# Online Learning, COVID-19, and the Future of the Academy: Implications for Faculty Governance and Collective Bargaining

Anthony Picciano
*City University of New York*, apicciano@gc.cuny.edu

# Online Learning, COVID-19, and the Future of the Academy: Implications for Faculty Governance and Collective Bargaining

Anthony G. Picciano[1]

## Introduction

In January 2020 I was invited to participate on a panel entitled *Online Learning: Policies, Politics, and Results,* to discuss online learning in higher education. This panel was to take place in-person at the end of March in New York City, hosted by the National Center for the Study of Collective Bargaining in Higher Education and the Professions. By the beginning of March, it became evident that an in-person conference would be unlikely since the coronavirus epidemic was spreading rapidly throughout the world and especially in New York City. Despite the cancellation of the conference, several sessions were rescheduled as webinars and I was invited to join a new panel entitled, *Online Learning: Policies, Practices, and its Future in the Face of COVID-19* in May 2020. My presentation referenced an article that I had written and published in September 2019 entitled, *Artificial Intelligence and the Academy's Loss of Purpose.* As a result of the questions asked during this panel presentation and subsequent email correspondence, I was asked to expand on my comments. This article examines online education's future in the academy both in the short run due to the coronavirus pandemic, and in the long run due to the expansion of technology in higher education with specific emphasis on the implications for faculty governance and collective bargaining.

In February 2019, an article in the *New York Times* described a global competition that hundreds of scientists enter every two years. Referred to as the "World Cup" of biochemical research, teams of scientists tackle a biological puzzle called "the protein folding problem." Essentially, they try to predict the three-dimensional shape of proteins in the human body, a problem that no one has ever been able to solve. Past winners have chipped away at it, but a solution still eludes the scientific community. In 2018, the Critical Assessment of Structure Prediction contest was not won by academics. It was won by a team at DeepMind, the artificial intelligence (AI) lab owned by Google's parent company, Alphabet, Incorporated. In describing

---

[1] Anthony G. Picciano holds faculty appointments in graduate programs in Education Leadership at Hunter College, the Ph.D. Program in Urban Education at the Graduate Center of the City University of New York (CUNY), and the doctoral certificate program in Interactive Pedagogy and Technology at the CUNY Graduate Center. In 1998, Dr. Picciano co-founded CUNY Online, a multi-million dollar initiative funded by the Alfred P. Sloan Foundation that provided support services to faculty using the Internet for course development. He was a founding member and continues to serve on the Board of Directors of the Online Learning Consortium (formerly the Sloan Consortium).

DeepMind's accomplishment, Mohammed AlQuraishi, a biologist at the Harvard Medical School who has dedicated his career to protein research commented that he felt "a melancholy" after losing to DeepMind. "I was surprised and deflated. They were way out in front of everyone else." He criticized big pharmaceutical companies like Merck and Novartis, as well as his academic community, for not keeping pace. "The smartest and most ambitious researchers wanting to work on protein structure will look to DeepMind for opportunities." (AlQuraishi, 2018) He urged the life-sciences community to shift its attention toward the kind of AI work practiced by DeepMind. DeepMind's victory predicted a future for biochemical research, increasingly driven by machines and the people who oversee the machines. Another researcher, Derek Lowe said "It is not that machines are going to replace chemists. It's that the chemists who use machines will replace those that don't." (Metz, February 5, 2019) Lowe too was predicting that successful research was moving into a blended environment of human and AI-enhanced technology.

The purpose of this article is to speculate on the future of higher education as online technology, including adaptive learning (also referred to as personalized learning) infused by artificial intelligence software, develops and matures. This is a risky undertaking since predicting the future, and in this case the evolution of technology, is difficult. While many try to predict *what* will happen and sometimes get it right, predicting *when* something will happen is far more challenging. Online and blended learning have already advanced within education, but the most significant changes are yet to come. Evolving technologies have the potential to change the traditional roles in our schools, colleges and universities to the point that many educators are reconsidering their purposes and roles as teachers, researchers and administrators.

The task of predicting the future of online technology and education has also been made more complex by the emergence in 2020 of the coronavirus pandemic. The world changed as the coronavirus pandemic scourge infected millions and killed hundreds of thousands of people.

Higher education went into online mode as best it could. Faculty were forced to move to remote learning in a matter of days and weeks. The result has been what many consider an emerging new normal. There is a clear sense that the remote learning during the pandemic will lead many education leaders and administrators to ramp up and consider more widespread use of online technology in all manner of instruction, research, and administration. (Kelderman, 2020) Significant implications are on the horizon for faculty governance and collective bargaining.

## The Evolving Technological Landscape

Any attempt at predicting the future should be based on calculated speculation. Over the next decade, digital technologies will advance in the development of man-machine interfacing or the ability of digital technology to interact more directly with and assist in human activities. Figure 1 provides an overview of the major technologies presently in various stages of development and evolution. Nanotechnology and quantum computing form the base for the development of man-machine interfaces such as artificial intelligence, bio-sensing devices, robotics, and super- cloud computing. In the 2020s these technologies will be more visible, but in the 2030s and beyond they will mature, integrate, and have their greatest impact. For the purposes of adaptive learning, artificial intelligence and the super-cloud are most important in terms of impact on higher education. For a more extensive description of the elements in Figure 1, please see *Artificial Intelligence and the Academy's Loss of Purpose*. (Picciano, 2019)
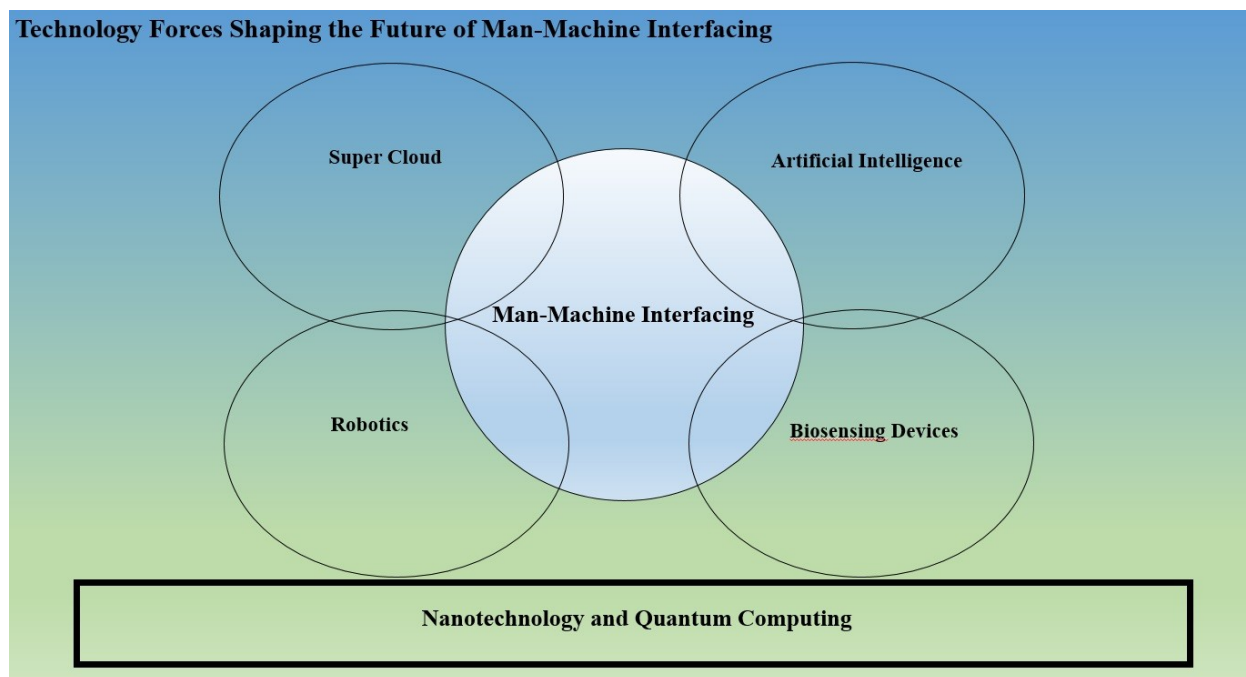


"Nano" refers to a billionth of a meter or the width of five carbon atoms. The simplest definition of nanotechnology is technology that functions very close to the atomic level. Governments around the world have been investing billions of dollars to develop applications using it, focusing on areas such as medicine, energy, materials fabrication, and consumer products. However, companies such as Intel and IBM have been developing nanochip technology with the potential to change the scope of all computing and communications equipment. IBM, for instance, announced in 2015, a prototype chip with transistors that are just 7

nanometers wide, or about 1/10,000th the width of a human hair. Nanochip technology is here now and is developing into commercial production and application. During this decade, it will become a mature technology.

By the 2030s, the whole concept of the digital computer may give way to the quantum computer that operates entirely on a scale the size of atoms and smaller. Another decade or so of research and development on quantum computers may find their speed thousands of times faster than the speed of today's supercomputers. The storage capacity of such equipment will replace the gigabyte ($10^9$) and terabyte ($10^{12}$) world of today with zettabyte ($10^{21}$) and yottabyte ($10^{24}$) devices. Large-scale digitization of all the world's data will occur with access available on mobile devices. And all this technology and computing power will eventually be less expensive than it is now. Nanotechnology and quantum computing will provide the underlying base for the development of a host of new applications using AI and super-cloud computing. The first generation of quantum computers will likely be available via the super-cloud and geared to specific applications related to large-scale, complex research in areas such as neuroscience, NASA projects, DNA, climate simulations, and machine learning. These will be followed by applications for everyday activities in commercial enterprises. They will specifically change the way people work and interact on a daily basis. It is quite possible that many jobs will be displaced by these technologies. Joseph Aoun, the president of Northeastern University and author of *Robot Proof, Higher Education in the Age of Artificial Intelligence,* commented, "If technology can replace human beings on the job, it will. Preventing business owners from adopting a labor-saving technology would require modifying the basic incentives built into the market economy." (Aoun, 2017, p. 46) Beyond the market economy, this also holds true for education, medicine, law and other professions.

### Enter COVID-19

COVID-19 has added a new dimension to the technological landscape in all aspects of our society including education. In Spring 2020 over 90 percent of all courses offered in postsecondary education had an online component. Faculty in all sectors converted their courses as quickly as they could to remote learning mainly because they had no choice. It was a clear emergency with their own and their students' health at risk. Prior to the pandemic, approximately 30%  (close to 7 million) of all college students took at least one online course a year.(Seaman, Allan, & Seaman, 2018) Many more took blended courses[2], but good data on this aspect of online learning are not available mainly because of issues of definition of "blended" and a lack of recordkeeping. In the opinion of some, online technology saved the semester for the higher education sector during the pandemic. (Ubell, 2020) It forced many faculty who had never used

---

[2] Part online and part face-to-face instruction.

online education, or had used it modestly, to now depend upon it for instruction. Synchronous online communication using Zoom and other videoconferencing software became especially popular. It is likely that many faculty will continue to use online facilities when the COVID-19 pandemic is over. Blended learning models especially will become more popular. It is also likely, because of the pandemic, that many colleges and universities will operate as fully online institutions through the Fall 2020 and beyond. In May 2020, for example, the country's largest university system, California State University, announced that all classes would be held online in the Fall. (White, 2020) Furthermore, those colleges that do open their campuses may face a "liability minefield" filled with the threat of lawsuits if students and faculty become infected with coronavirus. (Kafka, 2020) It is possible that the most prudent approach for many colleges, especially those located in COVID-19 hotspots, will be not to meet in-person until a vaccine is developed and widely distributed.

Beyond 2020, the emergence of COVID-19 will continue to have ramifications for higher education. First, faculty were forced to move their courses online with little time for planning or testing. Early feedback from faculty is that many were able to adjust and, in fact, had good experiences with online instruction. As many faculty, who have taught online for years, have come to see some of its effectiveness, the same is proving true for many of those recently forced into it. Faculty new to online learning appreciated the ability to continue class discussions beyond bell schedules[3], to provide students convenient access to media, simulations, and other illustrations, and to mix a variety of instructional modalities into their teaching. Faculty and students who were new to online instruction also came to appreciate the convenience of not commuting to a campus for parts or all of their courses. On the other hand, faculty and students in primarily residential colleges were less likely to view the convenience aspect of online learning positively compared to the social ambiance of campus life.

Second, COVID-19 put major financial strains on colleges and universities. Many colleges were forced to refund tuition, dormitory charges, and other fees as students were required to leave campus and to attend courses online. Private residential institutions that are tuition-driven have great concerns about their ability to attract students if they must continue to operate either fully or partially online. Without a residential experience, students and their parents may question why they should pay tuition that is much higher than that at public institutions. At the same time, public universities also have serious financial concerns. Their budgets were already strained , but the pandemic forced many state and local governments to divert extensive resources to health services for the victims of COVID-19 even as they also anticipate a major

---

[3] Sometimes imposed by accreditation and other requirements rooted in "seat-time" metrics as opposed to learning metrics and meaningful learning activities.

decline in expected tax revenue. Several states, such as Wisconsin and Connecticut, had already taken draconian steps to close and consolidate colleges.

Third, prior to the pandemic, to be competitive in attracting more students, college administrators coaxed and provided incentives to many of their faculty to teach online. Some faculty, especially the full-timers, citing their prerogatives, resisted these calls. However, now that almost all of the faculty have had to teach online, their reasons and positions for resistance have been weakened to some degree. Indeed, they might be open to do more online teaching to some degree and be more willing to work with administration to move additional programs online.

## Implications for Faculty Governance and Collective Bargaining

The emergency move to remote learning was done with little regard for faculty governance and collective bargaining requirements. As mentioned earlier, faculty saw the need to protect their own health and that of their students,.They rose to the occasion, and moved their courses online. In doing so governance and collective bargaining issues such as approvals by curriculum committees, proper professional development opportunities, and cash or equipment incentives were ignored or  deferred for discussion at a later date. How will these issues be handled if COVID-19 is still with us over the next year or two? With time to prepare, college administrations will have to engage in developing mutually agreed upon conditions and stipulations for going online. It is not likely that faculty governing bodies and collective bargaining units will allow the administrations to operate as if they are still in emergency mode.

COVID-19 will move many colleges to undertake more online learning for pedagogical and financial reasons. Adaptive learning models can be cost-effective substitutes for face-to-face instruction especially if the college employs more contingent and tutor instructors for them instead of full-time faculty. Some of the most successful online models in higher education have adopted these approaches. Places like Western Governors University and the University of Southern New Hampshire have become financial powerhouses through their use of online technology and the hiring of large numbers of contingent faculty who deliver courses that are completely preprogrammed and scripted. Faculty in these institutions have little say in the nature of the curriculum or the method of delivery. They are hired from course to course and do not have governance or collective bargaining protections. In fact, collective bargaining for the most part does not exist in these institutions. As colleges move to more online learning, there are legitimate concerns for the survival of the faculty voice.

Traditionally, a host of issues such as compensation, class size, training/professional development, faculty evaluation, intellectual property, equipment provisions, as well as promotion and tenure, have been part of governance and collective bargaining vis-vis online learning. As online instruction becomes more normal during the pandemic/post pandemic timeframe and colleges operate beyond emergency mode, these issues will all come into play again. A lot of the good will that was present during the immediate pandemic emergency will not necessarily be there in the latter or post-pandemic period. Here are three examples of issues.

The "heart" of many collective bargaining issues are the terms and conditions of employment, especially workload. (McConnell, 2020) Online learning is generally seen as a change in these terms and conditions. It needs to be mentioned here that online learning comes in many different modes or formats. There are synchronous modes such as using videoconferencing software like Zoom to replicate a face-to-face discussion. There are asynchronous modes that can be text- or voice-based using a learning management system such as Blackboard. And in blended formats, there can be any combinations of the synchronous and asynchronous modes. The workload will also depend upon the size of the class and the structure and organization of the course. Regardless of mode, a major issue for faculty governance and collective bargaining has been whether online learning increases a faculty member's workload. Tynan, Ryan & Hinton (2012) conducted a qualitative study and interviewed 88 instructors of online and blended learning courses. All of the interviewees in this study overwhelmingly perceived their workload as having increased by teaching in fully online or blended modes. Here are several specific comments from the faculty interviewed:

> One of the things about online is that people see it as a personal service. You say – yes, there's the Blackboard discussions and so on. That means that every day you go into it and you service that Discussion group – every day. If I'm running a lecture group – like face-to-face stuff – I'm not servicing those classes every day. And then of course students decide – oh well, they're a bit diffident about putting up a stupid question, so they email you or ring you...(Tynan, Ryan, & Hinton, 2012, p. 78)

> I think it takes a lot longer for me to form a suitable reply online than it does for me to just spit out an answer. Because I spend a lot of time thinking 'how should I say it? Have I said that OK? Is someone going to take that the wrong way?' And I'll spend half an hour on a five-minute question. (Tynan, Ryan, & Hinton, 2012, p. 102)

> With 170 students, I'm probably spending in excess of 14 hours a week plus with the students, answering their queries.... I probably spend a good five to 10 hours the week before the semester starts. (Tynan, Ryan, & Hinton, 2012, p. 104)

In another study involving 23 instructors teaching asynchronous online courses, it was determined that it takes 12.69 hours per week to teach class with an average class size of 22 students (Mandernach & Holbeck, 2016).

The above studies provide insights into additional workload issues as a direct result of teaching online. Faculty teaching online will want to be compensated one way or another either with special stipends for teaching online or reducing the number of courses they have to teach.

Health and safety are another COVID-19 issue related to faculty governance and subject to collective bargaining. This directly concerns those campuses that decide to open in face-to-face mode and whether faculty can be required to return to campus. (Kanter, 2020) OSHA requirements will also be in play here. In an open letter to the Pennsylvania State University administration, faculty members affirmed that they "believe in the importance of the university as a physical site of face-to-face dialogue and debate." (Townsend, S. et al, (2020) Nevertheless, all people "have the right to protect their own well-being," the letter said. Should students return to campus, instructors should have autonomy over how they want to teach, attend meetings, and hold office hours, the letter said, and no one should be obligated to disclose personal health information as a justification for such decisions. At the University of Notre Dame, more than 140 faculty members signed a petition, arguing the same. Faculty members "should be allowed to make their own prudential judgments about whether to teach in-person classes," it said. (Jones et al, June 16, 2020) Notre Dame's vice president for public affairs and communications said the university expects faculty members to be available for in-person classes, unless an individual person's circumstance "results in an exception." As a result, many colleges are beginning to have faculty members fill out accommodation-request forms, which asks employees to disclose if they fall into one of the categories identified as being high risk for COVID-19 by the Centers for Disease Control and Prevention.(Pettit, June 22, 2020) This activity would appear to contradict the position held by the Pennsylvania State University faculty letter that no one should be obligated to disclose personal health information.

A third issue relates to training, compensation, and annual leave. The City University of New York Professional Staff Congress (PSC), the collective bargaining representative for faculty, has made a number of demands in this regard. Here is the text of a letter sent by the PSC to its members explaining a cease and desist request that was sent to the CUNY administration.

First, there has been no recognition of the extraordinary back-breaking effort required of every faculty member who had to move classes from in-person to online this Spring; there has been no workload credit nor compensation offered for the dozens if not hundreds of hours poured into that effort, including trainings that many

faculty started taking beginning at the end of March to assist with that process so that they could provide the greatest possible support and experience for their students.

Second, full time faculty may not be required to take on assignments during annual leave; any such assignment must be voluntary and additionally compensated. Calling these trainings voluntary while simultaneously making them required for teaching assignment in the Fall is a distinction without a difference. We are demanding that CUNY make these trainings available after the start of the fall semester and not restrict assignment based on taking the training during annual leave.

Third, adjunct faculty who are likewise being told such training is voluntary are even more compelled to treat it as required given the vulnerable nature of their positions. Adjuncts, by virtue of their contingency, rarely feel they have the ability to say no.

And finally, all faculty taking these trainings must be appropriately compensated. We used an average adjunct teaching rate and an estimate of 15 hours of training to formulate our demand of $1500 under the new stipend provision for full time faculty and the appropriate teaching rate for adjuncts who, depending on schedule and step, may receive more than $1500 and may receive less, but the aim of our demand was that there be largely equivalent compensation for all faculty." (Lasher, R., June 19, 2020)

The issues raised above are just a sample of what will continue to evolve in the immediate future and at least until a COVID-19 vaccine is developed and made widely available to the general population.

### Further into the Future

While it is the hope that a vaccine for COVID-19 will be developed within a year or so and that we can begin to put the scourge behind us, we hold out hope that gradually things will reach some semblance of normalcy however that is redefined. Further into the future, the period of the late 2020s and 2030s still looms as a time of significant change in the way society functions, works, communicates, teaches and learns, The evolving technological landscape based on nanosecond and quantum computing, artificial intelligence, and super-cloud based systems will begin to mature. The implications will be extensive for all education including colleges and universities. Faculty governance and collective bargaining will be stressed as they deal with a host of new issues related to how faculty teach, how students learn, how researchers research and how administrators and support staff function.

Some in the academy are already issuing grave concern if not warnings. Joseph Aoun, the president of Northeastern University, mentioned earlier, looks at the future of higher education and the changes that will occur as a result of digital technology and especially artificial intelligence. As he

acknowledges that American colleges and universities are among the fullest expressions of human culture ever evolved and perhaps the most effective institutions for intellectual advancement ever developed, he cautions that if they fail to respond creatively and deliberately to the technological challenges that they face, "they will wither into irrelevance." (Aoun, 2017, p.12)

Drew Faust, the former president of Harvard University, in a message to the World Economic Forum, described three major forces that will shape the future of higher education:

1. the influence of technology

2. the changing shape of knowledge

3. the attempt to define the value of education.

She went on to extol the facilities that digital technology and communications will provide for teaching, learning, and research. She foresaw great benefits in technology's ability to reach masses of students around the globe and to quantify easily large databases for scaling up and assessment purposes. On the other hand, she made it clear that "residential education cannot be replicated online" and stressed the importance of physical interaction and shared experiences.

On the nature of knowledge, she stated that the common organization of universities by academic departments may disappear because "the most significant and consequential challenges humanity faces" require investigations and solutions that are flexible and not necessarily discipline specific. Doctors, chemists, social scientists, and engineers will work together to solve humankind's problems.

On defining value, she notes that quantitative metrics are now evolving that can assess and demonstrate the importance of meaningful employment. However, she believes that higher education as well provides something very valuable: it gives people "a perspective on the meaning and purpose of their lives," but it is not possible to quantify this type of student outcome. She concluded that:

> So much of what humanity has achieved has been sparked and sustained by the research and teaching that take place every day at colleges and universities, sites of curiosity and creativity that nurture some of the finest aspirations of individuals and, in turn, improve their lives—and their livelihoods. As the landscape continues to change, we must be careful to protect the ideals at the heart of higher education, ideals that serve us all well as we work together to improve the world. (Faust, 2015)

Will technology drive the shape of knowledge and the definition of value, or will it be the other way around? Techno-centrists see technology as the driver while others who look at higher education holistically see technology as a tool that serves the needs of the other elements. We may be looking at a future where those who make up the academy will see their roles repurposed. Faculty may become tutors to adaptive learning courses; researchers may be aides to AI software such as DeepMind; administrators, counselors and other support staff may be dependent entirely on super-cloud applications that will seek to standardize much of what they do across institutions.

Will higher education take the Aoun route or the Faust route? Faust presented three key elements in higher education's future, but it is the interplay of these elements that will become most crucial in predicting its future. We should note that "what so much of what humanity has achieved…" has been because the academy has been so well-served and influenced by a strong and vibrant faculty voice. Faculty governance and collective bargaining have been important foundations of American higher education that will surely be challenged in the future as technology comes to influence all that occurs in our colleges and universities. Will the faculty be up for this challenge is the critical question.

# References

AlQuraishi, M. (December 9, 2018). AlphaFold @ CASP13: "What just happened?" Blog posting. Retrieved from: https://moalquraishi.wordpress.com/2018/12/09/alphafold-casp13-what-just-happened/ Accessed: May 20, 2020.

Aoun, R.E. (2017). *Robot Proof: Higher Education in the Age of Artificial Intelligence. Cambridge*, MA: The MIT Press.

Faust, D. (2015). Three forces shaping the university of the future. World Economic Forum.

Retrieved from: https://agenda.weforum.org/2015/01/three-forces-shaping-the-university-of-the-future/ Accessed: June 1, 2020.

Jones, C.T. et al (June 16, 2020). Online teaching Fall 2020. Retrieved from: https://docs.google.com/document/d/1TauPC1G7eGcuaBGyHgcDyvWzC5qj4xljakaWI9hS9S4/edit Accessed: June 17, 2020.

Kafka, A. C. May 20, 2020). Why the fall will be a liability minefield. The Chronicle of Higher Education. Retrieved from: https://www.chronicle.com/article/Why-the-Fall-Will-Be-a/248887?utm_source=at&utm_medium=en&utm_source=Iterable&utm_medium=email&utm_campaign=campaign_1256325&cid=at&source=ams&sourceId=2343968 Accessed: June 1, 2020.

Kanter, A.S. (June 15, 2020). Can faculty be forced back on campus? The Chronicle of Higher Education. Retrieved from: https://www.chronicle.com/article/Can-Faculty-Be-Forced-Back on/248981?utm_source=at&utm_medium=en&utm_source=Iterable&utm_medium=email&utm_campaign=campaign_1290117&cid=at&source=ams&sourceId=2343968 Accessed: June 20, 2020.

Kelderman, E. (June 1, 2020). Spurred by coronavirus, some colleges Rush to move online. *The Chronicle of Higher Education*. Retrieved from: https://www.chronicle.com/article/Spurred-by-Coronavirus Some/248893?utm_source=at&utm_medium=en&utm_source=Iterable&utm_medium=email&utm_campaign=campaign_1258731&cid=at&source=ams&sourceId=2343968 Accessed: June 1, 2020.

Lasher, R.(June 19, 2020). Letter sent to all members of the Professional Staff Congress.

Mandernach, B. J. and Holbeck, R. (2016). Teaching Online: Where Do Faculty Spend Their Time? *Online Journal of Distance Learning Administration*, v19 n4 Win 2016. Retrieved from: https://www.westga.edu/~distance/ojdla/winter194/mandernach_holbeck194.html Accessed: June 23, 2020.

McConnell, J. (June 18, 2020). *Collective Bargaining and Online Technologies in the Age of a Pandemic.* Webinar hosted by the National Center for the Study of Collective Bargaining in Higher Education and the Professions

Metz, C. (February 5, 2019). Making new drugs with a dose of artificial intelligence. The *New York Times.* Retrieved from: https://www.nytimes.com/2019/02/05/technology/artificial-intelligence-drug-research-deepmind.html Accessed: June 1, 2020.

Pettit, E.(June 22, 2020). Who gets to teach remotely? The decisions are getting personal. *The Chronicle of Higher Education.* Retrieved from: https://www.chronicle.com/article/Who-Gets-to-Teach-Remotely /249035? utm_source=at&utm_medium=en&utm_source=Iterable&utm_medium=email&utm_camp aign=campaign_1307053&cid=at&source=ams&sourceId=2343968 Accessed: June 22, 2020.

Picciano, A.G. (September 2019). *Artificial intelligence and the academy's loss of purpose.* Online Learning Journal. Retrieved from: https://olj.onlinelearningconsortium.org/ index.php/olj/article/view/2023 Accessed: May 31, 2020.

Seaman, J., Allan, E. & Seaman, J. (2018). Grade increase: Tracking distance education in the United States. Needham, MA: Babson College Survey Research Group. Retrieved from: www.onlinelearningsurvey.com/highered.html Accessed: May 30, 2020.

Townsend, S. J. et al (2020). Open letter to the Penn State Administration regarding plans for the Fall and the response to COVID-19. Retrieved from: https://docs.google.com/forms/d/e/1FAIpQLSfRYMyUIUxYFS4qWLQadcZ6nvEsXymCn 09c664cYVluDz3UBg/viewform Accessed: June 15, 2020.

Tynan, B., Ryan, Y, Hinton, L. & Mills, A.L. (2012) *Out of Hours: Final Report of the Project e-Teaching Leadership: Planning and Implementing a Benefits-Oriented Costs Model for Technology Enhanced Learning.* Australian Learning and Teaching Council.

Ubell, R. (May 13, 2020). How online learning kept higher ed open during the coronavirus crisis. *IEEE Spectrum*. Retrieved from: https://spectrum.ieee.org/tech-talk/at-work/education/how-online-learning-kept-higher- ed-open-during-the-coronavirus-crisis Accessed May 25, 2020.

White, T.P. (May10, 2020). CSU Chancellor Timothy P. White's Statement on Fall 2020 University Operational Plans. Retrieved from: https://www2.calstate.edu/csu-system/news/ Pages/CSU-Chancellor-Timothy-P-Whites-Statement-on-Fall-2020-University-Operational-Plans.aspx Accessed: June 1, 2020.

Zweibach, P. (June 11, 2020). Letter to Pamela Silverblatt, Senior Vice Chancellor for Labor Relations, CUNY. Retrieved from: https://www.psc-cuny.org/sites/default/files/CUNY_ltr_Mandatory.Training_6-11-2020.pdf Accessed: June 13, 2020.