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# A preliminary exploration of crisis management approach on higher education and quality assurance in Taiwan *under* COVID-19 pandemic: *relevance to other contexts?*

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## ABSTRACT

In alignment with the Central Epidemic Center (CECC) measures and Ministry of Education (MOE) policy, Taiwan's universities took actions to ensure campus safely and continued quality of learning. At the same time, quality assurance agencies in Taiwan responded to the new mode of online instruction during the pandemic. The aim of this study is to explore the impact of virus pandemic on higher education and quality assurance. Crisis management approach and policies from central government and national accreditor are analyzed first. The actions and responses from three case universities are subsequently discussed at the end of the paper.

## ARTICLE HISTORY

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Higher education; quality assurance; crisis management; COVID-19

## 1. Introduction

The pandemic outbreak of *Coronavirus Identified in 2019 (COVID-19)* spread relentlessly across borders in 2020, infecting more than 38,889,379 persons in nearly 188 countries, as of November 2020. This resulted in a worldwide educational crisis. In an attempt to contain the spread of the COVID-19 pandemic, most governments temporarily closed educational institutions. The UNESCO (2020a) claimed that students affected by school or university closures have exceeded 1.5 billion, accounting for 91.5% of the world's student population.

The impact on higher education includes thousands of faculty members and students being suddenly forced to stay at home and learn online; the suspension of international mobility and travel; postponement of institutional entry examinations; and reduced or cancelled government funding. These changes affect not only how universities maintain the quality of teaching, but also how student learning outcomes are measured, in national and international contexts. As Brown and Salmi (2020) pointed out, the pandemic pressured higher education institutions to determine 'whether to halt student learning assessment, postpone or cancel final exams,

how to recruit local and international students for the next academic year especially in countries where national end-of-high-school exams have been scratched' (p. 1). In addition, a UNESCO (2020b) survey report shows that most universities have administered examinations remotely via internal or institutional platforms, or even postponed the whole academic year. At the same time, they have had to apply alternative measures, with adapted methodologies, to assess student learning outcomes. These include the submission of essays; oral presentation through videoconferencing; and project and task-based work. Moreover, universities, in particular, have difficulty in 'ensuring the students of the final years who should be on time with a quality assured degree' (United Nations Educational, Scientific and Cultural Organization (UNESCO), 2020b, p. 2) under this unusual situation.

Higher education in Asia, and its quality assurance (QA) mechanisms have been seriously threatened by the pandemic in 2020. Most Asian institutions, guided by national authorities, have closed campuses; postponed examinations; cancelled all large gatherings such as graduation and enrolment ceremonies; temporarily suspended cross-border research projects; enforced quarantine policy on all incoming international students, etc. (Hong, 2020). Given the fact that all Taiwan's universities took swift action to ensure campus safety and quality of learning, in alignment with the Central Epidemic Command Center (CECC) measures and Ministry of Education (MOE) policy, Taiwan has become one of the few nations where campuses remained open normally after the outbreak of COVID-19 (Everington, 2020).

Over the past two decades, higher education in Taiwan has undergone significant expansion, both with respect to increases in the number of institutions and the number of enrolled students. Amid flourishing economic development, social liberalization, and democratization in the 1990s, Taiwan's higher education system has decentralized and the state now exerts less control, while universities continue to seek greater autonomy (Hou et al, 2021). By 2019, the number of higher education institutions increased to 157, enrolling more than 1.3 million local students as well as 64,268 overseas students during the 2019–2020 academic year (Ministry of Education, 2020a). Since 2000, on the one hand, the government would like to deregulate the higher education system in order to strengthen international competitiveness; on the other hand, a national accreditor, Higher Education Evaluation & Accreditation Council of Taiwan (HEACT) was established in order to assess institutional accountability (Hou et al, 2018).

Therefore, the aim of this study is to examine the impact of pandemics on higher education and QA in terms of policy making, quality assurance measures and university responses in the Taiwanese context. As Taiwan is recognized as one of the most successful stories of the COVID-19 crisis, the crisis management approach and relevant national government and national accreditor policies as an external form will be analysed first. The actions and responses from three universities selected by type and location from an internal perspective will be discussed towards the end of the paper. Based on the above considerations, there are three research questions to be addressed, as follows.

(1) What was the crisis management approach adopted by Taiwan's government during the pandemic to ensure quality assurance in higher education? (2) How did

three Taiwan universities respond to national regulation in terms of governance, digital delivery and internationalization under the pandemic?

(3) To what extent is Taiwan's experience relevant into other contexts?

## 2. Literature review

### 2.1 *The issues, challenges, impacts of COVID-19 on higher education*

The impact of COVID-19 on higher education has already drawn widespread attention and raised discussion globally, particularly in areas of internationalization, inequality and quality aspects (Brown & Salmi, 2020; United Nations Educational, Scientific and Cultural Organization (UNESCO), 2020a). First of all, national border closures suddenly drove multifaceted changes in the ecology of international student mobility. On one hand, there has been a significant decline in international student mobility during COVID-19 due to restrictions on international travel (Altbach & De Wit, 2020a; Bothwell, 2020; Mitchell, 2020). On the other hand, students' preference for studying abroad is likely to be changed after the crisis (Mitchell, 2020). It is predicted that more students will be interested in short-term mobility instead of a foreign degree after COVID-19 (Altbach & De Wit, 2020a). Study destination patterns will likely be reconstructed from the global scale to the regional scale (Altbach & De Wit, 2020b). Under this scenario, East Asia would likely emerge as a regional hub (Bothwell, 2020). Nevertheless, Simon Marginson predicted that this severe hit on global/regional mobility and internationalization in higher education would likely require at least 5 years of recovery (Bothwell, 2020).

Another issue raised by Altbach and De Wit (2020b) is that of widening inequality caused by the pandemic, due to the varying levels of online acquisition and infrastructure in higher education worldwide (Sharma, 2020). As universities shut down physical presence learning and turned to online education, the ability to access the internet, and varying Internet speed, would become one of the determining factors for the QA of online learning. Universities in developing countries, or those with limited online access, might suffer as a result of this unusual situation more than those in developed countries (Altbach & De Wit, 2020b; Atherton, 2020; Brown & Salmi, 2020). Take Southeast Asia, for example: a large segment of the population doesn't have access to the Internet and electronic devices. Only Singapore, Brunei and Malaysia have over 80% Internet coverage (Jalli, 2020). Without alternatives for those who are unable to receive online education, inequality and marginalization will definitely widen in these regions (Tamrat & Teferra, 2020). When classes move from physical instruction to online learning, inequality issues between universities will intensify in both developed and developing nations.

This rush to distance education or online teaching during the current crisis also raises quality issues. Forcing a variety of face-face discourses, particularly lab work and internship, to move online, has led to concern over student learning outcomes and assessment. Although online assessment is deemed to be one of the choices to realize students' learning outcomes, it remains challenging to develop a set of criteria for QA of distance education in most nations (Brown & Salmi, 2020; Coates, 2020). In particular, the quality of online learning might be only poorly assured if higher education providers are lacking appropriate and sufficient equipment, advanced technology and physical curriculum

adjustment, as well as experienced faculty members (Altbach & De Wit, 2020a). It is more challenging for professional programmes, such as medicine, biotechnology, engineering, etc. As Malcolm Reed, Dean of Brighton and Sussex Medical School, Brighton, UK argued that ‘there is no simple answer as to how to deal with students who have missed 6 months of their clinical experience’ (Burki, 2020, p. 758). This issue has led some governments to take strict actions regarding their quality concerns. For example, the Malaysian government has suspended all online teaching and learning activities in the country at the outset of the pandemic, and Argentina’s flagship university determined to postpone and reschedule the academic calendar instead of switching to online courses (Brown & Salmi, 2020; Martin & Furiv, 2020).

## ***2.2 State regulation and quality assurance in Asian higher education under neoliberalism***

The relationship between higher education and government has always been connected. Traditionally, the high level of state regulation over higher education is the most common governance model in countries, particularly in Asia. As Shin pointed out, ‘this is particularly true for the state-centered governance of East Asia’ (2018, p. 11), which responds to the argument by Van Vught and De Boer (2015) that the ‘state plays a pivotal role in establishing frameworks, objectives, and priorities’ (p. 38). In the late 1990s, neoliberalism with an emphasis on marketization, privatization, deregulation with competition as a key characteristic in higher education, was implemented in many Asian national agendas. Influenced by the new public management theory, several governance reforms were initiated, such as cuts in public funding, incorporation of national universities, competitions for national funding, etc. (Hou et al, 2020).

Higher education in Asia has been in the massification phase for the past several decades. Currently, enrolments in Asian higher education have increased by over 50% and in East Asia and Pacific, the gross enrolment rate even reached the world average level (Calderon, 2018; Marginson, 2011). Under neoliberalism, Asian governments regard QA as one of the most powerful apparatuses to regulate higher education institutions. Moreover, the expansion of higher education has sped up the development of QA made it serve specific functions for quality control in Asian higher education (Martin & Stella, 2007; Shin, 2018).

After 2000, most Asian governments started to develop national QA systems to ensure the quality of local higher education providers and programmes, including Taiwan. Examining the characteristics of Asian QA agencies, it was found that most of the agencies in the region were government funded and acted as a statutory body. Under either direct or indirect governmental control, Asian agencies were considered as extended arms of government. Although most agencies claimed that they have autonomy over review procedures and decisions, they admitted that it was not easy to enhance their level of ‘autonomy’ because of their close affiliation with the government (Hou et al, 2015; Jarvis, 2014).

### ***2.3 Conceptual framework-crisis management approach in higher education and quality assurance under global lockdown***

According to the International Organization for Standardization (ISO), a 'crisis' is 'an unstable condition involving an impending abrupt or significant change that requires urgent attention and action to protect life, assets, property, or the environment' (ISO, 2011, p. 1). When a 'salient, unexpected, and potentially disruptive crisis' occurs in an organization, it will threaten the operation of the organization (Bundy et al., 2017, p. 1162). The issue of how to manage or handle the crisis is imperative for the survival of an organization. Crisis management is defined by ISO as a process used to identify 'potential impacts that threaten an organization' and to provide 'a framework for building resilience, with the capability for an effective response that safeguards the interests of the organization's key stakeholders, reputation, brand, and value-creating activities, as well as effectively restoring operational capabilities' (The International Organization for Standardization (ISO), 2011, p. 3). Most importantly, it involves a variety of stakeholders to develop a plan swiftly for 'mitigation response, and continuity or recovery in the event of an incident'. Based on the level of impact, global higher education information firm QS finds that there are three major types of crisis management, including 'widespread disruption to normal operations for an extended period', 'an incident that threatens the reputation of the organization', and 'serious injury, illness, and death' (QS, 2020). And the OECD (2020) reminds us that 'the coronavirus pandemic is causing large-scale loss of life and severe human suffering without precedent in living memory which is testing our collective capacity to respond' (p. 1).

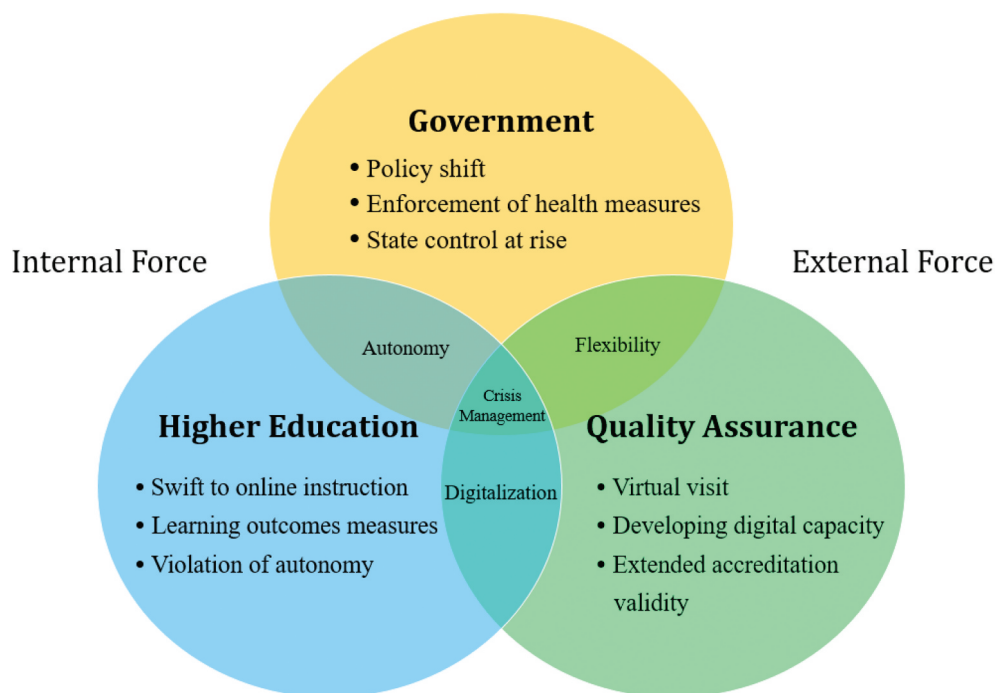
COVID-19 resulted in an immediate global lockdown that forced Asian governments and universities to reshape their relationship with the global community, and that has also raised the question of how the quality of higher education institutions should be measured in countries where most campuses are closed, lectures are forced to move online and students are compelled to learn at home as well as online (Bothwell, 2020). With a crisis management approach, the development of immediate action plans to alleviate damage and unintended consequences has reached a high state of urgency for governments, higher education institutions, and quality assurance agencies to rethink of their relationships as well as 'new approaches so that universities can deliver education in a way that is safe for staff and students, maintains quality, is sustainable and is resilient to future shocks' (The Quality Assurance Agency for Higher Education UK (QAA UK), 2020, p. 2).

Pressured by the pandemic, the government as a leading regulator to enforce health protocols strictly over higher education institutions would inevitably affect institutional governance and management, including student admission, pedagogy and course design, assessment and academic integrity, student engagement, work integrated learning and clinical experience, and even QA of transnational education (TNE). In addition, a study conducted by QAA UK also found that 'social and physical distancing restrictions and moving into online delivery have presented quality issues relating to inconsistent readiness, lack of digital capacity and hard to measure learning outcomes' (The Quality Assurance Agency for Higher Education UK (QAA UK), 2020, p. 6).

Although QA may not be at the forefront of most governments' concern during this pandemic, it can definitely affect the academic development of universities

(INQAAHE, 2020a; 2020b). The institutional transition to online learning under the COVID-19 crisis has established remote working models with dependable IT infrastructure, which indeed challenges the tradition mode of external reviews undertaken by quality assurance agencies. On one hand, the conventional model of QA has quickly shifted into virtual mode; on the other hand, the accreditation validity would likely be extended due to limitation of technology and travel (Brown & Salmi, 2020). Many issues of QA in higher education became immediately apparent as a result of COVID-19, and this will facilitate QA agencies to adopt a more flexible, innovative and contextualizing method to ensure students' learning outcomes (Youngs, 2017). Therefore, a theoretical framework of crisis management to examine the interconnectedness among government, higher education and quality assurance was created in three dimensions of autonomy, digitalization and flexibility as follows (Figure 1).

Pressured by the global lockdown, unbalanced relationships among government, higher education institutions and QA agencies emerged in several contexts. The more serious the pandemic becomes, the stronger the role of government will be; conversely, the role and identity of higher education institutions will be shaped by how they cope with rising risks including declining research funding, and a shortage of international students. Most importantly, universities will be directly regulated by government regarding their ability to provide sufficient online resources and support for unprepared teachers and disadvantaged students in this unique situation (Atherton, 2020; Martin & Furiv, 2020). At the same time, the role of external QA will likely fade owing to their inability to



**Figure 1.** Theoretical framework of crisis management in terms of autonomy, flexibility and digitalization.



**Table 1.** List of major documents and texts collected.

Governmental laws on health crisis management in Taiwan	HE policy documents by MOE Taiwan	University reports
1. <i>Communicable Disease Control Act</i>	1. Revised University Act	1. University A Policy over Pandemic Prevention and meeting minutes
2. <i>Special Act for Prevention, Relief and Revitalization Measures for Severe Pneumonia with Novel Pathogens</i>	2. Handbook on Prevention and Control of Infectious Diseases	2. University B Policy over Pandemic Prevention and meeting minutes
3. <i>Enforcement Rules of Disaster Prevention and Protection Act</i>	3. Actions and Responses by Universities Under COVID-19	3. University B Policy over Pandemic Prevention and meeting minutes
	4. Guidelines on 'University suspension and resumption in response to confirmed cases'	
	5. Guidelines on 'University suspension and resumption in response to instructions from the command center'	
	6. Ease Project for COVID-19 Prevention	
	7. Guidelines on adjustment and rehearsal of university teaching methods in response to epidemic prevention	
	8. the References for Online Instruction and Learning	
	9. <i>HEEACT Safety Measures for Covid-19 Prevention</i>	

Source: authors.

conduct on-site visits for institution and programme reviews. As Hou et al., (2020) indicated, 'in response to the new challenges in higher education and policy changes, quality assurance agencies are expected to transform the traditional role and reposition their relationship with the government and higher education providers, so as to maximize their full capacity' (pp. 301–302).

### 3. Research method

The study adopts a contextual analysis approach as its major research method, in order to explore the integrated model of crisis management and impact of COVID-19 on QA and higher education and governmental policy shift in the Taiwanese context. English and Chinese documents and texts, including government policies, national regulations, university reports, website, and international guidelines represent the sources used for subsequent analysis (Table 1). The contextual analysis approach is often used to assess texts and collected documents in the historical, cultural or social context, which takes both global and local contextualization into consideration while characterizing the specific circumstances and situations in the related documents (Iversen, 1989, 1991).

In addition, in-depth interviews were undertaken in order to learn substantial opinions of universities and quality assurance agencies in the context. In total, there were seven representatives selected. They are not only university senior administrators but also ever worked at national quality assurance agency over past 3 years. The interviewees' names are kept anonymous to protect their identity. The interviews were transcribed and collated with the document data using MAXQD to identify key arguments related to the challenges in implementing government health measures and QA policy. Seven respondents were



**Table 2.** Codes of participants by administrative positions and QA experiences.

Dean of Office of Academic Affairs	5-year EQA ex.	UQ 1
Dean of Office of Student Affairs	3-year EQA ex	UQ 2
University College Dean/QA top administrator	2-year EQA ex	UQ 3
University president	3-year EQA ex	UQ 4
University president	3-year EQA ex	UQ 5
University vice president	2-year EQA ex	UQ 6
University vice president	3-year EQA ex	UQ 7

given a code that summarized in terms of administrative position and QA experiences. The representatives were coded from UQ1 to UQ 7 (Table 2).

## 4. Policy shift, quality assurance initiatives and institutional responses in Taiwan higher education: a contextual analysis

### 4.1 Crisis management approach in Taiwan higher education and quality assurance

#### *Government-led approach and health measures*

As of November 2020 there had been 589 confirmed cases in Taiwan, with a total death toll of 7. One of the major causes of this outcome was the Taiwanese government's swift action and application of a top-down approach in accordance with crisis management system nationwide. As a matter of fact, the Taiwanese government has been well-prepared to tackle the health crisis as a result of several laws in place due to SARS 17 years ago. In 2016, the central government passed the Communicable Disease Control Act as an effective method to infectious diseases prevention and control (CDC, 2020a). Article 5 of the Act stipulated that 'the epidemic areas mentioned in the Act refer to either the international or domestic epidemic areas announced either by the central or local competent authorities, where communicable diseases are prevalent or infections' (Ministry of Health and Welfare, 2016, p. 1) should be reported to the public. The other national regulation, the Enforcement Rules of Disaster Prevention and Protection Act of 2018 in pursuant to Article 51 of the Disaster Prevention and Protection Act, was meant to manage serious impacts on national security, social economy and human health, or heavy burden on the healthcare system under infectious virus spreading (Ministry of the Interior, 2018).

As soon as the first COVID-19 confirmed case was announced in Wuhan, a top-down crisis management approach was immediately applied to tackle the health emergency and the government started surveillance for the containment of COVID-19 domestically and globally. The Taiwanese government immediately set up a response team, under supervision of the Cabinet, to investigate the situation under the Central Epidemic Command Center (CECC). Subsequently, the Prime Minister immediately appointed Dr. Shih-Chung Chen, Minister of Health and Welfare coordinate and integrate a variety of resources across different sectors of Taiwanese society, including government offices, hospitals, and the private sectors (CECC, 2020). The Ministry of Health and Welfare officially identified COVID-19 as a Category 5 Notifiable Infectious Disease (CDC, 2020b), which 'not only causes severe damage to the national security, social economy and

people's health, but also creates burdens to regional medical resources' (Ministry of Health and Welfare, 2020, p. 1). In addition, the *Special Act for Prevention, Relief and Revitalization Measures for Severe Pneumonia with Novel Pathogens* was stipulated on 25 February 2020, to authorize the government to take necessary measures to decrease the risk of transmission and avoid possible negative impacts for the Taiwanese economy and society. Other Measures and actions adopted by the competent authority include making a facial mask rational plan, providing subsidies or allowances to medical personnel engaged in disease prevention, compensation for people who are self-quarantined and isolated, tax deductions for employees, special funding for disease control, as well as penalties and sentences for violations of the law (Ministry of Health and Welfare, 2020).

### *Health protocols applied to higher education policies via three phases*

Following the CECC policy, the Ministry of Education adopted several measures to ensure the safety of students and teachers at schools, as well as the quality of learning on 22 January 2020. There are three phases of crisis management by the Ministry of Education during the outbreak of COVID-19.

*Phase one: Communication and Early Deployment:* from late January to mid-March

In the beginning of the pandemic outbreak, the Ministry of Education acted as the competent authority, communicating with universities and colleges as well as issuing procedures, guidelines and principles on crisis management for their reference. In this phase, Taiwan's government postponed the spring semester for 2 weeks (MOE, 2020a). Later on, the Ministry of Education developed a process of confirmed cases reporting system by universities, guidance for campus closure, and principles for college entrance examination, in the Handbook on Prevention and Control of Infectious Diseases (MOE, 2020b). Universities and colleges are informed in advance of all related measures before school starts in the spring semester, according to guidelines on 'University suspension and resumption in response to confirmed cases' and 'University suspension and resumption in response to instructions from the command center'. The two documents stressed that if there is one student or teacher listed as a confirmed case by the CECC, all the related classes should be suspended; colleges and universities with two COVID-19 cases are forced to close temporarily (MOE, 2020c).

*Phase two: Policy Implementation and quality of online learning:* from mid-March to late May

Given the fact that internet penetration in Taiwan is up to 85.3%, universities and colleges were able to effect a swift transition from class to online learning mode (National Communication Commission, 2020). When universities and colleges began teaching in mid-March, the Taiwanese government adhered to the principle of 'suspending classes without suspending learning' under CECC safety measures, and developed a set of criteria and guidelines for class suspension and resumption to ensure quality of learning (MOE, 2020d). The guidelines entitled *'Actions and Responses by Universities Under COVID-19'* stipulated that universities shall take full responsibility to 'ensure student learning outcomes while delivering discourses for epidemic prevention, suspending classes and resuming classes' (MOE, 2020e, p. 3).

To facilitate online teaching and learning, universities were encouraged to adopt simultaneous teaching, asynchronous teaching, and a hybrid of these methods, with an emphasis on quality of learning, particularly for classes with 100 students and classes

taking place indoor with poor ventilation (MOE, 2020f). In its principles entitled 'adjustment and rehearsal of university teaching methods in response to epidemic prevention', the MOE has stipulated that student attendance, interaction, group discussions and assessment should be taken into consideration under this flexible scheme (MOE, 2020b; (MOE, 2020c). And the implementation stage, the MOE published further guidelines called '*the References for Online Instruction and Learning*' to ensure the quality of distance education and engage varying higher education stakeholders, with responsibilities shared by central government, local government, and universities (MOE, 2020g). The Ministry of Education is also attempting to integrate resources from the public and private sectors in order to provide 2,000 open courses on platforms including eWant, OpenEdu, ShareCourse, TaiwanLIFE, TaiwanMOOC, etc. (MOE, 2020f).

#### *Phase three: Control and management of foreign students returning after May*

As mentioned above, international education and student mobility have been seriously impacted by COVID-19, and activity in Taiwan is no exception. As soon as the pandemic began in February, more than 26,000 degree seeking students, exchange students and Mandarin language learners were prohibited from returning to Taiwan to continue their studies, including Chinese, Hong Kong and Macao students. Moreover, the MOE announced that universities should assist those who cannot return home to study in their home country, and that they have a continuing right to learning through distance education (MOE, 2020h). In addition, all universities are requested to launch a so-called '*Ease Project for COVID-19 Prevention*' to provide sufficient administrative support for international students to complete their studies successfully. Specific items and measures are outlined in the Project, such as course enrolment and registration, credit payment, course taking method, student leave of absence, score assessment, suspension, withdrawal and schooling resumption, graduation qualifications, degree examinations for graduate students, applications for financial support, counselling and assistance mechanisms and others (MOE, 2020i; National Cheng Kung University, 2020).

When the number of confirmed cases in Taiwan dropped drastically to one or two per day by the end of May, the Ministry considered allowing foreign students from 11 low-risk neighbouring countries and areas who are graduating in the upcoming academic year to return to Taiwan. Although Chinese students were not on the list initially due to a new resurgence of the COVID-19 coronavirus in Beijing at that time, the restriction was lifted after 24 August 2020 (United News, 2020). Based on the safety measures of the CECC, all returning students would be required to go into quarantine for 14 days at hotels booked by the universities but paid by students (Wang & Chen, 2020).

#### *Safety measures and QA initiatives by the national accreditor*

Due to only low-level restrictions being set by the national government, the national accreditor, HEEACT could operate normally. HEEACT staff could work in the office and most on-site visits were undertaken as scheduled. Although HEEACT's operation was not significantly affected, it took quick action to respond to the health crisis in line with government health protocols (Higher Education Evaluation & Accreditation Council of Taiwan, 2020a). To sustain daily administration, HEEACT formed a task force for crisis management. It consists of key senior administrators who examine the potential impacts of the health crisis on the agency. The task force immediately published an emergency manual for staff, reviewers and universities, in alignment with the CECC measures and the

MOE policies. In accordance with the manual, HEEACT moved all face-to-face meetings with reviewers and providers online.

With more than 130 programmes in eight universities scheduled to be reviewed by the end of June, HEEACT adopted a flexible approach on on-site visits, due to institutional concerns over campus safety. For example, interview meetings for students, alumni and employers during an on-site visit would be changed to online mode. Prior to an on-site visit, all reviewers and accompanying HEEACT staff were to sign the Severe Special Infectious Pneumonia (COVID-19) Prevention Form and obey the safety measures imposed by institutions, such as wearing face masks, temperature testing and keeping social distance (Higher Education Evaluation & Accreditation Council of Taiwan, 2020b). Yet, all on-site visits of medicine programmes were postponed to 2021 due to high risks of visiting teaching hospitals by review panel (TMAC, 2020). As one of the interviewees just responded, 'We do not know if the COVID-19 will be spreading rapidly in Taiwan society. No one can guarantee that the situation will be controlled completely. Therefore, we should prepare it in advance and reduce personal contacts in order to avoid the larger population affected, particularly in the teaching hospitals' (Interviewee UQ 6).

Learning from the impact on global higher education, HEEACT recognizes that there has been a wider move towards digital delivery across the world. In order for quality assurance to respond to this new wave of digital education, HEEACT is thinking of developing a new approach to the assurance of online delivery and to the application of IT to traditional modes of teaching (Higher Education Evaluation & Accreditation Council of Taiwan, 2020c).

#### 4.2 Institutional responses: three university cases

Likewise, all Taiwan's universities and colleges are required to follow the health protocols and campus safety regulations published by Ministry of Education since February. The responses of three different types of universities in Taiwan, including one national university, one private university and one university of technology responded are analysed respectively in terms of institutional governance, digital delivery and internationalization as outlined in Table 3.

##### 1. National university A: transparency as a key approach to ensuring campus safety

University A, located in Taipei district area was the first university to have confirmed cases. Therefore, University A developed a stricter policy to control the pandemic spreading according to the MOE regulation of *University suspension and resumption in response to confirmed cases*. First of all, Pandemic prevention Task Forces at both institutional and collegial-levels were set up on 20 January 2020 (University A, 2020). The President at University A, as the leader of the institutional task force, called for a meeting to discuss health and campus safety measures, standard procedures for pandemic prevention every week. In particular, five top administrative offices were in charge of varying affairs with respect to public health, resources management, distance education, returning international students, and entry access control of all campuses, respectively (University A, 2020). In order to strengthen communication with students in particular, the University Student Union was invited to attend the meeting. University A also shared the governmental policies throughout newsletters, email and announced the new measures on the

**Table 3.** Comparison among three case universities.

Items	University A	University B	University C
Context	1. Public university in downtown 2. Occurrence of the first confirmed on Taiwan HE	1. Private Christian university 2. Emphasis over student learning outcomes and core competency acquisition	1. Public University of Technology in the southern rural area 2. emphasis over practical training and hand-on skills
Governance	1. Student involvement 2. Transparency 3. Pandemic Prevention Area Resources 4. Day Pass	1. Three layers of governance model 2. Transparency 3. Pandemic Prevention Area Resources	1. Transparency 2. Pandemic Prevention Area Resources
Digital delivery	1. Blended approach 2. Campus closure for three weeks and rely on online instruction 3. Recognition MOOCS credits	1. Blended approach 2. Online instruction simulation program for faculty members	1. Blended approach 2. Application of AR and VR into work-based learning and apprenticeship training courses
Internationalization	1. Student support 2. Quarantine regulation 3. Online courses	1. Student support 2. Quarantine regulation 3. Online courses	1. Student support 2. Quarantine regulation 3. Online courses
Focus	Transparency as a key approach to ensure campus safety	Student learning outcome-based governance model	Application of AR and VR into work-based learning and apprenticeship training courses

Source: authors.

Pandemic Prevention Area at University home webpage. All faculty members and students needed to use Day Pass and QR CODE while either entering campus or attending class, which enables University A to track each individual student if he/she is infected (Wu, 2020).

University A was also the first institution in Taiwan to apply fully online learning for programmes from April 6 to 24 when the first confirmed case occurred. Immediately, a contingency plan for online learning campus wide was launched (University A, 2020). Although many teachers have had teaching experiences on distance education, a majority remains unprepared. As one of the interviewees responded, ‘The university swiftly closed the campus for two weeks and moved into online mode. All courses were delivered online during this critical period. However, three programs have difficulty in online course delivery, including Music, Fine Arts and Physical education. The faculty members were allowed to make up classes after two weeks’ (Interviewee QU 7). It was found that University A provided necessary IT support and assigned assistants under *University Campus Online* for teachers to ensure the quality of synchronic and non-synchronic teaching, including use of Moodle learning platform, recognition of at least four credits from MOOCS (Wu, 2020; Interviewee QU7).

Currently, there are 1,446 international degree-seeking students out of the total enrolment numbers of 16,077 at University A. Around 1,115 international students determined to return to campus. University A followed the CECC health measures and MOE’s Ease Project for COVID-19 Prevention” project and made appropriate arrangement for those who would return, such as airport pick-up and accommodation, compliance with MOE 14-day self-quarantine code, student counselling services, etc. (University A, 2020).

## *2. Private university B: student learning outcome-based governance model*

University B was the first university to announce that all courses would be delivered online prior to the publication of MOE health measures though it was prohibited. As one senior administrator said, 'We switched all courses into a virtual mode, cancelled mid-term and final exams. We thought faculty members and students' health was the first priority. Unfortunately, MOE did not allow us to do so' (Interviewee QU 6). The Disease Prevention Task Force which engaged the Office of Academic Affairs, Office of Student Affairs, Office of International Education, Office of General Affairs and Center of Environmental Safety, was formed immediately at University B by the end of Jan., 2020 (University B, 2020). According to the principle titled 'Safeguard Home Campus by Our Own', the Task Force, under the leadership of University President, started to develop all related policies to ensure campus safety as well as students' right to learn. The governance model of the Task Force was being categorized into three sectors, including Standing Committee for decision making, Emergency Response Committee responsible for strategy development as well as Implementation Team for routine work monitoring (Chang & Wang, 2020). The updated information, policies and regulation were all published on the website of Pandemic Prevention Area Resources regularly. Transparency, student engagement and non-stop learning were considered as the core values for this contingency plan (Chang & Wang, 2020).

Given the fact that the use and application of Information Communication and Technology (ICT) into instruction would determine the quality of distance learning during the pandemic, special funding was allocated up to 600,000 USD for ICT equipment purchase and SMART classroom establishment. University B also initiated several faculty digital capacity building programme in order to enhance online instruction quality. Up to September, 2020, more than 179 seminars and workshops related to application of EverCam or Loom for teaching material production, I-learning platform, YouTube, WeChat, Line, Facebook for class discussions and student advising were held, engaging a total of 3,766 teaching staff and students. In addition, all faculty members were requested to take part in online course simulation program. Besides, only 333 out of a total of 1212 international students returned to campus, with a ratio of 27.5%. University B provided 757 synchronous and non-synchronous courses for those who did not return (Chang & Wang, 2020).

## *3. National university of technology C: application of AR and VR into work-based learning and apprenticeship training courses*

The COVID-19 Prevention Committee was immediately formed under presidential leadership prior to the beginning of the spring semester, 2020. Subsequently, a contingency plan, and guidelines and procedures for COVID-19 prevention on campus were completed and announced to faculty members and students. In addition, University C purchased disease prevention equipment, including facial masks, forehead thermometers, alcohol, blinkers, disinfection water, etc. To make it transparent and public, the university communicated with faculty members, students and other stakeholders via university website, and social media (Tai, 2020). No visitors were allowed to enter campuses in order to keep the campus safe.

The university allocated the special funding granted from the MOE to produce digital and online course materials, hiring part- or full-time digital teaching assistants as well as

upgrading recording facilities and software. To facilitate teaching and learning online on professional fields, such as agriculture, engineering, and veterinary medicine, the university applied AR and VR technology into work-based learning and apprenticeship training courses in addition to online teaching platform (Tai, 2020). As a matter of fact, one interviewee who served at national accreditor, was quite worried, 'some competencies and skills can't be acquired throughout online learning virtually, particularly those professional programs. We are not ready to so' (Interviewee QU 3)

Given the fact that the number of international students at University C was up to 630 from 43 countries, the Office of International Education not only contacted each international student to see if they would return campus, in order to arrange for airport pick up and self-quarantine accommodation, but also provided financial support for the returnees (University ca. 2020).

## 5. Discussion

### *5.1 Does a top-down approach of crisis management disrupt institutional autonomy?*

COVID-19 represents a historic moment for the transformation of the global higher education landscape, particularly the quality of the student experience as a result of online delivery. Curriculum, faculty, the academic calendar, grading and credit transfer are the most important dimensions of academic experience and should be embedded into the new mode of online teaching and learning (Eaton, 2020). But not all nations are ready to respond to this unpredictable situation in a swift and structured manner. Governments are expected to offer guidance on these matters with higher education institutions in order to maintain academic standards and student engagement (Atherton, 2020; Youngs, 2017). In times of uncertainty, higher education institutions have been forced to make a transition 'from an emergency action mindset to a mindset of creativity and innovation for the long term' (Eaton, 2020, p. 1).

The Taiwan case demonstrates that strong involvement of the government, with specific measures for campus safety and quality of learning as priorities in crisis management, indeed contributes to a positive consequence in disaster prevention during the period of crisis. Yet, it was also found that universities were not autonomous to determine if they could deliver all courses fully online or not (Interviewee UQ 5). The other top university administrator also thought government control and policy has intervened institutional autonomy and violated student' learning right with a political sentiment. He observed, 'I do not think it is fair to Mainland China students who were not allowed to return to campus according to MOE policy; at the same time, we felt that institutional autonomy was interfered seriously by the government' (Interviewee UQ 4).

In addition, the high rate of Internet coverage in Taiwan did not result in inequality issues among institutions. Concerns still remain, however, that this top-down crisis management approach connected strongly to local politics, to some extent, not only violates institutional autonomy but also diminishes QA professionalism (Hou et al, 2020; Martin & Furiv, 2020; The Central News Agency, 2020).



## 5.2. *How can the quality of online learning be ensured by universities and QA agencies after COVID-19?*

In Taiwan, teachers and students were not affected seriously in varying academic dimensions on a basis of institutional coordination among different offices and units. The three case universities showed that communication and transparency as priorities in crisis management would lead to consensus building among varying stakeholders and policy implementation. Internal QA implementation at institutional and programmatic levels have been proceeded as usual. As two university representatives stated, 'IQA was not affected at all. Daily administrative meetings are held as scheduled and internal control for institutional governance and program reviews are undertaken as planned. One of the changes is that we cancel the on-site visit for program review to avoid any risks' (UQ 1). 'We do whatever has been scheduled in terms of teaching evaluation and learning outcome measures. All procedures of IQA were conducted as normal' (UQ 2).

The top-down governance model of crisis management supports universities to deliver the courses fully online or a blended mode in the period of urgency abruptly. Yet, the key challenges to quality of online delivery remain unsolved in terms of input, process and outputs. Given the fact that teachers have not been exposed to high-quality online learning experiences, they do not completely understand the potential of technology. One of the interviewees stated, 'honestly speaking, faculty members are not familiar with the online teaching initially, particularly large class. They need more time for class preparation and try to get used to it. Take me for example, I need to prepare more materials of ppts in the on-line class and revamped my original pedagogy' (Interview UQ 3).

It was found that IT infrastructure and faculty digital capacity building characterize the success of Taiwan's experience, which might not completely be implicated into developing regions. Yet, it remains challenging for Taiwan's accreditor to develop flexible and innovative QA on the virtual campus, such as medicine programme accreditation. Notably, due to lack of experiences in assessing online delivery programmes remotely, government and higher education institutions are concerned as to whether Taiwan's QA system can adapt into the virtual mode after COVID-19 (Wang & Chen, 2020) (Table 4).

## 6. Conclusion

Several unintended consequences for higher education and QA, addressed above, have emerged under COVID-19. On one hand, higher education institutions had to shift to digital delivery in compliance with government-led health crisis measures; on the other hand, the rise of state control has great impacts on institutional autonomy. Yet, key quality issues over digital delivery remain unsolved, such as low completion rates, slow progression and the lack of clinical or fieldwork experience. These would inevitably led to a poor learning experience and resulted in inferior outcomes for graduates (APEC) & (TEQSA), 2017, p. 7).

Apparently, the national policy shift has highlighted the problem of developing a new mode of quality assurance fitting into closed campuses in the 'New Normal' era in Taiwanese context. Inevitably, quality assurance agencies have been forced to adopt a flexible, transformative way of working, whether or not they are ready for the new demands and challenges now being encountered. Under this new normal QA scheme, to some extent, role of QA would likely be diminished if on-site visits are suspended. It can be foreseen that technological

**Table 4.** Responses and impacts by government, national accreditor and higher education institutions in Taiwanese context.

Items/issues	Government/MOE	National accreditor	Higher education institutions
Policy shift/ governance	1. Strict health regulation 2. Control of international students returning	1. Adjustment of review procedures 2. Postponement of medical education accreditation	1. Access control for campus entering 2. Swift into on line instruction 3. Coordination of institutional governance
Flexibility	Coordination with HEIs and QA	Hybrid EQA approach	Blended instruction and learning mode
Autonomy	Top-down crisis management approach	In compliance with national health regulation	In compliance with national health regulation
Digitalization	mask rationing plan	1. Desk review online 2. Virtual meeting for review panel	1. ICT equipment purchases 2. Faculty digital capacity building
Impacts	Effective but authoritarian	1. Prolongation of medical education accreditation validity 2. Non applicable for distance education	1. Loss of institutional autonomy 2. International student admission 3. Academic integrity 4. Low learning outcomes

Source: by authors.

transformations of higher education will continue to trigger the new roles and innovative modes of EQA in the rapid and largely unpredictable onset of the pandemic.

In Taiwan, a strong government-led approach to combat COVID-19 safely enabled campuses to reopen and high internet coverage rate supported distance learning (Wrighton & Lawrence, 2020, p. 1). It has been argued whether Taiwan's story can be replicated in other contexts. The answers are both positive and negative. The Taiwan case demonstrates that government-led approach for the COVID-19 crisis management indeed contributes to a positive consequence in disaster prevention, which are often adopted by other nations. Higher education institutions are encouraged to develop a contingency plan with a focus due to diversity and flexibility. Besides, the high rate of Internet coverage in Taiwan did not result in inequality issues among institutions, which are not be easily replicated in some developing countries. Regardless of this issue, Taiwan's case is highly relevant to other contexts, as a consolidated governance model via a triangular coordination among sectors under the pandemic can be highlighted (Jarvis, 2014). Wynnyckyj (2020) stresses the lesson that three sectors have learned under the crisis, 'even though sometimes it can be difficult, in this emergency the ability to combine efforts, demonstrate high levels of professionalism and innovation in higher education is of great value' (p. 2).

Obviously, the pandemic is a global issue, and schools everywhere face adversity. It was time to develop a crisis of conscience about policies and reshape the new governance models in higher education for long-term resilience. Alternatively, Salmi (2020) warned, 'the main question is whether the majority of higher education institutions just want to go back to the "normal state" of the past, as happened after previous crises, or whether they are ready to embrace and mainstream some of the disruptive practices that they have implemented during the pandemic?' (p. 101).

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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## References

- Altbach, P. G., & De Wit, H. (2020a). COVID-19: The internationalisation revolution that isn't. *University World News*. Retrieved March 23, 2020, from [https://www.universityworldnews.com/page.php?page=UW\\_Main](https://www.universityworldnews.com/page.php?page=UW_Main)
- Altbach, P. G., & De Wit, H. (2020b). Post pandemic outlook for HE is bleakest for the poorest. *University World News*. Retrieved April 7, 2020, from [https://www.universityworldnews.com/page.php?page=UW\\_Main](https://www.universityworldnews.com/page.php?page=UW_Main)
- Asia Pacific Economic Cooperation (APEC) & Tertiary Education Quality and Standards Agency (TEQSA). (2017). *Quality assurance of online learning: Discussion paper*. APEC.
- Atherton, G. (2020). Admissions and equity challenges for HE post COVID-19. *University World News*. Retrieved April 7, 2020, from [https://www.universityworldnews.com/page.php?page=UW\\_Main](https://www.universityworldnews.com/page.php?page=UW_Main)
- Bothwell, E. (2020). Coronavirus: Global student flows to suffer 'massive hit' for years. *THE World University Rankings*. Retrieved April 24, 2020, from <https://www.timeshighereducation.com/>
- Brown, C., & Salmi, J. (2020). Putting fairness at the heart of higher education. *University World News*. Retrieved April 19, 2020, from [https://www.universityworldnews.com/page.php?page=UW\\_Main](https://www.universityworldnews.com/page.php?page=UW_Main)
- Bundy, J., Pfarrer, M. D., Short, C. E., & Coombs, W. T. (2017). Crises and Crisis Management: Integration, Interpretation, and Research Development. *Journal of Management*, 43(6), 1661–1692. <https://doi.org/10.1177/0149206316680030>
- Burki, T. K. (2020). COVID-19: Consequences for higher education. *National Center for Biotechnology Information, US National Library of Medicine*. Reteived from July 2020, [https://doi.org/10.1016/S1470-2045\(20\)30287-4](https://doi.org/10.1016/S1470-2045(20)30287-4)
- Calderon, A. J. (2018). Massification of higher education revisited. *RMIT university*. Retrieved from April 7, 2020, [https://www.researchgate.net/publication/331521091\\_Massification\\_of\\_higher\\_education\\_revisited](https://www.researchgate.net/publication/331521091_Massification_of_higher_education_revisited)
- Chang, K. C., & Wang, B. J. (2020). Student learning outcome-based holistic education under COVID-19 pandemic in Chung Yuan University. *Evaluation Bimonthly*, 7(86), 12–16. <http://epaper.heeact.edu.tw/archive/2020/06/23/7324.aspx>

- Coates, H. (2020). Emergency learning requires next-generation assessment. *University World News*. Retrieved April 25, 2020, from [https://www.universityworldnews.com/page.php?page=UW\\_Main](https://www.universityworldnews.com/page.php?page=UW_Main)
- Eaton, J. (2020). *Accreditation, quality and fall 2020: A framework for action*. CHEA.
- Everington, K. (2020, April 1). Taiwan one of only 6 countries on Earth where schools are open. *Taiwan News*. Retrieved May 13, 2020, from <https://www.taiwannews.com.tw/en/news/3908444>
- Higher Education Evaluation & Accreditation Council of Taiwan. (2020a). *Safety measures for Covid-19 prevention*. HEEACT.
- Higher Education Evaluation & Accreditation Council of Taiwan. (2020b). *Severe special infectious pneumonia (COVID-19) prevention form*. HEEACT.
- Higher Education Evaluation & Accreditation Council of Taiwan. (2020c). *Minutes of the joint administrative meeting*. HEEACT.
- Hong, B. (2020). A threat with a silver lining for higher education? *University World News*. Retrieved May 13, 2020, from <https://www.universityworldnews.com/post.php?story=20200410105633663>
- Hou, A. Y. C., Ince, M., Tasi, S. & Chiang, C. L. (2015). Quality Assurance of Quality Assurance Agencies from an Asian Perspective \: Regulation, Autonomy and Accountability . *Asia Pacific Education Review*, 16, 95–106.
- Hou, A. Y. C., Guo, C. Y., Chen, K. H. J., Hill, C., Lin, S. R., Chih, J. C. C. & Chou, H. C. (2018). The Implementation of Self-Accreditation Policy in Taiwan Higher Education and its Challenges to University Internal Quality Assurance Capacity Building. *Quality in Higher Education* 24(3), 238–250.
- Hou, A. Y. C., Guo, C. Y., Tsai, S. & Castillo, D. R. J. (2020). A Comparative Study of Relationship between the Government and National Quality Assurance Agencies in Australia, Japan, Malaysia and Taiwan : Policy Change, Governance Models, Emerging Roles. *Quality in Higher Education*, 26 (3), 284–306.
- Hou, A. Y. C., Chiang, T. T. L., Chan, S. J. & Lu, G. I. J. (2021). Historical Development of Higher Education in Taiwan from Past to Present. In Hou, A. Y. C., Chiang, T. T. L., Chan, S. J. & Lu, G. I. L. (eds.) *Higher Education in Taiwan :Global. Political, and Social Challenges and Future Trends*, (pp. 3–25). Singapore, Springer.
- International Network for Quality Assurance in Higher Education (INQAAHE) (2020a). *INQAAHE study regarding the impacts & challenges of covid-19 in the higher education*. Catalunya, INQAAHE.
- International Network for Quality Assurance in Higher Education (INQAAHE) (2020b). *INQAAHE principles for crisis management*. catalunya, INQAAHE.
- Iversen, G. R. (1989). Absolute and relative individual effects in contextual analysis. *Historical Methods*, 22(1), 21–25. <https://doi.org/10.1080/0615440.1989.9956334>
- Iversen, G. R. (1991). *Contextual analysis*. Sage.
- Jalli, N. (2020). Commentary: E-learning sees no smooth sailing in Malaysia and Indonesia. *CNA*. Retrieved August 13, 2020, from <https://www.channelnewsasia.com/news/commentary/corona-virus-covid-19-malaysia-indonesia-school-e-learning-online-12616944>
- Jarvis, D. S. L. (2014). Regulating higher education: Quality assurance and neo-liberal managerialism in higher education—a critical introduction. *Policy and Society*, 33(3), 155–166. <https://doi.org/10.1016/j.polsoc.2014.09.005>
- Marginson, S. (2011). Imagining the global. In R. King, S. Marginson, & R. Naidoo (Eds.), *Handbook on globalization and higher education* (pp. 10–39). Edward Elgar Publishing.
- Martin, M., & Furiv, U. (2020, March 28). COVID-19 shows the need to make learning more flexible. *University World News*. Retrieved April 8, 2020, from [https://www.universityworldnews.com/page.php?page=UW\\_Main](https://www.universityworldnews.com/page.php?page=UW_Main)
- Martin, M., & Stella, A. (2007). *External quality assurance in higher education: Making choices*. International Institute for Educational Planning (IIEP) UNESCO.
- Ministry of Education. (2020a). *Number of international student 2019 ~2020 academic year*. Taiwan: Ministry of Education.
- Ministry of Education (MOE) (2020a). Colleges and universities in Taiwan postpone the winter break to February 25. Taiwan: Ministry of Education. Retrieved May 15, 2020, from [https://www.edu.tw/News\\_Content.aspx?n=9E7AC85F1954DDA8&sms=169B8E91BB75571F&s=8CFC4B7DD566A8F4](https://www.edu.tw/News_Content.aspx?n=9E7AC85F1954DDA8&sms=169B8E91BB75571F&s=8CFC4B7DD566A8F4)

- Ministry of Education (MOE). (2020b). *Handbook on prevention and control of infectious diseases*. Taiwan: Ministry of Education.
- Ministry of Education (MOE) (2020c). Precautions for colleges and universities to suspend classes and resume classes due to Coronavirus disease. Taiwan: Ministry of Education. Retrieved May 17, 2020, from <https://reurl.cc/E7QM1a>
- Ministry of Education (MOE) (2020d). Suspending classes without suspending learning during epidemic prevention: Online teaching convenience package. Taiwan: Ministry of Education. Retrieved May 11, 2020, from <https://learning.cloud.edu.tw/onlinelearning/#university>.
- Ministry of Education (MOE). (2020e). *Actions and responses by universities under COVID-19*. MOE.
- Ministry of Education (MOE). (2020f). *Guidelines and principles for adoption of online instruction under COVID-19*. MOE.
- Ministry of Education (MOE). (2020g). *The references for online instruction and learning*. Taiwan: Ministry of Education.
- Ministry of Education (MOE). (2020i). *Ease Project for COVID-19 prevention*. MOE.
- Ministry of Education (MOE) (2020h). Schools at all levels postpone the arrival of residents of Hong Kong and Macao in response to the outbreak of Coronavirus disease. Taiwan: Ministry of Education. Retrieved May 24, 2020, from <https://cpd.moe.gov.tw/articleInfo.php?id=2524>
- Ministry of Health and Welfare. (2016). *The communicable disease control act*. Taiwan: Ministry of Health and Welfare.
- Ministry of Health and Welfare (2020). The special act for prevention, relief and revitalization measures for severe pneumonia with novel pathogens. Taiwan: Ministry of Health and Welfare. Retrieved from June 25, <https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=D0120021>
- Ministry of the Interior. (2018). *Enforcement rules of disaster prevention and protection act*. Taiwan: Ministry of the Interior.
- Mitchell, N. (2020, March 26). Five years to recover global mobility, says IHE expert. *University World News*. Retrieved April 7, 2020, from [https://www.universityworldnews.com/page.php?page=UW\\_Main](https://www.universityworldnews.com/page.php?page=UW_Main)
- National Cheng Kung University (2020). NCKU study at ease project for COVID-19 prevention. Retrieved May 17, 2020 from <http://acad.ncku.edu.tw/p/406-1025-203679,r2894.php?Lang=zh-tw>
- National Communication Commission (2020). Statistics of internet penetration in Taiwan. Retrieved August 13, 2020, from [https://www.ncc.gov.tw/chinese/news\\_detail.aspx?site\\_content\\_sn=5010&cate=0&keyword=∈ history=0&pages=0&sn\\_f=44581](https://www.ncc.gov.tw/chinese/news_detail.aspx?site_content_sn=5010&cate=0&keyword=∈ history=0&pages=0&sn_f=44581)
- Organization of Economic Cooperation and Development (OECD) (2020). COVID-19: Joint actions to win the war. Retrieved from June 13, 2020, <https://www.oecd.org/washington/newsarchive/covid-19jointactionstowinthewar.htm>
- QS. (2020). Crisis management for international offices. Retrieved from June 13, 2020, [https://irsw.pl/wp-content/uploads/Crisis-Management-For-International-Offices.pdf?utm\\_source=www&utm\\_medium=cpc&utm\\_campaign=Podsumowanie%20maja](https://irsw.pl/wp-content/uploads/Crisis-Management-For-International-Offices.pdf?utm_source=www&utm_medium=cpc&utm_campaign=Podsumowanie%20maja)
- Salimi, J. (2020). *Learning from the past, coping with the present, readying for the future: Impact of COVID-19 on higher education from an equity perspective*. Lumina Foundation.
- Sharma, Y. (2020). Major international and national school exams suspended. *University World News*. Retrieved April 8, 2020, from [https://www.universityworldnews.com/page.php?page=UW\\_Main](https://www.universityworldnews.com/page.php?page=UW_Main)
- Shin, J. C. (2018). Quality assurance systems as a higher education policy tool in Korea: International convergence and local contexts. *International Journal of Educational Development*, 63(1), 52–58. <https://doi.org/10.1016/j.ijedudev.2017.10.005>
- Tai, C. H. (2020). Pandemic prevention, combat and agriculture education sustainability under COVID-19 at national pingtung university of science and technology. *Evaluation Bimonthly*, 7 (86), 17–19. Retrieved September, 20, 2020, from. <http://epaper.heeact.edu.tw/archive/2020/06/23/7325.aspx>
- Taiwan Center for Disease Control (CDC). (2020a). *The enforcement rules of disaster prevention and protection*. CDC.
- Taiwan Centers for Disease Control (CDC) (2020b). Introduction of notifiable infectious diseases. Retrieved from June 25, <https://www.cdc.gov.tw/Disease/Index>

- Taiwan Medical Accreditation Council (TMAC) (2020). Official website. Retrived September, 20, 2020, from <https://www.heeact.edu.tw/38105/38133/>
- Tamrat, W., & Teferra, D. (2020). The shift to online learning calls for global cooperation. *University World News*. Retrieved April 25, 2020, from [https://www.universityworldnews.com/page.php?page=UW\\_Main](https://www.universityworldnews.com/page.php?page=UW_Main)
- The Central Epidemic Command Center (CECC) (2020). Central Epidemic Command Center (CECC) adds instructions on entry home quarantine requirements in relation to 2019 novel coronavirus (2019-nCoV). *Taiwan Centers for Disease Control*. Retrieved from April 25, 2020, from <https://www.cdc.gov.tw/En/Bulletin/Detail/pevkg6JalT40l4uB6wAWcg?typeid=158>
- The Central News Agency (2020). Adjusted policy for oversea students returning to Taiwan, except Chinese students. Retrieved August 13, 2020, from <https://www.cna.com.tw/news/firstnews/202008055010.aspx>
- The International Organization for Standardization (ISO) (2011). ISO 28002:2011 security management systems for the supply chain. Retrieved August 13, 2020, from <https://www.iso.org/standard/56087.html>
- The Quality Assurance Agency for Higher Education UK (QAA UK) (2020). Qaa International partners' forum - 20 May 2020 summary report. Retrieved July 13, 2020, from [https://www.qaa.ac.uk/docs/qaa/guidance/qaa-international-partners-forum-report.pdf?sfvrsn=fa54cc81\\_12](https://www.qaa.ac.uk/docs/qaa/guidance/qaa-international-partners-forum-report.pdf?sfvrsn=fa54cc81_12)
- United Nations Educational, Scientific and Cultural Organization (UNESCO) (2020a). Global education coalition. Retrieved April 19, 2020, from <https://en.unesco.org/covid19/educationresponse/globalcoalition>
- United Nations Educational, Scientific and Cultural Organization (UNESCO) (2020b). Exams and assessments in COVID-19 crisis: Fairness at the centre. Retrieved April 19, 2020, from <https://en.unesco.org/news/exams-and-assessments-covid-19-crisis-fairness-centre>
- United News (2020). Chinese students are allowed to return Taiwan's campus, Retrieved September 20, 2020, from <https://udn.com/news/story/6885/4806853>
- University A (2020). COVID-19 prevention resources area. *National Taiwan Normal University*. Retrieved from September. 20, 2020, [https://www.ntnu.edu.tw/nCoV/news\\_listV2.php?locale=zh](https://www.ntnu.edu.tw/nCoV/news_listV2.php?locale=zh)
- University B (2020). University B for Disease control. *Chung Yuan Christian University*. Retrieved September 20, 2020, from <https://wph.cycu.edu.tw/ep/en/home-2/>
- University C (2020). Meeting minutes for the 2nd disease prevention meeting. *National Pingtung University*. September. 20, 2020, <https://wp.npust.edu.tw/%E9%98%B2%E7%96%AB%E6%9C%83%E8%AD%B0/>
- Van Vught, P., & De Boer, H. (2015). Governance models and policy instrument. In J. Huisman, H. D. Boer, D. D. Dill & M. Souto-Otero, Eds. *Palgrave international handbook of higher education policy and governance*, (pp. 35–56). Palgrave.
- Wang, F., & Chen, C. C. (2020). CORONAVIRUS/Taiwan to admit 2,238 graduating foreign students after COVID-19 entry ban. *Focus Taiwan*. Retrieved September 20, 2020, from <https://focustaiwan.tw/society/202006170020>
- Wrighton, M. S., & Lawrence, S. J. (2020). Reopening colleges and universities during the COVID-19 pandemic. *Annals of Internal Medicine*. Retrieved September 20, 2020, from <https://www.acpjournals.org/doi/full/10.7326/m20-4752>
- Wu, C. C. (2020). NTNU' experience toward COVID-19 combat. *Evaluation Bimonthly*, 7(86), 9–11. Retrieved September 20, 2020, from <http://epaper.heeact.edu.tw/archive/2020/07/01/7323.aspx>
- Wynnykyj, M. (2020). Crisis has shown virtual quality assurance can work well. *University World News*. Retrieved July 13, 2020, from <https://www.universityworldnews.com/post.php?story=20200706101702976>
- Youngs, H. (2017). A critical exploration of collaborative and distributed leadership in higher education: Developing an alternative ontology through leadership as-practice. *Journal of Higher Education Policy and Management*, 39(2), 140–154. <https://doi.org/10.1080/1360080X.2017.1276662>