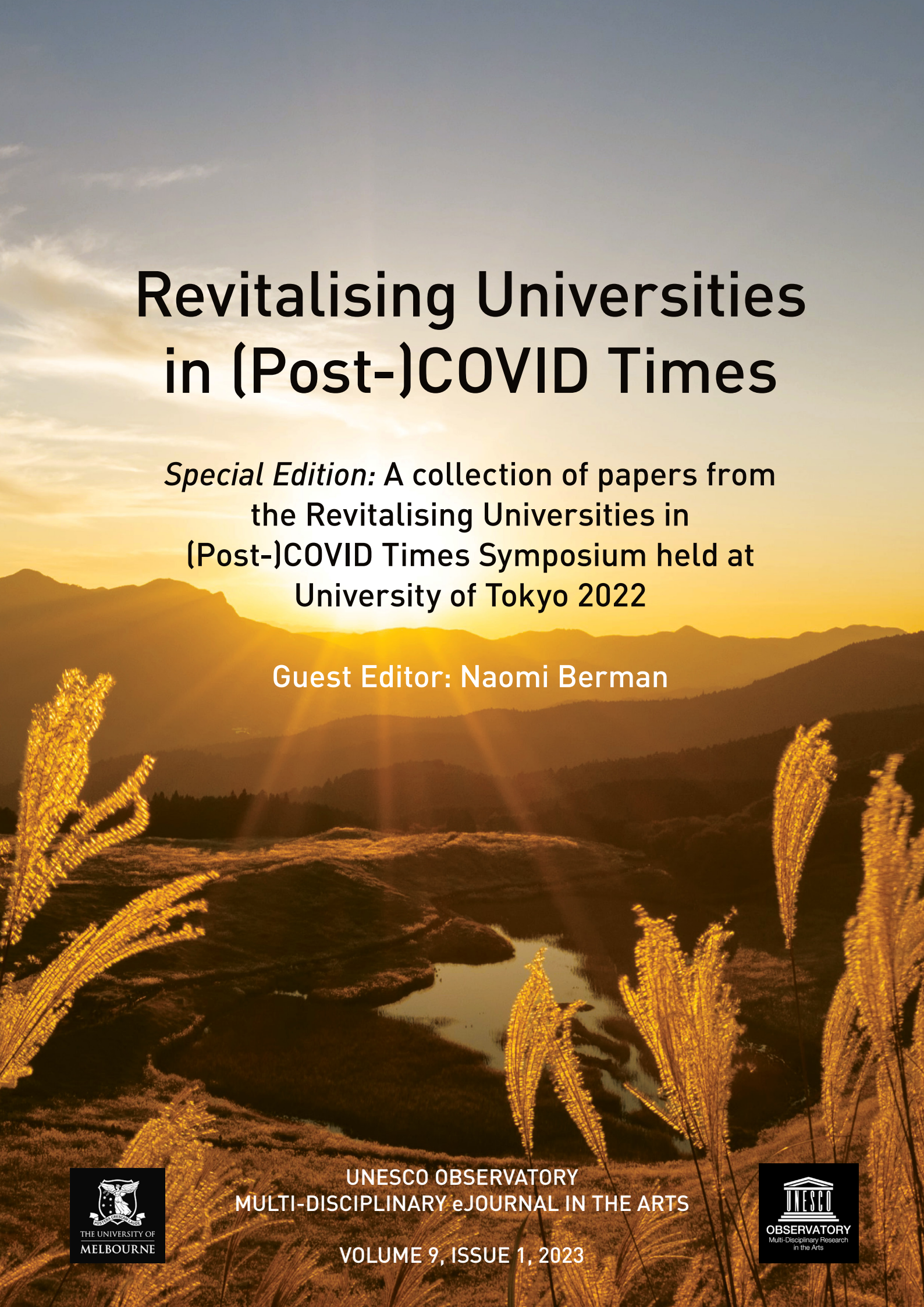

Revitalising Universities in (Post-)COVID Times

Special Edition: A collection of papers from the Revitalising Universities in (Post-)COVID Times Symposium held at University of Tokyo 2022

Guest Editor: Naomi Berman

THE UNIVERSITY OF MELBOURNE

UNESCO OBSERVATORY
MULTI-DISCIPLINARY eJOURNAL IN THE ARTS

VOLUME 9, ISSUE 1, 2023

UNESCO OBSERVATORY
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MULTI DISCIPLINARY eJOURNAL IN THE ARTS

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Cover Image: Photo by Samuel Berner on Unsplash

ISSN 1835 - 2776
UNESCO E-Journal
an Openly Published Journal affiliated with
The UNESCO Observatory at
The University of Melbourne

Edited and published by Lindy Joubert
Founding Director of the UNESCO Observatory
Email: lindyaj@unimelb.edu.au
Endorsed by the Melbourne Graduate School of Education

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The UNESCO Observatory refereed e-journal promotes multi-disciplinary research in the Arts and Education and arose out of a recognised need for knowledge sharing in the field. The publication of diverse arts and cultural experiences within a multi-disciplinary context informs the development of future initiatives in this expanding field. There are many instances where the arts work successfully in collaboration with formerly non-traditional partners such as the sciences and health care, and this peer-reviewed journal aims to publish examples of excellence.

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INTRODUCTION

This special Issue presents a selection of papers presented at the Revitalising Universities in (Post-)COVID Times Symposium, held at the University of Tokyo, November 2022. This hybrid event gathered academics, educators, and experts from Australia, Japan and other regions to discuss the future of higher education as universities navigate pathways out of the pandemic. The experience of the pandemic may vary between countries based on cultures, expectations, and social organisation, therefore exploring a diversity of experiences and expectations as universities reopen offers a fruitful point of differentiation and comparison between globally diverse educational spaces.

Echoing Connell's original call to rethink the 'good university', COVID has thrown into question taken-for-granted notions about the position of universities, forcing a reframing of understandings around their social purpose. The pivot to online during the pandemic has highlighted the potential for digital technology to transform the way we teach and learn. Yet it has also become clear that such transformation does not come without its social, economic and wellbeing costs. Indeed, questions around whether the response measures introduced by universities across the globe early in the pandemic are still valid and viable need to be asked, as institutions decide what gets kept, thrown away, amplified, or diminished. The symposium provided a space for reflection on these questions as well as broader philosophical and theoretical deliberations on the 'good university'.

Naomi Berman
Guest Editor

‘GOOD’ FORMS AND FUNCTIONS: HIGHER EDUCATION IN EMERGENCIES DOMAINS AND UNIVERSITY RESILIENCE

AUTHORS

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BIOGRAPHIES

Dr. Ian Teo

Dr. Ian Teo is an education policy and practice researcher who has engaged in range of projects for multinational organisations and governments. These have included UNESCO, NEQMAP, GPE-KIX, the Department of Basic Education (South Africa), the Emirates Schools Establishment (United Arab Emirates), the Department of Education, Skills and Employment (Australia), and the Department of Foreign Affairs and Trade (Australia). His research and project work have focused on the areas of education in emergencies and 21st century skills/general capabilities for the K-12 and higher education sectors.

Dr. Brigid Freeman

Dr. Brigid Freeman is Senior Researcher (Education) with the Australia India Institute at the University of Melbourne, and in 2023, Visiting Professor with the National Institute of Educational Planning and Administration (NIEPA) in Delhi, India. Her research is international and comparative, focusing on higher education policy and systems, university policy governance, internationalisation, and higher education in emergencies. Dr Freeman has undertaken extensive fieldwork in Australasia, India, and the United States, analysed convergence and diversification in university policy systems, and published higher education policy related research sponsored by the Australian Government, Victorian Government, and UNESCO.

BIOGRAPHIES CONT.

Prof. Pete Leihy

Prof. Pete Leihy teaches at Universidad Andrés Bello in Santiago de Chile. His research focuses largely on the history of higher education around the world. Since 2020, he has been working on the development of the Higher Education in Emergencies Domains with this article's other authors, and from 2023, in collaboration with USAID's Higher Education Learning Network.

Prof. Dong Kwang Kim

Prof. Dong Kwang Kim manages one of Okayama University's flagship global education programs (The "G-Course") and has expertise both in philosophy and education. He envisions helping restore the integrity and realize the values of higher education, which has experienced great strains from the impact of the COVID-19 pandemic and the amassed ills of neoliberal reforms. In recent years, he played a pivotal role in winning from European Commission the HESPRI (*Elevating Higher-Education policies: an empowering SPRIngboard*) project by building up a team of researchers based in Europe, East Asia, and Latin America.

ABSTRACT

Higher education institutions have taken various forms over the ages to serve the functions of assaying and disseminating knowledge and practice. The COVID-19 pandemic has significantly disrupted these forms and functions by challenging entrenched governance, teaching and research, and financing and operational models.

This article presents the Higher Education in Emergencies Domains (HEED) model for the analysis of plans, policies, and practices, which can be used to support institutional stakeholders as they seek to recover from, prevent, and prepare for future disruptions. Developed over the course of the COVID-19 pandemic, the HEED model delineates and informs:

- The drafting of pandemic plans, policies, and practices;
- Longer term assessment of institutional resilience as a result of the pandemic experience;

- The development of broader resilience to future disruptions to higher education through prevention, preparation, response, and recovery planning

These considerations will be discussed in light of institutional and system resilience, and 'good' forms and functions.

1. INTRODUCTION

More than a century ago, the Great Influenza Pandemic took the lives of millions from 1918-1920. Across four outbreaks – with the second wave being the deadliest – the spread of the Influenza A/H1N1 virus was spurred by World War I and mass migration globally. This influenza pandemic also contributed to significant economic disruptions in the forms of increased inflation, and falls in gross domestic product (GDP) and private consumption in affected countries (Barro, Ursúa and Weng, 2020). More recently, the experience of the SARS-CoV-2 (COVID-19) pandemic has invited comparisons with the 1918-1920 influenza pandemic in terms of international relations, economic trends, disease transmission, and mortality rates (Beach, Clay and Saavedra, 2020; Petersen *et al*., 2020; Liang, Liang and Rosen, 2021). The COVID-19 pandemic, however, is exceptional in human history in that its impact would grow so rapidly ubiquitous (Callaway et al., 2020; Nicolson, 2020; OECD, 2020). Consequences at previously unforeseen scale have included collaborative scientific and industrial efforts to develop, manufacture and distribute vaccines and treatments; disruptions to global, regional, and national supply chains; and transformations to workplaces, workstyles and working conditions. Concurrently, there have been forced national and domestic border closures and social distancing directives; and (at times unhelpful) pandemic-related public health discussions propelled into the daily news cycle and collective (un) consciousness (Guan *et al*., 2020; Stainback, Hearne and Trieu, 2020; Galanti et al., 2021; OECD, 2021; Klobucista, 2022; Shiraef *et al*., 2022).

Likewise, education has been impacted by the COVID-19 pandemic at all levels, in both shared and distinctly different ways in terms of participation, practice and place. Observed impacts in all education sectors have been influenced by national/local contexts, histories, and traditions. At the K-12 levels, the sheer size of this sector meant that the pandemic interrupted or halted schooling for approximately 1.5 billion students in 188 countries. It exacerbated pre-existing learning crises at this important foundational stage of learning, especially in developing countries, resulting in learning losses for an entire generation of students (Tarricone *et al*., 2021; Tarricone, Mestan and Teo, 2021; Broom, 2022). Within the vocational education and training (VET) sector, which instrumentally connects learning (off-the-job) and working (on-the-job) spheres, the pandemic forced a reimagining of pedagogy, mode and place(s) of learning, working, and assessment. While the worlds of working and learning were concurrent and rapidly changing, the VET sector was forced to innovate using existing and emerging technologies and learning infrastructure, leverage education-industry partnerships, and modify internship models. At the same time, the pandemic highlighted urgent skills shortages and shifting labour market patterns resulting from reduced skilled migration flows, changing demographics, further constrained economic conditions, and growing wealth inequalities (Clibborn and Wright, 2020; Causa *et al*., 2022; German Office for International Cooperation in Vocational Education and Training, 2022).

In higher education, at a time of great hope for global science, the pandemic disrupted knowledge production and transmission across the world, in ways both remarkably similar and locally distinctive. The sheer size of the sector in countries having the largest participation levels *and* high disease burden (i.e., the United States, India, and more recently, China) means that a large proportion of all higher education institutions, students, faculty and professional staff – and their communities - were severely impacted in terms of teaching and learning, research, business continuity, engagement and wellbeing; see International Association of Universities (2022). Clearly, the pandemic highlighted the need to build higher education system- and institution-level capacity for COVID-19-related emergency response-recovery-prevention-preparation, and to develop resilience against future disruptions.

This article focuses on considerations relevant to universities seeking greater resilience, and presents a tool to support an emergency response-recovery-prevention-preparation cycle. In the wake of governments and universities transitioning away from a focus on responding to the COVID-19 pandemic, such a tool might be used by policy actors to *recover from, prevent, and prepare for* future disruptions to education, including pandemics. This tool, including its domains and indicators, has been informed by the COVID-19 and higher education literature, and can be used to holistically audit a range of higher education plans, policies, and practices, or as a launching point for more in-depth research. Accordingly, the research question underlying this article queries 'How might plans, policies, and practices assist policy actors with recovering from, preventing, and preparing for, disruptions to higher education systems and institutions?'.

2. PURSUING 'GOOD' FORMS AND FUNCTIONS

The COVID-19 pandemic compelled university policy actors to rapidly reconsider existing institutional plans, policies, and practices, and introduce changes as public health directives forced closures across countries. These efforts occurred regardless of the forms and functions embodied by institutions, and can be framed as attempts to salvage the 'good' work of universities conceptualised by Connell (2016) as encompassing faculty teaching, student learning, research activities, administration, and business continuity planning and outcomes. Crucially, the spread of COVID-19 globally, and the limitations of pre-pandemic university emergency prevention and preparation, contributed to a range of system and institution-level responses and recovery strategies (Rennert *et al.*, 2021; Abdrasheva *et al.*, 2022). Before describing how responses to the pandemic might be thematically grouped and used to inform *recovery from, prevention, and preparation for* future disruptions to higher education, it is important to briefly outline some examples of the pre-pandemic forms and functions that universities embodied, to draw attention to subsequent observable convergence and diversification.

Universities have embodied various forms over the centuries, with some of the oldest continuous institutions being founded on *religion*, a cornerstone of knowledge and belief throughout human history. These include the University of al-Qarawiyyin in Morocco (c. 857 – officially designated a university in 1963) and Al-Azhar University in Egypt (c. 972 – going by university from 1961). Both institutions began as mosques and evolved over time to become centres of higher education for students of religious studies, astronomy, engineering, logic, medicine, and mathematics (Changing Structures of Islamic Authority, 2015; Sakay, 2020). Ancient and modern analogues of these institutions within the Christian tradition include the ecclesiastical universities in Europe (e.g. the Pontifical universities of the Vatican, and universities generally until the nineteenth century), the Americas (the roots of universities in the Spanish and English and later British empires), Oceania (e.g., theological colleges affiliated with universities), and the Middle East (e.g., the École Biblique, Israel). A second form comprises universities that maintain a focus on pure and applied *research* with the goal of knowledge transfer and certification (e.g., Stanford University in the United States; and the University of Tokyo in its current form), while a third typically emphasises a *technical* focus on engineering and engineering-related applications and innovations (e.g., Tsinghua University, China; and the Indian Institutes of Technology) (Geschwind and Broström, 2022). A fourth form, comprising *organisations that support and complement university activities*, promotes research-orientated partnerships with and between higher education institutions. Examples include the Centre National de la Recherche Scientifique (France) and the Max Planck Society (Germany).

While the forms of universities and their support structures have evolved through history, it is periodically fashionable to reconsider their *functions*, which essentially means the kinds of endeavours to which people commit themselves through such institutions (Oakeshott, 2001). One function is supporting and preparing students for *lifelong learning* by developing key skills and knowledge, mobilising education resources, and ensuring education access for all (Institute for Lifelong Learning, 2022). A second function is supporting students in their *transition to the world of work*.

This can involve the provision of supports and mentorship so that students can safely experiment with identities and ideas, develop greater independence, mirror desired behaviours, gain access to nurturing environments, and receive student-centre guidance, as well as acquire discipline-specific attitudes and competencies and become capable of making positive contributions to society (Chan, 2016; Mintz, 2021). A third function is the quest for new knowledge, including through serving as a training ground for the next generation of researchers and enhancing the quality of institutional teaching and research (Marginson and Considine, 2000; Watty, 2006).

However, few (if any) studies have systematically interrogated the ways in which the different forms and functions embodied by universities would inform nuanced system and institution-level responses and recovery strategies in the period following the beginnings of the COVID-19 pandemic. What is apparent from the growing body of higher education in emergencies literature is that universities engaged in and converged around broadly similar responses including:

- Transitioning to digital platforms to deliver undergraduate and postgraduate courses, support teaching, learning, assessment and student engagement, and conduct online seminars and conferences;
- Reconceptualising research and research training priorities, methods, projects and collaboration arrangements;
- Shifting to remote governance, decision-making, administration, communication, file sharing, and marketing;
- Re-evaluating financial obligations towards the maintenance of higher education infrastructure (buildings and grounds), resources (libraries, galleries, databases, equipment), and scholarships within a context of increasing funding requirements (e.g., creating COVID-safe campuses);
- Re-evaluating human resources commitments for faculty, professional staff, and professional development within a context of diminished funding from government and international market segments;

- Reconsidering geopolitical engagements and vaccine/booster mandates as countries reopened borders and engage in mobility programs for faculty and students (Bokolo Jnr and Noel, 2021; Freeman, Leihy, *et al.*, 2021; Freeman, Teo, *et al.*, 2021; Watermeyer *et al.*, 2021; Freeman *et al.*, 2022; Leihy *et al.*, 2022)

While critique might be directed towards philosophies, motivations, and evidence-bases informing these responses – and comprehensive, longitudinal analysis is required to evaluate whether these responses *actually* shifted[1] universities towards achieving 'good' institutional form and function – it is argued that common themes relating to plans, policies, and practices emerged globally since the beginning of the pandemic.

PANDEMIC SNAPSHOTS

International students in Australia

The pandemic revealed two key trends with respect to the types of government supports and treatments of international students in Australian universities and in the wake of major bushfires at the end of 2019 and the beginning of 2020. The first involved a lack of fiscal and social supports for international students, despite initial claims by Australia's then Morrison Government that these students would continue to be welcomed and supported during and following these crisis (Freeman et al., 2022). Specifically, the first two major Australian government stimulus packages targeted business and households, and businesses and workers, respectively. Temporary migrants (including international students) were excluded in both government stimulus packages despite international students having historically maintained jobs in the Australian casual

[1] See Connell's (2016) publication on 'What are good universities?' for a discussion on the concept of the good university and a more in-depth discussion about the approaches that might be taken to achieve this.

employment sector. The Morrison Government's higher education COVID-19 support package and the October 2020 budget likewise provided few supports for international students and international education, focusing instead on domestic issues and Australian students. Over time, a second trend emerged that related to migration policies governing international students. This trend saw amendment of international students' post-study visa rights to live and work in regional Australia (despite the challenges associated with finding work in these locations); international student nurses being permitted to work in the health sector nationally during the pandemic; changes to enable students to work more than 40-hours per fortnight; and more flexible visa application lodgements, post-study work options, and additional time for English language testing (Freeman et al., 2022).

Supporting institutions and students in Chile

While access to higher education has expanded rapidly over previous decades, particularly amongst students from less wealthy socio-economic backgrounds, the pandemic revealed clear gaps within the higher education sector. Particularly, students from such backgrounds are expected to possess fewer cultural and social capital advantages, and have less access to adequate resources for distance learning (i.e., out-of-date computer technology and limited internet connectivity). In part, these gaps motivated institutions like Universidad de Chile to support student learning by making internet access available through portable chips and modems, as well as supplying students with 7,000 tablet computers during the pandemic (Funk, 2021). This need for extra spending, however, resulted in the Council of Rectors of Chilean Universities (CRUCH) criticising the Ministry of Education's decision to reject a request for special pandemic funding during 2020. CRUCH has

claimed that the Ministry of Education "does not understand" the contexts and scope of the challenges faced by Chilean universities during the pandemic, citing a drop of income across all 30 CRUCH universities (USD $170 million) as a result of the October 2019 social uprising, lower registration fees, an inability on the part of students to repay student loans, and the extra costs incurred as a result of the pandemic (e.g., purchasing extra software for teaching and learning, training of academics, and providing students with digital technology) (Hurtado, 2020). The pandemic also caused considerable disruption to attempts at reforming the relationship between pre-service teacher training and professional development within the school system (Leihy, 2022).

3. RESPONDING TO COVID-19 AND DISRUPTIONS TO HIGHER EDUCATION

While the impact of the pandemic on universities can be mitigated by various policy actors, there are two in particular that are perhaps most influential: *governments* and *high-level* university *stakeholders*. Government responses frequently aimed at managing and securing public health, developing (or accessing) and disseminating vaccines and treatments, and reimagining economic policies, public financing, and nationalisation agendas. Governments recalled citizens living abroad, closed national/jurisdictional borders, and oversaw complete or partial closures of public spaces in response to the pandemic. Government responses extended to supporting remote modes of work and operations by leveraging information technology infrastructure and processes, and upskilling the public sector for pandemic-related response and recovery.

In contrast, high-level university stakeholders – such as *governance bodies*, *executive members*, and *operational managers* – reacted to government directives and policies. Globally, and to varying degrees, this included

reducing campus usage (e.g., shifting to remote study, research, and work arrangements), recalling international students/faculty to their home country, managing social distancing requirements, and shutting down selected university organisational units (e.g., laboratories, libraries, residential accommodation, retail outlets, and conference centres). University stakeholders also needed to support the transition between different modes of teaching and learning (i.e., fully online, hybrid, and in-person) over the course of the pandemic, and manage more adaptive ways of online teaching and assessment (e.g., teaching across a range of learning and communication platforms, and moderating and assessing student work online). This transition away from the campus meant that rapid and flexible arrangements regarding the implementation of ICT infrastructure were needed, as well as upskilling to support daily work-related responsibilities and general administration (e.g., decision making, communications/meetings, and document sharing).

As higher education institutions seek to recover from the pandemic and prevent and prepare for future disruptions, it will be crucial that university stakeholders are informed by higher education research, and business intelligence (i.e., institutional research) so that they are better positioned to develop *good* plans, policies, and practices. This process could begin by stakeholders considering a range of high-level issues to prioritise institutional goals beyond the pandemic. These might include considerations such as 'What is the "good" that universities are attempting to achieve?', 'What are the forms and functions driving institutional purposes in 2023 and beyond?', and 'Is there demand to return to pre-pandemic "business-as-usual" practices, or should institutional/sectorial "transformation" be pursued?'. At the operational level, relevant managers[2] might be compelled to focus on *how* institutional priorities are realised and monitored over the short- and medium-terms, and with respect to other countries' geopolitical agenda, such as, those involving socio-economics, protectionism, nationalism, and globalisation.

[2] It is acknowledged that there is, at times, overlap between the works that operational managers, governance bodies, and executive stakeholders plan for and do. However, the distinction between these groups has been highlighted for the purpose of characterising the types of work that different university stakeholders are required to engage in, with one layer more focused 'what' and 'why' certain institutional functions are prioritised, and the another layer more focused on 'how' these are operationalised and realised.

They might also have to more directly consider recovery, prevention, and preparation planning for what national and local demands are placed on institutions (e.g., central government funding), staff (e.g., human resource policies and practices), and students (e.g., course planning and readiness for employment), and which components of the institution require strengthening.

Accordingly, lessons learned over the course of the pandemic will be critical for informing how institutional functions – like teaching, research, professional collaborations, and business operations – are enacted into plans and policies to enhance the forms that universities will embody post-COVID-19 and to build resilience for the future disruptions. This will require university stakeholders to consider research, resources, and tools that can be adapted to institutional contexts and support the monitoring of prioritised decisions, policies, practices, and measures.

PANDEMIC SNAPSHOTS

Technology enabled learning initiatives in India

The onset of the pandemic hastened India's shift towards, and legitimisation of, technology enabled learning, with many innovative initiatives having commenced well beforehand. For example, building on India's longstanding commitment to distance education and community radio/TV broadcasting, including established e-learning initiatives such as EDUSAT and SWAYAM, as well as the Consortium for Education Communication, National Programme on Technology Enhanced Learning, and the Online Education Broadcast and Virtual Classrooms. In particular, EDUSAT is a satellite that was launched in 2004 by the Indian Space Research Organisation to provide millions of students with learning materials in local languages and access to distance learning. SWAYAM is a Government of India initiative that aims to provide recognised, high-quality Massive Open Online Courses (MOOCs) freely to

Indian students. As part of its initial response to the pandemic, the government launched VidyaDaan – a national content program in April 2020 – to leverage existing systems (e.g., Digital Infrastructure for Knowledge Sharing) and meet current teaching and learning demands, and PM eVidya, which was launched May 2020, and aimed to support multi-module access for education and compile digital, on-air, and online education (Singh *et al*., 2021). Notwithstanding these developments, the substantial challenges associated with India's aspirational digital agenda, including the 'digital divide' resulting in learning deficits for marginalised and non-metropolitan communities, are commonly acknowledged (Delgado Martín and Larrú Ramos, 2022; Tilak and Kumar, 2022).

Emergency student funding in Japan

COVID-19 motivated the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) to establish various higher education initiatives and programmes during the early stages of the pandemic. This included spending USD $95 million to accelerate the implementation of distance learning infrastructure and resources to support universities offering online classes and exempting the number of class credits that could be taken for distance education. MEXT also provided flexible payments of government scholarship for Japanese nationals studying overseas, as well as receipt of scholarship payments for international students in Japan despite arrival delays. A financial support program was also implemented, which provided individual payments of USD $1,900 to support 430,000 students (Japanese and international students) at universities, junior colleges, and vocational schools, and USD $950 for other students. Additionally, USD $150 million funding for tuition exemptions was allocated to students from households that were financially affected by the pandemic (MEXT, 2020).

4. THE HIGHER EDUCATION IN EMERGENCIES DOMAINS (HEED) MODEL

This section briefly outlines the Higher Education in Emergencies Domains (HEED) model, which was developed to support research regarding disruptions to higher education, including emergencies such as pandemics. This model was informed by reviews of the higher education and COVID-19 pandemic literature, with analysis conducted thematically to reveal emerging trends. This analytical approach provided the means to identify salient themes that were then reorganised into domains and domain indicators. The model has the potential to be applied by scholars and further developed by scholars, practitioners and policy actors into a tool for monitoring university plans, policies, and practices; see Leihy et al (2022) for a more in-depth discussion of the HEED model.

The **HEED model** was broadly conceptualised using the management framework developed by the Australian Institute of Disaster Resilience (AIDR) (2020). Specifically, the AIDR's identification of the prevention-preparedness-response-recovery (PPRR) emergency management cycle[3] was useful for framing how a holistic range of plans, policies, and practices might be monitored across the lifecycle of a disruption to higher education. As seen in Table 1, a holistic range of matters could be analysed using the nine domains and corresponding domain indicators.

[3] The response phase seeks to diminish the impact of a disruption to higher education and emphasises activities that have been designed/are intended to support communities, such as the communication of warnings or risks, support teaching and learning, and report lessons learned. The recovery phase is protracted and involves actions that seek to provide sustainable relief. Prevention refers to reducing or eliminating the likelihood of risks and shock, while preparedness emphasises the need to ensure the resources, services, and policies have been anticipated and developed to support response and recovery.

Table 1. Higher Education in Emergencies Domains (HEED) model

Domains	Definition	Domain indicators (select examples)	Domain indicator considerations
Geopolitics and jurisdictions	Covers national and supranational geographical and political pressures, and overall higher education systems	• Geopolitics • National jurisdiction and borders	• Strategic repositioning of global science (e.g., ensuring security of IP, curtailing foreign influence) • Closure of national borders
System regulation	Focuses on regulatory frameworks governing higher education institutions' academic and corporate practices, academic programs, student participation, accountability, competition, and collaboration	• Regulation of academic practices and programs (teaching and assessment, curriculum, and qualifications) • International mobility (international student and faculty visas)	• Changes in regulations governing teaching and assessment mode (i.e., online) • Centralised regulation of global flows of students and faculty
Financing	Focuses on the financial position of higher education institutions and student finances	• HEI revenue • HEI expenditure	• Loss of income from overseas student markets, investments, campus infrastructure and retail outlets • Increased expenditure to COVID-safe campuses
Infrastructure	Refers to infrastructure, assets, technology, and channels owned or managed by higher education institutions	• Higher education infrastructure (teaching, research, accommodation, events, retail, sports) • Technology	• Diminished usage during pandemic / Readiness for reopening • Reliance on distance learning platforms and ICT services
Teaching and learning	Refers to all aspects involved in the preparation, delivery, and assessment of teaching and learning, including academic practices and programs, teaching resources, and academic and student support	• Academic practices and programs (teaching and assessment, curriculum, and qualifications) • Professional development	• Rapid shift towards online / blended learning; upskilling of teaching staff to deliver online teaching; changes to assessment

Research and research training	References all aspects involved in research (including emergency-related), science communication, collaborations, publication outputs, repositories, and ethics, as well as research training	• Research • Research training	• Prioritisation of medical research and funding • Changed research methods
Pathways and portals in and out	Refers to formal pathways into and between higher education programs for local and international students across all levels of undergraduate and postgraduate study. It also includes transition out of higher education to employment.	• Language tests • Higher education entrance examinations	• Postponed senior secondary school examinations, English language tests and admissions
Governance and leadership	References the governance and leadership of higher education institutions, including governance structures, instruments and processes, emergency planning and decision-making, risk, quality and internal reporting, and record-keeping.	• Governance structures, instruments, and processes • Emergency decision-making	• Rapid emergency decision-making • Introduction of new communication protocols accommodating remote working and learning
Human resources	Refers to the employment and management of institutional faculty and professional staff. This includes employment contracts, staffing profiles and workload models, and practices enabling career progression.	• Contracts of employment (permanent, fixed, casual) • Conditions of employment	• Fewer advertised positions; job layoffs or reduced hours of paid work; increased workloads

Source: Adapted from Leihy et al. (2022).

While these domains and domain indicators are not intended to be exhaustive, they can also be adapted in various ways to scaffold a monitoring tool, and involve one or more institutions, in one or more national or sub-national systems. These adaptations include:

- Using the domain indicators 'as-is' to check-off and monitor changes to plans, policies, and practices across the PPRR cycle. This checklist approach is holistic and would require significant resources and collaboration to identify and analyse changes, and inform shifts across higher education systems and at institution level;

- Adapting the HEED model to focus on a selection of domains and/or domain indicators for more targeted monitoring. This might be supported by research – e.g., survey designs, individual/group interviews, or mixed-methods approaches – that collects and analyses data about specific institutional demands, contexts, and challenges to inform and monitor policies and practices during a disruption;

- Using the HEED model to develop a high-level heat map to describe and monitor the risk status of plans, policies, and practices across the PPRR cycle. Over the course of a disruption to higher education, changes could be progressively updated by policy actors to highlight risk and enable a targeted approach to mitigate the future impacts of disruptions. Table 2 provides a hypothetical and abridged overview of how a HEED model heatmap might be designed for the teaching and learning domain and corresponding domain indicators. The cells have been labelled to exemplify how policy actors might update this table at a point in time.

Table 2. Example of an adapted HEED heatmap for the teaching and learning domain

Domain	Domain indicator	Prevention	Preparedness	Response	Recovery
Teaching and learning	Academic practices and programs - Teaching	Moderate risk	Moderate risk	High risk	High risk
	Academic practices and programs – Assessment	Not applicable	Moderate risk	High risk	High risk
	Academic practices and programs – Curriculum	Low risk	Moderate risk	High risk	High risk
	Learning resources	High risk	Moderate risk	High risk	High risk
	Teaching resources	Low risk	Low risk	Moderate risk	Moderate risk
	Professional development – Academic staff	Moderate risk	Moderate risk	High risk	Not applicable
	Professional development – Professional staff	Moderate risk	Moderate risk	High risk	Not applicable
	Academic support – Writing skills	Moderate risk	Moderate risk	High risk	Not applicable
	Academic support – Research skills	High risk	Moderate risk	Low risk	Not applicable

NOTE:

- High risk: **Absence or lack of evidence** (plans, policies or practices) to indicate that this domain indicator has been addressed
- Moderate risk: **Some to moderate amount of evidence** (plans, policies or practices) to indicate that this domain indicator has been addressed
- Low risk: **Moderate to high amount of evidence** (plans, policies or practices) to indicate that this domain indicator has been addressed
- Not applicable: This domain indicator is not applicable for monitoring during this PPRR phase

5. SUPPORTING 'GOOD' FORMS AND FUNCTIONS IN HIGHER EDUCATION

As outlined in the Introduction, the research question underlying this article focused on how plans, policies, and practices might be developed to assist government policymakers and university policy actors with recovering from, preventing, and preparing for future disruptions to higher education. It is maintained that these recovery, prevention, and preparation goals could be elaborated and monitored by deploying the HEED model across the PPRR cycle. Specifically, by adapting this model into a contextually relevant tool or using it 'as-is', policy actors can gain a better understanding of system and institutional level vulnerabilities, to inform planning for greater resilience against disruptions to higher education. Importantly, this approach has the potential to support 'good' forms and functions of higher education as institutions emerge from the pandemic.

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