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Keeping Things Normal During an Uncommon Time: A Lesson from National Taiwan University

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Abstract: The 2019 coronavirus disease (COVID-19) pandemic impacts the learning and teaching experiences of faculty, students, and school staff at all levels of education around the world. While most schools face the challenges of closing down campuses, moving courses online, and relying on technology tools to deliver instructional activities, as one of the few countries with a regular semester schedule, universities in Taiwan have different experiences handling the current situation. This reflective essay aims to share the countermeasures that the Center of Teaching and Learning Development (CTLD) and Digital Learning Center (DLC) at National Taiwan University (NTU) took to keep everything going commonly during the uncommon time. The pandemic impact was discussed from the interrelationships of university policy, course, and instructor. We used Bloom's cognitive, psychomotor, and affective domains of knowledge to guide the implementation of related actions. Based on our learned lessons and reflections, we provide five suggestions regarding future precautions to other educational institutions.

Keywords: COVID-19 pandemic, countermeasure, university

Introduction

In late 2019, a novel coronavirus disease called COVID-19 was first discovered in China (Toresdahl & Asif, 2020) and then rapidly spread to other parts of the world, including Asia, Europe, and North and South America in 2020. Unlike previous pandemic cases of severe acute respiratory syndrome (SARS) in 2002 and the Middle East respiratory syndrome (MERS) in 2012 (World Health

Organization, 2020), the highly contagious nature of COVID-19 made its spread hard to control geographically. The pandemic's high level of uncertainty has sparked an emergent crisis (Nicola et al., 2020) in all aspects of daily lives. Responding to the outbreak, some countries used mitigation strategies to slow down the disease (Kraus et al., 2020). Others implemented suppression strategies like social distancing and self-isolation, which aims to decrease its reproduction level (Perrow, 1984). In the education sector, the response to the COVID-19 pandemic has also presented complex and unique challenges to all levels of schools. Responding to the sudden outbreaks, many educational institutions initiated emergency strategies, such as cancelling all on-campus meetings and moving courses online. In total, nearly 70% of the global student population worldwide is affected (Giovannella, 2020). However, the unprecedented scale and magnitude of the COVID-19 made the timeline of the "crisis" extend from days to months (Sasangohar, Moats, Mehta, & Peres, 2020). Whether schools choose to reopen campuses or continue offering courses online, a high level of uncertainty seems to be the only certainty in the near future.

As one of the few countries that successfully maintained a regular spring semester in 2020, Taiwan had a different experience from most educational institutions around the world. Although there were two universities partially and temporarily closed due to some confirmed cases, most universities in Taiwan managed to keep things running normally during this uncommon time. Under the social distancing and mask regulations, students attended on-campus meetings and face-to-face learning activities every day. The regular grading system was implemented in all courses, and the end-of-semester course and teaching evaluations were carried out in all courses that were delivered in online, blended, or face-to-face environments. This reflective essay aims to share our experience in NTU during the COVID-19 pandemic. An efficient and effective response to the crisis requires collaboration amongst various people (Sasangohar et al., 2020). For this essay, we primarily focus on the anti-COVID-19 measures the Center of Teaching and Learning Development (CTLD) and Digital Learning Center (DLC) at NTU took to assist instructors and students in facing the changed versus unchanged environments.

Situations in NTU

Before the pandemic became a global outbreak, the impact of COVID-19 was discovered in Asia in the beginning of 2020. Learning from past experiences during SARS, Taiwan was among the first alerted by the situation and took swift preventative actions in the pandemic's early stages. In January 2020, the Central Epidemic Command Center (CECC) was established by the government, and more than 20 nation-wide preventative policies toward the pandemic were carried out. Following the government policies, a campus-wide, multi-unit Coronavirus Task Force team was formed at the end of January in NTU. As a part of the Office of Academic Affairs, NTU CTLD and DLC took several

countermeasures to mitigate the impact and prepare both instructors and students to respond promptly to the uncertain situation of the pandemic. These actions were implemented following Bloom's (1956) three domains of knowledge, namely (1) cognitive, (2) psychomotor, and (3) affective. As Oerther and Peters (2020) suggested, it is essential to help university personnel adapting to the new circumstance by guiding their heads, hands, and hearts at the same time. Table 1 shows the timeline for the main measures taken during the spring semester of 2020.

Table 1. Timeline for the spring semester of 2020 in NTU

Date	Major event	CTLD & DLC measures
Feb. 3	Government announcement about the proposed start date of the spring semester of 2020	Providing the "instructional design principles" for the 16-week semester
Feb. 5	Border controlled in Taiwan	
Feb. 14		The announcement of the "Measures in Response to the COVID-19 Pandemic" by the Office of Academic Affairs
Feb. 21		Live broadcast to prepare the faculty for online teaching
Feb. 24		Training program of online teaching for instructors
Mar. 2	First day of class	
Mar. 13		Training program of online teaching for Teaching Assistants (TA's)
Mar. 17		Free online meeting account for NTU instructors
Mar. 18	Close campus to non-university personnel	
Mar. 20		Storage upgraded for course capacity on NTU COursesOnLine (COOL)
Mar. 27		Network upgraded for video watching fluency in NTU COOL
Apr. 6	Courses with 100+ students moved online	Providing guidelines of assessment design in online environments
Apr. 20-24	Midterm exam	The instructor survey about assessment design for midterm exam
Apr. 27	Courses with 60+ students moved	

	online	
May 5		Revised the end-of-semester course/teaching survey
Jun. 1	All courses can move back to campus	
Jun. 19	Final exam	The instructor survey about assessment design for final exam and teaching experiences during the pandemic The end-of-semester course/teaching survey

On February 3, the Minister of Education in Taiwan announced the extension of winter vacation in all schools for two weeks as a result of the pandemic prevention. To minimize the impact of this change on the activities, courses, and internships that were scheduled to take place in the summer, NTU decided to shorten the spring semester of 2020 from 18 weeks to 16 weeks. To assist instructors in making last-minute adjustments to their courses, the NTU CTLD provided all NTU instructors with guidelines for course redesign and alternatives for student assessment. These guidelines covered all types of courses, including lectures, labs, and discussions.

On February 5, the gradually restricted border control in Taiwan meant that many international students and overseas Taiwanese students were unable to attend classes in time or return to campus for the spring semester. Responding to these students' immediate needs, NTU announced that all courses with the aforementioned students must provide learning and teaching materials online. Since other classes might also have students absent from undergoing quarantine during the pandemic, digitalizing materials was strongly encouraged. To make the new change more acknowledged by instructors, ten days before the beginning of the spring semester, DLC held a live broadcast with the NTU President to explain the university's policy and to prepare instructors for online teaching in both synchronous and asynchronous ways. This 90-minute live broadcast attracted more than 3,000 views and 37 discussion threads in total. After the live streaming ended, DLC also uploaded the video online alongside other e-learning resources, including trainings, tutorials, guidelines, and teaching consultations. From a pedagogical perspective, this broadcast provided instructors with cognitive information about e-learning, psychomotor guidelines to digitalize materials, and emotional support to face the challenge in an unfamiliar setting.

Figure 1. A screenshot of the DLC live broadcast with NTU President.

To prepare for a large amount of online teaching and learning materials and the intense usage from instructors and students, DLC took some precautions on the infrastructure of NTU's online teaching and learning platform—the NTU COursesOnLine (COOL)—in the beginning of the spring semester. Both the storage capacity and networking were upgraded for heavy usage. Additionally, free accounts for online conferencing systems like U-meetings were provided to all NTU instructors. As the pandemic progressed, the social distancing policy took place on campus. On April 6, all courses with more than 100 students moved online, and on April 27, classes with more than 60 students moved online. As the situation gradually improved in Taiwan, these measures were loosened accordingly. In June, some instructors resumed course meetings in physical classrooms, and some chose to remain online until the end of the semester.

From our experience in NTU, the pandemic's impact on the continuation of learning and teaching can be discussed from the interrelationships amongst university policy, course, and instructor (Figure 1). In response to the pandemic, the moving online policy was the primary measure that educational institutions around the world took under the notion of "suspending classes without stopping learning" (Zhang, Wang, Yang, & Wang, 2020). Following the policy, there were issues regarding courses and instructors that deserve further discussion.

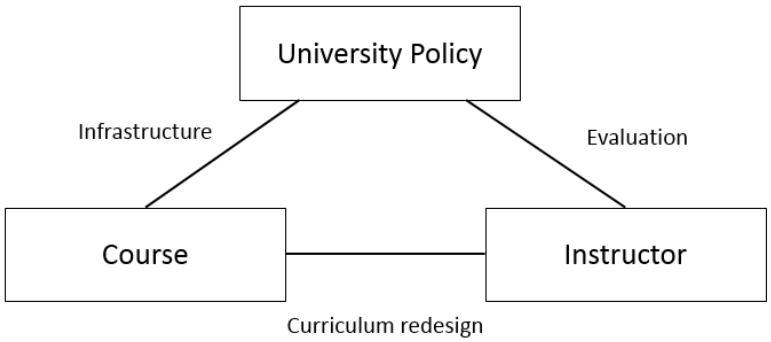

Figure 2. Impact of the pandemic on university policy, course, and instructor.

Even in the best circumstances, transitioning to online teaching and learning at scale is highly complex (UNESCO, 2020). However, under the threat of a global pandemic, it has become a necessity for most educational institutions. Although not all courses moved online in NTU during the spring semester of 2020, all instructors were encouraged to prepare for the possible sudden transition. At the beginning of the pandemic, the policy's implementation focused more on the cognitive and psychomotor aspects of knowledge, which means providing clear and precise suggestions to instructors about what they could do next and how they were going to do it. To achieve a prompt and smooth transition, some necessary infrastructure and supportive resources needed to be in place, as well. In NTU, courses with urgent needs to move online were assisted by NTU OpenCourseWare (OCW) and Massive online open courseware (MOOC) production teams. With the help of e-learning specialists, instructors can focus on making quick adjustments to course designs. For other courses, online and in-person tutorials, technical guides, and training programs about online teaching methods and how to make fair use of digital tools were provided to instructors and TA's. Peripherals like microphones and cameras were available at DLC, and a 'one-button studio' was established and opened to all NTU personnel for quick video production. Even for courses without an immediate need to move online, instructors were encouraged to use the automatic class recording system in physical classrooms to digitalize lectures for future use.

There were three main concerns regarding the effectiveness and efficiency of moving online: information security, the massive demand for online learning platforms, and the intellectual property of online teaching materials. At NTU, the online learning and teaching platform we used was NTU COOL, an online Learning Management System (LMS) developed by NTU DLC in 2018. It is a closed LMS that can only be accessed by registered course members, including instructors, students, and TA's. This closed design provided basic information security to its users and reduced the risk of intellectual property related to online material. Since it was an existing institutional LMS within NTU, it provided the familiarity that instructors and students need in an uncertain time and lowered the barrier to online learning. However, the large scale of its intended users still posed challenges. The number of courses

on NTU COOL in the spring semester of 2020 increased almost ten times from the previous semester. At the end of spring semester of 2020, one third of NTU courses, 65% of NTU instructors, and 80% of NTU students used NTU COOL. As shown in Figure 2 and Figure 3, the number of users and courses on NTU COOL over time in the spring semester of 2020 increased significantly with the announcement of courses moving online and social distancing policies.

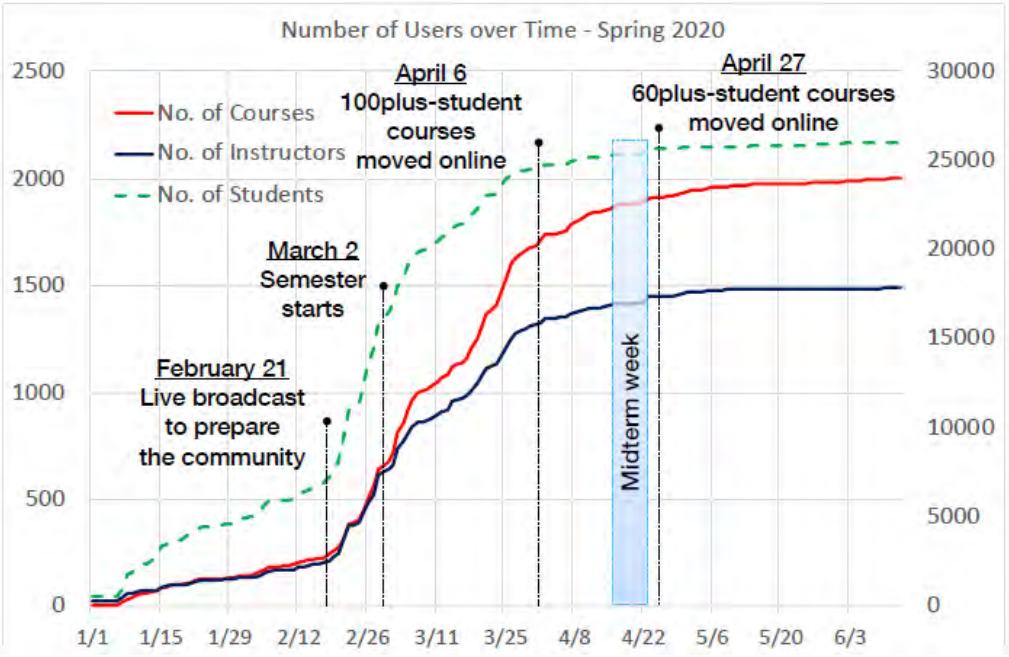

Figure 3. Number of users over time on NTU COOL in spring 2020.

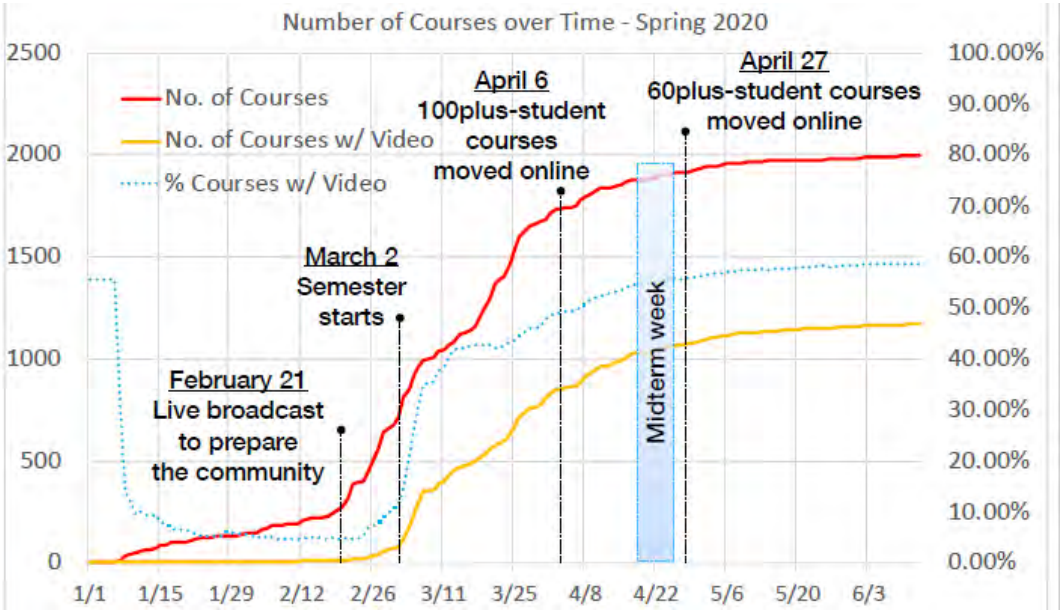

Figure 4. Number of courses over time on NTU COOL in spring 2020. The impact of the moving online policy on instructors.

For instructors, their main concerns about moving online focused on the relative issues of

evaluation. For example, how should instructors conduct online assessments? How should they evaluate students' online learning performance? How should their teaching or the quality of the courses in various contexts be assessed in the end-of-semester course/teaching evaluation? These concerns can affect instructors significantly at both cognitive and emotional levels.

Responding to the pandemic, many universities offered alternative grading options during the spring semester of 2020. Universities like Yale University and Duke University moved to Pass/Fail grading for all their courses. Carleton University asked faculty to submit their grades as usual, but students could then choose to keep the letter grade or convert it to Pass/Fail. At NTU, no matter how the course was delivered, all instructors had to follow the standard grading system during the spring semester of 2020. To understand instructors' actual reactions to the pandemic's impact on their teaching, we conducted an end-of-semester survey focusing on student evaluations of their courses. All NTU instructors who had courses in the spring semester of 2020 were asked if they made any changes to their students' assignments because of the pandemic. About 40% of respondents indicated that they changed assessments in at least one of their courses. Written report (50.5%), oral presentation online (42.9%), and open-book exam at home (38.5%) were the top three most used student assessments during the pandemic. In the survey, we also asked instructors if they had implemented new ways to evaluate students' performance in online courses. The results showed that online oral presentations (26.4%), open-book exam at home (25.3%), and online written exams (19.8%) were the three most used assessments that instructors tried in online environments.

Regarding online learning, most instructors worried about the academic integrity in online assessments. As previous research indicated, university instructors with limited online education experience tended to be more resistant to the idea and more skeptical about online assessment results compared to their more experienced colleagues (Yates & Beaudrie, 2009). A recent survey with 789 instructors also revealed that 93% of respondents felt students would be more likely to cheat in online courses than in-person courses (Wiley, 2020). Since assessments taking place in an unsupervised setting could easily raise concerns over online cheating (Beck, 2014), NTU instructors who tried online assessments for the first time would ask questions like, "Is it possible to automatically turn on the webcam on my students' laptops or automatically start screen recording while they are taking the online exams?" Moreover, some instructors moved final exams back to physical classrooms after the social distancing policy was removed because "some students will take online quizzes, which are supposed to be completed individually, together as teamwork. This is unfair to those who follow the exam rules." To help instructors prevent online cheating, NTU CTLD and DLC suggested instructors take precautions in three ways. First, instructors should consider the attitudinal perspective, creating a culture of academic integrity in online courses by educating students about the values of academic integrity and the consequences of dishonesty (Beck, 2014). Second, from the technical perspective, instructors should use instructional techniques or technologies to detect or prevent academic

misconducts, such as implementing plagiarism software, randomizing test questions, and breaking down a high-stakes examination into several tests. Third, from the pedagogical perspective, instructors can incorporate the idea of alternative evaluations like performance assignment and portfolio assessment and encourage higher-order learning in the course (Martin, Ritzhaupt, Kumar, & Budhrani, 2019; Reeves, 2000; Wiley, 2020).

Another concern from instructors about online teaching was the end-of-semester course/teaching evaluation survey. This survey aimed to assess students' learning engagement and the quality of the course/teaching. At NTU, the survey results were an indicator for the Teaching Excellence Award. While no NTU instructor was out on the wave of online learning and teaching during the pandemic crisis, some worried the sudden transition would affect their overall teaching quality. Therefore, the survey was revised by NTU CTLD according to the new situation. The regular survey mainly focuses on in-person classes and contains 11 questions from three perspectives: students' self-reported learning engagement (3), course/teaching performance (6), and suggestions for the course (2). To address the diverse mode of teaching in the spring semester of 2020, NTU CTLD conducted a statistical analysis of past results and reduced the second part of the survey into two questions: 1) the instructor was devoted to teaching, and 2) in general, this is an effective course. The first question focuses on instructors' teaching, and the second question regards the course quality. Based on the results from the analysis of end-of-semester course/teaching surveys in the spring semester of 2019 and spring semester of 2020, students' average satisfaction toward the course/teaching quality increased from 4.38 to 4.49 on a 5-Likert scale. It seemed the overall teaching and learning quality of NTU courses was not negatively impacted by the pandemic. Further analysis of the larger courses forced to go fully online in the spring semester of 2020 found that compared to the same courses offered in the previous academic year, the average satisfaction also increased from 4.28 to 4.34.

The pandemic impact on instructors and courses

As researchers stated, online education's effectiveness is largely dependent on instructors' online teaching ability and experience (Zhang et al., 2020). In their study of online teaching practices, Martin et al. (2019) concluded that the award-winning faculty they interviewed were characterized by "the willingness to learn and willingness to experiment". These characteristics are necessary for teaching in almost all educational settings; nevertheless, it is particularly essential for online learning in which technological advancement has given rise to more opportunities, as well as the unknowns that are inherent in the learning process. During the pandemic, the urgent need of online learning and teaching helped instructors realize the potential of online education and bridge the gap between conventional teaching and advanced technologies (Mohmmed, Khidhir, Nazeer, & Vijayan, 2020). For example, an

instructor found that watching lecture videos in NTU COOL actually encouraged students to ask more questions about course content than they would in face-to-face classrooms. Functions like video commenting in NTU COOL allow individuals to leave comments on a particular timestamp of the lecture videos, and then instructors can view the timeline and respond to comments. It provided an opportunity for each student to express opinions and discuss ideas with instructors without the concerns of class time constraints.

Another positive indication of e-learning progress in NTU was that since almost all courses digitalized parts of instructional materials for online learning during the pandemic, more instructors were willing to utilize these materials for curriculum redesign. For example, more large classes (with more than 800 students) were delivered in the blended mode in the fall semester of 2020. Instructors' course lectures are provided mainly online and followed up by face-to-face small-group discussions or activities led by TA's. It is an effective and efficient way to deliver quality teaching to a large number of students with concerns about the social-distancing policy. Moreover, the number of for-credit MOOCs and SPOCs (small private open courseware) combined with in-class, face-to-face activities or evaluations also increased in the fall semester of 2020.

Instructors' resistance to online teaching might be reduced by the urgent need during the pandemic, but to teach continuously under unfamiliar circumstances still increases pressure on both practical and emotional levels. Therefore, follow-up support was as necessary as the infrastructure and guidelines. In NTU, DLC held a campus-wide discussion forum for instructors of online classes. There were more than 1,800 instructors on this forum. They could raise questions, share ideas, and show support for each other while teaching online.

Final reflections and suggestions

While this reflection was written, the pandemic outbreak in many countries and regions of the world is still at its peak or is undergoing a second wave. Japan and the UK are under new lockdown policies. Situations in countries like the United States and Brazil are still severe. While the initially temporary actions seem to be becoming commonplace, we need to be better prepared for the forthcoming semesters. From our experiences at NTU, we strongly suggest that all policies and actions need to be considered from cognitive, psychomotor, and affective perspectives to be effectively implemented. In other words, in the face of an emergent crisis, people not only need immediate guidance about what to do and how to do it, but they also need continuous support to help them understand why they need to do it and how to keep doing it. From university policy, course, and instructor perspectives, we propose the following suggestions for other universities.

First, policy creation should be preventative and well-communicated. To ensure universities can effectively respond to possible risk, preparations for unforeseen events are necessary. This usually

requires information gathering, analysis of past and current situations, and evaluation of available solutions. However, having good policies can only be the first step. It requires good communication to implement policies effectively. At the university level, all policies need to be clearly communicated and explained to staff, faculty, and students. This allows for the necessary collaboration and understanding across various groups in times of uncertainty. At the course level, whether the class is delivered online, blended, or in-person, course policies regarding course expectations and responsibilities should be explicitly communicated between instructor and students (Taha, Matheson, Cronin, & Anisman, 2020). Timely and two-way communication is suggested because it allows different groups to express concerns and seek advice.

Second, infrastructure can reduce the impact of sudden changes. While online education is an obvious learning option during the pandemic, its effect is greatly constrained by the infrastructure (Zhang et al., 2020). The large scale of users and demands can easily overwhelm the existing institutional LMS and network systems. Therefore, necessary preparation of the infrastructure, such as the development of an LMS supporting online interaction and evaluation, should be taken into account by the university as a preventative measure. Moreover, since every course has aspects that can be delivered online, all instructors are encouraged to digitalize teaching and learning materials for later use if anyone is unable to attend physical classes or the course is suddenly moved online. For those courses that remain in face-to-face environments, digitalized learning materials can be used for more diverse instructional approaches like blended learning or flipped classrooms. For the future, the mix of face-to-face and online education could be a way to compensate for the advantages of both approaches and be a nimble solution to sudden changes.

Third, pedagogical support is just as important as technical support to instructors in online learning. Under the pressure of the pandemic and the sudden transition to online, instructors who did not have previous experiences with online learning tended to simply copy what they do in physical classrooms to online teaching. However, simply duplicating offline practices may fail to deliver desired learning outcomes online (Martin et al., 2019). Since online education lacks the physical environment to create collective experiences amongst learners and to provide hands-on learning opportunities, course learning goals need to be adjusted accordingly. Therefore, to ensure a better online learning experience, instructors not only need technical support and the accessibility of tools, but they also need online learning pedagogical knowledge. Examples of this include facilitating online learning activities, delivering teaching materials properly in an online format, and designing students' online assessments. At NTU, we provide training programs about online teaching to instructors and TA's. Quick suggestions for adapting the physical course design into an online format were available, as well. Instructors with less online teaching experience can make use of the tools and functions provided in the NTU COOL to make for an easier transition.

Fourth, building trust between instructors and students is essential to the effectiveness of

online education. Without face-to-face interaction and communication, students and instructors find it more difficult to build trust with each other. As a result, it can easily cause problems for the learning and teaching outcomes of online learning. Based on our observations at NTU, instructors usually feel more insecure than students in the online environment, and this is particularly true for those with less online teaching experience. Hence, instead of taking advantage of online learning's unique attributes to promote self-regulated learning and active learning, instructors can be even more demanding of students than those in physical classrooms. For example, instructors might use LMS analytics like login time or video-watching time to monitor individual students' learning behaviors in online courses, and in return, it could cause students to develop negative feelings toward the course or a lack of willingness to participate in learning activities in the LMS. Creating a sense of engagement, connection, and collaboration that leads to building trust between instructors and students is important to the effectiveness of online education. Therefore, instructors' understanding and usage of LMS analytics needs to be guided toward the direction of teaching improvement rather than learning assessments.

Fifth, the online teaching experience has also pushed most instructors to consider their courses and teaching methods from new perspectives. Many researchers have already suggested that the pandemic brought an unseen opportunity to online learning (Adedoyin & Soykan, 2020). Since all types of classes moved online under the pandemic pressure, it provided an opportunity to examine what teaching or pedagogy mode may be best fit for online learning. While some instructors and students embraced the potential of online education for the first time, others might have re-confirmed or re-discovered the learning features in face-to-face classrooms. Identifying the meaning and value of online and physical courses seems to be a necessary next step. What are the things that cannot be moved online? What is the learning advantage of gathering everyone together in a physical classroom? Why do instructors think they teach better in physical classrooms or with students sitting in front of them? What learning outcomes can only be generated in a brick-and-mortar environment? These are the questions that require administrators, instructors, and students to reconsider and then identify the real value of online and face-to-face classes.

Conclusions

Since the threat of COVID-19 is still real and present, we cannot afford to be careless. All universities need to stay vigilant and be prepared for future uncertainty. University administrators, instructors, and students have to remain flexible to all kinds of sudden changes and adaptable to make timely adjustments. In this reflective essay, we shared our crisis responses during COVID-19 and suggested measures to cope with the pandemic. Whilst it is a difficult time for everyone, what we learned at NTU is that risk can be an opportunity. As a consequence, the heavy demands on large-scale online education provide a unique chance to examine and reconsider the value and meaning of both online

and face-to-face courses. During the pandemic, we have assisted many instructors in reconsidering the goals of their teaching and the value of the learning environment they have created. We found that most pressure and doubt about online learning results from lack of trust in unfamiliar environments, a problem that can be easily relieved by building collaboration amongst university policy, instructors, and courses, and by providing continuous support at cognitive, psychomotor, and emotional levels. We hope all instructors will be aware of the importance of thinking about learning from the students' perspective instead of the instructors' perspective. We also believe the challenges brought by the pandemic may bridge theory and practice in order to foster a more collaborative learning approach to dealing with the ongoing crisis in the future. Many new creative teaching methods were introduced into NTU, as well, to see if we could find more options to prepare for future challenges. Although these new implementations need further evaluation of their effectiveness and sustainability, they open up greater possibilities for innovative learning and teaching, even during turbulent times.

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