

# COVID-19 and higher education: A pandemic response model from rapid adaptation to consolidation and restoration

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*COVID-19 has severely impacted the higher education sector. Early institutional responses have been diverse, ranging from minimal changes to complete digitalisation of curriculum. This paper develops a preliminary higher education pandemic response model based on a comparative analysis of responses to the current coronavirus pandemic and those that came before: The Black Plague, Spanish Flu, Severe Acute Respiratory Syndrome (SARS-CoV), Influenza A, and Middle Eastern Respiratory Syndrome (MERS). Some of these have well-documented cases, and others are lacking. This manuscript adopts a critical perspective, drawing on an extensive reading of current and forthcoming literature and institutional responses. A four stages of pandemic response model is proposed based on a critical review of published knowledge: rapid adaptation, improvement, consolidation, and restoration. The findings indicate that the time it takes institutions to navigate through each stage will vary, and some more advanced universities and colleges will progress through multiple stages in parallel. This paper provides a theoretical position for higher education during and beyond a pandemic and early evidence-based propositions that may support future empirical research.*

*Keywords: COVID-19; coronavirus; change management; response to pandemic; rapid digitalisation; university management*

## INTRODUCTION

COVID-19 has profoundly affected higher education, from requirements for accelerated digitalisation of learning materials, embedding of overnight working-from-home academics, responding to international border closures to changing student funding models (e.g., Fernandez & Shaw, 2020; Hartshorne et al., 2020; Toquero, 2020). The first six months of coronavirus pandemic responses, termed the *intra-period* response, were covered in-depth by Crawford, Butler-Henderson et al. (2020). Intra-period publications—during the first 6-12 months—typically postulate individual university responses or single-country responses, such as in India (Bhat et al., 2020), the Philippines (Tria, 2020), and the United Kingdom (Wyres & Taylor, 2020). The literature within this intra-period discusses progress towards rapid curriculum change, shifting from diverse teaching pedagogies to those that can inform curriculum delivered via learning management systems (e.g., Blackboard, Brightspace by D2L, Canvas by Instructure, Moodle, Schoology), videoconferencing facilities (e.g., Zoom, Skype, Blackboard Collaborate, Microsoft Teams), and online proctored examinations (e.g., ProctorU, ProctorExam, Respondus).

Each university has varied its responses to COVID-19. The dominant intra-period responses include: i) rapid digitalisation of all content and fully online delivery; ii) partial delivery online in line with evolving governmental regulation and university capability; iii) pausing of delivery during government lockdowns; iv) full suspension of delivery (Crawford, Butler et al., 2020). These responses have variable effectiveness (e.g., Marshman & Larkins, 2020), and, for the most part, the impact of such progressions is not yet clear. It may be quite some time before the

effects are known. The progression to the second *rapid digitalisation* period has been time-lagged for many institutions based on their country's governmental lockdown and the date of the first case. Chinese universities mobilised resources and were the earliest to adapt their curriculum in line with being *Ground Zero* for the pandemic. Social and psychological stability, medical expertise and delayed academic commencement are core characteristics of Chinese university responses (Wang et al., 2020).

This paper proposes four phases of pandemic responses in higher education: rapid adaption (or rapid digitalisation in the case of COVID-19), improvement, consolidation and restoration. As this paper will discuss, these offer a standard blueprint for responding to pandemics in the higher education context. Student equity, student success and academic leadership have been core tenets of a quality curriculum during COVID-19 (e.g., Beaunoyer et al., 2020; Fernandez & Shaw, 2020; Gonzalez et al., 2020) but are yet to be collectively synthesised in the broader global context of variable governmental responses, growing institutional constraints and reduced global traffic from some 160 countries undergoing nationwide closures (de Oliveira Araujo et al., 2020). Emerging financial models suggest that Australian universities that relied on international students are likely to be significantly hampered by a reduction in international travel arrangements in short, medium and, potentially, long-term climates (Marshman & Larkins, 2020). New Zealand entered early into full lockdown, with governmental authority assumed over the university sector during the pandemic (Ross, 2020a). Many countries are not yet at this stage, with more than 666 million confirmed cases at the time of writing (John Hopkins University & Medicine, 2020). While some countries—at the time of writing—have largely eliminated or suppressed COVID-19, many are struggling with future variants and new outbreaks.

In the context of a flattened curve, higher education institutions are likely to define their futures in much the same way as in the intra-period of rapid development toward online curricula. This is perhaps because digitalisation with 'blended' (online and face-to-face) pedagogies is a strategy that may better serve their learners and, indeed, larger volumes of learners (and their associated student fees). More traditional universities may rapidly revert to their original learning design as if their experience throughout the pandemic was a temporary lapse in performance (Sutton & Jorge, 2020). This paper seeks to provide insight towards digital pedagogies and suggests avoiding pure digitisation.

The discussion in this paper is guided by one research question: *What are the phases of higher education during the COVID-19 pandemic?* I critically explore the emerging literature, drawing on contemporary evidence and practical published insights (e.g., news and government reports), to consider how higher education as a global sector can grow from its coronavirus pandemic challenges. While the debate on the homogenous and/or heterogeneous nature of higher education continues (e.g., Donina & Hasanefendic, 2019), this paper explores global higher education from a generally homogenous perspective, noting that some minor jurisdictional differences have limited effect on the macro pandemic response proposed. However, in proposing any new model, it is pertinent to acknowledge that it has not yet been tested in a universal context.

To add briefly, the early works of Pearson and Mitroff (1993) speak to the need for five phases of crisis management: signal detection, preparation and prevention, containment and damage mitigation, recovery, and learning. In this work, effective signalling alongside previous evidence provides precedent and learning for future crisis scenarios. This paper focuses not on signalling but on positioning the existing literature to support the final phase of crisis: learning.

Importantly, this work focuses on enabling current higher education leaders to develop a considered pathway to exiting the pandemic environment in 2022 and beyond; it will also serve as a useful source for those leaders to examine their future pandemic planning. The benefit will be progression away from crisis management and towards higher education crisis leadership (e.g., Fortunato et al., 2018; Lalani et al., 2021; Petriglieri, 2020).

I begin addressing the research question by exploring higher education during the 2003 Severe Acute Respiratory Syndrome (SARS) epidemic that affected parts of mainland China, Hong Kong, Singapore and Canada. Then, I include comparative analyses of other epidemics and pandemics impacting the higher education context. This paper continues by briefly reflecting on the intra-period, or approximately the first six months from the first diagnosis, for the first universities impacted by COVID-19. Some universities are still in this phase, with others beginning to move into the second phase. Next, I propose a four-phase pandemic response model (Jaakkola, 2020), aiming to provide evidence-based guidance for universities progressing through the phases of COVID-19 effects and responses. This evidence is broadened through my involvement in COVID-19 responses within my institution and my prior engagement in university and sector-wide strategies as a past member of our Academic Senate and, before that, as an active student president. The value of this article is an opportunity to learn from collective and diverse experiences as universities progressively respond to the ongoing effects of the pandemic, considering specific nuances within geographic boundaries.

## METHOD

This research employs a critical literature review method (e.g., By, 2005). The COVID-19 literature at the time of writing is limited in examining how higher education organisations progress through pandemics, particularly the size and scope of the COVID-19 pandemic. However, contextual evidence from previous pandemics provides useful insights for theorising what a higher education pandemic response may look like. This study uses the qualitative synthesis approach (Barnett-Page & Thomas, 2009), adopting a meta-narrative approach (Greenhalgh et al., 2005).

Through a meta-narrative critical review, this research assessed existing information on the COVID-19 pandemic, using intuition by a researcher who has explicit and cohesive awareness of the current evidence on the topic from a series of systematic reviews, policy documents and keynotes over the past two years. Where possible, *Scopus* and *Web of Science* searches were used, and extensive searches were conducted of current journalistic reports, government releases, and higher education institution reports. However, the broad nature of the literature section made it unfeasible to take a specific search strategy. A critical appraisal of included works was included. This work was subsequently synthesised against crisis management literature and, importantly, distilled for future policy, practice, and research use through a model. In doing so, four key phases emerged across each virus response when contrasted to the crisis literature (see Table 2).

## LITERATURE: LEARNING FROM THE PAST

In the era of a coronavirus pandemic, it can be easy to claim its devastating impact as unprecedented for higher education, with articles arguing COVID-19 threatens the viability of half of the Australian sector (Marshman & Larkins, 2020; Ross, 2020a). However, this is not the first significant outbreak to bring the core businesses of universities to their knees. There have been several in recent history. On record, the bubonic plague epidemic ('Black Death') in

the mid-1300s, Spanish Flu (1918), SARS (2002), Influenza A (2009), and Middle Eastern Respiratory Syndrome (2012) are frequently cited examples. Other recorded sources of negative impacts on higher education include measles and Ebola, but these will not be covered here. The following section seeks to unpack some of the (often sparse) information on each of these global outbreaks in the context of higher education. Importantly, these provide a foundation for comparative historical responses to global viral spread within earlier higher education. These contexts support practical case studies of how universities responded in the past.

### **Black Death (1347-1351)**

During the Black Death, students and staff of the University of Oxford fled to the countryside and returned after the virus ended (Carlton, 2020). There was a high predicted death rate among university faculty (Campbell, 1931). Isaac Newton claimed the year away was his *annus mirabilis* and argued this period was one of the most successful of his career, becoming a professor two and a half years after the isolation; indeed, the apple falling from the tree occurred during this period. Many popular media outlets presently articulate a plea to their 2020 consumers in lockdown or require physical distancing to draw on Newton's inspiration (e.g., Brockell, 2020). Some accounts posit this as misleading (e.g., Levenson, 2020), given his natural genius and biographies of Isaac Newton identifying he had already begun to think about the challenges he would go on to solve during his isolation (e.g., Westfall, 1983). However, it points to how equity challenges emerge throughout pandemics, with those better equipped able to out-progress others.

Changes in population numbers and predictions of survival rates (using limited data) tend to be the focus of historical analyses of the Black Death in higher education. For example, Courtenay (1980) argues that the pandemic only had a "marginal impact on the population of the University of Oxford" based on quantitative records, such as residency registers (p. 705). However, Courtenay (1980) discusses the possible change in pedagogical content within theological and philosophical degrees; students in the pre-tertiary study could have been affected by the time in isolation and a teaching evolution saw theology and philosophy taught more practically and becoming 'easier to grasp and did not require as extensive a technical training in logic and mathematics' (p. 707). The challenge here is whether a change in student demographic motivated change or pedagogical developments based on the current climate.

### **Spanish Flu (1918-1919)**

Spanish Flu also affected universities across the world. Brawley (2020) provides an apt summary of the context of university business planning: North America saw universities close for up to a month at a time in 1918. Varsity sports programs often continued in empty stadiums. New Zealand saw the closure of education facilities in November 1918, prior to the first Australian case in January 1919, with a one-week delay to commencement at Melbourne University. The University of Sydney announced it would close from 7 April 1919, prior to a Government ban on schools from 14 April 1919. Students complained to news outlets about missing learning opportunities due to the cessation of teaching. Some universities continued classes in smaller numbers (e.g., six at the University of Tasmania and 20 in Queensland). Exams were altered, such as an extra 30 minutes of completion (University of Tasmania), there were issues with timetabling (University of Western Australia), and consideration of outdoor exams (University of Queensland).

### **SARS (2002-2003)**

The SARS epidemic hit Mainland China in November 2002. SARS spread to Hong Kong, Singapore and Toronto, Canada, in March 2003. In Mainland China, 5,329 cases were confirmed and 336 reported deaths by early June (Hung, 2003), with delays in the publication of accurate statistics resulting from researcher fear of government repercussions in Chinese higher education (see Yang, 2005). There were 8,422 confirmed SARS cases and 916 deaths across 29 countries (fatality rate of 11%: Park et al., 2020). Higher education providers globally made contingency preparations for the SARS outbreak.

In a case study of an Australian university, the initial response was to provide staff with personal choice on travel in March and to subsequently ban travel to affected locations during April and part of June (Feast & Bretag, 2005). The university had a transnational teaching arrangement with an Asian university, similar to many Australian universities, and was required to ensure continued delivery of offerings to their Asian university partner. The immediate responses included replacing face-to-face classes, followed by continued adaption and changing additional services as policy dictated. End-of-term exams were rebuilt with take-home exams, multiple-choice quizzes online and invigilated online exams; take-home exams were the most popular. Face-to-face lectures were replaced with narrated PowerPoints and recorded in-class lectures and workshops. Communication with students continued through monitored asynchronous discussion boards or chat sessions. When classes in the Asian University recommenced, optional classes with local tutors were offered, viewing the pre-recorded lecture as a dominant mode of instruction (Feast & Bretag, 2005).

In Hong Kong, a three-week halt on formal learning and teaching created a situation where some lecturers engaged in web-based communication with students, while many were unresponsive to students. Students were encouraged to be more self-directed and learn independently of their teacher, with assignment due dates being maintained (Kwok & Hodgson, 2004). The Chinese University of Hong Kong created specific strategic responses in the intra-period of SARS, with some of these leading to desirable long-term changes to curriculum and higher education delivery (Cheng, 2003). Based on readings of the literature, it appears most higher education institutions grew through the SARS pandemic, yet little evidence exists on possible reversions at the close of the outbreak. Bonk et al. (2005) call for future education providers to make a more concerted effort to deliver blended learning to respond to future global challenges and enable more rapid responses to forced closures of campuses and restrictions of face-to-face contact.

### **Influenza A (2009)**

The 2009 Influenza A (H1N1) pandemic, originating in North America, had a case fatality of 0.2% and estimated deaths of 500,000 across 214 countries (Park et al., 2020). The Centers for Disease Control and Prevention (2010) advised higher education institutions to decrease the spread during this pandemic. These recommendations included encouraging vaccination among student cohorts and specific staff, facilitating self-isolation of residential students who presented symptoms, promoting self-isolation among non-resident students and staff, cleaning more often, promoting hand and respiratory hygiene, and discouraging attendance for symptomatic students and staff. Such advice, while directed at higher education, was not unique to higher education circumstances; it was generic advice provided to those who had individuals living on-premises and with staff on-premises. Recommendations surrounding alternate learning and teaching were absent. Some universities (see University of Technology Sydney, 2016) continue to maintain guidance for students encouraging vaccinations.

Higher education institutions, during this pandemic, were recognised as severe potential outbreak centres (Akan et al., 2010). Despite this, there is limited available empirical evidence on changes during the H1N1 pandemic. The focus of some studies pertained to student responses. For example, in self-assessments of personal risk ( $n = 402$ ), 40.5% of Turkish students rated themselves as high risk, with 20.6% as moderate risk (Akan et al., 2010), 85.3% were practising prevention mechanism(s), with 92.8% indicating they would not be vaccinated. Israeli students in another study ( $n = 387$ ) were more likely to vaccinate if they had positive experiences with traditional flu vaccinations (Teitler-Regev et al., 2011).

### **Middle Eastern Respiratory Syndrome (2012)**

Originating in Saudi Arabia, Middle Eastern Respiratory Syndrome Coronavirus (MERS-CoV) had 2,494 cases and 858 deaths over 27 countries (Park et al., 2020). There is little peer-reviewed published evidence regarding how higher education responded to MERS-CoV. One Saudi Arabian study ( $n = 1,541$ ) reports on student and staff awareness of MERS-CoV symptoms and hygiene practices, highlighting 43% overall knowledge of MERS-CoV (Al-Mohaisen, 2017). Another sought to compare student virus awareness (Elrggal et al., 2018). Some consider Saudi Arabia to have done a ‘remarkable job’ in responding to COVID-19 (Yamin, 2020). However, there remains limited evidence of what changes were implemented by higher education institutions across the 27 countries. Poor access to healthcare, and a firm reliance on camel product trades, notably the ‘kiss your camel’ campaign, likely affected the spread of the virus (Barry et al., 2020). Compared to South Korea’s response to SARS, a stricter regime of prevention, diagnosis and quarantine was developed, resulting in the far more active seeking of healthcare than in the Saudi Arabian MERS climate (Willman et al., 2019). These studies, and a limited set of others, cover MERS-CoV in broad contexts that may have transferability of knowledge to the higher education sector. However, understanding how universities responded to the endemic and what changes were made from practical and pedagogical perspectives is lacking.

### **COVID-19 (2019-present) and beyond**

The novel coronavirus (COVID-19) pandemic began as an isolated incident in Wuhan, China, and has had perhaps the most significant effect on population health (542 million cases and 6.3 million deaths: Worldometer, 16 June 2022). The effects across higher education have been significant, with a Google Scholar search highlighting 28,400 results for the phrase ‘COVID-19’ AND ‘higher education’. To that end, there have been a series of systematic reviews covering relevant topics. When scoping, five manuscripts were systematic literature reviews or meta-analyses (which used a PRISMA approach or similar). While this search was not exhaustive, it was designed to provide an indicative view of the topics being addressed during the pandemic (see Table 1, as of 16 June 2022).

Google Scholar search phrases:

“COVID-19” AND “higher education” AND “systematic review” (9 results)

“COVID-19” AND “higher education” AND “systematic literature review” (1 result)

“COVID-19” AND “higher education” AND “meta-analysis” (1 result)

**Table 1: Summary of systematic reviews on COVID-19 and higher education**

<b>Source**</b>	<b>n*</b>	<b>Topic</b>	<b>Descriptive findings</b>
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Camilleri (2021)	118	Service quality and performance	Services were affected by COVID-19, and institutions use different metrics for service quality to other sectors.
Crawford and Cifuentes-Faura (2022)	7	Sustainability research	There was a decline in research on sustainability research in higher education during COVID-19.
Deng et al. (2021)	89	Depressive symptoms, anxiety, and sleep disturbance in students	The prevalence of depressive symptoms (34%), anxiety (32%), and sleep disturbance (33%) is around 1 in 3.
Fatima et al. (2021)	23	Coping policies of institutions	COVID-19 affected the holistic student condition, particularly those with low access to technology.
Makwembere (2022)	3	Students with disability in South Africa	There was a lack of research on students with a disability during COVID-19 in South Africa.

\* n of manuscripts in the final sample

\*\* refer Reference list for details

The COVID-19 pandemic has led to rapid digitalisation of teaching and financial restructuring in higher education (Marshman & Larkins, 2020), but the existing systematic reviews point to side effects pertaining to well-being and a change in temporary priorities for institutions away from non-core offerings of teaching and research. Much of the literature has been oriented towards isolated and single-nation or single-university studies, with limited examples of cross-cultural understandings of COVID-19 in higher education emerging. However, one study of 687 students in Australia, Cambodia, China, India and Malaysia (Eri et al., 2021) identified a lack of general training and development for staff and students to engage effectively in digital technologies for learning. This is consistent with studies by Sumer et al. (2021) and Connor et al. (2021), who also drew on multinational reference points.

The value and importance in a brief but critical review of the past pandemics affecting higher education demonstrate that while COVID-19 perhaps feels like the first major global health challenge to higher education, past case studies point towards a consistent – but contextualised – response to lockdowns. The key difference with the COVID-19 pandemic is population connectivity and access to digital technology; in the Black Plague, the lockdown technology was access to books. These cases inform the design of a pandemic response model for higher education that draws on contemporary and past practical evidence.

## **DISCUSSION: BUILDING A HIGHER EDUCATION PANDEMIC RESPONSE MODEL**

Each virus affected parts of the global higher education sector in different ways. However, the literature reporting responses is not always clear, with many earlier viruses having little recorded evidence of the impact outside of death rates or anecdotes of new practices. In the age of COVID-19, the responses are well documented, even as they unfold. Faster journal turnaround times, easier access to media outlets, and accelerated knowledge sharing have created great opportunities for clarity. COVID-19 is, sadly, unlikely to be the last pandemic to affect universities. We now have the opportunity to conceptualise what a good practice response may look like and continue collective learning through the process.

*COVIC-19 and higher education: A pandemic response model from rapid adaptation to consolidation and restoration*

The current world's interconnected and global nature means people are generally better off because of the ability to connect and be connected, including in higher education contexts (e.g., Warschauer & Matuchniak, 2010). However, there was one downside of connectedness: the potential for the rapid spread of viruses or other events that have the potential to disrupt 'normal' connections and relationships. In disruptive situations, the higher education sector needs a clear understanding of the phases in an evidence-based, dynamic and flexible response model that can adapt over time rather than taking a localised and reactive approach (Bonk et al., 2020). Learning from the history of responses will facilitate understanding the complexity of adaptation during the 2020 and beyond coronavirus pandemic. In this model, I present four key phases (see Table 2) and discuss these in depth below.

**Table 2: Four-phase higher education pandemic model**

Phase	Goal	Definition	Expected Indicators
<b>Phase 1</b> <b>Rapid adaption</b> <i>1 teaching period</i>	To rapidly adapt core business for the new context.	The need to act first and think later is common in Phase 1, with the goal of continuing core business services in some way, shape, or form. The core business of a university is typically teaching and learning, and this division will provide the first response emergency response through immediate prioritization of resources.	<ul style="list-style-type: none"> <li>• Rapid change of core business (e.g. learning and teaching).</li> <li>• Expected declines in quality of core business.</li> <li>• Increasing levels of employee and student distress.</li> <li>• Fluctuating financial indicators.</li> <li>• Fluctuating student engagement</li> </ul>
<b>Phase 2</b> <b>Improvement</b> <i>1 – 2 teaching periods</i>	To optimise the adapted core business to improve quality and begin to consider non-core activities.	Part-way through the first teaching delivery, the immediate response has been partially implemented. This provides a shuffling of immediate responsibilities away from executives and decision-makers towards front-line academic and professional staff as delivery commences. The result? Heads of Academic Units find the space to consider how what has been developed to date can be improved, and they plan to implement these either immediately or in a forthcoming teaching period.	<ul style="list-style-type: none"> <li>• Repeat practices of the 'new' core business with adaptations.</li> <li>• Plateauing changes in quality of core business.</li> <li>• Plateauing employee and student distress.</li> <li>• Clearer financial forecasting with some instability and buffers.</li> <li>• Declining student engagement</li> </ul>
<b>Phase 3</b> <b>Consolidation</b> <i>1 – 4 teaching periods</i>	To evaluate pre-pandemic measures of social, economic, and environmental success.	As the new normal becomes understood by management, staff, and students, there is acceptance along with exposure to non-core lag indicators. There may be a focus on elements missing from the current adapted service delivery, including discussions of leadership, curriculum quality and evaluation, equity, engagement, retention, and government reporting measures.	<ul style="list-style-type: none"> <li>• Emerging reflections of regression on social goals</li> <li>• Inclines in quality of core business</li> <li>• Exposure of declining non-core lag indicators</li> <li>• Plateauing or inclines in employee and student well-being and engagement</li> </ul>
<b>Phase 4</b> <b>Restoration</b>	To determine what a return to business-as-usual looks	The final stage focuses on the return to the pre-pandemic state, considering what may remain because of rapid innovation and what will revert. This may see some institutional rankings,	<ul style="list-style-type: none"> <li>• Short- and medium-term strategies for core service return</li> </ul>

Phase	Goal	Definition	Expected Indicators
<i>2– 4 teaching periods after the pandemic</i>	like and how it can occur.	under normal conditions, fluctuate significantly.	<ul style="list-style-type: none"> <li>• Disruption in service delivery as the new and old products collide</li> <li>• Medium and long-term strategies to restore fallen indicators</li> </ul>

### Phase 1: Rapid adaptation

*Rapid adaptation* during COVID-19 included four key strategies: i) rapid digitalisation, ii) reactivity to changing government regulations, and iii) pausing delivery during the lockdown, or iv) suspending delivery (Crawford, Butler et al., 2020). For digitalisation, this typically meant uploading content designed for face-to-face delivery online in its current form. In the latter three, governments developed a policy that saw consistent change in requirements (e.g., a progressive decline in the number of students in a room as the pandemic worsened). Some universities opted for a quick delay or pausing of delivery, expecting the pandemic to end quickly, and others fully suspended classes for a period. Most universities' responses can be categorised as either specifically one of those responses or a combination. Indeed, these were similar during other pandemics. For example, the University of Oxford likely had cessation of on-campus learning forced upon them by fleeing students and faculty during the Black Plague. The unnamed Australian university, during SARS, exhibited some reactive responses to government directives as it delivered curriculum under contractual obligations (Feast & Bretag, 2005). The higher education sector is considered risk-averse by nature (Newton, 2002), and, as such, many may act reactively to the conditions imposed on them by their governments. Immediate, quick-fix solutions were made per the variance in university executives' risk appetites, which is expected across a diverse sector (e.g., Pathan, 2009; Strydom et al., 2017).

Insofar as the expected changes to the sector during Phase 1, the rapid change in the core business is a natural assumption. The rapid adaptation makes it impossible to go through the same degree of rigorous quality assurances, and concessions will be made. In Australia, changes to face-to-face examination requirements by accreditation boards are one example (e.g., CPA, 2021); others have suggested delay for general cohorts and prioritising students close to graduation to enable their timely introduction into the market to support recovery.

The pace and scale of rapid curriculum changes (including forced innovation) will likely heighten distress in staff as they continue to fulfil their existing workload and find additional time for curriculum adaption (e.g., Ozamiz-Etxebarria, 2021). Instability and uncertainty will be felt in casualised employees first, and emotional contagion will likely affect tenured and contract employees (Nachatar Singh & Chowdhury, 2021). This will not be true in all circumstances, with social connection and bonding explicitly sought during times of heightened emotion and rapid information diffusion (Kusen et al., 2017). A great example of this during COVID-19 is global webinars for English teachers (Shin & Borup, 2020), with 9,159 attendees across six webinars in March and April 2020. The notion of solidarity and digital connection is a contemporary response to the increased instability of academic work, with academics working together to support their colleagues through communities of practice, informal meetings on Zoom and similar. While they were unlikely to prevent a decline in academic well-being, such informal connections may mitigate negative personal outcomes.

The implementation of equivalencies to pre-pandemic assessments, learning activities and informal learning opportunities will lead to some student distress (e.g., Ala'a et al., 2020;

Odrizola-Gonzalez et al., 2020), which, as for the academics, can lead to students seeking opportunities for social support and social bonding. For example, the #MedStudentCovid received 1,586 tweets and trended fourth in the UK on Twitter (Huddart et al., 2020). This gave students a semi-facilitated space to collectively express their concerns and identify relatable factors to bond over. These initiatives may seek upticks in student well-being, but there is an expected declining well-being curve as students settle into new learning practices they feel are sub-optimal and not what they want from higher education. There is a symbiotic relationship between well-being, belonging and engagement of students (Tice et al., 2021; Wilson et al., 2020). A student's general curiosity and appetite for understanding the new higher education landscape they inhabit may see increases in student engagement metrics but potential declines in *actual* engagement with learning. Once their immediate concerns are alleviated, likely rapid fluctuations in learner engagement will be determined significantly by external factors (e.g., lockdowns provide greater time and lower motivation for deep learning).

In higher education, knowledge-sharing behaviours of academic leaders enhance performance (Bakar et al., 2016). Attitudes and intentions of knowledge sharing, assessments of subjective norms, and commitment and trust enable knowledge-sharing behaviours in academia (Fullwood et al., 2013; Goh & Sandhu, 2013; Nordin et al., 2012). Despite the role that knowledge-sharing behaviour has in knowledge workers and higher education, this was not an obvious feature during the rapid adaption of COVID-19 (Fikuree et al., 2021; Lalani, 2021). Almost without exception, most published research during the pandemic was focused on single institutions and single countries: exploring a single response in isolation (Butler-Henderson et al., 2021). The efficient production of *Teaching, Technology, and Teacher Education During the COVID-19 Pandemic: Stories from the Field* eBook (Ferdig et al., 2020) is an e-book example. During an abbreviated peer review process, there was an opportunity to pair up collaborators to enable analyses for a large cross-institutional setting. The eBook provides great examples of how specific institutions are responding but failed to connect aligning threads of their 100+ short manuscripts. For example, Gandolfi and Kratcoski (2020) discuss a community of practice model to enable technology integration in the United States, and Janes and Carter (2020) discuss developing techno-resiliency through a community of practice model in Canada. Teacher development was conducted through video-enhanced observation at the University of Amsterdam (Van Der Zwaard & Bannink, 2020) and informal online conversations at Kansas State University (Porath, 2020). It is important to reflect on the quality of the research reported and the potential synergies and missed opportunities to collaboratively reflect on such rapid innovations and interventions. This is likely reflective of university-decision makers prioritising the immediate and local, with only some collaboration with close universities—failing to look to the experiences of those further down the COVID-19 trajectory entering the next phase. The success of future rapid adaption in pandemics will be determined by the ability to rapidly share high-quality interventions and adaptations and to collectively learn from others.

Unusual revenue and expense patterns will likely also characterise this phase. The institutions will likely undergo changes to revenue projects (e.g., lower international or higher domestic load) and expenditure items (e.g., immediate hiring of educational technologists or academic and administrative overtime). These will also be offset by a reduction in non-core activities. During COVID-19 and SARS, travel budget lines were the first to be removed (Crawford & Butler et al., 2020; Feast & Bretag, 2005) and recommendations to 'go online' (Porter & Porter, 2020). Pauses in planned major capital and infrastructure works, research budget line adjustments and delayed payments of long-term invoices are examples seen across the sector during COVID-19. The progression through this Phase is only likely to last a single major study

period, with the goal to rapidly adapt the core business in the constrained environment, with a move to replication, waste reduction, and improvement in Phase 2

### Phase 2: Improvement

At the time of writing, many higher education institutions globally are in the *improvement* COVID-19 phase. The key goal within Phase 2 is to improve adaptations to core business from Phase 1 and explore engagements with non-core activities. The close of the first teaching period will perhaps see student satisfaction surveys and results as a baseline and metric to improve upon. This begins with assessing the conditions that prevailed during the rapid adaptation period. In a survey of 3,707 members of the University of Valladolid, Spain, community, 40.42% of students felt moderate to severe impacts of the event, along with 23.66% of faculty (Odrizola-Gonzalez et al., 2020). Mean psychological distress was 34.20 among a sample of 381 undergraduate and postgraduate students in Jordan, with scores between 30 and 50 representing severe psychological distress (Ala'a et al., 2020; Andrews & Slade, 2001).

Some Universities set up structures to support specific student cohorts to continue placements and contribute to COVID-19 responses. For example, the University of British Columbia, Canada, the University of Tasmania, Australia, and Aalborg University, Denmark, developed opportunities for advanced medical students to support medical teams responding to COVID-19 (Haines et al., 2020; Rasmussen et al., 2020). Sixty-four point eight per cent of students surveyed at the Duke National University of Singapore Medical School ( $n = 179$ ) preferred to return to clinical settings (Compton et al., 2020). These new activities will be varied in their successes; Ferdig et al. (2020) report on more than 100 new or adapted initiatives in the education sector. In postulating improvement, it is important to go beyond uncritical perceptions of adaptations as 'innovations' and to explore their relative merit in terms of student learning and success or the success of academics who teach them. Some initiatives will fail, and these should be openly identified and examined for their potential merit with adaptation. Localised initiatives may also succeed and should be expanded, where possible, more broadly across a university.

A survey of UK academics ( $n = 1,148$ ) (Watermeyer et al., 2020), identified that most staff felt they had access to appropriate technologies (81.70%); however, only some staff were confident in their online delivery skills (60.60%), and less than half felt prepared for online learning, teaching, and assessment (49.50%). In the same study, academics perceived their workload would significantly increase in the following weeks and over the following three years. There were also perceptions of less opportunity to be innovative and a requirement to respond to future student norms (e.g., flexibility). Due to the rollover and repeated delivery of courses and subjects, there will be new opportunities to see glaring gaps in learning and teaching delivery during COVID-19. The teaching teams will begin conversations in their already limited work time (Longhurst et al., 2020; Watermeyer et al., 2020), exploring how their teaching can be better adapted to the new context. This may be formal (e.g., end-of-Semester evaluations and assessor meetings) or informal (e.g., a general conversation among colleagues that sparked an idea for improvement).

Among the changes, student apathy or resistance to online learning will likely persist. The first delivery period presented students with studying online as a 'necessary evil'; an initial anecdote argued most students would prefer to return to their original learning pathways. Yet, there seems to be less agreement on this in 2023, with students opting for online classes over on-campus; this might have significant consequences for extracurriculars (see Bullard, 2022). The gap between student expectations before COVID-19 and the current delivery could decrease

student engagement as opportunities to ‘go outside’ return to their personal lives. In one study, 35.70% of the United Kingdom and the Republic of Ireland universities reported reduced student engagement, and 21.40% reported greater difficulty in positive student/teacher relationships (Longhurst et al., 2020). The rapid publication of commentaries, editorials, student and staff-centric studies, and case studies during COVID-19 should be welcomed because they will inevitably provide opportunities to learn from the collective higher education experience and thinking. Studies of successful adaptations and improvements are readily available in the literature. For example, the use of synchronous pedagogy in online Fijian doctoral education (Hogan & Devi, 2019), or methods of organising online classes during the rapid adaptation phase in Georgia, United States (Basilaia & Kvavadze, 2020).

There needs to be a balance between the desire to rapidly improve quality and the needs of staff members that may be hitting periods of fatigue and risking burnout. Before the pandemic, burnout and poor psychological well-being were common in higher education (Barkhuizen et al., 2014; Bezuienhout & Cilliers, 2010; Hogan & McKnight, 2007). Mindfulness, workload adjustments and mental health leave are among the many responses adopted in the past (Bradley & Eachus, 1995; Bright & Pokorny, 2013). Many of these responses may now be sidelined while staff are required to complete greater workloads within a heightened period of poor psychological well-being. Improvement of curriculum and student learning experiences will begin with ensuring staff are psychologically safe and supported during the pandemic, with confidence in the certainty of their positions where possible.

### **Phase 3: Consolidation**

During Phase 3, those identified as ‘developed’ countries (e.g., United Nations, 2021), among others, are now in a position where their second or third delivery of subjects/units have completed. At this point, universities will begin to examine longitudinal data for student success, student evaluations, staff pulse surveys, and human resource information systems data (e.g., leave accruals, turnover, and reasons for accessing employee assistance programs) (Attridge, 2019)). These will inevitably turn into conversations for and about leadership (e.g., Iromea & Reynolds, 2021). For example, what are the opportunities to create good practices during or beyond the crisis? Connection with members of the academic community, distributing responsibilities, communicating clearly and setting a pathway forward takes courage (Fernandez & Shaw, 2020). Successful consolidation requires leadership at every level: executive, staff/teacher and student. This leadership should begin with authenticity and recognition that leader-follower relationships are likely hyper-fluid during periods of turbulence (Crawford, 2022). Each of these levels has different foci. This leadership exploration should not, however, only focus on the internal university communities and should recognise that universities often play a broader community leadership role.

For students, the focus is on reasonable resistance, self-efficacy and developing social support. Students will generate resistance to some university practices, which should be expected and welcomed. In one case, students were encouraged to ask their professors questions on Twitter (Huddard et al., 2020); through open and transparent dialogue these students were supported to be resistant and have their concerns addressed in a timely manner. New initiatives and adaptations may not always work, and their immediate feedback will support corrective action to enable and support student learning. Students also require a degree of psychological capital (hope, efficacy, resilience, and optimism (Luthans et al., 2007)) to feel confident to succeed. Psychological ownership is when individuals feel that an object is their own (Dawkins et al., 2017). Just as in workplace contexts (Park et al., 2013; Ramos et al., 2014), students who

demonstrate psychological ownership over their studies are likely to help their peers, speak up when needed and act as a citizen of the university community. Promoting positive and strength-based antecedents to positive well-being (Martin et al., 2017) will create communities where students are equipped with the tools they require to be resilient and adaptable during the COVID-19 pandemic. Effective social support from within and without higher education communication is essential to enable students to find the necessary relief and motivation required for their success (Shen et al., 2010).

For staff, the focus will be reviewing their curriculum content, delivery methods and the impacts on their students. Many will feel the downward pressures associated with tightening financial constraints, survivor's guilt when some colleagues lose their employment at the university and monitoring the declining well-being of themselves and their peers (Thornhill & Saunders, 1998). Even without institutional pressures (e.g., student evaluations), teaching staff will likely identify challenges to delivering content in the first and second deliveries (Laurillard, 2008); that is, effective teaching staff will seek to create adaptations and process approvals for curriculum improvements. There may be frustrations that emerge from teachers on matters such as specific student and staff equity issues. For example, poor internet or technology access for lower socioeconomic students may concern teaching staff (Zhang et al., 2020). In these circumstances, setting realistic expectations of students and being sincere in interactions is essential (Crawford, 2022). The downward pressures can only be responded to by staff, and a positive teaching team culture is critical to support teaching staff as pressures mount. These positive organisational cultural elements will also support staff in regulating emotions as they process greater workloads and personal and professional challenges.

For executives, the focus will be on regulating the staff and student responses while balancing the tumultuous financial climate (e.g., Marshman & Larkins, 2020). The challenge for many university executive teams may be remaining financially viable as expenditure on wages, the decline in revenues, and the costs of poor mental well-being take their respective tolls (Deng et al., 2021). For most accreditation bodies and ministries of education, the expected standard of curriculum quality during COVID-19 has not drastically changed. Some accrediting bodies have granted some minor caveats (e.g., leniency on short-term invigilated examinations); however, institutional reporting requirements on curriculum quality and student attrition are unlikely to change. Developing academic integrity among all students was a 2019 imperative (e.g., Stoesz et al., 2019). Institutional responses to indigenising the curriculum and fostering child safety literacy remain business-as-usual initiatives that continue in 2020 and beyond (e.g., Bennett & Gates, 2021). Although, for some institutions, delaying initiatives may be necessary to monitor heightening workload commitments and staff capacity.

#### **Phase 4: Restoration**

The ongoing effect of the first coronavirus (COVID-19) case in Wuhan in December 2020 has created a ripple effect affecting the entire higher education sector. It is possible to say that higher education will never be the same again; however, for some locations, this is unlikely to hold. Some institutions will revert to their original state of affairs at the close of the pandemic. At the point where the virus is business-as-usual (similar to the common cold), institutions will face the question: 'How do we now progress?' There are three possible answers: 1) resume pre-COVID offerings with broad communication strategies on hygiene methods and promotion of a vaccine; 2) blend the pre-COVID and intra-COVID deliveries to present a revised curriculum and pedagogy; or 3) reimagine a future of higher education that focuses on developing a community of students and staff and on the collective quality of education provided to students within that community. With COVID-19 being the first significant pandemic to affect higher

education in the digital era, these contestable possible answers will frame the next decade of theoretical and empirical research.

I posit the need to go beyond resuming pre-COVID offerings with vaccine and hygiene communication to focus on developing institutions whose values are student-centric over staff- or business-centric (Crawford, Percy et al., 2020; Yang & Tan, 2019). Higher education students have now experienced what it feels like to have flexible curriculum offerings, combinations of on-campus and off-campus offerings and a reduction in mass manufactured assessment (e.g., gymnasium-housed invigilated exams with fixed times). Some elements will return, but academic administrations should be cautious about implementing a full restoration. Effective leaders will carefully evaluate the new curriculum and pedagogic elements that students enjoy and resource the creation of new and reimagined education offerings that support student equity, well-being and success. This phase should include extensive scholarship designed strategically to meet the sector's needs (e.g., Acuna & Kelder, 2019).

## CONCLUSION

Based on a literature review, this conceptual piece defines phases by which higher education progresses through pandemics. Rather than offering a time-bound and rigid solution, this paper develops a model to frame a dialogue for contemporary higher education, and how it responds to COVID-19 and future pandemics it may face. COVID-19 has, indeed, posed one of the greatest challenges the education sector has ever faced, but it will not be the last. There will continue to be a plethora of scholarship emerging that discusses pandemic and epidemic responses for universities and colleges globally. This paper serves as a call to avoid single institutional studies, particularly if not networked deeply into the existing literature. The forthcoming flood of manuscripts arguing their panaceas for higher education during a pandemic should begin with what is already known. This paper serves as a foundation of work to date, both academic and practical.

The significance of this model poses a preliminary policy framework for higher education to examine in the context of the current pandemic and develops a blueprint by which institutions can take an evidence-based approach should another pandemic, epidemic or similar occur. The model proposed builds on a comparative analysis of previous pandemics in the context of a contemporary pandemic landscape. The practical implication of this work is a clear documentation of phases by which pre-emptive pandemic response plans could be developed. The model is, however, limited by its empirical testing. While the study draws on a large volume of literature, and the author considered significant practical and theoretical perspectives, there is a need to examine contexts and institutions against this model to identify to what extent it is universal as a blueprint.

The pandemic model developed in this paper suggests that future empirical research examines the four elements to identify those that accurately depict a universal approach to pandemic responses in higher education and elements within the model that may require revision based on new evidence. As we progress, publishing feed-forward controls will support institutions whose pandemic response is in an earlier phase. This research is limited by the conceptual focus and the fact that, empirically, we are still in the early phases of COVID-19. However, it is based on extensive reading—of existing and forthcoming empirical literature, current journalistic reports, government releases, and higher education publications—using a meta-narrative approach. Of concern is the dearth of literature on failures in COVID-19 responses; reporting these should be encouraged. Our learnings will be through our successes and the transparent

sharing of what did not work. The pandemic has affected students and academics in different ways, individually and collectively. By learning together and sharing knowledge of successes and failures, our collective efforts can support genuine responses that will enable effective learning pathways for students and landscapes of teaching and curriculum for teachers.

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