Negotiating transboundary crises in higher education: Tsinghua University’s shift to online learning during the COVID-19 pandemic

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Abstract
The COVID-19 pandemic posed a major challenge for education leaders and policymakers across the globe. This paper discusses the experience of Tsinghua University’s shift to fully online learning, as the first major university in the world to move all courses online in response to the 2020 pandemic. The article introduces the Institutional Resilience in Higher Education Framework to articulate the factors that drive quality education during times of crisis. The article explores the shift to online learning in the context of pandemic as transboundary crisis and details Tsinghua’s online learning emergency response to distil lessons learnt and identify emerging best practices for further online learning implementation. It extrapolates broader lessons about university response to transboundary crises and highlights the importance of effective crisis management, institutional resilience and leadership for delivering quality higher education in emergencies and beyond.

Keywords
higher education, online learning, crisis, pandemic, Tsinghua University, transboundary crisis

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**Introduction**

*A pandemic shock*

In December 2019 doctors in Wuhan, China, detected a case of pneumonia of unknown causes. A newly identified virus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was later identified as the cause of the pneumonia. The novel coronavirus disease, COVID-19, resulted in a wide range of symptoms. While some patients were asymptomatic or had the sniffles, others were more likely to develop a rapid onset, potentially fatal pneumonia. The novel coronavirus spread rapidly though Hubei Province, China and then around the world. By 30 January 2020, the exponentially increasing cases and the international spread of the virus prompted the World Health Organization (WHO) to declare the outbreak a Public Health Emergency of International Concern. Five-and-a-half weeks later, on 11 March 2020, the WHO declared a pandemic.

Response measures included widespread lockdowns, resulting in the ‘hibernation’ of major economies. The health measures necessary to protect populations rapidly drove economies into the worst global economic environment since the Great Depression. In many countries the necessary pandemic response resulted in massive spikes in unemployment, reduced GDP growth and steep drops in stock markets. The pandemic also paralysed global mobility with the large-scale grounding of the international airline industry, strict travel restrictions and border controls and lengthy quarantine requirements.

*The shock hits higher education*

COVID-19 response measures created a perfect storm of challenges for the higher education sector. Social distancing requirements and the closure of university campuses meant that lectures, libraries and any form of on-campus, in-person study were off-limits. Rapidly introduced and unexpected travel restrictions and flight unavailability meant that students and staff alike were stranded in countries outside of those where they were working or studying. From an economic perspective, the potential loss of student fees, potentially undefined delays to teaching semesters, research interruptions and disruptions to collaborative international research were dire. COVID-19 posed an unprecedented crisis for universities around the world.

Chinese universities were the first in the world to feel the full effects of the pandemic. Tsinghua University, one of China’s leading research institutions which is ranked number one in Asia, was among them. Established in 1911 in Beijing, China, Tsinghua is home to just over 45,000 students, completing undergraduate and post-graduate degrees in 20 Colleges and 57 Departments. It is world renowned for its expertise in science and technology, consistently ranking among the world’s top 25 universities. It is famous for its incredibly competitive admissions process (less than 0.1% of domestic applicants receive a place) and for its influential alumni, including the General Secretary of the Chinese Communist Party Xi Jinping. Although Tsinghua cannot lay claim to the title of China’s First University (that honour goes to its prestigious neighbour, Peking University), in 2020 it took the title of China’s first elite university to shift fully online.

*The need to study higher education*

This paper explores the case of Tsinghua University’s unprecedented shift to online learning as a means of investigating transboundary crisis response in a major public institution. It draws on an in-depth case study of staff response immediately during the crisis. The article highlights the distinctive challenges that transboundary crises pose for higher education institutions while exploring the role of institutional resilience in effective response and recovery. It introduces the
Institutional Resilience in Higher Education Framework as a conceptual means of articulating the factors that contribute to education quality in times of crisis. The paper explores Tsinghua’s response process ultimately to draw lessons learnt and present more general policy recommendations for improved higher educational policy, especially in transboundary crises and emergencies. The article offers suggestions to support higher education institutions and policymakers to successfully, rapidly and inclusively implement quality online learning programmes, especially during periods of crisis.

The article contributes to online educational policy debates concerned with improved resilience in higher education. This includes concerns about addressing the needs and interests of the stakeholders involved in higher education teaching and learning. In so doing, the article advances understanding of how online learning may be used in crisis response, especially to limit student hardship. Moreover, the study speaks to the literature on institutional resilience (e.g. Wildavsky, 1988; Boin and van Eeten, 2013; Hamel and Välikangas, 2004), inclusive and quality online higher education (OECD, 2005; UNESCO-UNEVOC, 2019; Khe Foon Hew, 2015), policymaking in crisis (e.g. Venette, 2003; Boin, 2013; Boin, 2014 and higher education in emergencies (e.g. Stoddard et al., 2007; Save the Children, 2003; INEE, 2010).

The article continues by briefly surveying the literature on transboundary crises, crisis governance and institutional resilience. It then introduces the Institutional Resilience in Higher Education Framework, which expands on the work of Hamel and Välikangas (2003) and the International Network for Education in Emergencies (INEE) (2010). With this conceptual framework in place, the article then introduces the case study of Tsinghua University’s shift to online learning, drawing on a real-time study of Tsinghua staff completed by the Tsinghua University Institute of Education. This unique, ‘live streamed’ perspective captures raw responses to the university’s crisis response while also providing strategic insights into the university’s swift but complex decision-making in a time when it faced myriad unknowns. The article distils key lessons learnt during this process and makes suggestions as to how these lessons could be applicable in other higher education contexts during times of crisis.

**COVID-19 as a transboundary crisis**

*Contextualising crises*

It is helpful first to define crises in general terms before considering how the COVID-19 pandemic represents a transboundary crisis and why this characteristic is important to appropriate crisis response. For purposes of this article, crises are defined as extreme events that present an imminent threat to the health, safety, security or well-being of human life and can be either naturally occurring or caused by human action (AlKnawy, 2018). They are characterised by elements of uncertainty, threat and urgency (Rosenthal et al. 2001). Crises confront decision-makers with hard dilemmas that somehow must be negotiated, often with limited information, in short timeframes and in the face of public concern and scrutiny.

Although crises have always confronted leaders, research demonstrates that contemporary crises are increasingly complex and interconnected (Boin and Lagadec, 2000). Transboundary crises are identified as such because they cross physical, temporal and functional borders, threatening various regions without a clear beginning or end (Boin, 2009). The spread of such transboundary crises facilitates power vacuums, where responsibility for solving the crisis is unclear and where the boundaries of the crisis itself are unclear (Boin, 2009). This situation, particular to transboundary crises, sees their effects being felt for withstanding periods of time (Boin, 2009).

The COVID-19 pandemic is a transboundary crisis. Understanding it as such is important, as the very nature of this crisis provides us with clues as to the types of institutional leadership
responses that are required and that will be most successful in meeting the challenges faced. Research shows that many large, contemporary crises are increasing in their complexity and interconnection. The growth in ‘mega-disasters’ led scholar Kathleen Tierney (2014), for instance to proclaim such crises ‘the new normal’ not so long ago. To make matters especially pandemic qualifies as both a transboundary crisis and a mega disaster, with the World Health Organization (WHO, 2010) describing a pandemic as the global spread of a novel disease, which does not stop at national borders and usually affects a vast number of people (WHO, 2010). Despite tough border controls and unprecedented-in-modern-times stoppages of global mobility, the COVID-19 pandemic crossed geographical and economic borders without prejudice. Today, it has reached almost every country in the world and infected over 270 million people worldwide, regardless of economic status.

COVID-19 has also crossed numerous functional boundaries, including health, economic, education, tourism, business and more. It forced countries to declare states of emergency and to close schools, universities and private businesses. This cross-functional characteristic creates leadership issues and conflicts of interest. Moreover, there remains no clear timeframe for the end of the crisis. This causes challenges in decision-making processes at all levels and in all functional and sectorial areas.

**Crisis management**

Before investigating how at least one major higher education institution responded to the COVID-19 pandemic as transboundary crisis, it is helpful briefly to understand crisis management more generally. Crisis management involves the actions that societies and organizations perform to minimize the impacts and negative effects of a crisis. Such negative impacts can be measured in terms of damage to people, critical infrastructure, and public institutions. During a crisis, traditional management systems are no longer effective and cannot be maintained (Venette, 2003). Effective crisis management must therefore implement emergency procedures to save lives, protect infrastructure and restore trust in public institutions (Boin, 2013). Crisis management is of utmost importance because if performed inadequately, its processes and structures can have enormous detrimental consequences.

Crisis management is particularly challenging because accurate causes and consequences of the threat are usually unknown, forcing leaders to take decisions in an emerging and uncertain situation. In cases of major crises, the results are often so catastrophic as to not have been envisioned, even with sound crisis management planning. The management of the crisis itself, therefore, presents another layer of challenge, with the planning and preparation phases only playing a marginal role (Boin, 2014). While risk management involves assessing potential threats and finding ways to avoid them, crisis management involves dealing with the threats before, during and after they have occurred. Scholars generally agree that although prevention planning strategies cannot offer full protection from unforeseeable crises, societies and organizations must nevertheless be prepared to respond to, manage and recover from damaging events. They must, in other words, build resilient response systems (Wildavsky, 1988).

**Resilience in crisis response**

Resilience is an increasingly common way of describing individuals’ or communities’ capacity to ‘bounce back’ from or adapt considerable change, including that wrought by crises. Resilience is most often presented as a potential solution to the challenges posed by crises and disasters. According to Wildavsky (1988), a forerunner in resilience theory, resilience is the capacity of an organisation or society to maintain high performance levels and recover after a disturbance.
Resilience is, in other words, the ability of an organization to prepare for, respond and adapt to disruptions in a way that will allow them to not only survive but to prosper. Scholarly definitions of and approaches to resilience, however, vary along two lines. The first line implements a defensive approach, which focuses on mitigating the effects of the crisis and on returning to normality and ‘business as usual’ post-crisis. This represents a more traditional view as represented in a Wildavaskian approach to resilience. The second and more progressive and proactive approach integrates the concept of learning and assumes that organisations have the capacity to emerge stronger from a crisis (Boin and van Eeten, 2013). Regardless of the understanding of resilience adopted, what is clear is that crises disrupt the ‘usual’ organizational processes and challenge the normal way of doing things. They therefore offer an opportunity to learn and take advantage of the crisis to accelerate novel processes and innovations via resilience.

Organisational or institutional resilience is an important branch of resilience studies and is of direct relevance to higher education institutions. According to Hamel and Välikangas (2004), organisational resilience consists of three interdependent attributes. The first attribute is the networks and relationships attribute which is encompasses the internal and external relationships developed by the organisation, which can be leveraged in times of need. The second attribute is change readiness, which consists in the planning and direction that has been established in the organisation. To build resilience, an organisation should have a proactive, forward-looking and unified vision as well as well-defined plans and strategies which can respond to times of crisis. Leadership and culture build the third and final attribute. Effective crisis management and resilient organisations heavily rely on strong leadership and decision-making as well as the will to find innovative and creative solutions to the crisis.

During the COVID-19 pandemic, technology and innovation have arisen as a response to the crisis, informing institutional resilience. Solutions continue to be found outside the traditional practices and procedures as the pandemic continues. Accordingly, it is likely that the COVID-19 pandemic will catalyse long-term innovation and further strengthen institutions who lead with progressive approaches. Universities stand at the forefront of this opportunity, derived from disaster. The article turns now to one key but very early example of this, the case of Tsinghua University’s rapid shift to online learning.

**Institutional resilience in higher education framework**

**Framing the research**

This section establishes the analytical framework for the study, detailing the lens through which the data was understood. A novel framework, the Institutional Resilience in Higher Education Framework, was adapted for the purpose of this research (Figure 1). The framework expands on Hamel and Välikangas’ ‘What is organisational resilience?’ (2003) research. This work defined a framework for organisational resilience consisting of three interdependent attributes; namely networks and relationships, change readiness, and leadership and culture. The framework also consists of a total of 13 indicators. The Framework also adapts guidance on education in emergencies from the ‘Minimum Standards for Education Handbook (Preparedness, Response, Recovery)’ by the International Network for Education in Emergencies (2010).

**Framework attributes**

The following section details the Framework’s key attributes, acknowledging their foundation in Hamel and Välikangas (2004) broader framework and the INEE Handbook (2010) with specific tailoring for the higher education sector.
Networks and relationships. The networks and relationships attribute focuses on the internal and external relationships developed by the organisation, which can be leveraged in times of need (Hamel and Välitkangas, 2004). These are identified by the following indicators, which are explored in detail given the need to contextualise in higher education.

**Effective partnerships:** The first indicator is representative of the close and collaborative relationships and resources the organization might need to access during a crisis. It also incorporates the planning and management that is entailed in accessing these partner relationships (Hamel and Välitkangas, 2004). Such partnerships should be established and solidified by an institution well before a crisis, allowing them to be leveraged in the event of a crisis. Partnerships can offer valuable resources, support and expertise. In the case of higher education institutions, partnerships with other universities, with the national and local governments, as well as with private companies and international organisations, can be extremely useful when fighting an emergency situation. They can offer expertise in the area, provide emergency policy guidance or resources for the organisation to thrive even in difficult times.

**Leveraging knowledge:** The leveraging knowledge indicator focuses on the ability of the organisation to access expert opinions when needed. To ensure redundancy – that is, that someone will always be able to fulfil fundamental roles – experts are trained and their positions shared (Hamel and Välitkangas, 2004). In times of crisis, it is important for institutions to leverage valuable internal and external knowledge and skills. They need to be aware of the pool of knowledge available internally and empower internal and external knowledge sharing. For knowledge gaps, it is important for the institution to train its staff and to encourage the sharing of responsibilities.

**Breaking silos:** Social, cultural and behavioural barriers and divisions can result in disjointed, disconnected and detrimental operational approaches (Hamel and Välitkangas, 2004). Organisations should therefore aim to reduce such obstacles for higher efficiency and resilience. Silos also create barriers, reduce efficiency and duplicate work. All of this leads to decreased resilience. By reducing barriers and encouraging shared knowledge and cooperation, the work of an
organisation becomes increasingly more efficient. This is particularly important during a crisis, when the use of the existing resources should be maximised to face the challenge.

**Internal resources**: The previous indicators mentioned the effective management of resources. This is extremely important during a crisis. During an emergency, resources can be terribly limited and responses are time sensitive. Resilience therefore can be increased by optimally managing and leveraging existing human, financial, physical and intellectual resources. For universities, this may include academic and professional staff, the considerable budgets available to large institutions, including government funding, campus plant and equipment and the expertise ingrained within a knowledge institution.

**Change ready.** The change readiness attribute of the Framework refers to the planning and direction that has been established in the organisation even prior to a crisis. Change readiness can be identified and understood through the following indicators:

- **Unity of purpose**: Unity of purpose represents an organisation’s awareness of what its post-crisis priorities are, a clear definition of organisational levels and their interactions and a clear articulation of an organisation’s minimum operating requirements. Unity of purpose is essential for the establishment of a coordinated and efficient management system (Hamel and Välikangas, 2004). The members of the organisation must therefore ensure that they have a united vision and purpose in order to work with dedication in the same direction. Emergency situations create uncertainty, and it is therefore fundamental for the institution to respond with a clear united direction. For universities this demands a clear university vision and mission, clarity of working relationships between school, departments, colleges or faculties and the central executive and an agreed layering of organisational hierarchy that will be followed in times of crisis.

- **Proactive posture**: Crises demand time-sensitive actions, making a proactive posture a crucial component of organisational resilience. Institutions must be strategically and behaviourally prepared to respond to early warning signals of threat even before they escalate into a crisis (Hamel and Välikangas, 2004). Resilient institutions should be ready for emergencies and be open to and expectant of change. By maintaining a proactive posture, institutions ensure that they are always be up to date with the development of the emergency and prepared to respond to the possible developments. For universities, a proactive posture may incorporate active engagement of government and emergency response organisations, the local community and emergency services. It may also involve disaster or crisis simulation exercises, creation of response plans and campus-wide simulations to ensure necessary preparedness, as detailed in ‘Planning strategies’.

- **Planning strategies**: The third indicator extends the idea of a proactive posture by focussing on the development and evaluation of plans and strategies aimed at managing potential vulnerabilities. It is not only important to respond to an emergency situation, but rather to respond adequately and effectively (Hamel and Välikangas, 2004). A thorough evaluation of potential plans can increase the probability of choosing the best possible response plan with the information available at the time and imagining potential scenarios. Response plans should, when possible, be prepared before the escalation of an emergency situation and be prepared with additional responses.

- **Stress testing plans**: Not only should plans and strategies be prepared, but they should also be tested against a number of possible scenarios. It is important to design potential scenarios to practice response arrangements and validate plans with the participation of staff (Hamel and Välikangas, 2004). Universities may also wish to consider the appropriateness of involving student and town-based stakeholders in crisis planning strategies, simulations and stress tests. ‘Town-gown’ relationships are therefore an important component of effective emergency preparedness and stress testing.
Leadership and culture. Leadership and culture comprises the third capacity attribute and is identified by the following indicators:

**Leadership:** Strong crisis leadership is essential to providing effective management and decision-making during times of crisis, as well as continuous evaluation of strategies and work programmes (Hamel and Välikangas, 2004). Leadership provides guidance and reassurance to staff and in the case of higher education institutions, to professors and students as well. In times of uncertainty, strong and clear leadership is essential.

**Staff engagement:** A resilient institution is built by the hard work of its members. Staff engagement is vital to both longer-term crisis management and immediate emergency response. Staff should be involved in order to understand the link between their own work, the organisation’s resilience and its long-term success (Hamel and Välikangas, 2004). Staff engagement should ideally be an empowering process in which team members are encouraged to use their own problem-solving skills and propose solutions of their own. Within universities, leaders may look to draw upon and encourage application of the myriad skills and capability that exist within their diverse staff to apply those individualised specialities to crisis response.

**Situation awareness:** It is common for organisations to encourage their staff to be vigilant about the organisation, its performance and potential problems (Hamel and Välikangas, 2004). This largely internal focus is important to organisational success but must be expanded in times of crisis. By cultivating situation awareness, members of the institution can have a better understanding of the challenges that are being experienced internally and externally, at different levels. Situation awareness links to leadership and culture, as an institution’s leadership must actively encourage staff not only to recognise potential challenges, but also to report them. They should be rewarded for providing positive and negative feedback regarding the organisation, including early warning signals which can be quickly reported to organisational leaders. Listening to the staff at all levels has been shown to help avoid potential issues before they escalate and help the organisation thrive and be resilient. Such encouragement of situation awareness and openness to staff feedback requires special attention in universities which, in most places, are built on strong hierarchical traditions that may inhibit staff at lower levels or in ‘professional’ (as opposed to academic) roles from speaking out.

**Decision-making:** It is important for the leadership of the institution to not micro-manage emergency response plans. Rather, leadership should empower staff to take decisions related to their work. Delegations should also be clearly articulated to enable timely and successful crisis responses. Highly skilled staff are involved in the decision-making process, where their specific knowledge can add significant value or where their participation will contribute to crisis response implementation (Hamel and Välikangas, 2004).

**Innovation and creativity:** To cultivate innovation and creativity in organisations, staff must be encouraged and rewarded for fostering innovative and creative problem-solving and solution development (Hamel and Välikangas, 2004). Crises often present new challenges and unprecedented situations which can be more effectively tackled with innovative and creative solutions. The fostering of problem-solving, solution-oriented and innovative thinking can also offer the opportunity to the institution to not only survive the crisis, but to thrive and emerge from it stronger than before. It can catalyse innovative solutions which could ultimately change and improve the status-quo. Universities are deeply familiar with innovation and creativity by nature. The Framework points to the centrality of these attributes to effective crisis response and resilience.

Quality education. The Institutional Resilience in Higher Education Framework’s fourth and final component focuses on quality education and adapts standards from the INEE Handbook (2010) to articulate the factors known to ‘enhance the quality of educational preparedness, response and
recovery, increase access to safe and relevant learning opportunities and ensure accountability in
providing these services’ (INEE, 2010). The INEE ‘Minimum Standards for Education’ have been
designed for education in crisis response and recovery and are applied here in order to articulate
the attributes critical to maintain education quality during crises.

**Foundation Standards**: Effective emergency education response is based on active com-
munity participation processes that empower people to take part in decision-making and also to
take action on education issues. Emergency situations necessitate swift and immediate actions;
therefore, full and inclusive participation is often difficult to achieve in emergency situations.
However, institutions should have emergency mechanisms in place which include the partici-
pation of multiple stakeholders and the mobilization of their resources (INEE, 2010). Coordi-
nation mechanisms for education should also be put in place to support the stakeholders’ work to
ensure access to quality education. The coordination of the education response should be timely,
transparent, results-oriented and accountable to the affected community. Education authorities
should therefore assume a leadership role for the education response and coordinate with other
stakeholders. The education plan should also include the analysis, assessment, monitoring and
evaluation of the implemented policies.

**Access and learning environment**: Access to quality education is a fundamental right. During
times of crisis, however, such access is often limited. National authorities as well as institutions,
have a responsibility to ensure that all individuals have access to relevant, quality education in
secure learning environments (INEE, 2010). Inequalities are often exacerbated in emergency
situations and therefore education policy plans should ensure inclusive and comprehensive plans,
while leaving no one behind. In particular, institutions should ensure access to quality education to
students living in remote or underserved areas, as well as women, vulnerable or marginalised
groups and students with disability. It is also important to consider that in times of crisis, students,
professors and staff might be dealing with their own physical and psychological risks. Educational
programmes delivered during emergencies must also provide support and protection to the
educators and those who support their work. Emergency response should be flexible to their needs,
including flexible and expedited administration processes, possible changes in class schedules and
evaluations adapted to the circumstances. Education facilities should also promote the safety and
well-being of learners, teachers and education personnel. Temporary and permanent learning and
living environments should be repaired, retro-fitted or replaced as needed with disaster-resilient
design and construction. Similar care should be given to support for online learning environments.
Where learning continues in-person, health and sanitation standards should be implemented and
promoted.

**Teaching and Learning**: Access to education is only meaningful if the education programmes
being delivered during a crisis offer quality teaching and learning. Emergencies may also offer
opportunities to improve curricula, train teachers, offer professional development (even inform-
ally) and support instruction and learning processes. Evaluations of learning outcomes and
student engagement remain an important component and, where possible, should not be neglected
during crises. This helps to ensure that education delivered is relevant and that it supports and
protects students (INEE, 2010). Teachers and other education personnel should also receive
periodic, relevant and structured training according to their needs and circumstances, wherever
possible. Instruction and learning processes should strive to maintain commitment to being
learner-centred, participatory and inclusive. Learners’ active engagement is important at every
educational level. This is important to ensure that no student is left behind.

**Teachers and Other Education Personnel**: Support and supervision mechanisms for edu-
cators and personnel should also be offered and function effectively. Management, supervision
and accountability are vital to providing professional support and maintaining teacher motivation
and teaching quality. Even trained and experienced teachers and other education personnel may
find themselves overwhelmed by crisis events (INEE, 2010). They face new challenges and responsibilities and may experience distress. Their ability to cope with the consequence of an emergency situation and support learners relies on their own psychological and physical well-being. Moreover, including learners in assessment and evaluation processes is important. Learners may periodically provide feedback to neutral parties as part of performance appraisal processes.

**Education Policy:** The right of all individuals to receive an education, is clearly stated in numerous international legal instruments and declarations. It is the duty of the national authorities and the international community to respect, protect and fulfil this right. Education authorities must prioritise continuity and recovery of quality and inclusive education. Moreover, laws, regulations and policies should be developed based on reliable information and scientific data available. Unfortunately, in cases of emergency, including the COVID-19 pandemic as studied here, reliable data and information is not always available. Plans, laws and budgets that allow timely responses to emergency situations help support national education policies (INEE, 2010). In an emergency and through to recovery, it is essential that these rights are protected. Education authorities and other key actors should develop and implement an emergency education plan in order to support response and recovery while protecting students’ rights.

**Method and data**

The research is built on the case study of Tsinghua University’s online learning response to the COVID-19 pandemic. Case study design offers a versatile form of qualitative inquiry utilized for comprehensive, multi-faceted, holistic and in-depth investigations of complex issues in their real-life settings (e.g. Crowe et al., 2011; Yin, 1992; Stake, 2006). The case study approach lends itself well to capturing information on exploratory ‘how’, ‘what’ and ‘why’ questions (Crowe et al., 2011). It can also offer additional insights into what gaps exist in its delivery or why one implementation strategy might be chosen over another (Crowe et al., 2011).

Stake (2006) distinguishes between three types of case studies: intrinsic, instrumental and collective. The first one is utilized to learn about one unique phenomenon, the second one selects a particular case to gain a broader understanding of an issue or phenomenon as a whole, while the third type involves studying multiple cases and comparing them. This research adopted an instrumental case study design to analyse the particular case of Tsinghua University with an aim to advance a better understanding of institutional resilience in higher education and the use of online learning technologies. While not generalisable, knowledge generated by this case can help to inform studies of resilience, emergency higher education and digital learning in universities worldwide.

China was the first country hit by the pandemic and spearheaded the closure of higher education institutions. Tsinghua University was therefore one of the first higher education institutions to make the decision to shift to online education during its winter break in February 2020. Tsinghua University is ranked as Asia’s leading institution and it is committed to high educational standards. Tsinghua serves as a relevant case study because it managed to offer numerous online courses for the entirety of its first 2020 quarter successfully and simultaneously.

In the first stage of the research, a qualitative analysis of documents and reports was performed to frame the case study and analyse the resilience of the University. The data collection method was limited by the necessity to limit materials collected for the qualitative analysis to English. This unfortunately excludes a body of data available in Chinese. However, the abundance of available material in English provides the study with sufficient material. It also reflects the teaching language of the courses for which the data was collected. The volume of data collected, together with the time restrictions of the study and the limitations imposed by the COVID-19 pandemic, also impacted the capacity to collect data, within the available resources. The limits of the method
were taken into account and accommodations were made to mitigate these limitations throughout the research process.

Case study insights

Tsinghua University goes virtual

On 27 January 2020 China’s Ministry of Education (MoE) announced that all higher education institutions would postpone the start of the 2020 spring semester. On 30 January, in an extraordinary move, Tsinghua University held a university-wide meeting of top-level leadership and announced that its campus would close, as per MoE requirements, but that the spring semester would be held online. On that same day the WHO declared a Public Health Emergency of International Concern.

Before making this announcement, University leadership, including President QIU Yong, Chairperson of the University Council CHEN Xu and Provost YANG Bin, faced an extraordinary dilemma: Should they simply delay the start of the semester in the hope that the health crisis would clear and classes could resume late, but as normal? Or, based on limited evidence and uncertainty, should they risk an unprecedented move and shift all of Tsinghua’s teaching and learning online?

Before the 30 January announcement, Tsinghua University did not offer formal online education. Remote learning in China remained limited, despite its uptake in other countries since the early 2000s. Government policy prevented online classes being counted towards university degrees. The leaders’ decision to become a purely virtual campus, therefore, was not just a change in the mode of teaching delivery; it was a leap into new policy areas that would require immediate and possibly retrospective work with government to ensure acceptance and approval.

By 3 February, Tsinghua organized a special online meeting detailing their plan for the online spring semester. Over 57,000 students and staff attended live, online. Tsinghua University President Qiu and Professor Chen, Chairperson of the University Council, delivered this plan as the first ‘class’ in the spring semester. Speaking on behalf of the University leadership, Professor Qiu said, ‘Stay at home and take care of yourselves. Delaying a return to school doesn’t mean no classes – we can continue our education. Striving together, we can minimize the impact of the virus. Tsinghua has always placed great emphasis on education and pedagogy. Even in times of great hardship, we at Tsinghua have continued our main mission: educating students and promoting knowledge’.

Tsinghua University started its spring 2020 semester on time and online, just 18 days after its announcement that learning would be remote. The shift to remote learning was historically unprecedented and incredibly swift. It required a rapid mass mobilization of staffing, technological and pedagogical resources. In the first week alone, students completed 10,635 online lessons covering 152 different courses delivered by 2681 faculty based in China, the US, UK, Japan, Canada, France, Australia and Germany (Huang et al., 2020).

Pursuing hearts and minds for online learning

Although online learning is today common in many countries, Tsinghua’s leadership needed to address a perception that remote learning is a ‘poor cousin’ of the classroom. This is an attitude held widely in the global higher education sector. A 2018 Times Higher Education survey about the quality and potential of online university teaching found that more than two-thirds of university leaders who responded did not believe that online education could replace face-to-face campus learning. Approximately 70% of those same respondents ‘disagreed’ or ‘strongly disagreed’ that ‘digital technology will have eradicated physical lectures by 2030’ (Lau et al. 2020; Nicol and Bice 2011).
For many in the study, the doubtfulness about online teaching’s capacity to eclipse the physical campus was attributed not to lack of digital technology or capacity, but to the intangible qualities of campus life and person-to-person engagement.

At Tsinghua, a number of university leaders, teachers and students raised concerns about whether online learning could offer the same quality education as a traditional classroom. Teachers whose class styles relied on seminars, labwork, experimentation, creative arts or physical education were particularly concerned. The university leadership faced an immediate and substantial cultural hurdle. How could they turn the hearts and minds of those concerned about the quality and interactions of online learning?

The University leadership immediately formed three committees in an effort to address a gamut of concerns about the shift to remote learning. This included an Online Learning Advisory Committee, Online Learning Quality Assurance Committee and Online Learning Technical Assurance Committee. The university also delegated part of the leadership to each school within the University. Executive teams of each school formed special working teams, who in collaboration with the university committees, had the objective to draw up plans for online teaching; draft relevant rules and regulations and supervise the implementation. Representatives of the University leadership also promptly initiated direct, mediated dialogues, aimed at ensuring that all staff members’ concerns were heard and considered. This involved University leadership working with the diversity of Tsinghua’s curricula, faculty and student body and creating adaptations and responses to both acknowledge and support that diversity.

Even where remote learning was more readily accepted, university leaders and teaching staff faced pressing questions about how to deliver it. During the initial planning stages, leaders and an online learning taskforce considered a variety of alternative methods to deliver online education (Zhang et al., 2020). This included two simple alternatives ultimately deemed to be the most feasible solutions: pre-record lectures and follow-up with live discussion forums or interactive online guidance; or deliver classes live, online, at the originally scheduled class time.

Staff largely praised this decision. Although it was ‘basic’, it was also clear and timely. As one staff member, interviewed by Tsinghua University’s Institute of Education for a University-wide evaluation of the move to remote learning noted, ‘They planned everything quickly within a few days, including all the consulting teams, working teams, [and] milestone events, such as the first class online [and] “clone” courses. [They] spent the next 2 weeks to deliver the plan. … The initial planning was very complete, effective, and proactive’. (Zhang et al., 2020).

While the delivery options were easy to grasp, the decision to promote these two modes of remote learning did not immediately convince everyone. Online teaching was new to most Tsinghua faculty, new technologies were required and teaching staff faced the daunting task of redesigning their courses, including assessment tasks, for remote learning while retaining the educational quality Tsinghua is known for as a top university. The University leadership and taskforce next got down to addressing these challenges.

**Addressing the challenges**

**Rapid technology deployment.** Tsinghua University also required the technology necessary to shift an entire campus of coursework online. Fortunately, Tsinghua is one of the world’s leading science and technology universities (it is consistently rated near the US/MIT in world university rankings) and is home to TUSPark (a science park to rival Silicon Valley). The University therefore had ready access to strong technical expertise and advanced experience. XuetangX, for instance, is China’s first and largest MOOC software, developed out of Tsinghua in 2013.

The University collaborated with XuetangX Online to further develop XuetangX’s Rain Classroom ‘smart teaching tool’, originally developed for non-degree MOOCs in 2016. The Rain...
Classroom platform is integrated with PowerPoint to facilitate live, online learning. It allows online teachers to interact with students via video, voice, chat and poll features and includes options such as screen sharing, interactive quizzes and real-time response. Importantly for Tsinghua’s students, many of whom were unexpectedly stuck outside of Beijing due to rapid city lockdowns in response to the pandemic, Rain Classroom also works through the popular Chinese social media app, WeChat. Even where students did not have reliable internet access, they could participate in learning via their mobile phones. By working with XuetangX Online and upgrading the Rain Classroom platform, Tsinghua University’s taskforce was able to offer the University’s first large-scale, real-time, interactive, long-distance and decentralized online teaching system (Huang et al., 2020).

Embedding teaching quality. University leaders sought to underpin their access to strong technical expertise with a rapidly produced online education policy that emphasized large-scale, real-time, highly interactive, and remote distribution. This policy included a commitment to maintain teaching quality, despite most staff having never delivered online courses. Moreover, the University faced an unprecedented circumstance in which the majority of staff would be teaching from their own homes due to the lockdown. In order to support teaching quality, University leaders and the online learning taskforce quickly created a training programme to support technology use and remote teaching quality. Within 2 weeks of the original announcement, more than 2600 faculty members and thousands of teaching assistants attended training activities, with technical assistance from over 2000 volunteers. As one Lecturer from Tsinghua’s School of Humanities noted, the assistance and technical support were welcome, as was support to keep course design simple: “With the release of the online teaching announcement of … “starting classes as scheduled,” I’m sure every teacher will have gone through the same process as me, … exploring the infinite possibilities of the simple and straightforward “Rain Classroom” software”. (Zhang et al., 2020).

Putting learning before policy. While education in China has seen an increasing trend of private institutions in the last decade, it is still primarily state-run and increasingly decentralised to local and regional implementation. Provincial authorities administer higher education institutions, for the most part (OECD, 2016). The MoE is the agency of the State Council that oversees education throughout the country. It draws up strategies, policies and plans for educational reform and development; and it is in charge of budgeting, resource allocation, information, and administrative services (OECD, 2016). Local and national governments are both, therefore, central actors in education policy development and implementation in China, acting as political and administrative authorities with legislative and regulatory power over the higher education sector.

As Tsinghua University leaders deliberated whether to delay the start of semester or shift learning fully online, the MoE grappled with the policy decisions that could support higher education institutions to continue their work during the pandemic. In early February, the Ministry of Education launched an initiative entitled ‘Ensuring learning undisrupted when classes are disrupted’. Over the course of 2 weeks, with all face-to-face meetings banned, the Ministry organized tele-conferences with school management agencies, online platform and course providers, telecom providers and other stakeholders to plan the implementation of the initiative (UNESCO, 2020). The MoE issued instructions on the deployment of online teaching for higher education to enable students to resume their studies remotely (Ministry of Education, 2020). They further collaborated with the Ministry of Industry and Information Technology in order to boost internet connectivity services for online education, in particular in underserved regions of China. Together, the Ministries worked to upgrade the bandwidth of major online education service platforms; mobilise resources for the provision of online courses and resources; strengthen online security and provide psycho-social support, including education about COVID-19.
The virus’ appearance in China, combined with the Ministries’ rapid work, made it the first country in the world to provide massive online education to an estimated 276 million students nationwide during the epidemic prevention and control period, with about 76 million of those students enrolled in higher education (Huang et al., 2020; UNESCO, 2020). The policymakers’ decision to focus on online learning also had the secondary but very welcome result of catalysing a nationwide technological shift. Government actions provided millions of people with faster and more stable internet networks and prompted private enterprises to invest in innovative solutions for the crisis.

**Crisis breeds opportunity.** The quick action of Tsinghua University’s leadership in a period of tremendous unknowns and under exceptional time pressure resulted in decisions that transformed the delivery of higher education in China. Despite the lack of policy precedent and early MOE instructions to delay the start of the 2020 spring semester, University leaders hedged and won. First, they predicted that the challenges posed by COVID-19 would not be short-lived. Secondly, they wagered that their decision would not only be accepted by government but that it would demonstrate national leadership in how to manage higher education during the pandemic. Both assessments proved correct.

Tsinghua’s leaders face an ongoing dilemma, rife with precariousness. If decisions are taken to keep campus mostly or partly closed, how will future remote learning differ from that rapidly delivered during the 2020 spring semester? At what stage might blended learning technologies be implemented into traditional classrooms? Will Chinese policymakers and other leading Chinese universities now consider fully online, accredited degree programmes in their institutions? Only time will tell. But the leadership culture and lessons exhibited in Tsinghua’s early response to the pandemic offer important insights for policy and practice that will inform University, national and possibly global higher education responses to a pandemic that will shape a generation of learners.

**Insights from the case study**

The case of Tsinghua University’s transboundary crisis response, seen through a framework of institutional resilience, offers several important insights and lessons for higher education institutions. These can be understood as relating to four key areas: networks and relationships, change readiness, leadership and culture and standards for education during emergencies. This concluding section draws on the scholarly literature and case analysis to distil several summary recommendations.

**Networks and relationships.** The case demonstrates the important of maintaining exchanges with diverse stakeholders, such as the private sector and other global universities through global virtual forums even during a crisis. This should be combined with efforts that continue to leverage and listen to internal knowledge and experience. Doing so requires leaders to maintain communication channels between departments and schools back to the central university. This may involve conducting regular evaluations and assessments and gathering feedback from staff. Institutions should also consider student feedback and work to leverage the knowledge of the students during times of crisis, ensuring that students are heard and their immediate needs met as best as possible, given the situation.

**Change readiness.** Although research confirms that crisis management plans rarely play out according to those plans, institutions should nevertheless have plans in place for possible future emergencies and school closures. This includes facilitating regular practice of enacting those plans and working through crisis scenarios. Institutions also now have an opportunity to continue to
improve and innovate technical aspects for delivery of online education. This should involve a focus not only on technical but also social-economic and pedagogical support to students. Design policies aimed at supporting students’ needs and curbing challenges, such as time-zone differences, mental health issues and lack of adequate learning environments, should also be considered. This will in turn provide more equitable education and help students to have a better experience with remote learning, especially when that remote learning experience is exacerbated by crisis. Not all change readiness responses need to be overly complicated. Simple steps that can be taken to assist with change readiness in the shift to online learning also include ensuring the asynchronous availability of lectures for students unable to participate in real time and providing access to audio-only content to reduce internet bandwidth issues.

**Leadership and culture.** Leadership and institutional culture also have a clear and decisive role to play in higher education institutions’ response effectiveness to crisis. It is vital to have an overarching and holistic plan but also to delegate as much implementation as possible to schools, departments and even professors and professional staff. Devolution and decentralisation in times of crisis allows for better, more flexible and immediate response to local needs. Such devolved but clear leadership also demands clear communication and time-sensitive decision-making with all stakeholders kept in the loop, including students. By offering clear communication channels and possibilities for feedback, leaders cultivate a culture of inclusion while also leveraging any early recognition of possible challenges and actions for improvement.

**Standards for education in emergencies.** The final set of recommendations to support institutional resilience through sound crisis management focuses on establishment of educational standards in times of emergencies. This includes working to ensure equal access to quality education despite a crisis. In order to achieve quality standards, institutions should incorporate gender, socio-economic and other disparities into their emergency policy-making and also disaggregate data during evaluations to understand the different impacts on diverse groups. Institutions should ideally aim to assess the situation of each student and attempt to adjust the university’s teaching and learning policies for students in need. This particular effort speaks to the need for devolved leadership during crisis. It is also likely that physical and psychological support services will be needed and there should be policies to support student access, including via expanding economic support available or offering ways for students to access not only vital service but also to assist them through the economic challenges that often accompany crises without risking their education.

Adaptability should form another component of institutions’ crisis management standards, particularly in relation to adapting to different pedagogical methods to meet crisis situations. This may include, for example, opting for recorded classes when many students are not in the same time-zone as a professor. Online extracurricular activities can also play an important role in helping students build or maintain a sense of community with their university during periods in which they may be absent from campus or isolated from colleagues, friends or family. Given that crises, including the pandemic, can take considerable time for recovery, standards should support post-crisis options for students to follow courses either in-person or online. Standards should also include advice as to leniency for students in need while not compromising quality education.

Finally, and importantly, university staff will also experience the effects of crisis and standards should include a duty of care with relevant policies to support them. This includes provision of necessary support, such as health and mental health services, and facilitating access to increased resources wherever possible. Staff in circumstances like pandemic will also benefit from online pedagogical training and technical support.
The discussion and recommendations presented here represent a distillation of general lessons extracted from a very specific case. Despite that specificity, however, the transboundary characteristics and institutional resilience present in the case of Tsinghua University’s shift to online education offer unique but applicable insights for higher education institutions.

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