

**COVID-19 and the academe in South Africa: not business as usual**

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The famous R.E.M. song laments "*It's the end of the world as we know it, I had some time alone, I feel fine...*". Many South Africans would agree that it is indeed the end of the world (or business) as we know it, and through the lockdown we have certainly had some time alone; but contrary to the lyrics, all may not be fine, especially for South Africa's scientific community.

The coronavirus has impacted every economic and social sector<sup>1</sup> across the globe, including Higher Education in South Africa. Every student and staff member at a Higher Education Institution will have been affected in some way and to varying degrees; not one person will emerge from this unscathed. It is impossible to predict all the short- and long-term impacts of the COVID-19 epidemic, but we will experience the aftershocks for some time to come. Here we discuss some of these impacts, from undergraduate level to large research projects, and offer some suggestions on how to mitigate some of the damage.

At undergraduate and Honours level, several Higher Education Institutions have had to scramble to place study material online for students. Out of necessity, contact universities have had to develop innovative and flexible ways to offer both theory and practical components to students, and find alternative forms of formative (and most likely summative) assessment. However, academic staff at contact universities typically have little, if any, experience or training in the pedagogy or delivery of online learning. Thus, academics with teaching responsibilities will have had to upskill and familiarise themselves with online learning platforms and all that it entails, including increased administration. The #feesmustfall protests of 2015 may have prepared some faculties / universities hardest hit by earlier student protests, but the total shutdown of almost all sectors of society presented challenges not experienced during this period. In addition, COVID-19 has compounded issues at some universities in South Africa which were negatively impacted by staff or student strikes at the start of 2019. An encouraging aspect of this exercise is, however, that this forces academics to truly interrogate and re-evaluate their curricula and encourages a move away from 'rote learning' to focus more on critical thinking and applied understanding using a holistic approach, as traditional assessment techniques are no longer viable. But in a country where a large percentage of students depend on financial assistance to make ends meet, where data costs are high and even a mobile connection may not be readily available to all, and where devices such as laptop computers are seen as a luxury, it is not surprising that contact universities have faced push-back from students who have argued that universities cannot expect them to continue with online learning without the necessary resources<sup>2</sup>. To address this issue, universities have negotiated with several cellular networks to make data available to students (at a cost to the university, thereby forcing universities to reshuffle their financial budgets and/or asking the general public to donate to discretionary funds), and various universities are

providing devices to disadvantaged students. Moreover, a limited number of educational websites have been made data-free to students, although the largest online platform (Blackboard and its various platforms) is not hosted in South Africa and, therefore, cannot currently be accessed for free (there are plans to move it to South Africa, but this will not be in place for several months). Notwithstanding all these efforts, they do little to help students in remote areas where electricity supply is inconsistent and network coverage is poor. It is also pertinent to highlight that not all university staff own a laptop or a personal home computer; neither do all have proper access to the internet from home. Moreover, the devices that they do have may need to be shared with a spouse or with children that are being home-schooled. In particular, historically disadvantaged universities in rural areas have fewer resources to support students and teaching staff. Even better resourced universities, such as the University of South Africa, which is an open distance learning institution and arguably best suited to address the challenges that this pandemic presents, has had to grapple with making laptops available for staff and devising mechanisms to run its internal operations and administration remotely, as well as find alternatives to traditional sit-down examinations for hundreds of thousands of students during the COVID-19 pandemic. A notable number of courses have switched from traditional sit-down examinations to continuous assessment; however, large classes (sometimes in excess of four or five hundred students) in many faculties renders this form of assessment difficult and its administration near-impossible. In addition, many disciplines require compulsory experimental training to complete professional courses or retain accreditation with international bodies; these activities remain prohibited under lockdown. Here, the answers remain elusive.

While much consideration and attention has been given to moving teaching content online, and rightly so, the elephant in the room concerns the broader impact of COVID-19 on research in South Africa. This includes, among other, the supervision of postgraduate students, meeting research output targets, submission of new grants to secure the next cycle of research, and meeting research funding and project deliverables. What the impact will be on South Africa's overall research output remains to be seen. Some research<sup>3</sup> argues that academics now have more time for research during lockdown, with data sheets being taken out of the proverbial bottom drawer, dusted off, and turned into publications. However, the outcome here will be unique for every person. For example, working under heightened anxiety may limit research productivity<sup>4</sup>. The productivity of academics with children may especially be impacted as they need to juggle childcare and work in the same household. Other research<sup>5</sup> suggests that women's productivity is likely to suffer more than men's during the pandemic because, even in many higher earning households, women remain the primary caregivers and, as such, childcare and home-schooling fall predominantly on their shoulders. On the other hand, the

psychological effects of enforced solitude may be severe for those having to isolate without a partner or family. Equally, early-career researchers may be more affected by the lockdown than more senior researchers with established laboratories<sup>5</sup>. Regardless, these examples serve to illustrate that we live in a complex world with a plethora of real-world problems, and that the experiences of students and staff during the COVID-19 pandemic cannot be generalised. It is, therefore, inappropriate to focus on any one particular group as being more or less vulnerable, but rather to see the collective as being in this situation together.

From a practical perspective, many research projects will be compromised by lockdown and social distancing regulations. It will affect (in some way or another) from Honours students who now have no access to a laboratory on campus (or the field) to run their experiment to A-rated scientists who will likewise struggle to achieve the objectives of funded research and may fail to meet international obligations. While academics from the natural and physical sciences will mainly be affected by the lack of access to field study sites and laboratory facilities during the various phases of lockdown, many social scientists may be affected far longer as social distancing strategies persist. Social science research often relies on interviews, focus groups, and survey questionnaires; thus, these researchers face the risk of exposing themselves, or the communities in which they work. Most geospatial modelling predictions indicate that many poorer communities will be hardest hit by the virus; therefore, in the aftermath of the COVID-19 pandemic, they may not wish to participate in research, even after the pandemic and life has returned to the "new" normal in the months and years following the pandemic.

On the other hand, the COVID-19 pandemic may also present opportunities for research, particularly for social scientists. The proliferation of research, disseminated through preprints, is an example<sup>6</sup>. In several instances and where possible, post-graduate students and researchers from all disciplines must be innovative and think outside of the box in terms of running experiments, collecting data and redesigning postgraduate projects. Examples could include using remote sensing methods for long-term monitoring studies, to mine older datasets, to extract information from large online data sources such as the Global Biodiversity Facility or the Scientific Committee on Antarctic Research's various data portals (to name but a few), or to conduct reviews or meta-analyses of existing studies.

The over-riding point is that academia, including researchers and administrators, and associated bodies such as the National Research Foundation, should be conscious of the impacts that this pandemic will have on all academics and students in terms of research, and devise strategies to facilitate the research of all who are impacted. Academia as a whole needs

to be cognisant of the plight of all researchers and be careful of claiming that specific groups are disproportionately affected, since how individuals experience this period will be highly individualistic. This pandemic is affecting everyone, but in different ways, and it is up to academia to show compassion during this difficult time. Field and laboratory experiments may fail, collection of data in long-term studies will suffer, the submission of journal articles for review may be delayed, and the submission of grant applications may be deferred (although several instructions have indicated that they will be submitting more grant applications than in other years), and this is to be expected. The real question is what can (and should) be done to benefit the entire research community during this difficult time? What mechanisms and strategies can Higher Education Institutions and the research sector in general put in place to facilitate the continuation of research and save the aspirations of students and staff alike?

Strict time frames to completion are imposed on postgraduate students, both by the National Research Facility through the number of years that a student is financially supported as well as by universities that require motivations from students who are unable to complete their degrees in the allocated time. Students whose research can be conducted entirely online or is conceptual, or whose data have already been gathered, may be less affected by the lockdown. However, students that still need to collect data in the field or perform laboratory experiments will experience significant challenges to complete their research on time. Where fieldwork is season-dependent, students may lose an entire year. A case in point concerns students that are funded through the South African National Antarctic Programme, where the annual Marion Island Relief Voyage was cancelled (only emergency personnel are partaking in the reduced voyage). Unless a second voyage can be scheduled for later in the year, students will lose an entire year's data. Long-term datasets that have continuous sampling for several decades will suffer. The National Research Facility and various universities should carefully assess requests for an extension in student support (there would be cost implications, but the long-term benefits would outweigh the costs). These 'costed' extensions are urgently needed, particularly for post-graduate students in South Africa<sup>7</sup>. Simply deferring student registrations may not be the most sensible option as numerous students will disappear out of the system (the leak in the pipeline will increase notably) as the background and socio-economic circumstances<sup>8</sup> may simply not allow students to spend a year idle and re-enter the pipeline next year.

The majority of National Research Facility grants are cyclical; unspent money is returned at the end of each year. Where projects are in the middle of a cycle, researchers can motivate for a carry-over of unspent funds only under specific financial rules; these should be carefully re-examined in light of the COVID-19 lockdown. In addition, where projects were due to end

in 2020, careful consideration should be given to allowing projects to extend for another year to allow for the meaningful completion of such projects (the so-called no-cost extensions being considered by the Royal Society and the Wellcome Trust, the German Research Foundation and the Swedish Research Council). This is especially true for projects that require field-based work, or projects that involve foreign partners where international travel may not be possible for months or even for the remainder of the year. Travel bans will also prevent international conference attendance where the latest research is presented, and networking provides opportunities to set up international collaborations. Collectively, working from home during lockdown, heightened anxiety, and travel bans coupled with countries coming out of lockdowns at different times may also affect the number of local and international (as part of larger multinational collaborations) grant applications that are submitted.

Another possibility is to extend deadlines for grant proposals or have no stipulated deadlines<sup>8</sup>. In South Africa, as elsewhere in the world<sup>9</sup>, the National Research Foundation extended its closing date for the One Call from 30 April to 15 May, but this was done after the internal closing dates for most of the institutions had passed; as such, the benefit of this extension sits with the designated authorities at universities, with some simply using the extension to extend the time available for screening and providing feedback to their own researchers. The German Research Foundation provides an alternative because most of its funding calls do not have a deadline and may be less affected going forward. The National Research Foundation should perhaps consider a second funding call in September or October, once they have had time to scrutinize how many researchers submitted funding applications during the 2020 One Call. In addition, a reallocation of some existing subsidies to universities should be considered. For example, Higher Education Institutions that pay out publication subsidies from the Department of Higher Education and Training directly to academics' salaries should consider retaining these funds to help researchers support their own research and fund post-graduate students<sup>10</sup>. In short, flexibility is required in a time of crisis.

The South African Government has pledged billions of rands to kickstart our economy during and after COVID-19, which may have severe implications for the amount of funding channelled towards academia and research. If COVID-19 taught the world anything, it is the importance of research across various spheres (natural and social sciences, economics, medicine, etc). Here, we make a plea to Treasury and government departments that drive research to continue to support these endeavours; perhaps even to increase funding to expand research. Governments across the world are implementing strategies to curb the spread of the SARS-CoV-2 virus that are based on the advice from scientists and research panels, and how well countries fair in curbing the spread of the Coronavirus depends on how well they implement

the advice from their research advisors. Funding cuts to research departments may therefore be fundamentally flawed, if not now then certainly in the future should another similar situation arise.

If this pandemic is to teach us anything, it should be that academics must be innovative in the way we do our science and facilitate learning. We also need to be compassionate to our fellow academics and students; we are all in this together. Several research groups have set up platforms of communication (e.g. Zoom, WhatsApp, Google Group) to remain connected, plan research and maintain group morale while working remotely<sup>11</sup>. Now is the time to forge strong supportive collaborations, where South African researchers stand together and support one another, particularly in light of possible austerity measures in the future<sup>12</sup>. Collectively, we need to ensure the well-being of our colleagues, of our postgraduate students who fear that they may not complete their degrees on time, and of our undergraduate students, many of whom feel rudderless. And foremost, we need to safeguard our own physical and mental health.

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