny_pubs/263

This Report is brought to you for free and open access by the New York City College of Technology at CUNY Academic Works. It has been accepted for inclusion in Publications and Research by an authorized administrator of CUNY Academic Works. For more information, please contact AcademicWorks@cuny.edu.

ONLINE LEARNING WITH IN-PERSON TECHNOLOGY

STUDENT & FACULTY EXPERIENCES IN HYBRID/ONLINE COURSES AT CUNY

MAURA A. SMALE

Professor, Chief Librarian, New York City College of Technology, CUNY

MARIANA REGALADO

Associate Professor, Head of Information Services, Brooklyn College, CUNY

JEAN AMARAL

Assistant Professor, Open Knowledge Librarian, Borough of Manhattan Community College, CUNY

TABLE OF CONTENTS

| | |
|---|----|
| Overview | 2 |
| <i>Summary Findings and Recommendations</i> | 2 |
| Introduction | 4 |
| Online Learning at CUNY | 4 |
| Our Research | 5 |
| Findings..... | 6 |
| <i>Instructional Context</i> | 7 |
| <i>Centrality of Campus Computers</i> | 7 |
| <i>Access to Technology</i> | 9 |
| <i>Expectations of Online Environments</i> | 10 |
| <i>Time and Support</i> | 11 |
| <i>Community and Connection</i> | 14 |
| Recommendations | 15 |
| Acknowledgements..... | 17 |
| References | 17 |

OVERVIEW

Online learning continues to grow throughout higher education, including expansion at urban commuter institutions like the City University of New York (CUNY) that have traditionally focused primarily on in-person courses. Building on research into the scholarly habits of CUNY students, we undertook a qualitative study to explore the lived experiences of CUNY students and faculty using technology in online and hybrid courses. Our research revealed how students and faculty use online tools in support of learning and illuminated a range of experiences determined by differing access to and skills with technology, the usability of required technology platforms, availability of support, and communication and connection in online courses. Insights from this research can inform the development and deployment of online learning tools and support for students and faculty at CUNY and on other commuter college and university campuses.

SUMMARY FINDINGS AND RECOMMENDATIONS

- CUNY students and faculty use myriad technologies intentionally and creatively to achieve learning goals.
- Faculty feel overwhelmed by instructional technologies available to them for teaching hybrid and online courses. More consistent training and support for technology use in teaching is indicated.
- Students do much of their work for hybrid and online courses on campus, and require access to robust wifi as well as computer labs and printing; they may have inconsistent access to technology off campus. Maintaining and upgrading campus-based computing support and infrastructure is key to student success.
- Smartphones are the most common technology that students have access to, though limitations of required digital platforms constrain their ability to use smartphones for their academic work. University supplied/supported platforms (e.g., Blackboard, Microsoft365, etc.) should be evaluated for mobile-readiness, and when possible technologies should be selected based on mobile usability.

- Both students and faculty bring into the classroom functional and user experience expectations based on consumer-facing technologies, and often report that required academic digital platforms fall short. CUNY should leverage its position as a significant customer to seek improvements to bring educational technologies in line with commercial standards in user experience and usability.
- Students and faculty express a desire for more connection and community in their hybrid and online courses; increased use of synchronous or asynchronous video could meet these needs.
- Students expressed frustration with a lack of technical support for online learning outside of business hours. Recommendations include moving course deadlines to within business hours and increasing after-hours support CUNY-wide.
- Students and faculty are interested in more training and support around technology used in hybrid and online courses but are largely unaware of existing training opportunities. Increasing awareness of campus training opportunities and creating/promoting online training opportunities across the university (for Blackboard, in particular) may address this need.

INTRODUCTION

As librarians at the City University of New York, we most often observe and work with students outside of classes when they use the library to study and do homework, to access print and online resources, and for assistance with their research. As online learning has expanded at our colleges, we have seen increasing numbers of students in our libraries and computer labs specifically engaged in work for their hybrid and online courses. To explore and better understand student and faculty lived experiences with technology in their hybrid and online courses, we undertook a qualitative study at three CUNY colleges.

Since increasing the availability of online courses can facilitate student retention and graduation (Blackmon & Major 2012; Kegley, Toteva, & Wolf 2016), it's important to know more about student and faculty experiences in these courses to inform better institutional decisions about technology. This research is especially important at publicly-funded institutions like CUNY that enroll many lower socioeconomic status students, who may have less access to technology off campus, and that may face budgetary challenges which can constrain technology investment. Understanding student and faculty experiences with technology in online courses is imperative to designing and supporting online education with student success in mind.

ONLINE LEARNING AT CUNY

Hybrid and online instruction is growing at CUNY. In spring 2017 there were 13,705 undergraduate courses designated as fully online (863), hybrid (12,941) or partially online (197) (City University of New York 2017b).¹ The push to increase online learning has primarily focused on increasing access and student success. The CUNY Master Plan states that the university has a goal of increasing hybrid and online courses in the coming years, in particular to “expand access and appeal to a broader base of students.” The importance of providing “faculty development and support to aid the creation of more dynamic online course offerings” is also acknowledged (City University of New York 2016). Results from the most recent Student Experience Survey

¹ This number excludes students enrolled in CUNY's fully-online School of Professional Studies.

conducted in spring 2016 suggest that many CUNY students also are interested in increased opportunities for online learning: 40% agree or strongly agree to wanting more online courses, and 45% report the same for hybrid courses (CUNY Office of Institutional Research and Assessment 2017).

Along with the increase in hybrid and online classes at CUNY, use of open educational resources (OER) has also been on the rise. All three colleges launched OER faculty development programs in 2014-15, and in 2017 and 2018 the New York State Department of Education provided \$4 million to CUNY in support of OER which has led to initiatives on all 24 campuses. OER are more often than not delivered digitally and are often used in hybrid and online courses, and as with these courses, technology access and support impacts student and faculty experiences of OER.

The colleges included in our study highlight the range of undergraduate institutions at CUNY, and include Borough of Manhattan Community College (BMCC), New York City College of Technology (City Tech), and Brooklyn College. All three colleges—like the university more broadly—offer a mix of in-person, hybrid, and online courses, though the exact balance of courses available varies from college to college and between departments and majors. Our research on student and faculty experiences with online learning at these three CUNY colleges continues our broad qualitative studies of the scholarly habits and experiences of CUNY undergraduates which has focused on how, when, where, and with what tools they do their academic work (Smale & Regalado 2014, 2017; Amaral, Regalado & Smale 2018).

OUR RESEARCH

We created two online questionnaires to gather data: one for students and another for faculty² At the beginning of the fall 2015 semester we emailed the faculty teaching all hybrid and online courses offered at each of the three colleges and invited them to ask their students to complete our online student questionnaire. In spring 2016 we did the same with faculty, and emailed instructors of hybrid and online courses to invite them to complete our online faculty questionnaire. Each questionnaire was open for

² Questionnaires are available in CUNY Academic Works:

https://academicworks.cuny.edu/ny_pubs/146/, https://academicworks.cuny.edu/ny_pubs/145/

responses throughout the semester in which it was distributed, and no compensation was provided for either student or faculty participants. We received approval from each college's Institutional Review Board to conduct this research with students and faculty.

The questionnaires focused on student and faculty experiences with technologies they used in their online and hybrid courses. Along with specific technology questions, participants were provided with free-text fields to share how technology contributed to and hindered successful engagement in their courses. Both students and faculty also offered thoughts on how to make their online and hybrid class experiences better if they were able to "wave a magic technology wand."

We received 472 responses to our student questionnaire and 77 from faculty. As qualitative researchers, our aim was to learn about the details of student and faculty lived experiences rather than strive for statistical significance. Since we used a convenience sample to recruit participants in our study we included all responses in our analysis, even from respondents who did not answer every question. Questionnaire responses were imported into the Dedoose platform for qualitative analysis. Responses from students and faculty were coded and analyzed to elucidate themes and facilitate further analysis.

FINDINGS

Analysis of our student and faculty questionnaire responses revealed much about their use of technology in hybrid and online courses. Student respondents were enrolled in a range of liberal arts, sciences, and professional degree programs, and most attended college full time. Faculty participants also represented a range of disciplines and most indicated that they taught hybrid and online courses as well as used technology when teaching in-person courses. As we have found in prior studies on technology use at CUNY, there is broad consistency between the responses from all three types of college in our study: a community college, a comprehensive college, and a senior college (Smale & Regalado 2014, 2017). Thus, we discuss our results here in aggregate, not for each individual school.

INSTRUCTIONAL CONTEXT

Faculty identified the technologies they use in their hybrid and online courses, selecting from a list we provided. The overwhelming majority of faculty who responded to our questionnaire use content delivery platforms including Blackboard. Use of online collaboration tools, presentation software, and streaming media was also very common. Fewer faculty reported the use of feedback tools, lecture-capture or screencast tools, and data manipulation applications. Several faculty provided additional information about technologies that they use in their courses that did not fit into one of the categories provided. Responses included video and audio production software, discipline-specific simulations, and platforms offered by textbook publishers.

Faculty told us how they sometimes struggle to effectively create and curate the technology environment for their hybrid and online courses within the constraints of the technologies available through the university and on the open web. As one faculty member stated:

I have to cobble together the best experience I can from a whole slew of different technologies, each of which has its merits but falls short in some other way, and I have to pick just the top 3-4 technologies for a single class, because otherwise the students get overwhelmed.³

This sampling of the technology milieu within hybrid and online courses provides context for looking at how our students engage through their own technologies.

CENTRALITY OF CAMPUS COMPUTERS

Students were asked to indicate the frequency with which they use five technologies for their hybrid and online coursework: desktop computer, laptop computer, smartphone, tablet computer, and e-reader. They were also asked in which locations they use the technology: home, campus, and commute. Most students who responded to our questionnaire own or have access to a smartphone and use it often for their

³ All quotes are verbatim as typed by students and faculty into questionnaire responses, including any spelling and grammatical errors.

hybrid and online coursework; only four student respondents reported that they do not have a smartphone. However, use of the other technologies for their coursework is more varied, and some students reported that they do not have any access to a desktop computer at home. E-reader access and use was very low. For students who completed our questionnaire, the majority use a combination of a laptop at home, a desktop computer on campus, and their smartphones in all locations to complete their hybrid and online coursework.

We also asked students what technology or combination of technologies “makes it work” for them in their hybrid and online classes, and the majority expressed a strong preference to do their coursework on a laptop and/or desktop computer. While many did note that a smartphone (and to a lesser degree a tablet) was useful for access on the go, it was clear they considered a smartphone to be insufficient as the sole device for their academic work.

With a scant few exceptions, our students are not distance learning students—they are taking hybrid and online courses in conjunction with in-person classes. We know from the 2016 Student Experience Survey results that most CUNY students (78%) use the computer labs on campus; the reasons most often cited were that they do not have a printer at home and that it is more convenient for them to work on campus (CUNY Office of Institutional Research and Assessment 2017). As we have observed in our libraries, and as our research confirms, students in hybrid and online courses are using campus computers to complete homework, assignments, and even exams in their hybrid and online classes, as one student noted:

I would say it is the campus computer in which I do most of my work for the hybrid/online class.

Students also shared details about other locations in which they do their hybrid and online coursework. Some use the public libraries, often near their homes, to access computers and occasionally printing. Others use down time at their jobs—on both their own mobile devices or the computer provided to them—to work on hybrid and online classes, as another student shared:

I do a lot of my academic work using a desktop computer at my job during my lunch break or down time.

ACCESS TO TECHNOLOGY

With the exception of smartphones, CUNY students may have inconsistent access to technology or Internet off campus that is required for their academic work (Smale & Regalado 2014, 2017). While faculty responses to the question “which technologies created barriers for yourselves or your students” tended to focus on software rather than hardware, some faculty members did acknowledge that consistent access to reliable technology for students completing their hybrid and online coursework could be problematic. One faculty member noted that:

A basic internet connection at home by some students is a barrier for good performance.

While another instructor suggested that:

It would be super if I could give our students good laptops to use at home.

Students—and to a lesser extent, faculty—also reported their frustration with college-provided wifi on campus. Students noted that wifi was often slow, unreliable, and inaccessible, especially if they were attempting to complete high-bandwidth assignments such as watching a required video in their hybrid or online course. For students, the lack of reliable wifi often pushed them to use library or campus computer labs for their hybrid and online coursework, as it did for this student:

I have to use the schools computers if I'm taking the online courses, as the wifi slows down.

For faculty the state of wifi on campus sometimes meant that they struggle to incorporate technology into their teaching, both during the in-person sessions for hybrid courses and for fully in-person courses that used the LMS or other technologies.

Given that CUNY students spend an average of 45-60 minutes commuting each way to get to campus (CUNY Office of Institutional Research 2012), students expressed the desire to access their courses on mobile devices, especially smartphones. A few students successfully completed most, if not all, of their course activities on their smartphones, including one who described the technology that makes “it all work”:

My smartphone. I am able to access my grades, type up a paper, review a power point, etc. in the palm of my hand.

Yet other students acknowledged that access on smartphones is currently less than ideal. In “magic technology wand” answers, students wished for:

- *seamless and glitch free smartphone integration*
- *better support for mobile devices*
- *A great app that lets you save and submit assignments straight from your smartphone*

EXPECTATIONS OF ONLINE ENVIRONMENTS

Responses from both students and faculty contained implicit, and sometimes explicit, expectations for educational technology to perform as well as and in similar ways to technology they used in other settings. These expectations for high levels of usability, user experience, and support set a bar that educational technology is not meeting in many cases.

Students and faculty both specifically noted challenges in using Blackboard during their hybrid and online courses. For both groups, Blackboard often featured in answers to questions about the most frustrating or barrier technology in these courses, and faculty noted both their own challenges as well as those of their students. Poor usability was a primary concern; many respondents characterized Blackboard’s design and interface as “cluttered” which made it challenging for faculty to set up and administer and for students to locate, participate in, and submit assignments. Students and faculty also compared Blackboard unfavorably to commonly-available commercial Internet applications that they use in and outside of their academic lives, such as banking, shopping, and social media.

Another common frustration reported by students and barrier reported by faculty related to when Blackboard and other college-provided platforms were unavailable during times when students and faculty needed to use it for their hybrid and online courses. Students and faculty acknowledged that while some outages were due to unforeseen circumstances, others were the result of required, scheduled maintenance. In response to what they would change with a magic technology wand,

some noted their wish for improvements to the availability and reliability of required academic technology, as did this student:

I would make sure that the website being used never has to be 'under construction' and I would make sure it is always running as quickly and efficiently as possible.

The overall user experience in hybrid and online courses was also mixed. Faculty described challenges involving both technology and campus resources. For students and faculty, unreliable campus wifi, inadequate classrooms and computer labs, and limited mobile access can add up to subpar user experience in hybrid and online classes. A student described being thwarted in several ways from completing coursework:

The most frustrating was when you're on a timed schedule with other classes that are all priority and Internet is slow, computer labs are full, and when you need certain tools only. Like when certain assignments you can only do on a desktop and can't do on my iPad or tablet, it's inconvenient and harder to do the assignment and end up getting backed up with something.

Among responses from faculty, several noted that they found freely-available academic websites or platforms offered by textbook publishers to be easier to use, and some wished that they could replace Blackboard entirely with those platforms. Several faculty members attempted to integrate other websites and platforms with Blackboard, with mixed success. However, while some students appreciated the increased usability of these other platforms, one student specifically noted the financial burden that some external solutions place onto students, in this case a requirement to spend over \$100 to participate in the course:

Some professors also don't use Blackboard, and require us to use a different website where we have to pay.

TIME AND SUPPORT

Both students and faculty articulated hopes and frustrations with how hybrid and online classes impacted their ability to manage their time. Underlying these hopes and frustrations we detect a shared expectation of technology as a time saver. Student

responses clustered around their experiences with deadlines, support, and notifications and were framed for many by their perception that the workload in their hybrid or online course was heavier than in their face-to-face classes. Sometimes these three were entangled in the student experience as they were for this student describing frustrations with online learning:

more work than on campus classes, shorter deadlines, less examples of what exactly is wanted in assignments. some professors also are less involved.

Some students mentioned challenges with meeting deadlines in their hybrid and online courses, including a small subset with submission deadlines for hybrid and online courses that occurred at the same time as the student was attending an in-person class. Further, assignment deadlines set to times when support from either the instructor or the college help desk is not typically available, for example, 11:59pm, sometimes prevented students from successfully submitting their work to an online system.

More commonly reported were student frustrations with the inflexibility of deadlines in Blackboard, which may not allow for submissions past the designated due hour. As well, a number of students shared that technical problems with the platform, their computer, or their Internet connection could impact their ability to submit assignments by the deadline. This response to what was most frustrating by this student was similar to many others:

Sometimes when trying to access blackboard to check or post assignments, the system is temporarily down which is frustrating especially when doing group assignments that have a strict deadline.

The related issue of support also loomed large in student replies, with students noting that they wished for more availability of both technical and academic (that is, from their instructors) support. The main issue students reported with technical support was its limited hours of availability compared to anytime online access to the platform. Students also wished they could get support and feedback from their instructors right in the moment. One student wished for an "online chat pop-up with instructor," and another envisioned:

A place where you can get feedback or questions answered right away from your professor. Like an instant messaging portion rather than email, which takes time.

Tied into deadlines and support was a desire on the part of students for increased alerts or notifications as a strategy that would help them keep track of the work in their hybrid and online classes. Expectations for how technology can be leveraged for this purpose may be set by experiences beyond academe. This student specifically draws on the parallels between Internet applications they use in their everyday life to suggest applicability to their coursework:

I would get an alert everyday when my online assignments are coming due. Just like my bank alerts me when bills are coming due a week in advance. That will be great.

In their responses faculty also recognized the ability of online applications to send notifications as a potential benefit to students, with one faculty member wishing for “an app that would provide notifications for students on their phones.” Another faculty member had a more elaborate, and intrusive, wish:

The magic technology would be an alarm or reminder that will not stop buzzing on their phones until the submit their weekly assignment.

Teaching hybrid and online courses also impacted faculty’s own time, noting, similar to students, an increase in workload in their hybrid and online courses. Faculty also expressed their desire for support in teaching online. Several mentioned their own inexperience with technology as a barrier to fully engaging with online teaching tools. Some reported that they use Blackboard because it is the technology they know, not because they feel it is the best technology to use. Other faculty expressed a wish that they had more instructional technology support to assist them in designing and implementing their hybrid and online courses. This faculty member’s comment reflecting on the range of applications and platforms they use in their courses sums up the feelings of many:

We are in an age of tech resource overabundance and I just wish there was a way (and time) for me to curate it and keep track. Just listing the above software suites was surprising in itself because I'd forgotten I even use some of the items I listed.

COMMUNITY AND CONNECTION

Both students and faculty expressed a wish for more interaction—synchronous and asynchronous—in their hybrid and online courses. Some faculty and students concurred with the assessment of one faculty member that “the best experience is face to face and technology can't duplicate that.” Some students expressed the same frustration as this student at “the inability to have that person to person interaction that would encourage students to ask questions.” At the same time faculty also wished for more interaction with their classes, specifically for students to be more engaged in their hybrid and online coursework. The class discussion board was mentioned frequently. While some faculty perceived a lack of student engagement in that space, other faculty noted that some students who did not participate in face to face class sessions were more involved in the online forum.

In addition to interactions, students reported that they would appreciate greater and more timely feedback from faculty. Unfortunately, a few students indicated that they had not received feedback on any of the assignments in a course. More productively, many students suggested that more video or interactive applications reviewing and expanding on both course content and technical support would make their experience in hybrid and online courses better. At the same time, faculty reported their struggles with creating or including videos in their courses, usually framed as a lack of technical expertise or time. One faculty member wished that:

I could discuss what I'd like to have happen and someone else would create it (e.g. incorporating quiz questions into PowerPoint slides).

While students wished for more guidance and instructions from their instructors, faculty noted that students would benefit from more training in Blackboard and other required technologies before beginning a hybrid or online course. Despite the near ubiquity of mobile computing technology, students do not necessarily come to college ready to use the required technologies. Students, too, are aware that technical skill has an impact on their experience in hybrid and online courses. As one student astutely noted:

It's not as intimate as being in a classroom environment. Sometimes technology becomes more of the focus than the content.

Many student responses noted a lack of community and a sense of isolation. For example, a student felt their course was “self service,” and another expressed frustration “that there is no teacher.” The absence of a class community can impact learning, as this student noted in response to what was most frustrating:

When you may have a question and you never been to class for online courses so you can't reach out to other students for help.

Other students wanted the opportunity for in-person meetings, including a student who would use the magic technology wand to ask for “a meet and greet with the professor,” echoing this poignant comment from another student:

I do miss seeing the faces of my peers n prof.

RECOMMENDATIONS

The lived experiences of students and faculty in this study suggest several aspects of hybrid and online courses that need attention as online learning continues to expand at our institutions. We cannot assume that students taking online courses are distance students who do not come to campus. Most students enrolled in online courses at our commuter colleges are also enrolled in hybrid or face-to-face courses, and this has important implications. While online courses do not require classroom space, students in the courses will often be using other spaces on campus, such as the library and computer labs, and will require access to services such as printing. As well, some students have inconsistent or limited access to technology in their homes, making the on-campus access to technology resources and space even more important.

Students in hybrid and online courses may also require more training and technical support, as faculty use more and varied technologies to deliver content and create interactive experiences. As one faculty member noted, students “are savvy with gadgets and software that enhance their personal lives, but they lose confidence when navigating technologies for learning.” The needed support will not always fall during the institution’s help desk hours, as noted by those students who have 11:59 p.m. assignment deadlines.

While many of our study participants articulated frustrations with Blackboard, neither students nor faculty are likely taking advantage of capabilities that might

address some of those frustrations. For example, notification or alert options are available in Blackboard and other technologies, though they may be more limited than what students and faculty are accustomed to from banks and other companies. This study indicates that many students and faculty may not be aware of the options available and may require additional training to better leverage their instructional technologies.

Several recommendations emerge from this study that could facilitate student and faculty work in hybrid and online courses. The most frequently mentioned sources of frustration by both groups were campus wifi and Blackboard. One student went so far as to wish for “a hybrid class that is pre downloadable that does not require internet access.” Without robust wifi networks on campus, students and faculty struggle to complete their work and lose time they can ill afford to lose. Technology infrastructure is costly; however, as hybrid and online course offerings increase, campuses need to invest adequately in these networks. While both faculty and students expressed a desire for more video and interactivity, including livestreaming, these will only increase frustration and contribute to poor user experience if delivered without improvements to infrastructure.

Yet increasing the use of video and creating opportunities for interaction will be important to improving the sense of community and connection in hybrid and online classes. There were calls by students and faculty to use common social networking and communication technologies, such as Facebook, Skype, and FaceTime, which could potentially lessen the sense of isolation felt by some students. In order for faculty to take advantage of these technologies that have the potential to positively impact community and connections in hybrid and online courses, they will need additional support from instructional designers and instructional technologists, as faculty suggested in their responses.

The marked difference in usability and user experience that students encounter with online educational technologies such as Blackboard as compared to what they experience with other websites, from news to social media sites and beyond, is reflected in many of the comments about the students’ most frustrating experiences. Students expect just-in-time and point-of-need support similar to that provided by technology companies and banks, for example. Many websites now provide a pop-up customer service option to ask questions in the moment, addressing the magic wand wish of several students. Alerts, similar to those provided by banks for bills, were another frequent request from students. Overall, CUNY students and faculty, both,

desire a user experience with educational technology for hybrid and online courses that aligns more closely with the usability of consumer-facing technology used daily by most of us.

ACKNOWLEDGEMENTS

A grant from The City University of New York PSC-CUNY Research Award Program supported this work. We are grateful to the CUNY students and faculty who completed our questionnaires and shared their experiences with us.

REFERENCES

- Amaral, Jean, Mariana Regalado and Maura A. Smale. 2018. "A Decade of Research at Urban Commuter Colleges." In *Academic Libraries for Commuter Students: Research-Based Strategies*, edited by Mariana Regalado and Maura A. Smale, 69-83. Chicago: American Library Association.
- Blackmon, Stephanie J. and Claire Major. 2012. "Student Experiences in Online Courses: A Qualitative Research Synthesis." *Quarterly Review of Distance Education*, 13(2), 77–85.
- City University of New York. 2016. *Master Plan 2016-2020 – The City University of New York*. <http://www2.cuny.edu/about/masterplan/>
- . 2017a. *Mission & History – The City University of New York*. <http://www2.cuny.edu/about/history/>
- . 2017b. *Online Instruction at CUNY – The City University of New York*. <http://www2.cuny.edu/academics/current-initiatives/academic-technology/online-instruction/>
- CUNY Office of Institutional Research. 2012. *2012 Student Experience Survey*. <https://www.cuny.edu/about/administration/offices/ira/ir/surveys/student/SES2012FinalReport.pdf>
- CUNY OIRA (Office of Institutional Research and Assessment). 2016. *A Profile of Undergraduates at CUNY Senior and Community Colleges: Fall 2015*. City University of New York. http://www2.cuny.edu/wp-content/uploads/sites/4/media-assets/ug_student_profile_f15.pdf

- . 2017. *2016 Student Experience Survey*. City University of New York.
<https://public.tableau.com/views/2016StudentExperienceSurvey/MainMenu>
- Smale, Maura A. and Mariana Regalado. 2017. *Digital Technology as Affordance and Barrier in Higher Education*. New York: Palgrave Macmillan.
- . 2014. "Commuter Students Using Technology." *EDUCAUSE Review Online*, September/October.



This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/).