

COVID-19 implication on higher education: case study at Medgar Evers College - what we have learned and realized through abrupt online conversion

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Abstract

The unprecedented COVID-19 global pandemic radically changed the way we do things. The face mask is now a must to put on, and you do not handshake anyone. We are not even allowed to go near any person within six feet to maintain social distancing. The sudden pandemic lockdown forced all face-to-face classes into online classes overnight. It added immense pressure and stress to both instructors and students that brought many negative consequences. The sustained disruption has challenged higher education institutions to maintain academic continuity and put them into a grave financial situation due to a substantial decline in cash flow. This paper presents a case study of the transition to online learning for the Computer Information Systems classes at Medgar Evers College during the COVID-19 pandemic lockdown. We present the method we used to maintain academic continuity, examine the challenges of abrupt online transition, and assess what we learned from its outcome. In conclusion, we discuss the threats and opportunities for higher education institutions in the post-pandemic, which might change the entire landscape of higher education.

Introduction

The unprecedented COVID-19 global pandemic crisis radically changed the way we do things. The face mask is now a must to put on, and you do not handshake anyone. You are not even allowed to go near any person within 6 feet to maintain the social distancing. The lack of social interaction, fear of a pandemic, and working at home via Zoom or other means of online communication only put immense stress and pressure on people and the typical non-issues became heightened.

The sudden outbreak of the COVID-19 pandemic and lockdown has upended business as usual for colleges and universities. All classes in typical face-to-face learning shifted to remote learning almost overnight. Confusions, fear, anxiety about uncertainty, and nervousness about the unprecedented pandemic crisis added immense pressure and stress to students, faculty, and staff alike. One thing was clear: the pandemic's impact on Higher Education Institutions (HEIs) would not be trivial. Any disruption of continuous and successful delivery of instructions and campus life to students could bring detrimental consequences, such as a decreased cash flow due to the substantial decline in enrollment. While class closures, dips in enrollment at the beginning of a new semester, and cancellations may be temporary, any sustained long-term disruption by the lockdown will result in HEIs experiencing a financial crisis and possible closure of campuses if left unaddressed.

Another threat to HEIs could be the effectiveness of online instruction and the changes in students' preferences in higher learning. Perhaps, the HEIs maintained academic continuity by converting their face-to-face classes to online classes during the lockdown. However, both students and faculty transitioned to online education at lightning speed, resulting in less content coverage and missing dynamic in-class activities and interactions. In some cases, faculty struggled to keep up with the fast-paced technology of online learning tools and could not teach online as effectively as in classrooms. Less satisfied students will start questioning the worth of education they get from HEIs and look for cheaper alternatives like for-profit online schools. Additionally, some students found online learning convenient and easy to pass courses due to less content coverage. They will push HEIs to maintain various instructional modalities even after the pandemic lockdown. Consequently, HEIs will experience more

enrollment challenges and additional expenses to keep multiple instructional modalities, resulting in a bigger cash flow problem.

Recent research shows that those HEIs serving students of color, and low-income backgrounds are the hardest hit by the above concerns. In this paper, we present a case study of the Department of Computer Information Systems (CIS) at Medgar Evers College (MEC), a predominantly black institution with approximately 96% minority and 73% female population, located in a poor region of Central Brooklyn in New York City. We present what it has learned and realized through abrupt online conversion due to the COVID-19 pandemic lockdown. In particular, we examine the pandemic lockdown's impact on enrollment at the university level, college level, program level, and course level to identify their trends and their implications on the institution's cash flow. The data shows that the lockdown's impact on MEC's enrollment was more significant and challenging than those findings in recent research reports. We also examine the students' preference of registering for face-to-face classes versus online classes for the Fall 2021 semester when the campus reopens from pandemic lockdown. We discuss the case study's findings and conclude that it is urgent for HEIs serving economically disadvantaged students and minority students to redesign their business model to survive in the post-pandemic world.

Literature Review

The COVID-19 pandemic, also known as the coronavirus pandemic, was first identified in December 2019 in Wuhan, China that was later declared a pandemic on March 11, 2020, by the World Health Organization [1]. Since then, the pandemic has affected all lives worldwide, resulting in more than 3.3 million people dying as of May 2021 [2]. This ongoing pandemic also resulted in significant global social and economic disruption. In the United States of America, President Trump declared a national emergency on March 13, 2020. The first COVID-19 deaths were reported in New York, resulting in abrupt closings of all New York City public schools on March 16, 2020 [3]. As part of the City University of New York (CUNY), MEC was forced to abruptly close the entire campus on March 16, 2020, and converted all of its face-to-face classes to online classes. A little over a year has passed since then, MEC campus is still closed, and it is now preparing to reopen in the Fall of 2021.

Numerous educational institutions and public areas worldwide have been partially or fully closed during the COVID-19 pandemic, and the implications on HEIs have been substantial. In this section, we review the top three pandemic implications on HEIs that have been reported in recent literature. Some of those implications might last longer than others, and they might change the entire landscape of the higher education industry going forward.

The first implication of the COVID-19 pandemic on HEIs is the substantial decline in enrollment. The National Student Clearinghouse Research Center released a report on Fall enrollment during the COVID-19 pandemic, which included data from most institutions in the United States. The report shows that the U.S. college enrollments in Fall 2020 have declined 2.5 percent, twice the rate of decline in Fall 2019, which was approximately 400,000 students lost [4]. In particular, the community college enrollment, which is often comprised of the largest share of students of color and students from low-income backgrounds, had the sharpest decline with freshman enrollment down 13.1 percent. The hardest-hit programs include precision products, law enforcement, firefighting, and mechanic technology, maybe because these skills are difficult to teach online. It also shows the number of high school graduates going straight to college decreased by 22 percent in Fall 2020, primarily due to the losses of lower-income and urban high school students. That has serious implications for this generation of students and our national economy since they would be vulnerable to pursue higher education anytime soon.

The second implication of the COVID-19 pandemic on HEIs is the financial crisis driven by the substantial decline in enrollment and the major recession of global economies resulting from a significant period of business lockdown. In the recent Brookings' Brown Center Chalkboard discussion forum, Stephanie Cellini, Nonresident Senior Fellow at the Brown Center on Education Policy at Brookings, found the striking difference between the dramatic decline in community college enrollment in Fall 2020 and the previous enrollment results. Typically, the enrollment in community colleges increases during the recession because an unemployed individual seeks new skills and first-time students look to gain a credential before embarking on a career path. However, in this pandemic recession, the pattern is

reversed. Declines are particularly sharp among first-time students and students of color, raising critical concerns about increasing inequality in the coming years. In contrast, enrollment is up in for-profit and online colleges. The research repeatedly finds weaker student outcomes for these types of institutions relative to community colleges, and many students who enroll in them will be left with more debt than they can reasonably repay [5].

The financial challenges faced by HEIs seem to be more significant problems. In its recent research report, the Deloitte Center for Higher Education Excellence depicted the most immediate challenge for most higher education institutions involves their cash flow [6]. A substantial drop in tuition income due to a decline in enrollment, loss of additional revenues from fees, room and board, and other auxiliary services, unexpected expenses including partial refunds on tuition and the cost of technology upgrades to scale virtual engagement modalities, and cost of implementing safe and secure return to normalcy will hemorrhage an institution's cash flow. Prestigious institutions, such as Harvard (Cambridge, MA, USA) or Oxford (UK) universities, are well placed to weather the coming storm with their rich endowments. But places that fall lower down the league tables are vulnerable, especially if international student fees form a big part of their income [7]. Even worse for those HEIs already financially stressed or operating from a deficit position before the pandemic, unanticipated short-term expenses and longer-term enrollment declines will likely threaten their solvency, potentially forcing numerous closures and mergers. Similar concerns and outlooks for HEIs in other countries are addressed in a recent report prepared by the technical team of the UNESCO International Institute for Higher Education [8].

The third implication of the COVID-19 pandemic on HEIs is the change of students' learning behaviors due to the lengthy lockdown period. The COVID-19 campus closures have been going on for over a year. Classes have been delivered to students remotely, either synchronously or asynchronously online, or combining face-to-face learning and online learning in hybrid form. Research shows that ordinary people acquire new habits if certain actions are repeated daily for 18 to 254 days [9]. Students, faculty and staff, and other stakeholders have been pushed out of their comfort zones to convert traditional face-to-face interaction into online engagement for over a year. They now realize that they liked some COVID-19 schooling changes and adapted to new online habits. For example, students found the online or hybrid classes were convenient and easy to pass courses, while faculty liked the flexibility of teaching courses online at home. As a result, some of them will push HEIs to maintain various instructional modality offerings even after the COVID-19 pandemic [5]. This implication would accompany several significant consequences to the future sustainability of many HEIs. For example, the downgrading of the student experience and the downgrading of the degree's value would make their graduate employment difficult, especially in the COVID-19 recession [7].

Also, the instructional modality changes sped up student's access to free digital learning content available. As students discovered that they could learn course contents without paying any fees, why would they enroll in HEIs and pay high tuition? Some might say that education is not only about learning the contents but also learning about other important social qualities that students acquire at HEIs, such as interaction with faculty and peers, campus life, and other networking opportunities. That may be true at prestigious colleges and universities. However, HEIs or community colleges have not provided enough such interaction and social networking opportunities to their students. Therefore, the enrollment decline at community colleges will be inevitable in the future.

Moreover, as more students seek a quality online learning experience, new entrants with advanced technological solutions using Artificial Intelligence (AI) and Deep Machine Learning (DML) jeopardize the existence of those struggling HEIs in the post pandemic world.

Research Methodology

We present a case study of the Department of Computer Information Systems (CIS) at Medgar Evers College (MEC) and how it managed the challenges of abrupt COVID-19 pandemic lockdown to maintain academic continuity by establishing and executing the Emergency Academic Contingency Processes (EACP). The critical component of EACP was converting face-to-face learning to online learning within a week and constantly monitoring the effectiveness of online instruction weekly. It considered, specified, and monitored every possible risk that could arise from the abrupt conversion, such as students,

faculty, and staff being unaware of what they needed to do, having to learn new things at lightning speed, and feeling a sense of despair.

Secondly, we examine the impact of the pandemic lockdown on enrollments at the university level, college level, program level, and course level by comparing the enrollment data between pre-pandemic lockdown and during the pandemic lockdown. We compare findings with the final enrollment data reported by the National Student Clearinghouse Research Center to measure the level of impact on the enrollment at MEC.

Thirdly, we examine the effectiveness of the online instruction during the pandemic lockdown by comparing the grade distributions of two School of Business (SOB) representative CIS courses from Fall 2019 (pre-pandemic lockdown) to Fall 2020 (during pandemic lockdown). In specific, we want to study any sign of grade inflation or jump in withdrawal. The grade inflation during the pandemic lockdown seems to be inevitable since most instructors were lenient in grading as students were struggling in the pandemic crisis including unemployment, extra caregiving, overwhelming hospital jobs, poor internet access, etc. However, any increasing trend of withdrawal from courses might indicate that students were not satisfied with the instruction or overwhelmed to follow the online instruction.

Finally, we examine the pandemic lockdown's impact on student's preference of instructional modality by comparing pre-registration data of face-to-face classes versus online classes for the Fall 2021 semester when the campus reopens from pandemic lockdown. A student's strong preference for registering for online classes over face-to-face classes might prove our suspicions that the forced online instruction due to the lengthy pandemic lockdown has changed students' behavior for their higher education.

Emergency Academic Continuity Processes (EACP)

On January 28, 2020, CUNY's Chancellor, Rodriguez, sent out his first communication message to all CUNY stakeholders about the seriousness of the developing COVID-19 crisis (CUNY, 2020). After two coronavirus cases in the New York City area have been confirmed, he mandated all CUNY Spring 2020 classes to be converted to distance education on March 11, 2020. With the directions from the CUNY Central Office and Office of Academic Affairs at MEC, the School of Business led by its dean discussed various strategies to maintain academic continuity during the lockdown.

As a result of that meeting, CIS established the Emergency Academic Continuity Processes (EACP) to maintain academic continuity during the unprecedented pandemic lockdown. The challenges with establishing and executing EACP were how to quickly respond to the unknown risks that could arise during the unprecedented pandemic lockdown. Note that disasters and unexpected events do happen. Any mission-critical organization has a disaster recovery plan and a risk management plan to cope with them, assuming that the affected area is limited, and the recovery time could be estimated. On the contrary, the abrupt pandemic lockdown affected broad regions, including entire New York City and New York State, and no one knew how long it would last. Consequently, EACP needed to be agile and flexible enough to respond to unknown risks promptly. The essential components of the EACP are shown in Figure 1. The description of each component follows.

Define and Establish EACP

The goals and objectives:

- Make sure that the sudden change of modality would not confuse faculty or students.
- Focus efforts on ensuring teaching continuity, guaranteeing equity, monitoring effectiveness, and efficient support.
- Design pedagogical measures to evaluate training and generate mechanisms to support learning for disadvantaged students.
- Provide students and faculty the guidance and training for online learning platforms and solutions.
- Establish clear communication channel and designate a point person for the department.
- Document the pedagogical changes introduced and their impacts weekly.
- Learn from mistakes and plan responses as quickly as possible.

- Identify possible risk scenarios and plan contingency (i.e., death of faculty and students, unexpected disruption due to stress and anxiety, etc.).
- Monitor, control, assess, and evaluate risks each week.
- Promote internal reflection on the renewal of the teaching and learning model.

Assuring Online Delivery Platform and Faculty Readiness

We chose Blackboard as the main instruction delivery platform since most faculty and students were already familiar with it. For those classes needed to be broadcasted real-time, we provided licensed online conference solutions, including Blackboard Ultra, Cisco WebEx, Zoom, Google Hangout, Skype, FaceTime, and echo360. We allowed faculty to use other solutions if students agreed to use them. CUNY implemented a week of an instructional recess from March 12, 2020, to March 18, 2020, to prepare faculty, students, and staff to operate in full distance education mode. During this period, we required all faculty to participate in Blackboard training and be certified.

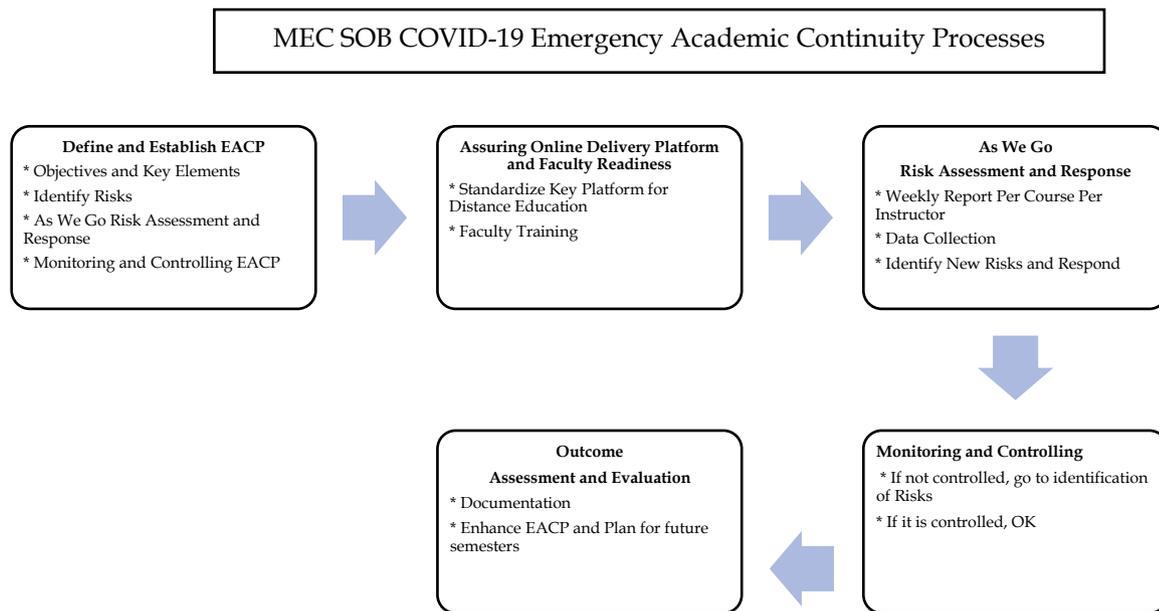


Figure 1. Medgar Evers College School of Business Emergency Academic Continuity Plan Processes

As We Go Risk Assessment and Response

We designed and distributed a simple but effective weekly assessment report template to all instructors. The objective was to remind each instructor to assess each week's class and plan next week's lesson. We required them to submit a brief weekly report to the departmental designated person by the end of each week throughout the semester. The departmental designated person compiled the report weekly and submitted it to the Department Chair for review and evaluation (Appendix 1). The Department Chair discussed any issues found with the faculty to mitigate them as quickly as possible.

One immediate problem we found was matters of equity and access. Some students did not have computers or internet access to access online instructions. Motivated by these concerns, CUNY decided to institute a recalibration period from March 27, 2020, to April 1, 2020. During this period, all scheduled courses were canceled, and we provided students with access to the equipment they needed to complete their semester requirements. It also afforded faculty time to consider best practices emerging across the virtual classrooms for example, the asynchronous online instruction. Those lost time due to the instructional recess and the recalibration time were made up by shorting the Spring Recess.

Monitoring and Controlling

Department Chair constantly monitored the progress of the online instruction delivery. For any issues found, Department Chair worked with the faculty to resolve them as quickly as possible. Also, SOB hosted periodic workshops for faculty and students to share best practices of online learning. Moreover, SOB provided students with the sources of available financial assistance and free food supplies.

Outcome Assessment and Evaluation

We required all classes to be evaluated according to the course evaluation template designed and distributed by the Office of Academic Affairs. A post-evaluation conference with each faculty was conducted to give feedback and comments for possible enhancements. Any findings refined the EACP to plan future semesters until the pandemic crisis is over.

Findings and Results

Owing to the full support from the CUNY Central Office and Office of Academic Affairs, and most importantly, willing faculty and students, we completed the unprecedentedly challenging Spring 2020 semester successfully. The EACP worked to maintain academic continuity and was found to be effective in the lockdown environment. However, the pandemic semester, Spring 2020, did not finish without dents. MEC SOB lost two professors, and few students died of COVID-19.

A little over a year passed since the COVID-19 lockdown was declared. We learned a lot about our faculty, students and how to deliver courses online. We present some of the findings and outcomes by comparing pre-COVID-19 lockdown data (Fall 2019-Spring 2020) with the COVID-19 lockdown data (Spring 2020-Spring 2021).

Enrollment

The CUNY-wide enrollment data between pre-pandemic lockdown (Spring 2020) and pandemic lockdown (Spring 2021) are compared among its 25 campuses, as shown in Figure 2.

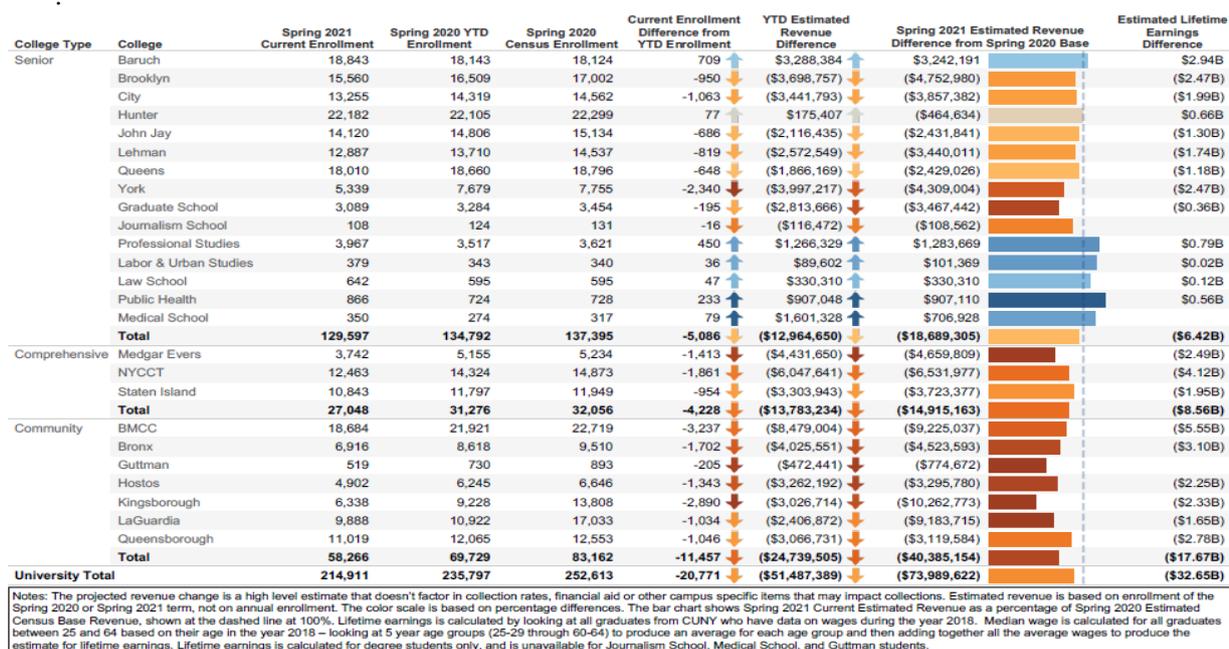


Figure 2. CUNY Enrollment Data: Pre-COVID-19 Lockdown (Spring 2020) Vs. During COVID-19 Lockdown (Spring 2021)

Except for the professional schools and two senior colleges – Baruch College and Hunter College located in the affluent areas of New York City, the enrollment after the COVID-19 lockdown declined over 8.8% across the campuses. As the NSCRC reported, the effect of the COVID-19 pandemic lockdown on those campuses with the largest share of students of color and students from low-income backgrounds was severe. For example, York College, located in Jamaica in Queens County of New York City, had a

30.5% decline, and Medgar Evers College, located in Central Brooklyn in New York City, had a 27.4% decline. The enrollment among seven CUNY Community Colleges also declined by over 16.4% on average.

The financial impact on MEC due to the sharp decline in enrollment is substantial. The 27.4% decline in enrollment implies an estimated \$4.4 million revenue loss compared to the revenue generated in Spring 2020, pre-COVID-19. That translates to a whopping \$2.5 billion revenue loss estimated over a lifetime. Unless MEC finds a way to revert the enrollment decline trend soon, it will be highly challenging for MEC to stay open in the future.

To identify the program-level enrollment trend, we examine CIS data that are representative of SOB. We compare the pre-pandemic lockdown enrollments with the pandemic lockdown enrollment in Fall 2020. As shown in Figure 3, the CIS enrollment in Fall 2020 declined 17.6% for its Bachelor of Science Degree program and 25.6% for the Associate Degree program, respectively. The more significant decline in the Associate Degree program proves that those poor students might have been affected more severely by the pandemic lockdown, resulting in not enrolling in Fall 2020.

We examine the course enrollment data of CIS 101 - Computer Fundamentals and CIS 211 - Internet Emerging Technology for the course level enrollment trend. All SOB students are required to take them during their freshman year and Sophomore year, respectively. Consequently, they serve as a good indicator of identifying the new SOB student enrollment trend (Freshman taking CIS 101) and the continuing SOB student enrollment trend (Sophomore taking CIS 211) in pandemic lockdown.

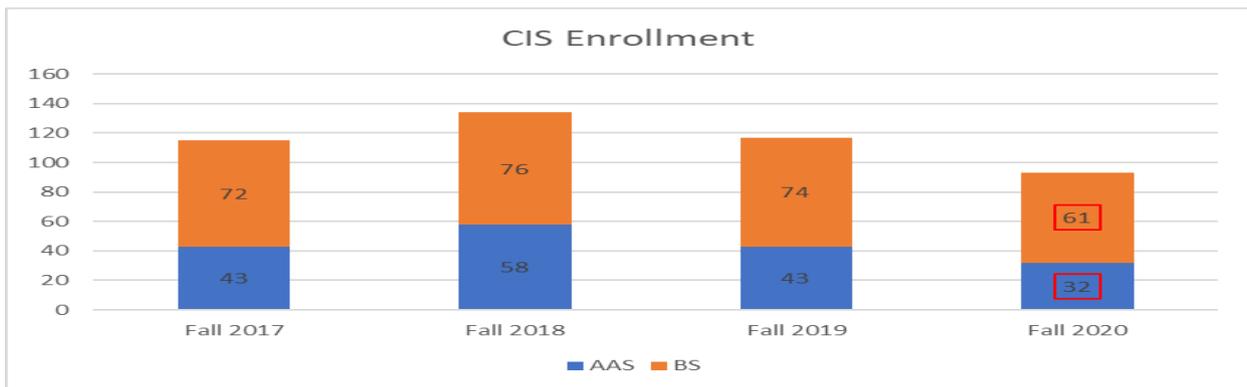


Figure 3. CIS enrollment: pre-COVID-19 Lockdown (Fall 2017~Fall 2019) Vs. During COVID-19 Lockdown (Fall 2020). AAS-Associate Degree Program; BS-Bachelor Program

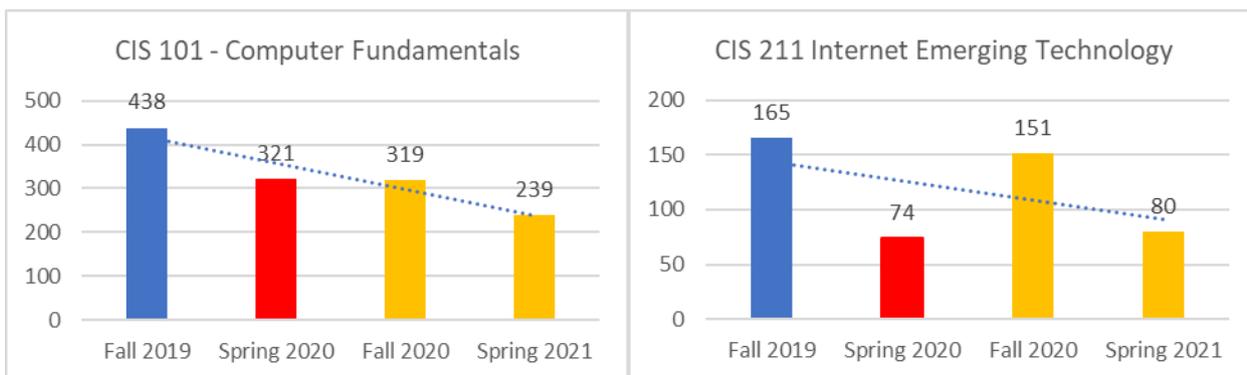


Figure 4. Freshmen and Sophomore CIS class enrollments: pre-COVID-19 Lockdown (Fall 2019 & Spring 2020) Vs. During COVID-19 Lockdown (Fall 2020 & Spring 2021)

As shown in Figure 4, the CIS 101 enrollment was substantially declined over 25% during the pandemic lockdown compared to the pre-pandemic lockdown. This indicates that not many new students enrolled in pandemic lockdown. Contrary to CIS 101 enrollment decline, it is interesting to see that the CIS 211 enrollment almost stayed constant, indicating that those students enrolled at SOB before the pandemic lockdown stayed and continuously enrolled in classes during the pandemic lockdown.

One of the concerns raised during EACP was the effectiveness of online instruction that took overnight due to the abrupt pandemic lockdown. For this study, we examine the grade distributions of the above classes for three semesters from Fall 2019 (pre lockdown) to Fall 2020 (during lockdown) to spot any grade inflation or jump in withdrawal rate from classes. Some instructors use grade inflation to retain students in the class. On the contrary, students tend to withdraw from the classes if they believe they would not receive the expected grade for the course. Consequently, the correlation between grade inflation and the withdrawal rate should be low.

We found temporal grade inflation in CIS 101 (Freshman class) in Spring 2020, the first semester affected by pandemic lockdown, and then it stabilized in Fall 2020, as shown in Figure 5. The rate of those students who got a grade lower than "B" dropped most likely due to the change in the college's grade policy offering students CRedit with passing (CR) and No Credit (NC) options. This seems to align well with our prediction that the grade inflation retained Freshman as the enrollment for CIS 211 (Sophomore class) did not decline much in Fall 2020 as described previously. On the contrary, we did not find any grade inflation from CIS 211 grade distribution, as shown in Figure 5. The rate of higher grades was lower compared to the pre-pandemic lockdown semester, Fall 2019. However, there was a substantial jump in the withdrawal rate in Spring 2020, and the withdrawal rate in Fall 2020 was still higher than the pre-pandemic lockdown semester. Perhaps, the higher withdrawal rate was due to the ineffective online instruction. However, further study is needed.

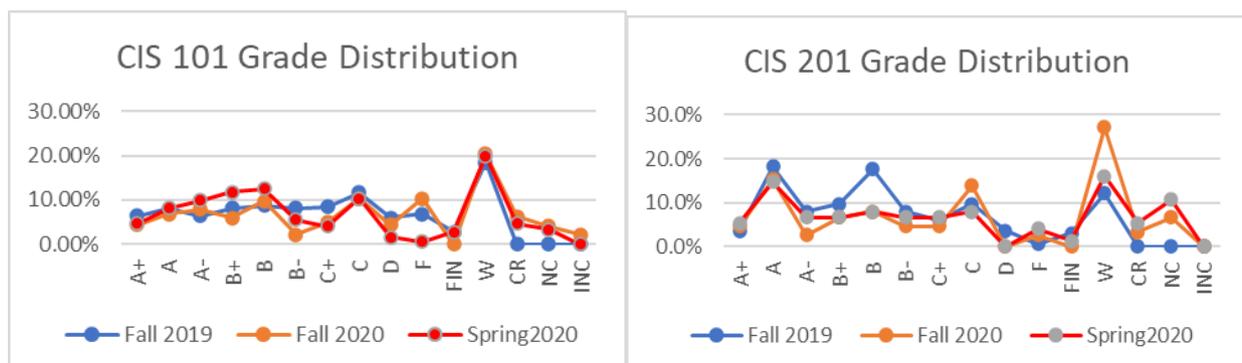


Figure 5. Grade Distribution Examples: Pre-COVID-19 Lockdown (Fall 2019) Vs. During COVID-19 Lockdown (Spring 2020 & Fall 2020). Note the following unusual terms used at MEC: FIN-financial hold; W-withdrawal; CR-pass with credit; NC-no pass; INC-incomplete.

With the rapid vaccination, NY Governor Cuomo declared going back to normalcy and to reopen campus in Fall 2021. We observed the student's tendency to come back to face-to-face learning after two semesters of asynchronous online studies. Following the directions given by the CUNY central, CIS offered 67% of Fall 2021 classes in face-to-face learning and the rest 33% of classes online classes. At the end of the Spring 2021 semester, we collected and examined the preregistration data, as shown in Figure 6. Interestingly, students heavily favored online classes over face-to-face classes. The online sections offered were already fully registered or close to full registration, whereas the preregistration for face-to-face sections did not reach 30% of the class capacity. This implies that students' learning habit changes are real, and this trend might continue even in the post-pandemic.

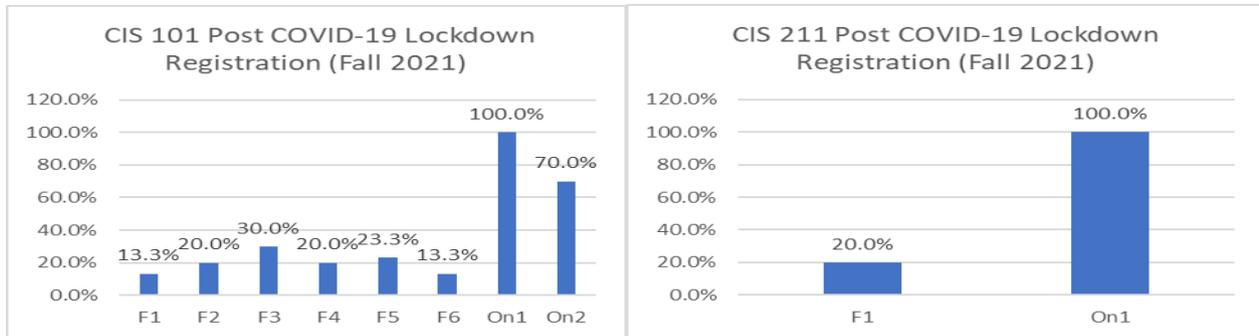


Figure 6. Post COVID-19 Lockdown Course Registration Examples (Fall 2021): Face-to-Face Class Vs. Online Class

Discussions and Conclusions

MEC CIS maintained academic continuity during the COVID-19 pandemic lockdown by establishing and implementing EACP that included the abrupt conversion from face-to-face learning to online learning. The EACP is agile and flexible enough to continuously enhance academic continuity with the minimum impact of unknown risks arising from the lengthy lockdown caused by the pandemic crisis. However, it is worth mentioning that EACP was found to be effective because CUNY already had the online learning infrastructure in place before the pandemic lockdown. If any HEIs did not have the online learning infrastructure before the pandemic lockdown, it would have been challenging for them to maintain academic continuity. Consequently, technology will play a more critical role in higher education in the future. It is also worth mentioning that many students accessed online lessons via their smartphones during the pandemic lockdown – many new entrants see this as an opportunity to tap into the higher education market with smartphone apps in the future.

We found that the enrollment decline reported by the National Student Clearinghouse Research Center was real and affected those HEIs serving students of color and low-income backgrounds substantially, including MEC. However, it is unclear what really caused the decline in enrollment – was it due to the extra-economic hardship experienced by those students already in low-income backgrounds, or was it due to the government pandemic stimulus packages that offered affluent unemployment benefits to non-student workers? That would be interesting future research.

It is too early to assume that the resumption of face-to-face activities of HEIs would stop the enrollment downtrend. Based on our findings from the study of the enrollment of new students and continuing students for the required freshmen course, CIS 101, and the sophomore course CIS 211, there was a substantial decline in new student enrollment. That would affect the entire future course offerings due to the lack of students to run the courses without affecting the HEI's financial sustainability. Any additional financial challenges will lead those financially struggling HEIs to definitive closures in an already full-blown economic recession.

Finally, we found changes in students' learning behavior with flexible and easy-to-follow technological solutions. For example, we observed students' preference for taking online classes over face-to-face classes even during the reopening semester. Such change in students' learning behavior might be seen as an opportunity to rethink and, to the extent possible, redesign the teaching and learning processes, and paying special attention to delivering online learning over the smartphone. Else, the beleaguered HEIs are at risk of surviving because there will be new for-profit entrants with superior educational technology solutions, taking full advantage of student's learning preferences that might change the entire landscape of the future higher education industry.

Appendix 1. Weekly Assessment Report Sample – Computer Information Systems, School of Business

DISTANCE LEARNING ACADEMIC PLAN: SPRING 2020/WEEKLY SUBMISSIONS/Week 3/15 - 3/21/2020

COURSE #	Weekly Learning Objectives & Plan	INSTRUCTIONAL DELIVERY PLATFORMS	# Of students	Back up Delivery plan if using Blackboard	Weekly Assessment	INSTRUCTOR
CIS 101.001	Learning Objectives 2 Understand Security, Privacy and System Care Discuss real life situations and apps that can be used for Privacy and Security. Demonstrate system care Quiz for reinforcement	Real-time video conferencing using Blackboard Collaborate Ultra (recording presentations) Blackboard class work assignments Blackboard homework assignments Blackboard exams All course materials are posted on Blackboard and on-line sessions follow the course syllabus.	14	E-mail	Students successfully used the collaborative tools for video, chat and audio, and are fully engaged in our e-books on CengageBrain as well.	Instructor 1
CIS 211.ENY 1	Successful delivery of course contents over the online instructional delivery platform. Learning Objectives: Students will have a better understanding how to create a basic HTML webpage... Discuss the different websites graphics tools, typography, and color for Web development.	Cisco Web Blackboard	16	Archive Method under Blackboard Management Package & utilities	Read chapter 1, creating a Basic Webpage Page HTML-29 to HTML-35 Lab 1 Assignment: Creating a Webpage from a Template and using Placeholder Text Page HTML-43 to HTML-44. Follow instruction Step 1 to Step10 Save your HTML coding file to CH1_Lab.html Upload Ch1_Lab.html to blackboard Submission file can be found under Content tab link Ch1-lab1	Instructor 2
CIS 450.040	Successful delivery of course contents over the online instructional delivery platform. Learning Objectives and Activities: Understanding Gantt Chart and project management. Presenting weekly research progress. Discuss next steps to successfully complete the project this semester.	Blackboard WebEx	7/9	Google Hangout Github E-mail	Learning Activities: Demonstrated the WebEx and Blackboard as the online course delivery platform. Reviewed each student's progress with his/her research project. Reviewed submitted Gantt Charts and enhanced them to manage projects more effectively. Assigned Homework.	Instructor 3

References

WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020. World Health Organization, 11 March 2020. Available online: <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020> (accessed on 21 April 2021).

The COVID-19 Pandemic. New York Times, 3 May 2021. Available online:

https://www.worldometers.info/coronavirus/?utm_campaign=homeAdvegas1? (Accessed on 21 April 2021).

A Historical Timeline of COVID-19 in New York City. Investopedia.com, 5 April 2021. Available online: <https://www.investopedia.com/historical-timeline-of-covid-19-in-new-york-city-5071986> (accessed on 21 April 2021).

Current Term Enrollment Estimates. National Student Clearinghouse Research Center, 17 December 2020. Available online: <https://nscresearchcenter.org/current-term-enrollment-estimates/> (accessed on 16 April 2021).

How the COVID-19 pandemic has impacted higher education. Brookings, 16 March 2021. Available online: <https://www.brookings.edu/events/how-higher-education-has-been-impacted-by-the-covid-19-pandemic/> (accessed on 16 April 2021).

COVID-19 impact on higher education: Confronting financial challenges facing colleges and universities. Deloitte Perspectives. Available online: <https://www2.deloitte.com/us/en/pages/public-sector/articles/covid-19-impact-on-higher-education.html> (accessed on 16 April 2021).

Bulki, T.K. COVID-19: consequences for higher education. *The Lancet Oncology News* **2020**, *21*, 6, 758-765.

COVID-19 and higher education: Today and tomorrow - impact analysis, policy responses and recommendations. UNESCO IESALC, **2020**.

Lally, P.; Van Jaarsveld, C.; Potts, H.; Wardle, J. How are habits formed: Modelling habit formation in the real world? *Eur. J. Soc. Psychol.* **2010**, *40*, 998-1009.

Why have college completion rates increased? An analysis of rising grades. National Bureau of Economic Research, April 2021. Available online: <https://www.nber.org/papers/w28710> (accessed on 27 April 2021).
