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# A systematic review of the implications for teaching, learning and assessment at South African universities after the Covid-19 pandemic

## Abstract

*This paper presents the results of a systematic review of literature, reported in research journals, on the experiences of higher educational institutions regarding teaching, learning, and assessment during the Covid-19 pandemic. Different studies related to the Covid-19 pandemic have been conducted within the South African context, but there has not been a systematic review of these studies highlighting the lessons learned, how these lessons have affected education in higher education institutions (HEIs), and how these lessons can inform future planning. This study aims to summarise literature on teaching, learning and assessment in higher education institutions and to conceptualise possible guidelines for future planning. An analysis of 52 research articles revealed 7 implications for the lessons learnt from the pandemic for future teaching, learning and assessment (TLA) in South African HEIs (realisation of the affordances of technology for TLA, institutional changes related to online TLA during the pandemic, students' experiences related to TLA, lecturer's experiences related to TLA, the need for care, assessment related matters, approaches to teaching, learning and assessment) and several recommendations for how these lessons can be leveraged to help HEIs to prepare effectively for future catastrophic disruptions to education in South African HEIs. The discussion shows the digital divide that exists within the South African population and other contextual challenges faced by higher education institutions during the pandemic, and the different sacrifices by both institutions and students to survive the pandemic. Overall, the findings of this review provide valuable guidance for HEIs and stakeholders involved in TLA, offering insights on how to integrate the lessons learned from the pandemic into their future planning and strategies.*

**Keywords:** Covid-19, higher educational institutions, learning and assessment, pandemic, post-pandemic, teaching, South Africa, systematic review

## 1. Introduction

The declaration of Covid-19 pandemic by the World Health Organization (WHO) on 11 March 2020 (WHO, 2020), triggered unprecedented and obligatory transformations across various sectors, including higher educational

institutions (HEIs).<sup>1</sup> The resulting global impact of the pandemic compelled governments worldwide to implement lockdown measures leading to schools and universities closure, resulting in approximately 1.6 billion students confined to their homes (UNESCO, 2020). In South Africa, the declaration of the national state of disaster on 15 March 2020 resulted in immediate travel restrictions and the prohibition of in-person interactions. Consequently, on 27 March 2020, a nationwide lockdown was implemented (Morris *et al.*, 2020), leading to the closure of HEIs. This global event had a profound impact on the practices of teaching, learning, and assessment (TLA) at HEIs worldwide. The closure of HEIs in South Africa resulted in several institutional changes in both policy and practices to accommodate the new normal (Czerniewicz *et al.*, 2020), which included the forced adoption of online learning through learning management systems (LMS) for TLA (Buthelezi & Van Wyk, 2020). Lecturers and students engaged in these activities remotely, resulting in unique experiences and challenges, while HEIs themselves underwent transformative processes to adapt to the new normal of TLA.

A selective literature review of TLA at South African HEIs during the pandemic revealed consensus among studies regarding generic findings related to the effects of the pandemic (Baloyi, Jarvis & Matshali, 2022; Czerniewicz *et al.*, 2020; Buthelezi & Van Wyk, 2020). These general themes observed in the corpus of literature related to TLA during the pandemic ranges from challenges faced by students to the illumination of the digital divide that exists within South Africa. Only one systematic review focused exclusively on the South African context during the pandemic (Ndlovu, 2023). This study examined the challenges experienced by students with learning disabilities at HEIs during the pandemic. The study identified a lack of support and limited access to content as key challenges exacerbated by the pandemic. A second systematic review, which included the South African context amongst other countries, was also found in existing literature (Ndibalema, 2022). This study focused on the transition of distance-learning students and lecturers to online learning during the pandemic. The findings highlighted the importance of technological and pedagogical proficiency for successful networked learning in distance education (Ndibalema, 2022). Neither of these studies explicitly addresses the examination of lessons derived from the pandemic pertaining to TLA and their implications for future implementations for South African HEIs post-pandemic. Additionally, these systematic reviews also did not focus on how these lessons can equip HEIs to strategize effectively for prospective disruptions of a similar nature. The current study focuses on these identified literature gaps.

Numerous studies have explored the impact of the pandemic on TLA at South African HEIs. These studies have provided comprehensive findings through diverse methodologies, offering insights into various contexts within the South African higher education landscape (Mahlaba, 2020; Jordaan, 2022; Maphalala *et al.*, 2021; Phejane, 2022; Shaik *et al.*, 2022; Woldegiorgis, 2022). Interestingly, the findings across different contexts present a consistent perspective, indicating that most students, lecturers, and HEIs encountered similar challenges and transitions during the pandemic. While valuable lessons have been derived from the pandemic regarding TLA in HEIs, a rigorous and systematic understanding of the implications of these lessons in the post-pandemic era is still lacking. The identification of which lessons from the pandemic should be integrated to future TLA or discarded remains unclear. Moreover,

1 To avoid the risk of sounding redundant and repetitive, we wish to disclose that the terms 'COVID-19' and 'pandemic' will be used interchangeably and, unless otherwise stated, the studies reviewed in this article are from South Africa. Higher education institutions in the context of this study refers to the 26 South African public universities in South Africa.

given the unprecedented nature of our current world, there is no documented systematic approach for leveraging the lessons learned from the pandemic to prepare effectively for future catastrophic disruptions to education in South African HEIs. These findings highlight the existing literature gaps within the South African context, emphasising the necessity and relevance of the current study. Therefore, the current study uses a rigorous and systematic review of literature to shed light on the implications of the lessons learnt from the pandemic for TLA in the post-pandemic era. The aim of the current systematic review is threefold: Firstly, this article aims to provide a comprehensive summary of the published lessons related to TLA at South African universities during the pandemic. In doing so, we argue that literature on the lessons from other regions is also relevant, but we choose to focus on the South African region to exemplify the local lessons. Secondly, this article aims to use this comprehensive summary to discuss the implications of the lessons learnt from the pandemic for future teaching, learning and assessment at South African universities. Thirdly, given the unprecedented nature of our current world, this article aims to give a systematic approach for leveraging the lessons learnt from the pandemic to help universities effectively prepare for future pandemics. Therefore, given these aims, we set out our systematic review to answer the following questions related to the study aims.

- What are the lessons related to teaching, learning, and assessment at South African universities during the pandemic?
- What are the implications of the lessons learnt from the pandemic for future teaching, learning, and assessment at South African universities?
- How can the lessons learnt from the pandemic be systematically leveraged to help universities effectively prepare for future catastrophic disruptions to education at South African HEIs?

## 2. Methodology

### 2.1 Search strategy

For this systematic review, a search strategy was developed to identify relevant literature on TLA during the pandemic at South African HEIs. This search strategy was tailored using keywords such as 'Covid-19', 'teaching', 'learning', 'assessment', ['higher educational institutions' OR 'universities' OR 'institutions of higher learning'], AND 'South Africa'. These search terms were entered into Scopus, Web of Science, ScienceDirect, EBSCOhost, and Sabinet African Journals databases to identify relevant literature studies. The search including all the data parameters resulted in 226 documents consisting of academic empirical journal articles and review articles from peer-reviewed journals. The titles of these documents were published in English and were between the years 2019–2023. We then manually added an academic article that was accepted for publication in November 2023 written by the first author to bring the total of identified studies to 227 before the application of the selection criteria.

### 2.2 Selection criteria

The selection criteria for this study were established based on the guidelines provided by the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA 2020) statement (Page *et al.*, 2021), because it also allows for reporting on both empirical and

review articles.<sup>2</sup> The PRISMA 2020 statement comprises 7 sections encompassing a total of 27 items, some of which include sub-items. The PRISMA 2020 checklist also includes items specifically designed for the critical appraisal of published systematic reviews, making it an appropriate tool for the current research study. While the utilisation of PRISMA 2020 ensures transparency, completeness, and accuracy in reporting systematic reviews, it does not serve as a tool for assessing the quality of the systematic review itself. The primary objective of our search was to identify and synthesise existing empirical and review-based articles pertaining to TLA during the pandemic in South African HEIs. Consequently, the papers included in the present systematic review were selected based on the following inclusion criteria:

- Published between 2019–31 March 2023.
- Studies published in peer-reviewed journals and are documented in English.
- Only empirical and review articles related to TLA during the pandemic at the 26 public universities in South Africa.

### 2.3 Exclusion criteria

- Studies in books, book chapters, conference proceedings and grey literature (such as opinion pieces, technical reports, blogs, presentations, etc.)
- Studies outside of the scope of higher education in South Africa.
- Studies that do not address issues related to TLA, but are in higher education (e.g. pure science, medical, virology, psychological disciplines, etc.)
- Not published in a peer-review journal.
- Not in English.
- Published outside the period 2019–31 March 2023.

The selected studies related to teaching, learning and assessment during the pandemic in South African HEIs are provided in Appendix A.

### 2.4 Quality assessment

Upon the completion of the screening process, an assessment of the studies was conducted to evaluate their quality for inclusion in the current review. Initially, the sample of the studies underwent iterative reduction involving the elimination of duplicate records and articles with irrelevant titles. As a result of this filtration process, a total of 85 articles remained for further quality assessment. Subsequently, articles that we documented in languages other than English, despite having English titles, were excluded from the data set, leaving only 82 articles to be screened for eligibility. To ensure the inclusion of high-quality and relevant studies in the current systematic review, a thorough analysis was performed using the predetermined eligibility criteria, resulting in the inclusion of 52 studies. In these 52 articles, 50 were identified using the search strategy and 2 were identified using other methods. These articles were subject to data extraction, looking for data related to TLA during the pandemic. A flow diagram for this quality assessment process can be found in, and it adheres to the PRISMA 2020 framework.

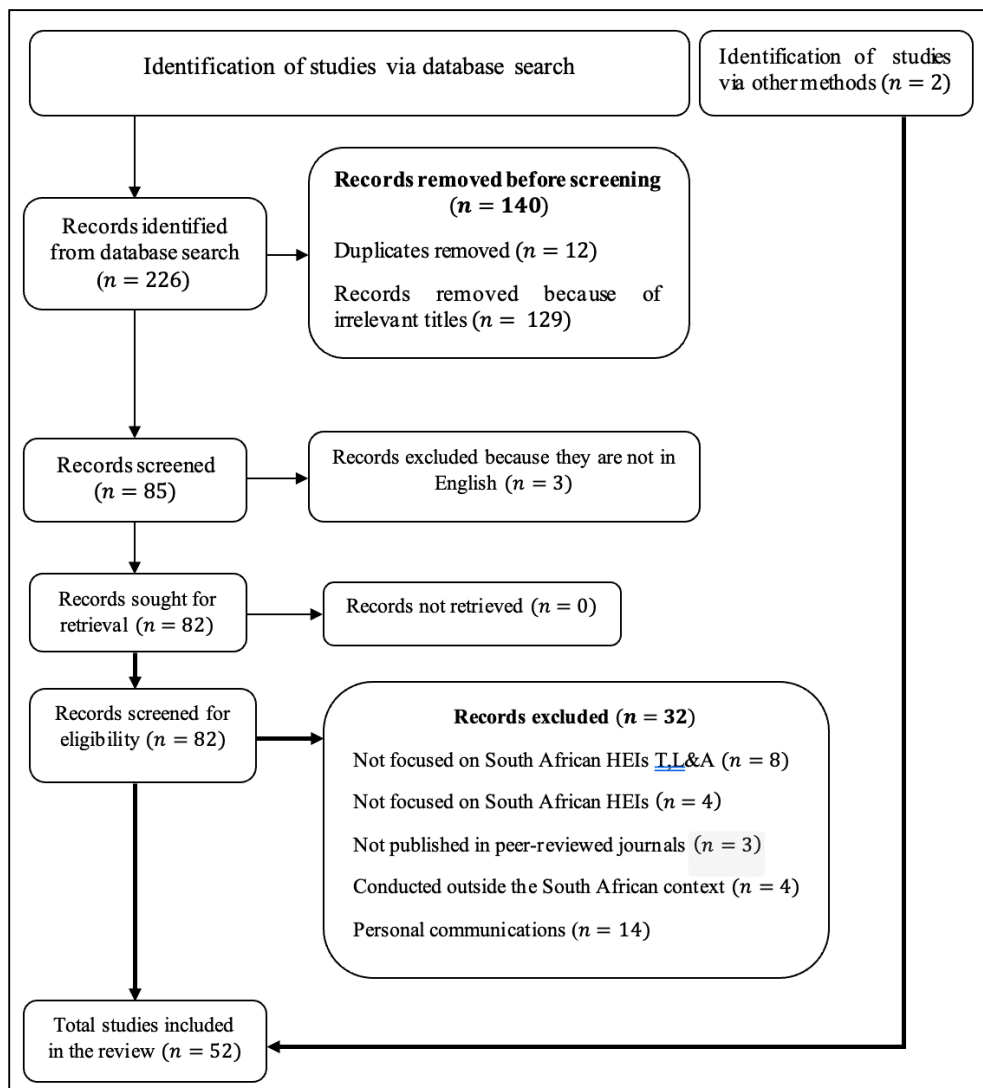
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2 For example, provide an explicit statement of the main objective(s) or questions the review addresses (p. 5, Table 2).

### 3. Data extraction

The Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre) suggests several guidelines containing detailed sets of questions for coding at keywording and data extraction for mapping, synthesis and reporting of primary research. In this systematic review, the selected studies were inserted into a Microsoft Excel spreadsheet that was designed based on the inclusion and exclusion criteria. Thereafter, a review specific tool was devised based on the research questions to extract relevant data using the guidelines from the EPPI-Centre. In this systematic review, most of the studies analysed were empirical by nature (), providing practical evidence and the other studies () offered theoretical arguments based on review-based articles. Out of the 52 studies that were included in this systematic review, 22 articles were review articles, 19 articles focused on a qualitative interpretation of the TLA related experiences from both students, lecturers, and university management staff, 6 of the articles had a quantitative focus, and 5 articles used a mixed-methods approach. This combination of study types enabled the identification of both practical and theoretical evidence to support the findings presented in this article. Thus, we employed a balanced approach by combining theoretical evidence from review articles with empirical evidence from empirical studies. This approach ensured a comprehensive analysis of the lessons related to TLA during the pandemic at South African HEIs.

The articles included in this study were from various HEIs from South Africa. 17% of the articles were from the University of South Africa, 11% of the articles were from the University of KwaZulu-Natal, 13% from the North-West University, 9% from Stellenbosch University, 8% were from the University of Fort Hare, 6% from University of Johannesburg, University of Free State, and Nelson Mandela University each, and 4% was from the University of Zululand, University of the Western Cape, University of Witwatersrand, Rhodes University, and the Durban University of Technology. Lastly, the articles focused on different participants, including 2 024 university students, 337 students and lecturers, 259 lecturers, and 77 students, lecturers, and other stakeholders. This indicates that a significant portion of the empirical findings in this review were derived from the experiences of students. The prominence of review articles in the analysed studies can be attributed to the limitations imposed by the lack of face-to-face interactions between participants and researchers during the pandemic. Therefore, a considerable portion of the findings relied on the perspectives and experiences of the researchers themselves. The data extracted and summarised in Table 1 provided a comprehensive overview of the lessons learned from the pandemic. These lessons formed the basis for discussing the implications of the pandemic on future TLA in South African HEIs. The review identified themes related to these lessons, which were then used to explore how universities can leverage these lessons to better prepare for future pandemics, considering the unprecedented nature of the global landscape.



**Figure 1:** Study selection chart (Adapted from Page *et al.*'s (2021) revised PRISMA Framework

### 4. Findings

This section presents the findings of the systematic review. We begin by discussing the overview of the themes of the findings related to the lessons learnt from the pandemic as extracted from the different articles. Thereafter, these findings are discussed in detail in the next section. We then use these lessons to provide a comprehensive description of how universities can include the lessons in their current TLA, and also use these lessons to inform future planning related to disruptions such as pandemics and other disruptions such as the #FeesMustFall movement.

## 5. Overview of themes related to the lessons related to TLA

The advent of the pandemic presented numerous valuable lessons that shed light on various levels of needs within South African HEIs (see Table 1). Firstly, a significant realisation permeated all stakeholders involved in TLA within HEIs, highlighting the crucial role of technology as an essential component for the seamless continuation of academic activities during the pandemic. It became evident that technological integration was imperative for the sustenance of educational endeavours. Secondly, institutional changes became imperative, necessitating policy amendments, the redistribution of financial resources, and the establishment of mechanisms to ensure equitable access to online learning for all students. These adjustments were indispensable in mitigating the adverse effects of the pandemic and ensuring the continuity of academic activities. Thirdly, both lecturers and students encountered a multitude of changes in their academic lives, such as challenges and the adaptation to new methods of learning. It became evident that the geographical locations and home-related circumstances of both lecturers and students contributed to distinct challenges they faced. Moreover, both lecturers and students perceived a heightened workload compared to the pre-pandemic period, thereby further exacerbating the demands placed upon them. In the fourth instance, there was an escalated requirement for care, encompassing both emotional and psychological support, for both lecturers and students. This need arose because of the challenges encountered during the pandemic, emphasising the importance of attending to the well-being of individuals involved in academic activities to ensure their ability to continue effectively. HEIs should prioritise building connections, providing self-care resources, and fostering a deeper understanding of students and lecturers' holistic environments. Fifthly, the pandemic necessitated amendments, raised concerns, and presented challenges pertaining to assessment practices for both students and lecturers. The shift to remote learning modalities required the reassessment and adaptation of assessment methodologies to suit the new circumstances, which posed unique considerations and complexities. Lastly, lecturers and students resorted to different social media platforms and other technological software to facilitate their academic activities amidst the pandemic. HEIs responded by embracing blended multimodal learning approaches to accommodate the varied preferences and circumstances of students, ensuring inclusivity and the continued engagement of all students. The findings overview of the themes of the findings from this study are summarised in Table 1.

**Table 1:** Summary of the lessons learnt from the pandemic related to teaching, learning and Assessment in South African higher institutions of learning

<p><b>Realisation of the affordances of technology for TLA</b></p> <p>Online learning was the only way to continue TLA (Feldman, 2020; Valler &amp; Bruce, 2020), enhance preparedness through integration of digital technologies as standard practice (Knoetze &amp; Toit, 2022; Wolhuter &amp; Jacobs, 2021), transform infrastructure and develop technological tools for T, L &amp; A (Kativhu, 2021; Mdiniso <i>et al.</i>, 2022), increased reliance on stable internet access (Makhoba &amp; Reddy, 2022), prioritize technology-related professional development (Shaik, 2022; Naidoo <i>et al.</i>, 2022), enhance digital capital for lecturers and students (Bekker, &amp; Carrim, 2021; Oluwatimilehin, 2021), redesign curriculum for the delivery of both theoretical and practical components online (Molato &amp; Sehularo, 2022), and more time spent on LMS for TLA (Gamede, Ajani &amp; Afolabi, 2022; Joseph <i>et al.</i>, 2022).</p>
<p><b>Institutional changes related to online TLA during the pandemic</b></p> <p>Illuminated prevailing inequalities to HEIs (Czerniewicz <i>et al.</i>, 2020), such as digital skills, inequalities, technological constraints and limited resources (Mncube, Mutongoza &amp; Olawale, 2021; Woldegiorgis, 2022).</p> <p><b>Challenges</b></p> <p>Urgent reassessment of TLA approaches (Ndofirepi &amp; Hungwe, 2022), load shedding worsened access to seamless online TLA (Makhoba &amp; Reddy, 2022), ensure equal access to online learning and uphold quality standards (Aina &amp; Ogegbo, 2021; Bekker &amp; Carrim, 2021; Wolhuter &amp; Jacobs, 2021).</p> <p><b>What institutions had to do?</b></p> <p>Establish disaster management teams to mitigate challenges to online TLA (Baloyi <i>et al.</i>, 2022), rolled out blended learning approaches (Manik &amp; Tarisayi, 2022), set up VPN for off-campus access to learning materials, provide resources for online TLA, enhanced digital capacity (Baloyi <i>et al.</i>, 2022; Feldman, 2020; Lukumon &amp; Maharaj, 2020; Pika &amp; Reddy, 2022), redistribute financial resources (Maringe &amp; Chiramba, 2022), negotiated zero-rated websites (Manik &amp; Tarisayi, 2022; Naidoo &amp; Israel, 2021), ensure equitable access to technology and learning resources (Baboolal-Frank, 2021; Naidoo <i>et al.</i>, 2022; Pika &amp; Reddy, <i>et al.</i>, 2022; Vigar-Ellis &amp; Ndllovu, 2021).</p>



### **Students' experiences related to T, L & A**

Students missed campus life (Alex, 2022), authentic classroom discussions and validation of their ideas (Feldman, 2020; Mapukata & Toto, 2021), they felt that they were teaching themselves (Feldman, 2020), enhanced access to resources and the adoption of digital transformation (Lukumon & Maharaj, 2020), institutional support, guidelines, and resources necessary for effective remote learning (Baoolal-Frank, 2021; Okoro *et al.*, 2021).

### **Online learning**

Most students expressed dissatisfaction with online lectures, tutorials, and practical work (Alex, 2022; Ally *et al.*, 2022), disruptions in their academic lives (Govender, Reddy & Bhagwan, 2021), difficulties with concentration, time management, content comprehension, and self-motivation for learning (Alex, 2022; Cupido, Gordon & Behardien, 2022), perceived lag in their academic progress (Knoetze & Toit, 2022; Ross, 2021), communication difficulties, insufficient lecturer support, and perceived lack of engagement in content uploading on LMS (Jordaan, 2022; Knoetze, Booyesen & Khuhlane, 2022; Maphalala, 2021), disengagement, decreased motivation, non-submission of assessments, absenteeism, and dropouts (Maringe & Chiramba, 2022; Menon & Motala, 2022), students needed enhanced support, guidance, and effective LMS training (Buthlezi & Van Wyk, 2020), no ICT exposure in schools (Jordaan, 2022), lack of technology skills (Phejane, 2022).

### **Geographical location**

Low-income students lacked stable internet connectivity (Czerniewicz, 2020; Govender *et al.*, 2021; Maphalala, 2021; Woldergorgis, 2022), financial burden for accessing learning materials (Phejane, 2022), electricity outages (load shedding) caused network network and data availability problems (Govender *et al.*, 2021; Makhoba & Reddy, 2022), no technological devices due to financial constraints (Jordaan, 2022; Maringe & Chiramba, 2022; Mdiniso *et al.*, 2022; Ross, 2021; Woldergorgis, 2022).

### *Home-related challenges*

Limited space, high population density, and noise levels posed challenges for learning (Mapukata & Toto, 2021; Maringe & Chiramba, 2022), no essential study resources (Alex, 2022; Feldman, 2020; Maphalala, 2021), household chores and family issues, not present on campus, added to their workload (Govender *et al.*, 2021), loss of household income affected academic performance (Cupido *et al.*, 2022), parents' lack of understanding led to conflict between chores and online learning (Govender *et al.*, 2021; Jordaan, 2022; Cupido *et al.*, 2022).

### **Workload**

Students experienced increased workload (Alex, 2022; Menon & Motala, 2022; Ross, 2021) because work was thrown at them (Feldman, 2020).

### **Lecturer's experiences related to T, L & A**

Learn new virtual habits and learn new digital skills to navigate online teaching and assessment (Meeran, 2022), found limited support from university ICS staff (Majola & Mudau, 2022; Meeran, 2022; Woldergiorgis, 2022).

### **Online teaching**

Multimodal learning channels for diverse backgrounds and learning styles (Czerniewicz *et al.*, 2020; Joseph *et al.*, 2022; Naidoo & Israel, 2021), creating inclusive and supportive learning environment (Hardman *et al.*, 2022), demonstrate resilience (Shaik, 2022), mitigate solutions to challenges, indicating some element of being self-directed learners (Mahlabi & Mentz, 2023), diagnose students' learning styles to optimize interventions (Kativhu, 2021), engage in reflective practices to align teaching approaches with student needs (Godsell, 2022), customize pedagogical tools for specific content to enhance learning (Menon & Motala, 2022), adapt teaching methods and delivery (Naidoo *et al.*, 2022), and tailor instructional design and pedagogical strategies for online environments (Aina & Ogegbo, 2021).

### **Challenges**

Unprepared to utilize online technologies and pedagogies (Mdiniso *et al.*, 2022), no training and professional development in online pedagogy (Knoetze *et al.*, 2022; Okoro *et al.*, 2021), adapting to remote teaching and maintaining student engagement and motivation (Aina & Ogegbo, 2021; Gerber & Eybers, 2021), providing realistic and authentic experiences for modules requiring laboratory sessions (Menon & Motala, 2022; Naidoo *et al.*, 2022), converting modules to online or flipped classrooms without clear guidelines (Gerber & Eybers, 2021), compromised quality of teaching (Bekker & Carrim, 2021).

### **Home environments**

Lecturers recreated office spaces at home (Meeran, 2022), absence of institutional support for work-life balance and flexible work arrangements (Walters *et al.*, 2022), no sense of urgency and time constraints that come with being in a formal workplace (Cupido *et al.*, 2022).

### **Workload**

Increased workload as universities assigned them additional administrative responsibilities (Hardman *et al.*, 2022; Menon & Motala, 2022; Shaik, 2022), workload exacerbated by caregiving and household duties in female lecturers (Cupido *et al.*, 2022; Walters *et al.*, 2022), blurred boundaries between work and home spaces and work without time limitations (Meeran, 2022).

<p><b>The need for care</b></p> <p>Lack of care and awareness regarding students' needs (Feldman, 2020), feeling disconnected from the university (Govender <i>et al.</i>, 2021), negative emotions including vulnerability, loneliness, anxiety, depression, panic attacks, fearfulness, frustration, neglected, hopeless, social isolation, fatigue, exhaustion and financial stress (Govender <i>et al.</i>, 2021; Feldman, 2020; Jordaan, 2022; Menon &amp; Motala, 2022), need for empathy, compassion, understanding, and support for students, along with a focus on connection building, self-care, overall well-being, and deeper understanding of students' holistic environments (Godsell, 2022; Hardman <i>et al.</i>, 2022), not in a good mental space for online learning (Ross, 2021), campus clinics played a vital role in addressing students' physical well-being and psychological needs (Baloyi <i>et al.</i>, 2022). Lecturers experienced high levels of stress, anxiety, feelings of being overwhelmed, fatigue, burnout, and various mental and emotional health issues, further compounded by the loss of colleagues and relatives (Menon &amp; Motala, 2022; Shaik, 2022; Meeran, 2022), increased work-related stress and decreased motivation (Hardman <i>et al.</i>, 2022), sense of alienation and diminished autonomy (Hardman <i>et al.</i>, 2022), missing personal interaction and connection with students (Shaik, 2022).</p>	<p><b>Assessment-related matters</b></p> <p>Requirements for sub-minimum and duly performed marks were suspended (Naidoo &amp; Israel, 2021), students dissatisfaction with lecturers' feedback on online assessments (Aly <i>et al.</i>, 2022; Feldman, 2020; Van Wyk, 2021), compromised quality of assessments and lack of rubrics and assessment guidelines (Maphalala, 2021), lack of internet access to complete online assessments (Feldman, 2020), technological difficulties with uploading assessment responses to the LMS and inability to complete assessments due to time limitations (Majola &amp; Mudau, 2022; Meeran &amp; Davids, 2022). Trustworthiness of online assessments compromised (Cupido <i>et al.</i>, 2022), ensuring academic integrity and preventing cheating (Majola &amp; Mudau, 2022), monitoring students' academic dishonesty (Molato &amp; Sehularo, 2022), similar answers among students' responses and difficulties in monitoring students' progress (Menon &amp; Motala, 2022), lack of formative feedback to students (Bekker &amp; Carrim, 2021), did not adequately assess the desired module outcomes (Cupido <i>et al.</i>, 2022), use Turnitin to monitor plagiarism (Maphalala, 2021), increased level of difficulty in questions and concerns about failing (Meeran &amp; Davids, 2022).</p>	<p><b>Approaches to teaching, learning and assessment</b></p> <p>Teaching and learning were conducted using various audio and visual tools such as audios, podcasts, voice-over PowerPoints, and video PowerPoints through platforms like Zoom, Microsoft Teams, WhatsApp, LMS, and virtual clinical visits (Ally <i>et al.</i>, 2022; Feldman, 2020; Mapukata &amp; Toto, 2021; Ofori-Kusi &amp; Tachie, 2022), flipped classrooms (Gerber &amp; Eybers, 2021), students' enjoyed working at their own pace, having control over their learning, convenience, flexibility, and self-paced nature of remote learning (Feldman, 2020; Lukumon &amp; Maharaj, 2020; Van Wyk, 2021), engaging in SDL and adopting personalized learning approaches (Aina &amp; Ogegbo, 2021; Mahlaba, 2020; Pika &amp; Reddy, 2022), blended learning (Gerber &amp; Eybers, 2021; Mapukata &amp; Toto, 2021).</p>
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## 6. Implications of the lessons learnt from the pandemic for future TLA at South African HEIs

The following section delves into the implications of the post-pandemic landscape on TLA within South African HEIs. In this section, we present arguments regarding the integration of lessons learned from the pandemic into the future TLA strategies of South African HEIs. Moreover, we emphasize the significance of these lessons for informing and shaping future approaches to TLA.

### 6.1 Realisation of the affordances of technology for TLA

The pandemic forced HEIs, students and lecturers to utilise specific technological artefacts for TLA practices. Students independently acquired new skills and competencies for navigating online learning and assessment. Lecturers likewise independently developed new skills and strategies for online teaching and assessment, thereby enriching their pedagogical repertoire in navigating online teaching and assessment. These newly acquired skills and competencies should be harnessed and integrated into regular practices, enabling the facilitation of more flexible and inclusive learning opportunities for students, while allowing lecturers to leverage the advantages of online platforms to enhance their teaching and assessment strategies. Furthermore, acknowledging the potential of technology in TLA emphasises the need for HEIs to develop their infrastructure to meet the needs for online TLA and enhance the digital skills of both teachers and students.

### 6.2 Institutional changes related to online TLA during the pandemic

In response to the pandemic, HEIs established disaster management teams tasked with the responsibility of ensuring a smooth transition to online TLA, and these teams were useful in mitigating the transition to online TLA. Thus, it is advisable for HEIs to consider maintaining these disaster management teams as a permanent component of their academic structure to proactively plan for potential future pandemics and to address other disruptions, such as movements like #FeesMustFall. To address the issue of students lacking access to technological devices for online learning, HEIs need to provide resources such as loaner laptops, thereby enhancing equitable access to technology for all students, mitigating inequalities and establishing an environment conducive to online learning for all students. Additionally, considering power cuts, HEIs should devise strategies such as developing backup power systems, scheduling synchronous activities during periods of stable electricity supply, and providing asynchronous learning options to minimise the adverse impact of loadshedding on students' educational experiences, even beyond the pandemic. Nevertheless, it is important to acknowledge that HEIs do not possess absolute authority over power outages resulting from load shedding in various geographical areas. Consequently, effectively addressing power cuts across all regions in South Africa may present significant challenges for HEIs.

### 6.3 Students' experiences related to TLA

Students expressed dissatisfaction with various aspects of online learning, including reduced interactivity, limited face-to-face interaction, and challenges with adapting to new online platforms. To improve students' online learning experience, lecturers should incorporate engaging and interactive teaching strategies, multimedia resources, and opportunities for collaboration. Students also faced difficulties with concentration, time management, and comprehending course content. The shift to online education requires of students to develop

self-discipline, time management skills, and adapt to new learning routines. HEIs can support students by providing guidance on effective study habits, offering time management workshops, and promoting digital literacy skills. Students reported communication barriers and a perceived lack of support from lecturers during online learning. These challenges resulted from limited face-to-face interaction, difficulties in seeking clarification, and delayed feedback. To address these issues, lecturers should prioritise effective communication channels, provide timely feedback, and offer virtual office hours or online discussion forums. Moreover, lecturers should also implement strategies to enhance student engagement, such as active learning, collaborative projects, and real-world applications of content. It is also crucial to provide LMS training to both students and lecturers for effective utilisation of online learning platforms. Several barriers to effective engagement in online education also included limited space, high population density, noise levels, and a lack of study resources. HEIs should provide students with guidance on creating conducive study spaces at home and explore alternative learning spaces within the community, such as libraries or community centres. Students also face the challenge of balancing academic responsibilities with household chores and family issues, impacting their ability to focus on studies. HEIs should offer support services like time management workshops, academic advising, and counselling to help students manage their responsibilities effectively. Additionally, inadequate technology skills and lack of prior exposure to ICT created further barriers, preparatory programs and ongoing support for digital literacy development can help students overcome these challenges.

#### 6.4 Lecturer's experiences related to TLA

During the transition to online teaching and assessment, lecturers encountered numerous challenges that compromised the quality of education. These challenges encompassed inadequate training in online pedagogy, difficulties in sustaining student engagement and motivation, and the necessity to adapt teaching methods and instructional design for online environments. To address these issues effectively, HEIs should offer explicit guidelines and professional development opportunities to assist lecturers in overcoming these challenges. HEIs should prioritise training and professional development initiatives to support educators in developing online teaching essential skills. Furthermore, ensuring that ICS personnel are equipped to provide prompt assistance and support to lecturers is crucial for effectively navigating online teaching. To foster inclusive online learning environments beyond the pandemic, educators should employ strategies that cater to the diverse backgrounds and learning styles of students. Additionally, engaging in reflective practices can facilitate the alignment of teaching approaches with student needs and create a supportive learning environment. HEIs should provide support to educators in managing their workload and promoting work-life balance to lessen their workload. The rapid transition to online teaching, coupled with the absence of clear guidelines for converting modules to online or flipped classrooms resulted in compromised teaching quality. Therefore, HEIs should provide lecturers with explicit guidelines and resources to maintain high-quality teaching standards in online environments.

## 6.5 The need for care

HEIs must prioritise the emotional and psychological well-being of students and lecturers, even beyond the pandemic, alongside their academic duties. This can be achieved through counselling services, mental health resources, and peer support programs tailored to the diverse needs of students and lecturers. Additionally, it is crucial for HEIs to recognise the impact of lecturers' well-being on their teaching effectiveness and create a supportive work environment. This can be accomplished by implementing policies that promote work-life balance, offering resources for professional development and emotional support, and fostering a culture that values the well-being of lecturers. By addressing these needs, HEIs can cultivate an inclusive and supportive learning environment that enhances the overall educational experience for all stakeholders involved.

## 6.6 Assessment-related matters

The suspension of sub-minimum requirements and duly performed marks implies a potential lowering of academic standards and may raise concerns about grade inflation; thus these measures should be discarded from future HEIs' academic plans. Students' dissatisfaction with feedback on online assessments indicates the need for improved communication and guidance from lecturers. The compromised quality of assessments, lack of rubrics, and assessment guidelines highlight the importance of developing clear and consistent evaluation criteria to ensure fairness and validity in grading. Thus, lecturers should always include rubrics and assessment guidelines with assessments they give to students. The lack of internet access for some students poses a challenge in completing online assessments, emphasising the necessity for inclusive approaches that consider diverse technological capabilities. Thus, students who do not have access to the internet should be given different opportunities to complete and submit their assessment to their lecturers. Maintaining academic integrity and preventing cheating are crucial in online assessments, necessitating the implementation of effective monitoring systems and tools like Turnitin to detect plagiarism. The difficulties in monitoring students' progress and providing formative feedback underscore the need for innovative approaches to track and support students' learning journeys effectively. The increased level of difficulty in questions and concerns about failure suggest the importance of carefully designing assessments that assess the intended module outcomes appropriately while maintaining students' confidence and motivation.

## 6.7 Approaches to teaching, learning and assessment

The utilisation of diverse technological software and social media tools by students and lecturers has proven instrumental in facilitating classroom activities and fostering effective communication pertaining to TLA. Particularly in remote learning environments, the integration of audio and visual materials has demonstrated promising outcomes in terms of enhancing student engagement and comprehension. As a result, it is imperative for HEIs and lecturers to incorporate these practices into their permanent teaching policies and plans. This entails the integration of pedagogical approaches like flipped classrooms and blended learning, even beyond the pandemic, owing to their inherent benefits. Furthermore, remote education presents distinct advantages, such as personalised learning experiences, increased learner autonomy, and the ability to accommodate individual learning styles and preferences, thereby aligning with the principles of SDL. Considering that both lecturers and students have developed these favourable dispositions during the pandemic, it is crucial for TLA to continue nurturing and advancing these dispositions in a post-pandemic context.

## **How can the lessons learnt from the pandemic be systematically leveraged to help universities effectively prepare for future catastrophic disruptions to education in South African HEIs?**

The pandemic has had a significant impact on HEIs globally, necessitating rapid adjustments to remote learning, implementation of health and safety measures, and navigation of various challenges. To improve preparedness for future pandemics and similar disruptions, universities must reflect on the lessons learned from this pandemic and identify strategies that can be systematically leveraged. This involves the following key considerations:

- The pandemic highlighted the crucial role of technological infrastructure in facilitating online TLA processes. HEIs should invest in upgrading their technological infrastructure to support seamless online education, communication, and collaboration. Additionally, there is a need to enhance the digital skills of both lecturers and students to engage effectively in online teaching and learning. By embracing technology, upgrading infrastructure, and upskilling digital competencies, HEIs can minimise challenges associated with online learning during future pandemics and disruptions.
- The limitations of face-to-face TLA were revealed by the pandemic, emphasising the need for flexible teaching and learning models. Universities should seize this opportunity to develop blended learning approaches that integrate both in-person and online elements. This approach offers flexibility for students and lecturers, ensuring educational continuity in various settings. Faculty development programs should be implemented to equip lecturers with the necessary skills to facilitate effective online learning and leverage technology for interactive and engaging learning experiences.
- The pandemic underscored the significance of prioritising health and safety within university campuses. To prepare for future outbreaks, comprehensive health and safety protocols should be established, encompassing regular sanitisation, effective ventilation systems, and appropriate physical distancing measures. HEIs should also develop contingency plans for seamless transitions to remote learning when necessary, safeguarding student well-being and minimising the risk of virus transmission within the campus community and/or minimize property damages during disruptions such as #FeesMustFall movement. Furthermore, the pandemic had a significant impact on the mental health and well-being of students and lecturers. Future pandemic preparedness strategies should prioritise proactive measures to address mental health challenges. HEIs should establish robust support systems, including accessible counselling services, mental health awareness campaigns, and resources for stress management, even beyond the pandemic.
- The importance of collaboration and partnerships among universities, government agencies, healthcare providers, and relevant stakeholders was emphasised during the pandemic. To prepare effectively for future crises, HEIs should actively engage in interdisciplinary collaborations to develop comprehensive response plans and share best practices. This involves collaborating with local health authorities to establish effective communication channels, sharing resources and expertise, and leveraging collective knowledge and experience to navigate crises collaboratively.

In conclusion, the lessons learned from the pandemic provide a valuable roadmap for universities to enhance their preparedness for future disruptions. It is crucial for HEIs to proactively incorporate these lessons into their pandemic preparedness strategies, ensuring the continuity of education, student success, and overall resilience of the university community in the face of future challenges.

## 7. Conclusion and possible contributions

The pandemic had a significant impact on the functioning of HEIs in South Africa, necessitating a transition from face-to-face to online teaching and learning modalities, which presented various lessons related to TLA. These lessons are critical in evaluating the implications for future TLA after the pandemic. Although studies have been conducted on online TLA at South African HEIs during the pandemic, there remains a need for a comprehensive examination and dissemination of the implications for future teaching, learning, and assessment among researchers, practitioners, and policymakers. This article provides a systematic review of research on the lessons related to TLA during the pandemic and the implications of these lessons for future T, L & A after the pandemic in South African HEIs. Furthermore, this article provides several arguments for leveraging the lessons learnt from the pandemic related to TLA on how South African HEIs may prepare for future pandemics or similar disruptions.

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