Making Higher Education Truly Inclusive

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List of Acronyms and Abbreviations

AHPPC	Australian Health Protection Principal Committee
CHED	Commission on Higher Education (Philippines)
COVID-19	Coronavirus disease 2019
DepEd	Department of Education (Philippines)
DHET	Department of Higher Education and Training (South Africa)
DICT (Philippines)	Department of Information and Communications Technology
ECQ	Enhanced community quarantine
GCQ	General community quarantine
HEI	Higher education institution
HTE	Host training establishment
IATF	Interagency Task Force for the Management of Emerging Infectious Diseases
ICT	Information and communication technologies
ITU	International Telecommunication Union
Mbps	Megabits per second
NBN	National Broadband Network (Australia)
NCR	National Capital Region
NSFAS	National Student Financial Aid Scheme (South Africa)
OECD	The Organization for Economic Cooperation and Development
OJT	on the job training
PHEI	Private higher education institution
SANReN	South African National Research Network
TENET	Tertiary Education and Research Network of South Africa
TESDA	Technical Education and Skills Development Authority
TEQSA	Tertiary Education Quality and Standards Agency (Australia)
SEND	Special education needs and disabilities
SUCs	State universities and colleges (Philippines)
US	United States
USAf	Universities South Africa
WHO	World Health Organization

Executive summary

This paper covers three specific topics related to the issue of the relationship between the reliance in higher education on ICTs during the COVID-19 pandemic and the immediate and possible longer-term effects on social inclusion in higher education. First, it discusses the response to the COVID-19 pandemic by higher education systems in terms of the provision of ICT infrastructure so that they could continue to function given increased restrictions. Second, it describes the outcomes of these interventions in terms of the inclusion (or exclusion) of marginalized students. Finally, it given consideration to whether the disruption to higher education, particularly the uptake of new modes of instruction, learning and assessment, results in greater inclusion in the future provision of education. Three countries – Australia, the Philippines and South Africa – were selected to study the effects and future outcomes attributable to the COVID-19 pandemic in relation to the ICT infrastructure, access and inclusion in higher education.

Two observations emerge from the South African experience. The first is the realisation that, as predicted by scholars neither technology nor open resources necessarily lead to the anticipated democratisation effects. Instead, in highly unequal societies (and university systems), an increase in the uptake of technology and open resources is more likely to exacerbate existing inequalities. The second observation is that the pandemic has made the invisible visible, that is, according to Czerniewicz et al. (2020, 949), the "crisis has made it impossible not to recognise the historical, geospatial, economic inequalities of the country and the world students live in."

The case of the Philippines suggests that the capacity of institutions and individuals to adapt to, cope, and mitigate the impact of COVID-19 on teaching and learning is significantly differentiated; well-resourced, well-connected, and strategically-located actors were more able to transition to new modes of education delivery. There are also differences in processes and outcomes due to other factors such as political leadership, social security provisions, degrees of autonomy and centralization, and underlying capacity

In terms of the impact of the pandemic on social exclusion in Australia, two issues stand out. The first is the perilous position of international students stranded in Australia due to the international travel ban. Despite some measures taken by the Australian government to support these students, the government's response was seen as largely unsympathetic. The second exclusionary impact to receive attention is that of widening and exacerbated student equity. It should, however, be noted that the issue of equity does not feature strongly in coverage of the impact of the pandemic on Australian higher education.

Theoretically, the availability of technologies to a broader segment of the population should result in greater inclusion (that is, participation in communication networks). However, the evidence shows that without the capabilities – many of which are non-material and do not relate to technical skills or access alone – and without an acknowledgement of the social dynamics of systems and networks, parts of the population will always remain excluded.

The following policies are recommended for higher education to be truly inclusive:

a. **ICT infrastructure and access**: In a context where access to technology, not only to the Internet but also to devices, governments should strengthen broadband infrastructure, on the one hand, and access to learning devices, on the other.
b. **Learning pedagogy**: From a pedagogical perspective, there is a need to formulate policies and programmes that transition teaching, learning and assessment from a highly collectivised and traditional system to one that allows individual learning journeys aided by technology.
c. **Teaching competencies**: The competency framework for higher education teachers should include using digital technology to design, deliver, and assess teaching and learning outcomes.
d. **Targeted education support**: Higher education policies and programmes should provide targeted education support to institutional providers, teachers, and students based on income and/or deprivation levels to transition towards better use of technology in education.

1 Introduction

Information and communication technology (ICT) infrastructure has proven vital in helping countries and citizens adapt and respond to the COVID-19 pandemic. ICTs have enabled them to continue working and learning remotely, and to access the latest health information, updates and directives from local and national authorities.

Connect2Recover is a global initiative that aims to reinforce the digital infrastructure and digital ecosystems of beneficiary countries. In 2021, ITU launched the "Connect2Recover Research Competition" to identify promising research proposals that will accelerate digital inclusion during the COVID-19 recovery globally. The objectives of the competition were to improve research focus on digital resiliency and digital inclusion to build back better with broadband for pandemic recovery; to build a global research community of think tanks and academic institutions around digital inclusion; and to promote knowledge sharing that informs targeted practices to build back better with broadband. The proposal submitted by Step Up Consulting titled 'Making Higher Education Truly Inclusive' was selected as one of fifteen successful applications. This report shares the findings, insights and recommendation that have emerged from the 'Making Higher Education Truly Inclusive' research project.

1.1 Research background

Many questions have been asked about the future of higher education post-COVID-19. The answers paint various scenarios, including that higher education will simply revert to 'business as usual'. Others suggest that higher education will be forced to adapt, although the exact nature of longer-term change remains unclear (Van Schalkwyk 2021). More ominous future scenarios include the demise of higher education. Whatever the response, change will take place in a context in which the COVID-19 crisis was seen to "deepen systemic socioeconomic vulnerabilities [and] widen income and wealth gaps" (Lenzen et al. 2020, 8).

Higher education plays an important role in national development by providing high-level skills and new knowledge for innovation (Muller et al. 2017). In the decades following the 1950s, higher education enrolments expanded rapidly in the US and Europe, followed by Asia, Latin America and Africa in the 1990s and 2000s (Scott 2019). This expansion created a new market that attracted the interest of the business sector, including, for example, commercial publishers, resulting in the marketisation of academic and scholarly publishing (Thornton and Ocasio 1999). However, with questions arising about the value created by commercial publishers with the advent of digitization and the world wide web, combined with generous profits made by publishers (Larivière et al. 2015), the relationship between higher education and commercial publishers has become increasingly strained as the imperatives of commerce and science clash (Strasser and Edwards 2015; Taubert and Weingart 2017).

Just as massification significantly transformed the higher education landscape and the scholarly publishing industry, the current COVID-19 pandemic has disrupted higher education as lockdowns and other restrictions were imposed across the globe. Higher education institutions (HEIs) have been compelled to invest significant funds to

mitigate the effects of the pandemic, and, due to the unprecedented nature of the global COVID-19 pandemic, higher education institutions have had to face challenges related to their teaching, learning and assessment activities. Most interventions have focused on developing and/or augmenting digital infrastructure to support undergraduate online teaching and learning to salvage the 2020 and 2021 academic years.

Since there were no existing policies and guidelines in most higher institutions on online teaching, learning and assessment, several questions such as, what to teach, how to teach, what should be the duties of the teacher and the student, the workload of the teacher, the teaching environment, and the implications for education equity, etc. were not clear. Conducting assessments remotely during COVID-19 also posed extraordinary challenges for higher education institutions owing to lack of preparation as well as the inherent problems of proctoring when relying on remote assessment technologies.

As before, the disruption of higher education has created new opportunities which have attracted the attention of the market. In other words, just as massification disrupted scholarly publishing, the COVID-19 pandemic is likely to disrupt the ICT sector, specifically those parts of the sector that provide Internet connectivity, and remote teaching and learning technologies.

Of concern is the fact that COVID-19 has, in many contexts, exacerbated pre-pandemic inequality, including in higher education (Salmi 2020). Governments, higher education institutions, private companies and donor funders responded to address inequalities related to Internet access and to include marginalized students in the provision of online teaching, learning and assessment. However, it remains an open question whether the crisis-related initiatives to democratize access were effective and are likely to prevail post-pandemic (Komljenovic 2020). The entry of commercial service providers into a growing market providing new online learning platforms, modes of instruction and assessment, driven by a cocktail of necessity and what Broussard calls ‘technochauvinism’, could well reverse any gains made during the pandemic. As Czerniewicz (2022, 2) writes: ‘The digital divide is alive and well; indeed, the digital paradox is that even as the basics of the divide are addressed through access, more complex layers of exclusion are added; digital inequalities thus morph into new complicated forms’.

1.2 Research questions

Given the background provided above, the questions that can be asked as we still face uncertainty amidst the COVID-19 pandemic are:

1. What was the response to the pandemic by higher education systems in terms of the provision of ICT infrastructure such that they could continue to function?
2. What were the outcomes of these interventions in terms of the inclusion (or exclusion) of marginalized students?
3. Will the disruption to higher education as a result of the COVID-19 pandemic, particularly the uptake of new modes of instruction, learning and assessment, result in greater inclusion in the future provision of education?

2 Literature Review

2.1 The impact of COVID-19 on inclusion in higher education

In a survey of popular higher education literature (Van Schalkwyk 2021), it was found that blended or hybrid learning is generally predicted to have a positive impact on higher education and is seen by some as becoming institutionalised in the teaching and learning function of universities. In fact, no instances were identified in which explicitly negative sentiment was expressed in relation to the conversion to blended or hybrid teaching and learning. Those in favour of technology argue that distance education and improved and diversified modes of delivery will result in more inclusive higher education systems. In contrast, others point out that limited access to technology for certain segments of the population, combined with data costs, will result in greater divides.

Others viewed the shift to blended or hybrid learning and the accompanying digitisation of the university as simply inevitable and expressed neither positive nor negative sentiments with regard to its institutionalization (Van Schalkwyk 2021).

However, some commentators have cautioned against an overly optimistic view on changes in teaching and learning post-COVID-19, arguing that the claimed benefits are unlikely to be enjoyed by all (Czerniewicz et al. 2020). Salmi (2020) highlights the deepening systemic inequities in higher education globally and how the COVID-19 pandemic has laid bare these inequalities. He includes in his overview the effects of the pandemic on higher education, the move to online learning and assessment, and how this has led to additional challenges for students who lack affordable access to reliable Internet service and devices. In the medium term, Salmi predicts that “COVID-19 is likely to have negative effects on the learning outcomes, graduation rates, employability and job prospects of traditionally under-represented students” (Salmi 2020, 16).

The extent to which COVID-19 results in greater inclusion may depend on the accessibility of technology in particular countries, not to mention the skills required to exploit the available technologies. It may well be the case that COVID-19 is seen to lead to greater inequality in those countries where pre-COVID-19 inequalities were already entrenched in society.

In a similar review of the higher education literature (Van Schalkwyk 2021) in relation to post-COVID modes of educational delivery, Coates et al. (2021) point out that in the case of China, online learning and teaching were treated as a temporary substitute for in-person teaching. As the pandemic was brought under control in China, universities returned to more traditional modes of instruction. Nevertheless, hybrid modes will persist (Goedegebuure and Neave 2021; Hedding et al. 2021; Osman in Walwyn 2020) and, according to Coates et al. (2021), not least because of the ‘intrusion’ of education service providers into university operations (see also Ivancheva et al. 2020) or, more broadly, the marketisation of teaching and learning (Czerniewicz in Walwyn 2020).

The digitisation of education is further explored by Komljenovic (2020), who expresses concern about anachronistic theory and understanding in relation to data and data products in higher education, the production of which has been accelerated by the pandemic to the extent that practice outstrips policy. Madonsela (2020) notes the exclusionary effects on disadvantaged students and the further entrenchment of social inequalities as a consequence of the digitalisation of higher education in the case of South Africa. Auerbach (2022) cautions about the effects of what she terms 'knowledge curatorialism' requiring new approaches to how students are educated at universities. Watermeyer et al. (2020, 623), following a survey of those responsible for delivering higher education in the UK, conclude that "online migration is engendering significant dysfunctionality and disturbance to … their pedagogical roles".

In other words, despite the positive rhetoric around digitisation and inclusion, there is equal concern that COVID-19 will exacerbate pre-pandemic inequalities in higher education vis-à-vis access and attainment. There is no consensus as to whether the effects of the pandemic will be positive or negative in terms of increases in the inclusion in higher education of previously marginalised groups.

2.2 Capabilities approach to understanding ICTs and social inclusion

In our previous research focused on data and social inclusion, we relied on the work of Manuel Castells and his concept of the network society and communication power to develop a conceptual model that accounts for whether the publication of data is likely to result in social inclusion or exclusion (Van Schalkwyk and Canares 2020). Castells (2004, 3) defines the network society as "a society whose social structure is made up of networks powered by micro-electronics-based information and communications technologies." In historical terms, networks are not new. The key factor that distinguishes the network society is that the use of ICTs creates new real-time, global communication networks in which new kinds of social relationships emerge. Among several of new social phenomena to emerge is that communication networks operate on the basis of exclusion. Global communication networks function according to a central program, and each network will develop standards and protocols to support its unique program. To illustrate, the global financial network's program is the accumulation of surplus (profit), and the standards and protocols that support network include rules on buying, selling and reporting. Network programs are determined by those who create the networks, placing them in a powerful position in relation to those who wish to participate in the network. Only those who are able to contribute something of value to networks – where value is determined by the program of the network – are in a position to participate in the global communication networks. Those who create and have the capabilities to participate in networks benefit from their participation, while inevitably, those who remain excluded do not. In short, communication networks determine the distribution of power in society (Castells 2009). This is not to suggest that power wielded in and by networks is immutable – social actors can mobilise to challenge network programs in efforts to reprogram them and, consequently, to disrupt and change programs through the exertion of çounter-power' (Castells 2009).

Our unit of analysis was deliberately broad – at the level of national populations or communities – to account for the social dynamics – particularly the exertion of power – in data systems. In other words, in our previous research we did not pay attention to individual- or micro-level dynamics.

In this report, we turn our attention to the individual level because we believe that while our network inclusion model offers important insights, COVID-19 has drawn attention to the need to pay equal attention to the capabilities of individual actors and these, in turn, enable or disempower them to engage with and, potentially, participate in communication networks, including pedagogic networks which were necessarily less location-based and global during the strict travel restrictions put in place during the COVID-19 lockdowns and which are still impacting on higher education at the time of writing of this report (for example, travel to and from parts of China remain restricted). Auerbach (2022), for example, writes about a new 'pedagogy of hyperlinkages' required in universities turning towards new, increasingly digital forms of educational delivery.

It is useful to view ICT, and social inclusion in higher education using the capability approach, primarily because the impact of digital technologies on education is dependent on the capability of both education providers and learners to access as well as use knowledge and skills to take advantage of the opportunities provided by technology in terms of enhancing the learning experience and outcomes.

Briefly, the capabilities approach popularized by Sen focuses on what people (and organizations, for that matter) are able to do and be, based on their capabilities: "The capability approach, to a person's advantage, is concerned with evaluating it in terms of his or her actual ability to achieve various valuable functionings as a part of living" (Sen 1993, 30). Capability, in this case, means the opportunity and freedom to make choices, which later on will impact how one is able to achieve being or doing or functioning (Walker et al. 2022).

However, one's opportunity and freedom to make choices is not uniform across all contexts. We argued elsewhere (see Van Schalkwyk et al. 2019) that the ability of actors to integrate into networks to exert influence (power) is dependent on their unique constellations of capital. The same can be said about a teacher's ability to teach using ICT and the student's ability to learn from digitally-enabled education delivery.

In a study looking at higher education and inclusion in South Africa using the capability approach as a theoretical lens, five main overlapping contextual factors that impact students' ability to access higher education are proposed (Walker et al. 2022). These are material (money/funding/resources); educational (schooling); environmental (geography and community development); social (information and support, and extended families and significant others); and personal (personal attitudes, values and characteristics). The capability approach makes prominent the finding that material resources are just one of the factors contributing to inequalities in access because the ability to use these resources is conditioned by other contextual conversion factors.

Using the capability approach to analyse access to information and communications technology in the Philippines, Alampay (2003) argues that it is not just about access to devices or proximity to the technology that conditions the ability to benefit from ICT. For equal opportunities to exist, it is important to look beyond proximity to infrastructure and consider socio-economic and cultural barriers for its use and the capabilities of users to use them (Alampay 2003).

3 Methodology

The research adopted a case study approach. Case studies have the greatest potential to reveal the socio-technical complexities at play in creating inclusive networked systems. Case studies are also easily replicated across multiple contexts to build a context-sensitive knowledge base.

Three countries – Australia, the Philippines and South Africa – were selected to study the effects and future outcomes attributable to the COVID-19 pandemic in relation to the ICT infrastructure, access and inclusion in higher education. The Philippines and South Africa were selected partly because the researchers are familiar with the higher education and ICT landscapes in both countries and partly because they present relevant cases in terms of countries dealing with the challenges of growing inequality combined with expectations for their higher education institutions to contribute to national development. Australia was selected because it presents a more developed and less unequal society as a reference point, but also because Australia faced the particular challenge of a significant decline in international students necessitating not only the implementation of emergency teaching and learning but also planning for a future higher education system less dependent on the presence of international students at the country's universities.

Initially, we had planned to select two public universities in each country (one rural and one urban university). In the end, we decided to focus on the national rather than on the organisational level because (1) we found it difficult to operationalise the distinction between urban and rural universities (very few universities are truly rural; many universities have multiple campuses in both urban, peri-urban and/or rural areas), and (2) because we were concerned that the selection of specific universities as case studies (as opposed to the study of three national systems) would be too specific for a study such as this one which provides initial insights and findings to be explored in greater depth and granularity by follow-up studies.

Data were collected through document analysis and interviews. There has been reasonably in-depth coverage of the impact of COVID-19 on higher education in both the media and, more recently, in the academic literature (for example, *Studies in Higher Education* Special Issue; Chao 2021; Czerniewicz et al. 2020). Several reports have focused on the issue of access to higher education as emergency teaching and learning systems have been introduced. Relevant literature was found following a two-step process: (1) a Google search for "Higher education", "covid", "[country name]", from which studies dealing with the issue of ICTs and/or social inclusion were identified; (2) by identifying new articles and reports from the reference lists of the literature found by following step (1).

Initially, we had planned to conduct several unstructured follow-up interviews with key informants to fill in any apparent gaps following the document analysis. Because our unit of analysis shifted from the organisational to the national higher education system level, interviews became less essential, and we mainly relied on the literature.

4 Results from the case studies

4.1 South Africa

4.1.1 Overview of ICTs in South Africa

South Africa embarked on a process of drafting a revised ICT policy to replace the existing, separate policies on telecommunications (1996), broadcasting (1998) and postal services (1998). An ICT Policy Green Paper was published in 2014, and the ICT Policy Review Report of 2015 was published following consultations and inputs on the Green Paper. The National Integrated Information and Communication Technologies (ICT) Policy White Paper was published on 28 September 2016. However, policy coherence, development and implementation have been plagued by a succession of ministers in the national government department (Van Schalkwyk 2017).

According to the ITU, 78% of the South African population own a mobile phone (ITU 2021[1]), while Statistics South Africa reported that 89.5% of households owned a mobile in 2018 (Icasa 2020). In 2019, national 3G population coverage was 99.7%, while 4G coverage was 92.8% (Icasa 2020). In the Eastern Cape province, the poorest of South Africa's nine provinces, 7.7% of households did not have access to a mobile phone (Icasa 2020). The coverage for the rural population in the Eastern Cape was 99% for 3G and 79% for 4G connectivity in 2019 (Icasa 2020).

Statista reports that 36.45 million South Africans (or 61.5% of the population) used mobile phones to access the Internet in 2021.[2] Data on Internet connectivity disaggregated by age is unavailable and would have been informative in establishing the levels of connectivity among university students. The country's smartphone penetration reached 91.2% in 2019, up from 81.7% in 2018. South Africa has seen a sharp increase in smartphone penetration, rising from 43.5% in 2016 (Icasa 2020).

In 2020, the cost of mobile data was 2.53% of Gross National Income (GNI) per capita (ITU 2022[3]), 0.53% above the UN Broadband Commission's affordability target.

According to the ITU, in 2017, 56% of the South African population used the Internet, and 62% of households had Internet access (ITU 2021). Statistics South Africa reports that in 2018, 64.7% of households indicated that they have access to the Internet and

[1] https://www.itu.int/itu-d/reports/statistics/2021/11/15/mobile-phone-ownership/

[2] https://www.statista.com/statistics/558867/number-of-mobile-internet-user-in-south-africa/

[3] https://www.itu.int/en/ITU-D/Statistics/Dashboards/Pages/IPB.aspx

that in the Eastern Cape province, 55.3% of households in that province had access to the Internet (Icasa 2020); 23% of households had a computer in 2019 (ITU 2021).

At 4.69% GNI per capita (ITU 2022[4]) – 2.69% above the affordability target – fixed broadband data is more expensive relative to mobile data. In addition, ICT skills across the population are relatively poor (ITU 2021[5]).

In summary, connectivity, particularly via cellular telephones, is fairly ubiquitous, and smartphone penetration is high, but cost of data remains relatively expensive in South Africa.

4.1.2 Higher education in South Africa

The South African higher education system comprises 26 public universities and 93 relatively smaller private universities (DHET 2021). Of the 26 public universities, only one is exclusively a distance learning institution.

The difference in the size of public versus private higher education providers can be seen in the student enrolment data. In 2018, 1,281,000 students were enrolled at a university, of which 197,000 were enrolled at private universities, and the remaining 1,084,000 were enrolled at public universities (Bunting et al. 2018). This equates to 25.5% of the total population of 20-24-year-olds being enrolled at a university in 2018 (Bunting et al. 2018). In terms of staff, in 2018, public universities employed 62,171 permanent staff, of which just under one-third (32%) were academic staff (Bunting et al. 2018).

4.1.3 ICTs in higher education

4.1.3.1 National- or system-level infrastructure

The Tertiary Education and Research Network of South Africa (TENET)[6] was created in August 2000 by the public universities of South Africa as the organizational home of, and vehicle for, collaborative inter-networking by universities, science councils and associated support institutions. TENET provides the Internet backbone for the country's universities.

TENET operates the South African National Research Network (SANReN) that has been deployed over the past ten years by the SANReN Competency Area (SCA) under contract with the Department of Science and Technology (DST). SANReN comprises a national backbone, multiple metropolitan rings, and extensive long-haul circuits to reach important research installations.

The original SANReN national backbone was commissioned in December 2009 and comprised a 10 Gbps ring interconnecting Pretoria, Johannesburg, Bloemfontein, Cape Town, Gqberaha (Port Elizabeth), East London and Durban. The network has since been significantly extended to increase aggregate network capacity to over 4

[4] https://www.itu.int/en/ITU-D/Statistics/Dashboards/Pages/IPB.aspx

[5] https://www.itu.int/itu-d/reports/statistics/2021/11/15/mobile-phone-ownership/

[6] www.tenet.ac.za

Tbps and to reach university campuses in smaller towns in all of the nine provinces in South Africa.

SANReN's metro fibre optic ring networks in Johannesburg, Pretoria, Cape Town and Durban were fully commissioned by 2010. In aggregate, they connect 90 urban campuses to the backbone. Between 2010 and 2019, the Rural Campuses Connection Project (RCCP) was undertaken to provide high-bandwidth connections for rural university campuses to SANReN. As a result of this project, the main campus of nearly every public university in South Africa had at least 10Gbps of connectivity.

In 2019, a major upgrade was undertaken to convert many of the managed leased circuits on the national backbone to dark fibre, lit by SANReN. The SANReN network also includes access circuits that TENET provides for many campuses. These include optical fibre access circuits that connect the campuses of multi-campus public universities that were not beneficiaries of any other connectivity initiative to the nearest SANReN node.

As of 2020, there are more than 500 separate fibre optic circuits and over 600 discrete routers and other network devices managed by TENET on behalf of SANReN. Several university campuses now connect to the network at much higher speeds following the 2019 upgrades, that is, at speeds of 100Gbps.

4.1.3.2 University-level infrastructure

Universities in South Africa manage their own ICT infrastructure. The result is that while public universities rely on a common backbone for Internet connectivity, each invests in the ICT solutions deemed most appropriate for its context and within the available resources. There is, therefore, little commonality across universities regarding ICT infrastructure and enterprise-level software.

A 2007 review of ICTs in higher education in South Africa concluded that ICTs had by that time already become institutionalized in the university landscape to improve educational delivery and outcomes (Ngugi et al. 2007). The review, presciently, also sounded caution against individual efforts by universities at the expense of collective learning and investing in ICTs for the sake of it rather than for its pedagogic potential (Ngugi et al. 2007).

4.1.4 The COVID-19 pandemic

4.1.4.1 Key phases of the pandemic

As of March 2022, South Africa had experienced four COVID-19 waves since the first case was registered in the country on 5 March 2020 (see Figure 1). On 23 March 2020, a national lockdown was announced to come into effect on 27 March 2020. From 1 May 2020, a gradual and phased easing of the lockdown restrictions began, lowering the national alert level to 4. From 1 June 2020, the national restrictions were lowered to level 3, and on 17 August 2020, they were lowered to alert level 2. From 21 September 2020, restrictions were lowered to alert level 1. The country has remained on alert level 1 during the remainder of the pandemic, with some adjustments made to level 1 restrictions during the second wave in December 2020.

The academic calendar in South Africa starts in February and ends in December. As a consequence, universities were at the start of the academic year when the pandemic broke out, and lockdown restrictions were imposed.

Some universities elected to suspend all academic activities during the week of 16 March 2020 following the declaration of the national state of disaster, although others only did so later (May 2020). All campuses were closed to students and staff when the national lockdown was enacted on 27 March 2020.

Under Alert Level 4, and the first tentative easing of lockdown restrictions, only final year students in programmes requiring clinical training were permitted to return to campuses, starting with medicine and followed by the phasing-in of other programmes such as dentistry, nursing and veterinary science.

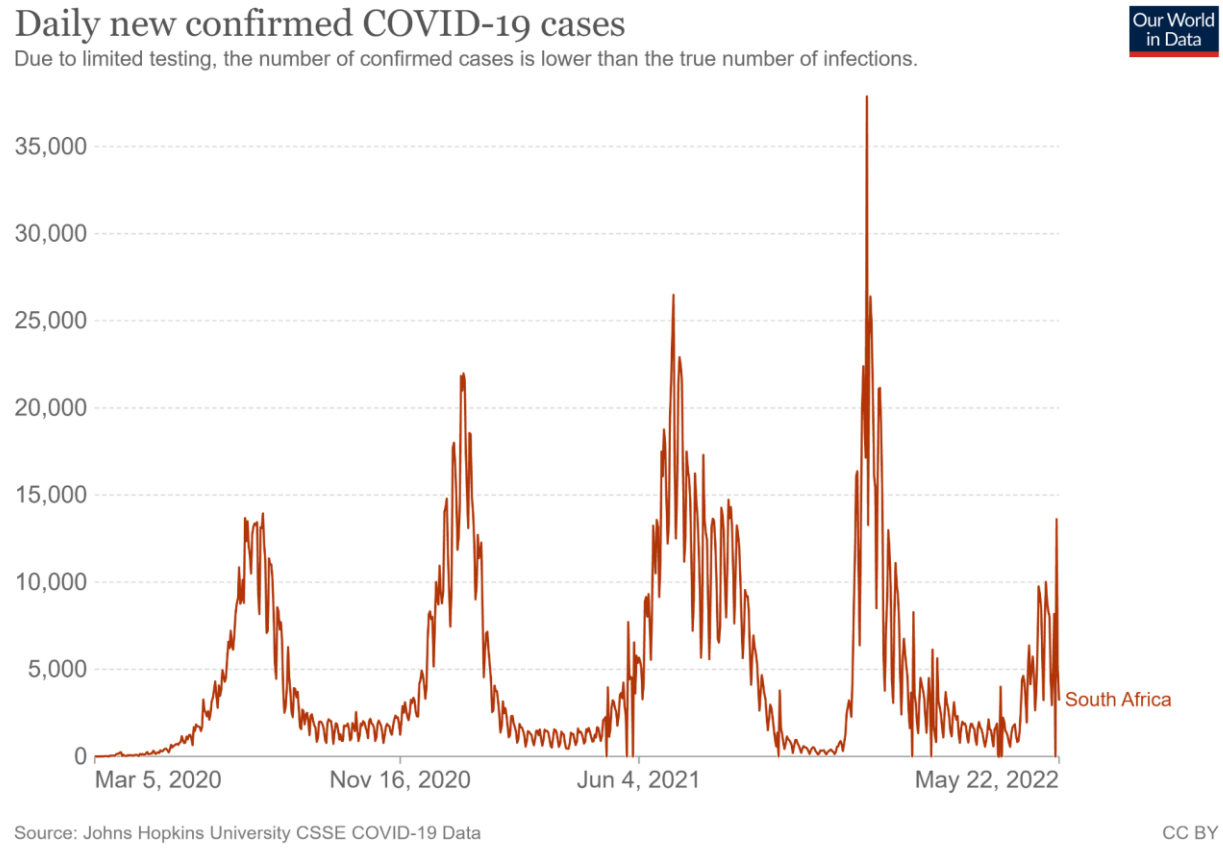

Figure 1. COVID-19 Cases - South Africa, 2020-2022 (Source: John Hopkins University)

Universities were only permitted to reopen following the announcement of Alert Level 3 on 1 June 2020, albeit in a highly controlled manner (Mafolo 2020b). By 8 June 2020, the government had published directives for the phased reopening of university campuses (South African Government 2020b). Under Alert Level 3, up to 33% of students in all years of study who required clinical training and postgraduate students who required access to laboratories and technical equipment were allowed to return to universities. Final-year students were also permitted to return to campus under Alert

Level 3, but the Directive encouraged universities to maintain the remote teaching of final-year students, wherever possible.

During the COVID-19 pandemic, each university has been permitted to use its discretion within the guidelines published in the Directive to plan the return of students and staff to campuses. The reopening of universities was, in any case, subject to the submission and approval of 'phase-in plans' by each university to DHET. These plans had to cover a range of health protocols such as screening (including self-screening), sanitisation and the provision of face masks. Guidance was provided by Higher Health, the national agency for promoting the health of South African students. Universities were also required to establish a COVID-19 Response Task Team.

From the perspective of universities, the response to the COVID-19 pandemic can be divided into three phases. The first phase from March to June 2020 is characterised by the initial response of the universities to the lockdown restrictions, working and studying from home, and their first, often experimental, forays into emergency remote teaching and learning. The second phase is characterised by the continuation and institutionalisation of remote teaching and learning at some institutions, while other universities began to welcome a limited number of students back to their campuses. During this phase, there is greater confidence in the methods of delivery but amidst great uncertainty about when, and if, teaching and learning would return to normal. This period extended from July 2020 to the end of the 2021 academic year. The reopening of campuses characterises the third phase at the start of the 2022 academic year with a hybrid approach to teaching and learning. While COVID-19 control measures remain in place during this third and current phase, universities are more akin to 'post-pandemic' spaces than the preceding phases.

Phase 1: Initial response by the university system to the pandemic (March–June 2020)

As the COVID-19 pandemic progressed, universities responded independently within the directives and frameworks issued by the national department (DHET) to put in place on-campus measures and restrictions to manage teaching, learning and assessment.

During the early phases of lockdown, most universities switched to emergency online teaching, learning and assessment. Institutions leveraged on the legacy investments they had already made in software and online platforms while exploring new solutions where gaps emerged.

Six weeks after lockdown, on 6 May 2020, 12 out of 22 contact universities[7] surveyed had commenced online instruction; two planned to commence online teaching on 1 June, while one university had chosen to proceed with teaching those students with access to devices and data, and to accommodate the remaining students in intensive face-to-face instruction when campuses reopened (USAf 2020).

[7] A contact university is a university that provides in-person classes, as opposed to a distance university that provides remote classes. In South Africa, all public universities with the exception of the University of South Africa (Unisa) are contact universities.

In an effort to support and guide institutions in terms of quality concerns, the Council on Higher Education and its standing sub-committee, the Higher Education Quality Committee (HEQC), published the 'Quality Assurance Guidelines for Teaching and Learning and Assessment during the COVID-19 Pandemic' (CHE 2020).

As universities pivoted to emergency online teaching and learning with the closure of university campuses in Phase 1, it soon became clear that some students either lacked computers or could not afford the data costs to access universities' online resources and teaching platforms (Czerniewicz et al. 2020; USAf 2020).

In response, at the national level, the government undertook to provide contact students who receive bursary funding from the government (that is, National Student Financial Aid Scheme [NSFAS] students) with learning devices in the form of laptops, while some students in need received laptops from their universities (Vuk'uzenzele 2020). The provision of laptops was dogged by delays in the tendering process (Mthethwa 2020; Ndaba 2020).

In response to the cost of data as a barrier to online learning for some students, cooperation agreements between government departments (that is, DHET and the Department of Communication and Digital Technologies) and mobile network providers were entered into to make zero-rated websites available to students (Czerniewicz et al. 2020). This allowed students to access prescribed university websites and services as well as specified online learning resources without incurring any data costs.

A DHET survey conducted in 2020 found that around two-thirds of students surveyed purchased data bundles from service providers, while almost half (46%) accessed data through their institutions. Almost a quarter of students resorted to using hotspots from other devices, while 16% had Wi-Fi or fibre at home. NSFAS students mainly accessed data by purchasing data bundles (65%), and almost half (48%) used institutional data. Only a quarter of the sample did not have to make additional plans to get data (DHET 2020a).

Universities initially faced push-back from students who insisted that universities could not expect them to participate in online learning without providing the necessary resources (Molosankwe 2020). At the same time, some universities that adopted fully online learning and assessment reported higher pass rates than in previous years (Ngqakamba 2020; Phakeng et al. 2020). And surveyed students reported several benefits from combining technology and learning, including: an appreciation for the convenience of asynchronous learning, saving time and money on transportation costs, developing a range of skills and knowledge about devices and educational technology, becoming more self-directed and independent learners, reporting increased and easier communication with lecturers and peers, and recognising the efforts lecturers and institutions put in to help save the academic year (DHET 2020a).

The main drawbacks of the DHET (2020) survey are (1) that the respondents only represented approximately 5% of the national higher education population; and (2) that as an online survey, it was inherently biased towards collecting survey responses from those who already had access to a device and data.

Phase 2: Institutionalised emergency teaching and learning (October 2020 to December 2021)

Following the early-June announcement of Alert Level 3 and the subsequent Gazetting of the directive on the reopening of universities, universities responded differently in terms of how they planned to reopen (Van der Merwe 2020). Some universities decided that all instruction and assessment would be virtual for the full academic year; others partially reopened campuses as the lockdown restrictions permitted. By the beginning of July, students had returned to 20 universities, with the remaining six universities planning to welcome students back by the end of August 2020 (Ngqakamba 2020a). The extent to which students were permitted to return to the 20 universities varied from university to university.

On 17 August 2020, with the announcement of Alert Level 2, universities were permitted a further reopening their campuses. The national department had indicated in its June directive that 66% of students would be permitted to return under Level 2, including first-year students (DHET 2020b).

Universities adopted a mixed approach to reopening under Alert Level 2, with some universities welcoming students back to campus and others electing to continue primarily with online-only instruction. In Gauteng province, Wits University, for example, took the decision to allow students unable to study from home to return to university residences on social justice grounds. The University of Johannesburg allowed students to return within the full limits permitted under Level 2 lockdown, while the University of Pretoria ruled out any contact classes for the remainder of the 2020 academic year and would allow only those students requiring laboratory and other on-campus facilities to return (Ngqakamba 2020b).[8]

Discussions were held between the Department, universities and private accommodation providers on how to mitigate the impact of the extension of the academic year on students (Parliamentary Monitoring Group 2020). Reopening for the 2021 academic year also required coordination with the Department of Basic Education to synchronise the end of the school year, the release of school examination results and the opening of universities for the 2021 academic year. Several universities only completed the 2020 academic year in the early part of 2021, while others completed it in November or December 2020. The delays in completing the academic year and the announcement that the final school examination results would only be available in mid-February 2021, led the Minister of Higher Education and Training to announce a readjustment of the 2021 academic calendar with campuses reopening between 15 March and 15 April 2021 (Ngqakamba 2020c).

A survey conducted in August 2020 reported that 46% of students faced challenges completing assignments or participating in online learning due to a lack of access to computer equipment or data (Jordaan 2020). Elsewhere it was reported that all universities indicated that access to devices and Internet connectivity were the main stumbling blocks in the delivery of online learning (USAf 2020).

[8] International students studying at South African universities and who are not in South Africa, were only permitted to return to South Africa during Level 1 of the lockdown when international travel resumed (DHET 2020b).

The South African Use of Learning Materials (SAULM) survey of 2020 (DHET 2020a) explored how students accessed and used learning materials during this phase. It focused on students' experiences with regard to access to learning materials; access to devices, data and connectivity; engaging with educational technology; challenges of technology and learning; and benefits of technology and learning – paying particular attention to poorer (NSFAS) students.

The survey found that 96% of students owned a device such as a laptop or desktop computer, or smartphone. Of those who owned devices, 89% stated that they owned a smartphone, while around 60% owned laptops. Almost 20% fewer NSFAS students owned laptops than non-NSFAS students, and 90% indicated that the device they own is a smartphone. Half (50%) of all respondents found that using a smartphone for academic purposes is somewhat too difficult.

Around two-thirds of respondents purchased data bundles from service providers, while almost half (46%) accessed data through their institutions. Almost a quarter of students resorted to using hotspots from other devices, while 16% have Wi-Fi or fibre at home. NSFAS students mainly accessed data by purchasing data bundles (65%), and almost half (48%) used institutional data. Only a quarter of the sample did not have to rely on their institutions or on support from government to acquire additional data.

Some findings related to students' engagement with educational technology include: 20% of students were not able to charge their devices as needed, more than half (54%) did not have a quiet place to study, and only half (50%) indicated that they had an appropriate network connection. Fewer NSFAS students had adequate access to network connectivity, electricity and a quiet place to study. Comparative analysis showed that NSFAS students generally engaged less with online activities than non-NSFAS funded students during remote learning.

Findings related to challenges of technology and learning can be summarised as follows: The biggest obstacles to students' engagement with remote learning were network connectivity, data, and not having appropriate devices for studying. Some other challenges students faced during this time included problems with electricity, a lack of study space, inadequate knowledge and skills to use devices and new study platforms optimally, and feeling isolated or disconnected from lecturers and peers. While the challenges experienced by respondents were intensified for NSFAS students, they were not limited to NSFAS students.

The benefits of technology and learning include: An appreciation for the convenience of asynchronous learning, saving time and money on transportation costs, developing a range of skills and knowledge about devices and educational technology, becoming more self-directed and independent learners, reporting increased and easier communication with lecturers and peers, and recognising the efforts lecturers and institutions put in to help save the academic year.

The Council on Higher Education (CHE), Universities South Africa (USAf) and the University of the Free State (UFS) administered the Staff Experience of and Perspectives on Teaching and Learning and its Future (SEP-TLF) survey (CHE, USAf and UFS 2022). Targeting lecturers and administrators at 24 participating institutions,

the survey sought to understand the experiences of these groups during the pandemic to inform the future direction of teaching and learning for the sector.[9]

The SEP-TLF study found that infrastructure challenges contribute significantly to academic staff's ability to access reliable electricity, with half indicating that interruptions in supply were a barrier to reliable access. Of the staff surveyed, 7% (119 respondents) were not provided desktop computers, laptops, smartphones or tablets for remote teaching and learning. Three-quarters of respondents (76%) indicated that they have reliable access to the Internet when working from home; 70% of respondents' access to the Internet off-campus is self-funded, with 25% receiving financial support from their universities, and 5% indicating that their universities funded their off-campus Internet access in full.

Students' lack of participation and engagement was a cause of great frustration among academic staff. Comments on the quality of teaching and learning in general during the delivery of emergency teaching and learning reflect a range of different perspectives, with many feeling confident that the quality is sufficient or even better, considering the circumstances, while others feel that there has been a significant decline in quality, particularly because of dishonesty.

Lastly, the survey found that the impact of the pandemic and the remote teaching and learning experience on academic staff's well-being has been significant, with more than half indicating that they were experiencing burnout.

From the SEP-TLF and SAULM surveys, it is apparent that universities still had much to learn about both the efficiencies and the effectiveness of new modes in the delivery of teaching and in the assessment of university students during this phase of the pandemic.

Phase 3: "Post-pandemic" higher education (February 2022 onwards)

In February 2022, at the beginning of the third phase, South African public universities welcomed students back to campus for the start of the academic year, the third to be affected by the COVID-19 pandemic. Not everything has returned to normal for university students and staff. Many universities have adopted a hybrid approach to teaching and learning with a mix of in-person and online classes. Class sizes are limited as per social distancing requirements, resulting in various approaches in the delivery of education to students.

While teaching is both online and in-person, the trend is for assessments to be in-person only because of the challenges in proctoring tests and examinations. Challenges include various practices by students to cheat when taking online assessments.

4.1.5 Outcomes of the COVID-19 pandemic on inclusion

In South Africa, it is widely predicted that the inclusion of online instruction will form part of all future educational paradigms. A wider variety of channels for teaching,

[9] https://www.usaf.ac.za/understanding-the-experience-of-academic-leaders-and-staff-the-sep-tlf-survey/

learning and assessment, especially in the form of online and distance teaching and learning methods, will be used by universities. The prediction is generally along the lines that virtual or digital teaching methods will not replace traditional methods, but that hybrid methods will assume a supplementary or supporting function. As a result, universities will need to devote more time, effort and resources to academic development activities, including development activities focused on senior faculty, administrative staff and students to master new technology and digital skills in their teaching, research, administrative and learning activities.

Most commentators are quick to draw a distinction between *emergency* online teaching and learning precipitated by the sudden onset of the pandemic, and ongoing research, experimentation and implementation of digital teaching and learning predating the pandemic. In this section, the focus is on the former rather than the latter, even if it is not always made explicit that the form of delivery is of an emergency nature.

An analysis of forecasts of the impact of COVID-19 on the university, the impact of digital technologies and of the institutionalisation of hybrid delivery modes of teaching, learning and assessment on the post-pandemic university was the most divisive of all the predictions (Van Schalkwyk 2021). Most predicted a positive impact in the form of innovative modes of learning, improved spaces for learning and a broadening of (remote) access to higher education. In almost equal numbers are those who view new technologies as making little difference to the student experience and those who predict that the hype-driven uptake of new technologies masks the exclusion of those students who lack reliable Internet access.

Perhaps somewhat unexpected are reports that students perform better in online-only learning environments (Ngqakamba 2020; Phakeng et al. 2020). This has led to calls to be more attuned to how university students' capabilities are assessed (Phakeng et al. 2020).

What is not necessarily disclosed by universities, and provides a crucial context in which to interpret improved performance, are the adjustments and concessions introduced to assessment processes during the pandemic.

What remains unclear at this stage is whether lecturers at South African contact universities perceive the same level of benefits from online instruction and assessment, especially in the case of certain disciplines and learning contexts (for example, postgraduate supervision). The general consensus in South Africa appears to be that teaching, learning, and assessment will not return to business as usual post-COVID-19. Instead, more blended or hybrid models of teaching and learning will prevail with a mix of both face-to-face and online modes of delivery and assessment (Walwyn 2020; Wangenge-Ouma and Kupe 2020).

4.1.5.1 Widening inequalities

In the South African context, when asked about how South African universities are responding to COVID-19 compared with other universities across the globe, former vice-chancellor of the University of Witwatersrand, Adam Habib, responded by saying, that "South African universities have similar problems to other institutions across the

world. The big distinction with South Africa is that we are undertaking these activities in the midst of deep inequalities" (Phakeng et al. 2020, n.p.).

Alert to the fact that the pivot to online teaching, learning and assessment does not democratise the delivery of education, several surveys and studies have been undertaken to explore the issue of widening inequalities under conditions of emergency teaching and learning at South Africa's higher education institutions.

Early in the pandemic, Czerniewicz et al. (2020) provided a granular account of the challenges and benefits of online teaching and learning as it relates to inequalities in South African higher education. Drawing on input from 15 university educational specialists, they foreground different types of inequalities – vital, resource and existential – showing how each manifest during the rapid and sometimes chaotic switch to emergency online teaching and learning. They also point to the need for 'networks of care' to respond with a greater sense of collegiality, or even humanity, to counter the new educational challenges that surfaced at South African universities during the pandemic, and also to counter a prevalent institutional culture of managerialism, corporatism and marketisation. Amidst reports of rising mental health problems experienced by students as a result of the pandemic (Andrew 2020), at least six South African universities, with support from American philanthropy, formally recognised the need to offer academic and psychosocial support to students during the COVID-19 pandemic (Govender 2020).

A focus on care resonates with the position put forward by Boughey and McKenna (2021). They call for a distinctly social account of teaching and learning by contesting dominant approaches that regard students as 'decontextualised learners'. They argue that this approach has become more relevant in South African higher education following the outbreak of the pandemic. Recognising students as they are and not as 'ideal learners' in a globalised system is an important step towards what Boughey and McKenna (2021) identify as a 'developmental university' more suited to the South African context. The potential to draw on what has been acknowledged and learned during the pandemic in terms of rethinking the kind of institutions needed in South Africa would, however, need to be furthered by concerted efforts, including in policy work and its implementation.

4.1.6 Conclusion

Two observations emerge from the South African experience. The first is the realisation that, as predicted by scholars (Gurstein 2011; Van Dijk and Hacker 2011; Van Schalkwyk and Canares 2020; Warschauer 2004), neither technology nor open resources necessarily lead to the anticipated democratisation effects. Instead, in highly unequal societies (and university systems), an increase in the uptake of technology and open resources is more likely to exacerbate existing inequalities. The second observation is that the pandemic has made the invisible visible, that is, according to Czerniewicz et al. (2020, 949), the "crisis has made it impossible not to recognise the historical, geospatial, economic inequalities of the country and the world students live in."

Regardless of the availability of data and devices, the quality of what has been offered as 'online provision' during the pandemic is open to question. Boughey (2021)

describes one response which involved a university paying a firm of consultants to scan and upload its ‘study guides’, previously only available in hard copy from the university bookshop, onto its learning management system. This caused the learning management system to crash. There are also reports of the extensive use of the voice-note function in WhatsApp as an alternative to lectures. In many cases, according to Boughey (2021) the move online has not involved carefully designed and developed approaches to online learning but rather an impoverished form of educational delivery offered under the auspices of ‘emergency remote teaching’. Students sent home to contexts not supportive of academic learning require ‘better’ teaching than what they had been offered on campus. In many cases, what they were offered would appear to have been much worse.

4.2 The Philippines

4.2.1 Overview of ICTs in the Philippines

Almost 30 years since the Internet was first introduced in the Philippines, problems of poor connectivity, unequal access and high entry costs still plague the country.

As of January 2022, there were approximately 76 million users of the Internet, representing three quarters of the total population (Kemp 2022). The majority access the Internet via mobile phones and spend at least 10 hours a day watching television or accessing social media sites (DataReportal 2022). But in household terms, high-quality Internet connectivity is significantly low, with only 48% of the population using the Internet and 24% of households having access to a computer (ITU 2021).

Internet speed in the Philippines remains dismal – at 46.44 Mbps on fixed Internet and 18.68 Mbps on mobile (Statista 2021), the second slowest Internet speeds in the ASEAN and 110th out of 139 countries ranked (Porcalla 2020). Despite this, the country suffers from high Internet costs. It ranked 104th out of 139 countries ranked in terms of mobile affordability and 72nd in terms of overall Internet affordability (Surfshark 2021).

The government, for its part, has aggressively been pursuing policy and programmatic interventions to address these problems and ensure meaningful Internet access for every Filipino (A4AI 2019). In 2015, the Congress of the Philippines enacted Republic Act 10844, creating the Department of Information and Communications Technology (DICT) with its three attached agencies – the National Privacy Commission, the National Telecommunications Commission, and the Cybercrime Investigation and Communications Center.

In 2019, three years after DICT was established, the department launched the E-Government Masterplan 2022 intended to optimize government operations, engage citizens, transform services and empower government employees. The intention is for the government to lead the country’s digital transformation. At the same time, the government drafted the Philippine Digital Transformation Strategy 2022 directed toward economic transformation, people engagement and innovation, built on the foundation of infrastructure development, human capital development, and universal access (Treceñe 2021).

Between 2012 to 2018, the share of the digital economy in the Gross Domestic Product (GDP) grew from 7% to 10% (World Bank 2020). As of 2020, the digital economy was estimated to be worth USD 7.5 billion (Alphabeta 2021), primarily dependent on its outsourcing industry (UNCTAD 2021). But the digital economy's potential is hampered by limited digital infrastructure, low adoption of digital payments, high cost of logistics, a less competitive environment and restrictive laws favoring incumbents (World Bank 2020). Nevertheless, digital education in the Philippines has significantly improved over the last few years, with its young people proving to be digitally competent (SEAMEO 2021) and the overall population registering high functional literacy rates (PSA 2020).

4.2.2 Higher education in the Philippines

There are three agencies managing different levels of education in the Philippines. The Department of Education (DepEd) implements school education, while the Technical Education and Skills Development Authority (TESDA) regulates technical and vocational education and training. The Commission on Higher Education (CHED) oversees higher education institutions of learning, particularly colleges and universities.

CHED's main mandates are to (a) promote relevant and quality higher education at par with international standards, (b) ensure accessibility of higher education to all, particularly those who are not able to afford it, (c) guarantee and protect academic freedom, and (d) commit to transparency and accountability in the education subsector. CHED's role in promoting ICT education is setting up minimum standards that involve ICT education across university and college course offerings (Tullao 2003).

Tertiary education in the Philippines is provided significantly by private institutions. As of most recent statistics (2020), a total of 1,729 higher education institutions (HEIs), or 88% of the total number of HEIs in the country are private, though these only enroll an estimated 54% of the total 4.1 million college students (CHED 2022). It is important to mention that CHED governs HEIs, whether public or private, but the former, also referred to as state universities and colleges (SUCs), are created by way of state legislation, fully state-funded, and to a certain extent deregulated from the CHED, as most of them are still required to obtain a certificate of compliance from the commission. Of the total number of higher educational institutions, only 36% have accredited programmes.

As of school year 2019-2020 (the most recent data available), there are 3,408,425 students enrolled in higher educational institutions, with business administration and allied courses, education and teacher training, and engineering and technology as the top three courses, constituting 58% of the total student population (CHED 2020).

Among faculty members in HEIs, only 54% have advanced qualifications. Thirty-nine percent (39%) have master's degrees, while 15% have PhDs (ibid.). The status of private and public universities is almost the same in this regard, owing to CHED's policy requiring that HEIs have 100% of its full-time teaching force to have master's

degrees. For part-time faculty, CHED only requires that at least 50% are master's degree holders.

4.2.3 ICTs in higher education

In a review of initiatives as regards the integration of ICT in education in the country, researchers have noted that while there are several programs and projects intended to strengthen digital literacy across the different levels of education, the lack of a unified framework resulted in a fragmented and less strategic approach to teaching and learning systems for digital education (de Dios 2016). This problem is compounded by weaknesses in ICT infrastructure (Garcia 2017) and the lack of access to useful devices (Reyes et al. 2021) to serve the needs of students and teachers alike (Lucero et al. 2020).

There are significant increases in public investments in SUCs in the country. Allocation to SUCs increased from "US$484.47 million in 2010 to approximately US$1 billion in 2016, although spending per capita remains relatively low" (Lim et al. 2018, 20). Given this, however, it was reported that only 102 of 111 SUCs have an Internet connection to enable flexible learning, and this only covers main campuses and excludes those satellite campuses located in remote areas (Mercado 2020). In an explanatory note to House Bill 6706, a proposed bill providing recovery packages to SUCs and technical and vocational schools, it was reported that only 20% of SUCs are ready for online learning, with the majority having limited ICT infrastructure (Go 2020). This is confirmed by a survey, albeit smaller in scope, among 8 SUCs where students opined that ICT infrastructure is inadequate (Mistio 2016).

Private higher education institutions (PHEI) that charge fees do not necessarily fare better than SUCs in terms of investments and quality. In a study, the Asian Development Bank classifies at least 70% of PHEIs as 'demand-absorbing institutions', that is, institutions that offer low-cost education but of questionable quality, (ADB 2012). PHEI statistics in 2021 confirm this condition, as only 29% of the total number of PHEIs have government-accredited programmes, and only 39% have faculty members with graduate degrees (CHED 2022).

PHEIs are left on their own to implement ICT innovations to aid the learning process. Given differences in endowments and resources, some are able to excel and compete with other schools in the ASEAN region (Joaquin et al. 2020), while others are lagging behind (Mercado et al. 2012). In one of the very few extensive reviews of ICT infrastructure investment in the country, covering at least more than 5% of PHEIs across the country's three major island groups, it was reported that IT infrastructure deployment is limited by annual budgetary allocation, Internet bandwidth, and human, technical, and conceptual skills of its human resources (Marcial 2012).

4.2.4 The COVID-19 pandemic

4.2.4.1 Restrictions on movement

The first case of COVID-19 in the Philippines was confirmed on 30 January 2020, by a 38-year-old Chinese woman who traveled from Wuhan, China, to the Philippines as a tourist. Two days later, her companion, also COVID-19 positive, died from the

disease, making the Philippines the first country outside of China to record mortality from the disease.

The Philippine government's response was erratic and seemingly misguided in the beginning. Despite the global alarm, the Duterte administration first downplayed the impact of the virus, with President Rodrigo Duterte himself saying, in a televised press briefing, that the virus will go away even without a vaccine (RTVM 2020). However, he did convene the first Inter-Agency Task Force for the Management of Emerging Infectious Disease (IATF) on 28 January 2020.
When there was a steep increase in cases (nearing 52 on March 12), the national government expressed alarm for the first time, placing the whole of Metro Manila under general community quarantine. Land travel, as well as domestic air and sea travel to and from Metro Manila, were suspended. At the same time, mass gatherings were prohibited.

Lockdowns were implemented in several areas in the country, starting off with the whole of Luzon. The lockdowns were referred to as “community quarantines” with different degrees of severity, from general community quarantine (GCQ) to enhanced community quarantine (ECQ), the latter restricting the movement of the population except for necessity, work, and health reasons.

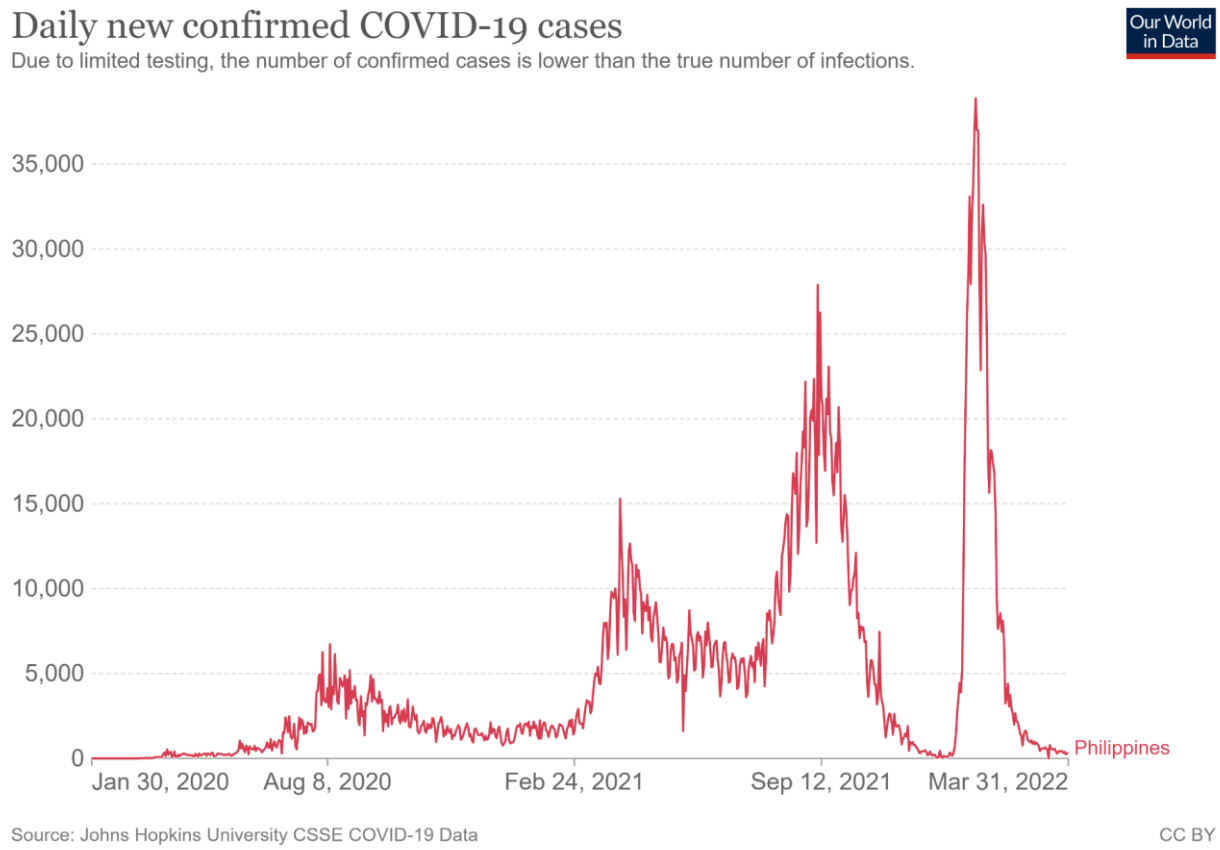

Figure 2. Confirmed COVID Cases – the Philippines, 2020-2022 (Source: Johns Hopkins University)

4.2.4.2 Suspension of classes (March 2020 – July 2020)

Following the announcement of President Rodrigo Roa Duterte on the suspension of classes in all levels in Metro Manila until 14 March 2020, on-the-job training (OJT), internships, and/or practicum in the National Capital Region (NCR) are also suspended. HEIs are advised to coordinate with their partner Host Training Establishment (HTE) for any adjustment of training hours and/or to consider alternative modalities for the OJT, internships, and practicum of affected students.

Along with this, several measures were instituted, including the possible postponement of graduation ceremonies, as most schools in the Philippines end in March and the facilitation of alternative activities to enable students to complete required practicum/OJT hours. Across the country, education at all levels was suspended until further notice, with local government units given the discretion to suspend classes within its respective jurisdiction provided that measures and arrangements are in place to allow the students to continue fulfilling their requirements. As cases continue to increase, with momentary declines in particular periods only, classes remained suspended for the rest of the country.

4.2.4.3 Adoption of alternative learning strategies (August 2020 – December 2021)

With the cancellation of classes, CHED mandated that students who were unable to return to school as a result of a travel ban should be provided with appropriate alternate arrangements. CHED asks HEIs to transition to flexible learning and other alternative modes of delivery in lieu of on-campus learning. At the same time, CHED authorizes HEIs to determine how to best meet the contact hour requirements for the completion of a subject or degree programme. At the same time, HEIs are allowed to undertake alternative assessments and remediations and consider student assessment and computation of grades to be based on current student records and school academic policies.

CHED has also allowed the use of appropriate alternative learning platforms (for example, electronic and non-electronic learning methods, modules, self-directed learning activities, simulations, case-based scenarios, among others) in exchange for the required contact hours to achieve the course outcomes/programme outcomes including evaluation and assessment based on the HEI's assessment of its instructional capabilities. At the same time, HEIs are given the flexibility to modify or reduce programme requirements in order to meet the requirements for graduation/promotion during this interim period. Finally, CHED has encouraged the adoption of a flexible learning strategy by ensuring appropriate (1) facility delivery system, (2) faculty complement, and (3) student support.

4.2.4.3 Resumption of face-to-face classes (December 2021 to present)

On 15 December 2021, CHED issued a new regulation allowing HEIs to conduct face-to-face classes only among fully-vaccinated students and allowing instruction only from fully-vaccinated faculty members. The directive only applies to areas classified as Alert Level 1 to 2 or those areas where COVID-19 transmission is low and decreasing. On 13 March, it was reported that 313 colleges and universities have started conducting face-to-face classes for close to a thousand degree programmes (Cruz 2022).

4.2.5 Outcomes of the COVID-19 pandemic on inclusion

4.2.5.1 Capacity shocks

While lockdowns and the subsequent closures of schools provided favourable opportunities for both students and teachers to stay at home and rest momentarily, the corresponding shift to flexible learning delivery created competency shocks on the part of teachers.

In a qualitative study involving a relatively small sample of teachers in one state university, it was found that while the majority of teachers had intermediate computer competency, most had no training in online teaching (Moralista and Oducado 2020). This is primarily brought about by the fact that despite the drive towards blended learning in the past 20 years, blended learning or hybrid learning is still considered new to the country (Alvarez 2020) because of the lack of uptake on the part of educational institutions due to institutional and infrastructure barriers (Cabauatan et al. 2021).

This lack of readiness and the inability to organise capacity-building programmes to train teachers in using digital education technology for teaching and learning has prevented schools, especially those schools that are poorly resourced, from offering distance education (Alea et al. 2020). Online classes were virtually nonexistent before the pandemic, except for the very few universities that offered distance learning for specific courses, usually in graduate school (Oscena 2020). The drastic change posed a great challenge in shifting to a flexible learning system. HEI instructors complained about the time required to prepare materials, check online submissions and communicate with the students. All these processes required additional time on top of the regular class hours (Cabauatan et al. 2021).

4.2.5.2 Pedagogical problems

The dominant mode of face-to-face delivery causes pedagogical problems in the design of learning activities and assessment outcomes. In a review of medical education HEIs in the country, medical students cited ineffective teaching strategies, low quality of teaching materials, and excessive class requirements (Baticulon et al. 2021). In another study, poor instructional design, as evidenced by vague learning contents and overloaded lesson activities resulted in poor learning outcomes (Rotas and Cahapay 2020).

It became evident that pedagogical problems abound, especially in classes requiring high degrees of teacher-student interactions, such as scientific experimentation, physical education, culture and the arts, and assessments requiring task performance. Assessments and instructional formats need to be effectively designed, and teacher competencies in pedagogy and technology must be improved (Lee et al. 2020).

4.2.5.3 Learner preparedness

The transition to flexible learning imposes strains on learner preparedness. Technological (hardware, software, and Internet connectivity); individual (students' learning styles, physical and mental health); and domestic (home and family concerns, including financial distress) constitute learner preparedness barriers impacting the

ability of students to participate meaningfully in flexible learning modality (Baticulon et al. 2021). Access to computers and other devices is limited (Avila et al. 2021), and a stable Internet connection in some areas is a luxury (Mirandilla-Santos 2020).

One university study also reported that the learning experience is hampered by the difficulty for learners to clarify topics or have discussions with the professors and the lack of study or working area for online activities (Fabito et al. 2020). These, including the factors mentioned above, resulted in the low participation of students during online classes (Aguinaldo 2021).

Learner preparedness is also affected by the financial limitations experienced by families. With parents losing their jobs during the economic slowdown, the ability of families to cater to unplanned but material expenses such as the purchase of mobile phones or laptops for online learning became very constrained (Mirandilla-Santos 2020). Regular expenses for data subscriptions also became very challenging (Tuga et al. 2021).

4.2.5.4 Student's mental health

In a nationwide cross-sectional study involving 3,670 medical students, only 41% considered themselves physically and mentally capable of engaging in online learning, citing difficulty in adjusting learning styles to new modes of delivery as one of the primary reasons (Baticulon et al. 2021). Another national cross-sectional study of undergraduate students reported high levels of disease and consequence-related COVID-19 anxiety. Disease-related anxiety refers to students' fears of contracting COVID-19, while consequence-related anxiety refers to students' fears of not being able to attend class because of several reasons, including access and connectivity (Cleofas and Rocha 2021).

Another study among 2,700 student respondents reported that 32% suffered mild to severe psychological impact during COVID-19, with 29% reporting mild to severe depression (Tee et al. 2020). The level of psychological impact is negatively impacted by access to information and by faith in healthcare providers' ability to combat the pandemic's impact. Finally, it was also reported that deaths due to intentional self-harm increased to 25.7% (Corpuz 2021) and that youth suicide rates and deaths were at an alarming rate in 2020 (Atlantic Fellows 2021).

4.2.5.5 New forms of inequality emerging

The pandemic has had a differentiated impact across several sectors of the population. This is also true in the case of the teaching and learning environment. Several studies have indicated that the pandemic impacts the poor and marginalized more. In the national cross-sectional study involving medical students mentioned above, it was found that students from lower-income brackets felt less capable of engaging with flexible learning modalities, highlighting anxieties related to financial costs due to poor economic conditions of households (Baticulon et al. 2021).

In the study related to anxiety also mentioned above, it was found that students from poorer households, without laptops or desktop computers, and expectedly, limited Internet connection, exhibited disease-related COVID-19 anxiety (Cleofas and Rocha

2021). This confirms qualitative studies indicating that students have to fund-raise on their own to get access to devices that they can share with their siblings, indicating poorer households' inability to access devices and Internet connections (Mirandilla-Santos 2020). Among students, younger, poorer female students and those who have limited or borrowed Internet connections exhibit higher levels of consequence-related anxiety (Cleofas and Rocha 2021).

In another study among 880 students, it was reported that low readiness scores in e-learning are prevalent among low-income, female and younger respondents (22 years and younger) living in rural areas (Alipio 2020). Readiness, in this case, was measured using self-rated responses on different variables such as access to devices and the Internet, computer skills, ability to express themselves and communicate with teachers and peers using online tools, and availability of administrative and technical support. Challenges to flexible learning are skewed especially toward students living in rural areas where there is a felt shortage of e-learning devices, various distractions in the learning environment, poor Internet connection, and loss of motivation (Gocotano et al. 2021), causing an increase in education gap in poor and rural areas (Mirandilla-Santos 2021).

Private universities that are better-resourced have the option to devise systems and procedures to make flexible learning more adaptive to student needs. For example, prime schools located in Manila, such as the Ateneo de Manila University, De La Salle University, and the University of Santo Tomas, were able to efficiently pivot to flexible learning modes of delivery using technology and various platforms (Joaquin et al. 2020). But other universities were not able to do so. In one case study of a public university, the learning administrators allowed teachers to use Facebook as the primary tool for educational delivery and Facebook Messenger as a teacher-student conversation medium (Toquero 2021).

According to the Coordinating Council on Private Educational Institutions, several private education providers are on the verge of closing down, unable to attract students and being resource-constrained were unable to transition to flexible learning (Malipot 2020). As a matter of fact, at least 10 Catholic universities have temporarily or permanently announced the closure of operations due to COVID-19 in 2020 (Jazul 2020).

Education response during the pandemic was also biased against learners with Special Education Needs and Disabilities (SEND). Toquero (2021) has highlighted how teachers are experiencing difficulties in adapting their lessons to respond to the educational learning needs of learners with SEND.

Students with disabilities also experienced social exclusion in the design of learning activities, difficulty in communicating with peers, challenges in adapting to new modes of delivery, and limitations in the use of assistive technologies (Dianito et al. 2021). It has become quite apparent that school systems and processes have not been adapted well to suit the context of students with SEND.

4.2.6 Conclusion

The case of the Philippines suggests that the capacity of institutions and individuals to adapt to, cope, and mitigate the impact of COVID-19 on teaching and learning is significantly differentiated; where well-resourced, well-connected, and strategically-located actors were more ready to transition to new modes of education delivery. This is not a surprising finding. Several studies have pointed, albeit in the context of a country's management of COVID-19, that there are differences in processes and outcomes across countries not only due to resources, but also due to other factors such as political leadership, social security provisions, degrees of autonomy and centralization, and underlying capacity (Baum et al., 2021).

However, the educational policies in the country have not considered these differences in capacity, thus the natural consequence of leaving actors on their own to respond and cope. In terms of connectivity, for example, while there were efforts by the public sector to expand connectivity to rural areas, this was not enough to fully enable students, especially in poor urban areas and far-flung communities, to take advantage of online learning modalities. The same can be said of educational institutions that are ill-resourced and even of teachers who were unprepared for digitally-enabled learning activities.

While it has been said that HEIs in the country will have to adapt teaching and learning to the challenges brought about by COVID-19 moving forward, and going back to old systems and previous methods is no longer an option, the challenge lies in how educational policy will address pre-existing and emerging inequalities so that schools, teachers, and students will be able to take advantage of the promise of using ICT in making education more accessible and inclusive.

4.3 Australia

4.3.1 Overview of ICTs in Australia

Australia is one of the forerunners in digital transformation amongst OECD countries, leading in the areas of digital education and skills development. As a matter of fact, the country's proportion of people with digital skills is among the highest globally, and this is evenly distributed across the population (OECD 2019).

Approximately 91% of the population uses the Internet regularly, with mobile phone ownership at more than 100% (Statista 2022). People access the Internet more on mobile phones than with fixed broadband connections, using the Internet for more than 6 hours daily to find information, stay in touch with friends and family, research, and follow news and current events (DataReportal 2022).

Australia's Internet speed is the highest in the Asia Pacific region, at 60 Mbps for fixed broadband and mobile connections (Ofa and Aparicion, 2021). At the same time, Internet affordability is significantly better, costing just 1.4% of median per capita income (AlphaBeta 2019). The country is 7th among 22 countries analyzed in terms

of affordability - with costs at all speed tiers better than the US, Poland, Italy, Spain, Canada, China, and Poland (AlphaBeta 2019)

4.3.2 Higher education in Australia

Higher education in Australia is provided mainly by 43 universities consisting of 37 public universities and five private universities, one of which is classified as international. There are also four university colleges and 142 institutes of higher education offering specialized courses in the country's higher education system. The majority of higher education institutions are not self-accrediting, meaning they cannot accredit their own courses as they develop them and require the Tertiary Education Quality and Standards Agency (TESQA) to accredit their programmes. All universities and university colleges pass TESQA's self-accreditation registration requirements (TESQA 2022).

As of most recent statistics (TESQA 2019), Australian higher education institutions record over 1.5 million total enrolments, with 92% of the total number of enrolled students studying in universities. The top five undergraduate degrees that students take are management and commerce (17%), society and culture (13%), health and medicine (12%), natural and physical sciences (6%), and education (5%). Very few students enroll in agriculture and environmental courses and food and hospitality services (less than 1%).

Around 50% of students in Australian higher education can be classified as belonging to at least one of the major student equity groups: students from low socioeconomic background; students with disability; Aboriginal and Torres Strait Islander students; non-English speaking students; students from regional and remote areas; and women studying in non-traditional areas (O'Shea et al. 2021). These equity groups were identified based on their under-representation in higher education and the perception that their particular challenges could be addressed by government and higher education institutions (Martin 2016).

The number of academic staff working in Australian higher education exceeds 63,000 full-time equivalent staff, with 64% employed full-time. Most academic staff in universities are engaged in teaching and research, with a significant percentage (at least 20%) engaged mainly in research and a majority (68%) at lecturer levels. In the case of other higher education providers, a majority (between 50 to 60%) are junior-level academic staff.

Australia has a highly internationalised higher education system – 31% of enrolled students in higher education come from outside of Australia, mainly coming from India, China and Nepal. Given the high proportion of international students combined with the country's socio-economic development, one can expect students to be from relatively wealthy families. Nevertheless, there is a pressure on the country's higher education institutions to reach out to underprivileged students (TEQSA 2021; Firth and Nyland 2020). In response, institutions have established multiple campuses in lower socio-economic regions. However, according to a recent study (Devlin et al. 2022), socio-economically disadvantaged students are far more expensive to teach than their privileged peers. The study found that underprivileged students cost six times more

than their more well-to-do counterparts. While the average costs could be reduced by enrolling a large number of disadvantaged students, up to 2,600 underprivileged undergraduates were required to generate economies of scale. Rather than dissuading higher education institutions from enrolling students from underprivileged families, the study recommends moving away from the current approach where every student is subsidised equally and providing more funding to disadvantaged students or rewarding universities with more funding if they embrace equity "missions".

4.3.3 ICTs in higher education

Investments in infrastructure and ICT education underpin Australia's progress in digital transformation. The National Broadband Network (NBN), established in 2009, was mandated to
"design, build and operate Australia's wholesale broadband access network … to ensure all Australians have access to fast broadband as soon as possible, at affordable prices, and at least cost" (NBN n.d.). While politically contentious because of its very high costs and seeming anti-competitive nature, NBN made connectivity, especially to areas previously without Internet services, possible and relatively affordable, even for people with disabilities (Goggin et al. 2017).

ICT education is embedded in the Australian educational curriculum since grade school. The Australian National Strategy in Schools which was published in 2008 contained targets on increased use of computers by learners at home and in school and increased investments in ICT-enabled educational service delivery. Five years after the publication of the strategy, Australia recorded significant achievements in the International Computer and Information Literacy Study for Australian students, with 23 percent achieving Level 1 in computer and information literacy and 4% achieving level 4, the highest competency level (De Bortoli 2014).

The country's growth of education technology companies over the last ten years is evidenced by the increased use of ICT in education. The Australian Trade and Investment Commission reports that almost 350 educational technology companies were providing technological solutions in 2013, primarily to secondary schools (50%) and universities (40%), in a context where international education is the country's third biggest export (Austrade 2016). This has increased to 600 companies in 2019, with 75% of companies reporting customers outside of the country, servicing secondary and tertiary education schools (Deloitte 2020).

The country benefited largely from collective investments in digital infrastructure and education. The Australian Bureau of Statistics reports that the digital economy accounts for at least 5.9% (AUD 109 billion) in 2019-2020 (ABS 2021), and the sector employs 805,525 workers as of 2020 (Deloitte 2021). But the country underutilizes its digital potential. According to a study, Australia's investment in digital transformation and corresponding innovation has stalled, causing missed opportunities, including an additional AUD 50 billion in GDP per annum (Alphabeta 2019).

The Australian Digital Inclusion Index (Thomas et al. 2019) measures digital inclusion in three discrete ways: access, affordability, and digital ability. The Index indicates gradual growth across the three dimensions in Australia. Australians with low income,

education, and employment levels are significantly less digitally included. Digital inclusion remains consistently low in households of lower-income (Thomas et al. 2019).

Australia needs to reposition its digital strategy by continuing to promote higher education in IT, deepen digital skills for other occupations, and encourage more women to enter and stay in the technology sector (Deloitte 2021).

4.3.4 The COVID-19 pandemic in Australia

In early 2020, Australia was reeling from the effects of several natural disasters – bushfires, flooding and drought. COVID-19 did not make the Australian headlines until 25 January 2020, when the World Health Organisation (WHO) reported 1320 confirmed cases of COVID-19 globally, 4 of which were in Australia.

Following the recommendations of the Australian Health Protection Principal Committee (AHPPC), intervention measures were implemented nationwide to control the transmission of COVID-19. These included some of the strictest travel restrictions globally imposed on Australians and foreigners (Prime Minister of Australia Border Restrictions 2020). Australian states and territories each implemented their own COVID-19 rules. The restrictions on international travel were to last until 21 February 2022 when the country's borders were reopened to fully vaccinated travelers.

Several measures were taken to limit the number of people in non-essential outdoor and indoor gatherings, as well as restrictions on access to facilities for the elderly. Further restrictions were placed on gatherings, including the closure of some social gathering venues. All non-urgent elective surgeries were postponed. People were encouraged to stay home with the exception of shopping for essentials, health or traveling to work or education.

By late March 2020, Australia's exponential growth rate followed that of the United Kingdom's, but due to the government's early lockdown and implementation of non-pharmaceutical measures, Australia managed to slow the growth rate and "flatten the curve" (Cook et al. 2020). The relatively low rates of community transmission within Australia during the initial months of the pandemic prevented the country's healthcare system from becoming overwhelmed (Australian Government Department of Health Coronavirus 2020).

In fact, Australia's COVID-19 response was seen as highly effective by US epidemiologist and state adviser Dr. Anothony Fauci, who praised the country for being a world leader in "containment and management of emerging variants". Aside from a few brief lockdowns in certain states, most Australians have been enjoying a relatively normal life while the rest of the world faced restrictions on movement and social gatherings.

Even after experiencing a second surge of cases in 2020, cases never rose above 1,000 for a population of 25.36 million. This was achieved without vaccinations as Australia only began its vaccination programme on 21 February 2021.

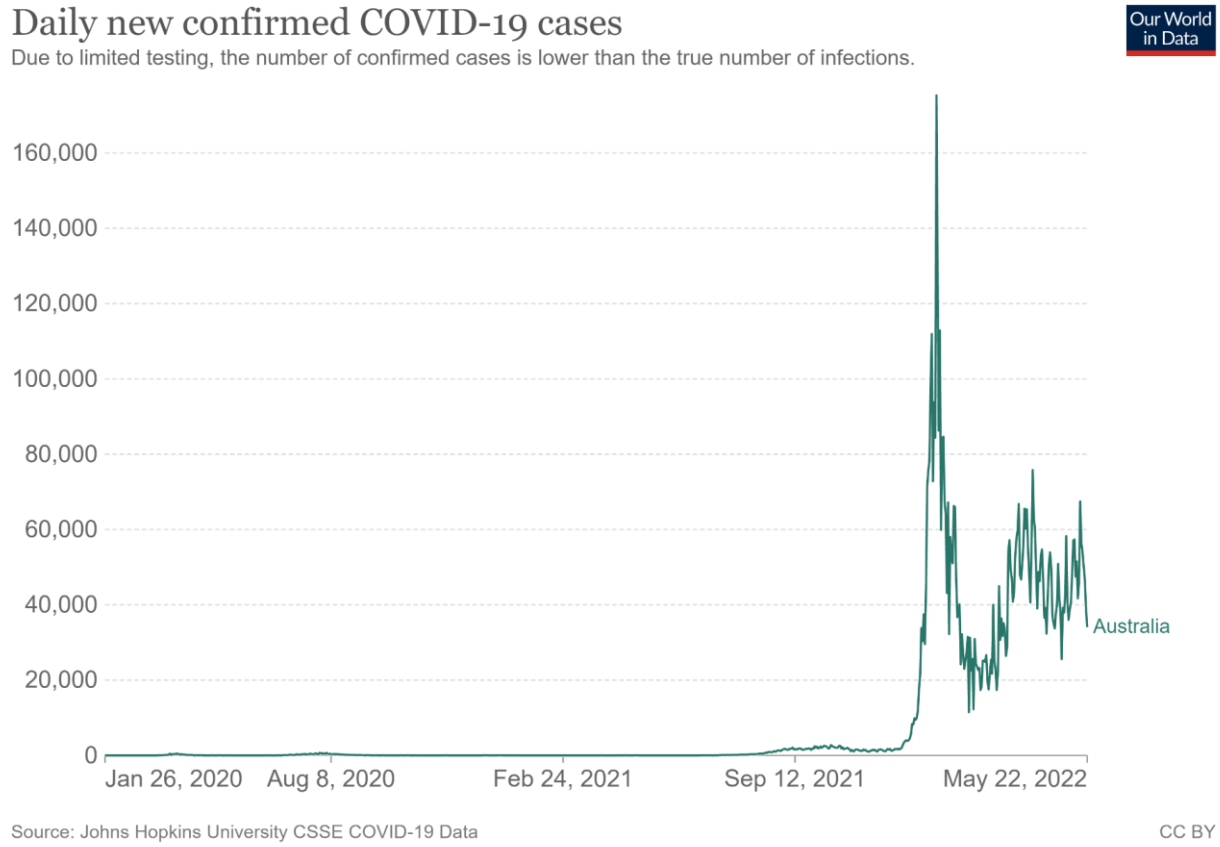

Figure 3. Confirmed COVID-19 Cases - Australia, 2020-2022 (Source: Johns Hopkins University)

During the COVID-19 pandemic, Australian schools, universities, public transport and airports remained open as restrictions were placed on other forms of social gatherings early on in the pandemic (Worthington 2020). Universities did, however, move teaching operations off-campus to cope with the COVID-19 pandemic with many lectures and tutorials offered online.

4.3.5 Outcomes of the COVID-19 pandemic on inclusion

The biggest impact on the higher education sector was the result of the international travel ban and the resultant decline in student fee income from international students (Carnegie et al. 2022). The foreign student market is Australia's third biggest export industry (Jackson 2018) and the country's largest service-sector export (Hurley and Van Dyke 2020). The impact is compounded by the fact that it is not likely to be as short-term as the impact on other industries such as tourism because a loss in international first-year enrolments over two years means a smaller cohort of international students for at least four to five years – the time taken to complete a university degree. There is also little room to grow the local market in terms of student numbers (TEQSA 2021).

Universities responded to the decline in international student enrolments and revenue by shifting to blended and online delivery of programmes to retain international students. This shift has effectively resulted in other structural impacts, including diversifying international student delivery away from the dominance of inbound (and

substantially on-campus and face-to-face learning) to hybrid models that will increasingly incorporate the delivery of Australian higher education awards online, offshore and through third-party arrangements. In part, this shift has been driven by the desire to support and retain students unable to enter Australia but has also been viewed as an opportunity to reach additional cohorts of students (TEQSA 2021).

The higher education sector in Australia has witnessed large-scale cutbacks in staff numbers in order to bring overhead costs in line with lower revenue (Universities Australia 2021). Contract staff were particularly vulnerable to cut-backs (Harris et al. 2020) although permanent staff were also retrenched (Larkins and Walker 2020; Marshman and Walker 2021). In some cases, the reduction in staff numbers was concomitant with the restructuring (closure or merging) of academic departments and faculties.

In terms of the impact of the pandemic on social exclusion, two issues stand out from a review of the literature. The first is the perilous position of international students stranded in Australia due to the international travel ban. Despite some measures taken by the Australian government to support these students, the government's response was seen as largely unsympathetic, vividly expressed by the "go home" response of the country's Prime Minister: if international students "are not in a position to support themselves, then there is the alternative for them to return to their home countries" (Leask and Ziguras 2020, 37). This "go home" response was broadly condemned in the education sector. The international education community was equally appalled by the country's response which was seen as a complete disregard for the welfare of international students during a particularly trying period for the global community (Leask and Ziguras 2020).

An online cross-sectional survey of 787 university students at Australian universities found few differences between international and local students across a range of variables (Dodd et al. 2021). The study did find that wellbeing was significantly higher in postgraduate students compared with undergraduate students and that future anxiety was significantly greater among undergraduate than postgraduate students. Female gender and low subjective social status were found to be associated with lower well-being in the first few months of the pandemic.

The second exclusionary impact to receive attention is that of widening and exacerbated student equity (Drane et al. 2020; O'Shea et al. 2021). It should, however, be noted that the issue of equity does not feature strongly in coverage of the impact of the pandemic on Australian higher education. And while the issue of the digital divide is acknowledged as a potential exclusionary effect, no empirical studies provide evidence to support claims that issues of ICT infrastructure, access or skills account for exclusion from or unequal access to higher education in Australia.

4.3.6 Conclusion

It was found that much of the reporting and literature on the impact of the COVID-19 pandemic on the Australian higher education sector focuses on the effects of the decline in international student numbers and a resultant reduction in the student fee revenue. The main concern from this shock to the system is how Australian

universities will reinvent themselves in response to a decline in international students, including the pivot to online and hybrid modes of teaching to maintain (or possibly increase) delivery to remotely-located international students. This has raised some concerns about the role of third-party technology providers and the quality of education delivered. However, the effects on the higher education system in terms of the exclusion of segments of the student population have received only cursory attention in the media and the academic literature.

5 Discussion

From the case studies presented above, it is apparent that there are both differences and similarities across the cases. This section discusses the divergences and commonalities and what they reveal about the relationship between higher education, COVID-19, ICTs and social inclusion.

In both the Philippines and South Africa, there exist highly stratified higher education systems in which some universities are more well-endowed relative to other universities in the same system. This is not to suggest that Australia is an equal society but rather that, relative to the higher education systems and societies of the other two countries, it is far more equal.

The position of relative strength of some universities in South Africa and in the Philippines allows stronger universities during times of crisis (such as COVID-19) to further solidify their positions relative to other universities in the same system. In other words, more well-endowed universities are better able to withstand external shocks while other universities struggle to adapt to a rapidly changing educational environment. This stratification mirrors the high levels of social stratification along income lines (that is, economic inequality) in South Africa and the Philippines.

In terms of ICTs, it is clear that technology is not 'neutral' in terms of its effects on society. Those more well-endowed (universities) and more capable (individuals) are better able to leverage technology to respond to and manage the outcomes of severe external systemic shocks such as those that have been evident during the COVID-19 pandemic. The longer-term risk is that organizational (university) level stratification will become more entrenched and pronounced in unequal higher education systems and societies as 'stronger' universities (that is, those with the best reputations which are reinforced by their ability to respond successfully to external shocks) will accumulate more at the expense of those at the other end of the spectrum (the so-called 'Matthew Effect'[10]).

In terms of differences, what stands out is that the Philippines has a bigger private higher education sector. Private universities provide substantial access to education in the country but are typically located at the lower end of the stratified higher education

[10] The 'Mathew Effect' is a term coined by Robert Merton, a leading American sociologist of science in the mid-20th century. It refers to the biblical passage Matthew 13:12: "From unto everyone that hath shall be given, and he shall have abundance: but from him that hath not shall be taken away even that which he hath." The Matthew Effect is the accrual of greater increments of recognition for particular scientific contributions to scientists or scientific organisations of considerable reputation, and the withholding of such recognition from those who have yet to make their mark (Merton 1973).

system. Moreover, the private sector did not receive any support from the government. This made a large number of students attending private universities highly vulnerable to declines in the quality of educational delivery during the pandemic.

Unusual in relation to the public universities in the Philippines and Australia, South Africa has a fee-paying system and only a small private higher education sector. It has in place a subsidy-scheme (NSFAS) to support students from low-income households. This provides some resources to poor students allowing them to access higher education, but it does not substantively change their endowment – they still lack social networks, financial support from their families, and safe and adequately-equipped spaces to support their studies when their institutional hosts (universities) could no longer provide a productive learning environment, as was the case during the pandemic. In fact, the South Africa case provides evidence of positive outcomes as a result of COVID-19 in terms of the increase in the form of a rapid and substantial increase in the provision of technology (that is, laptops) and access (for example, mobile data plans and zero-rated websites). This was made possible by public-private partnerships set up in a relatively short space of time. However, these improvements in ICTs did not, as has been shown, result in improvements in educational attainment.

From a pedagogical perspective, research in developing-country contexts shows that much pedagogy in developing contexts is collectivised (Hoadley 2017). Online learning has the potential to 'decollectivise' learning – slower learners can vary their own pace of learning (for example, reread sources, listen to a lecturer's input and discussion again, ask clarificatory questions of the tutor online, taking the requisite time to master material before having to move on). The result is that learners in the middle band can improve immeasurably, while the lower bands, who probably fell behind long ago, will not improve. In other words, hybrid pedagogies can boost the middling learners, improve the overall pass rate, but they will do little for the bottom end.

Whether the 'benefits' of the increased use of ICTs in the delivery of higher education (for example, reach and access) are interpreted in terms of efficiency or effectiveness also remains to be seen. The possibility exists that stakeholders such as government, university management and third-party providers of educational solutions will place greater value on the former, while academic staff and students may express concerns over the long-term effectiveness (or quality) of a wholesale shift to online teaching and learning. Any adoption of hybrid or blended learning will also need to take into account the capacities of the university's IT staff and academics to use fast-changing technologies effectively for educational purposes.

Perhaps one of the most persistent challenges for academic staff relates to what Trowler and Cooper (2002) term 'regimes of teaching and learning', that is, a 'constellation of rules, assumptions, practices and relationships related to teaching and learning issues in higher education'. As indicated above, universities provided varying levels of support to academics as they faced the need to move their teaching online. In many cases, this support was minimal, and academics did what was necessary to provide an 'emergency response'. An unacknowledged risk in the delivery of online education is a preference for forms of interaction that are familiar and which form the fabric of everyday social interaction—for example, using

WhatsApp rather than a university's learning management system. The danger is that these 'emergency responses' drawing on existing social preferences become entrenched practices and that any attempt to incorporate online learning in a well-designed approach using a range of online tools post-pandemic will face what have effectively become 'regimes' which would need to be deconstructed to allow for more productive approaches to online learning to emerge.

As indicated earlier, the extent to which online learning is a viable option in the developing-world contexts of South African and the Philippines post-COVID-19 remains uncertain, as is the extent to which online learning will be blended with more traditional modes. Any future integration of online learning as complementary to contact instruction will require substantial investment in developing capabilities in addition to digital communication infrastructure to ensure equal benefits from online learning. Whether government funding will be made available for such investments in a tight fiscal climate seems unlikely. What seems more likely is that those universities with the capacity and resources to exploit the benefits of online learning that have become apparent during the pandemic will do so, while the remainder will resort to traditional teaching methods.

From the above discussion, both challenges and opportunities are apparent, and it will take some time to establish which of the new approaches adopted during the pandemic are to be integrated as taken-for-granted methods into university teaching and learning. Particularly important will be the impact of the pandemic and new modes of educational delivery on attainment, that is, on the capabilities of all students to successfully complete their studies in a context of upheaval and potentially positive change.

6 Conclusion

In the specific domain of higher education, the subject of this study, Boughey and McKenna (2020), posit that we cannot truly understand and provide the necessary access to and success in higher education if we do not recognise the connections between capitalist market forces, the culture of new public management and the way universities are funded. They argue that we must see individuals (lecturers, students, administrators, vice-chancellors) as part of a much larger system that is open to internal and external pressures. This system has structures and cultures that impact on what individuals can achieve, despite any capabilities that they may acquire and despite any technological innovations in teaching and learning that may, at first glance, appear to hold much promise in democratising higher education. If we cannot see these structures and cultures of our institutions as both able to constrain and open possibilities for students and staff, we are more likely to fall back onto common-sense explanations for why some students (and staff) succeed and many others do not. These kinds of explanations, and the processes and policies they would give rise to, would be far more likely to entrench and protect the status quo that is exclusionary. If we protect the status quo that offers meaningful success only to some and to the exclusion of others, then we are resisting deeper transformation (Clarence 2022).

In more general terms, at the macro level, global digital communication networks created by advances in information and communication technologies have reshaped

society (Castells 2009). At the same time, these technologies play a profound role at the micro or individual level: they increasingly constitute the material conditions through which individuals accumulate capital and create value in order to participate in those communication networks that define society. The COVID-19 pandemic has shown that the rapid deployment of technology by various stakeholders is possible. Theoretically, the availability of technologies to a broader segment of the population should result in greater inclusion (that is, participation in communication networks). However, the evidence shows that without the capabilities – many of which are non-material and do not relate to technical skills or access alone – and without an acknowledgement of the social dynamics of systems and networks, parts of the population will always remain excluded.

7 Recommendations

Based on the findings and conclusions presented above, we make the following recommendations for each of the three countries included as case studies in this research project:

7.1 South Africa

The extent to which online learning is a viable option in the developing-world contexts as South Africa post-COVID remains uncertain, as is the extent to which online learning will be blended with more traditional modes. Any future integration of online learning as complementary to contact instruction will require substantial investment in developing capabilities in addition to digital communication infrastructure to ensure equal benefits from online learning. The following policies are recommended for higher education to be truly inclusive.

a. **ICT infrastructure and access**: In a context where access to technology, not only to the Internet but also to devices, governments should strengthen broadband infrastructure, on the one hand, and access to learning devices, on the other. Policies and programs in higher education should help eliminate the digital divide among private and public educational institutions, whose capacities to access technology are differentiated, and among students whose material endowments prevent them from accessing digital learning devices.
b. **Learning pedagogy**: From a pedagogical perspective, there is a need to formulate policies and programs that transition teaching, learning, and assessment from a highly collectivized and traditional system to one that allows individual learning journeys aided by technology. This should consider differences in individual learning processes as well as contextual barriers to learning.
c. **Teaching competencies**: The increased use and reliance on digital technologies in education during the pandemic has highlighted capacity deficiencies on the part of teaching staff. The competency framework for higher education teachers should include using digital technology to design, deliver and assess teaching and learning outcomes. The government should provide public support for training to attain these competencies, focusing on public universities and higher education institutions with limited resources.

d. **Targeted education support**: Higher education policies and programs should provide targeted education support to institutional providers, teachers, and students based on income and/or deprivation levels to transition towards better use of technology in education. This can take the form of technical assistance, funding support, capacity building, or low-cost loans.
e. **Public-private partnerships**: The COVID-19 pandemic showed how, when the political will is there, government departments can cooperate effectively with one another, and with the private sector to ensure greater access to higher education. Public-private cooperation should continue post-COVID for the benefit of marginalized students.

7.2 Philippines

The following policies are recommended for higher education to be truly inclusive.

a. **ICT infrastructure and access**: In a context where access to technology, not only to the Internet but also to devices, governments should strengthen broadband infrastructure, on the one hand, and access to learning devices, on the other. Policies and programs in higher education should help eliminate the digital divide among private and public educational institutions, whose capacities to access technology are differentiated, and among students whose material endowments prevent them from accessing digital learning devices.
b. **Learning pedagogy**: From a pedagogical perspective, there is a need to formulate policies and programs that transition teaching, learning, and assessment from a highly collectivized and traditional system to one that allows individual learning journeys aided by technology. This should consider differences in individual learning processes as well as contextual barriers to learning. This includes ensuring that flexible learning is adaptable to learners with SEND.
c. **Teaching competencies**: The increased use and reliance on digital technologies in education during the pandemic has highlighted capacity deficiencies on the part of teaching staff. The competency framework for higher education teachers should include using digital technology to design, deliver and assess teaching and learning outcomes. The government should provide public support for training to attain these competencies, focusing on public universities and higher education institutions with limited resources.
d. **Targeted education support**: Higher education policies and programs should provide targeted education support to institutional providers, teachers, and students based on income and/or deprivation levels to transition towards better use of technology in education. This can take the form of technical assistance, funding support, capacity building, or low-cost loans.

7.3 Australia

This research project did not find strong evidence on unequal access to technology, shifting demands on teaching competencies, except for the inability of international students to handle the initial shocks of the pandemic, and Australia's unwillingness to lend support. What the pandemic has highlighted, however, is the ability of digital technologies to widen coverage of higher education as an international offering –

potentially reducing costs for international students coming into the country by implementing blended learning approaches. Before this strategic approach is adopted, teaching, learning, and assessment should be researched to understand whether the shift towards more inclusive instruction using technology-enabled approaches have provided opportunities for better learning. Arguably, this shift will have economic implications, as consumption will start to move to students' domestic economies, and not to the region in Australia where their schools are located.

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