

Challenges in Teaching and Learning during COVID-19 Pandemic on Sustainable Development Goals in South Africa (A Systematic Review)

Aderinsola Kayode 

Durban University of Technology, South Africa 

University of Ibadan, Nigeria 

Afe Babalola University, Nigeria 

aderinsolaK@dut.ac.za

Abraham Adeniran 

University of Ibadan, Nigeria 

Afe Babalola University, Nigeria 

Fulufhelo Netswera 

Durban University of Technology, South Africa 

Abstract

During the COVID-19 pandemic, South Africa implemented lockdown and social distancing measures, resulting in the closure of all schools and higher education institutions in the country. Despite the challenges posed to both educators and learners, education systems have been forced to transition from traditional face-to-face pedagogical classroom methods into remote virtual platforms, which allow sustainability in the continuity of teaching and learning in traditional methods. This study adopts a systematic review approach to examine challenges in teaching and learning during and after the COVID-19 pandemic in South Africa. Evidently, the findings from the study depict that, in the wake of the pandemic, the transition in education in South Africa was hampered by educational inequality and insufficient digital literacy among instructors in many South African educational institutions. However, post-COVID-19 evidence reveals that much progress has been made as there is an increased focus on adoption training and the use of digital tools and technology. The conclusion of this study is that traditional education should be blended with online teaching and learning to achieve sustainable development goal number four.

Keywords: teaching and learning, Coronavirus, COVID-19 pandemic, sustainable development goals, pedagogy.

Introduction

On March 12, 2020, the coronavirus (COVID-19) was designated a global pandemic, and social separation was implemented in many regions to limit the situation. Indeed, many governments around the world opted to close schools countrywide to avoid or control the spread of the virus, disrupting the education of millions of children and adolescents (Das & Kusakabe, 2021; Suppawittaya, Yiemphat & Yasri, 2020).

Since the initial discovery of COVID-19 in Wuhan, China in 2019, the virus has affected a staggering amount of people, with over 600 million confirmed cases and 6 million deaths reported worldwide (Bacher-Hicks, Raaper & Brown 2020; Flores & Gago, 2020; Johnson, Lee, & Kim, 2020; Raaper & Brown, 2020). The pandemic has had a profound impact on society and the global economy, with

no nation remaining untouched by its effects (Flores & Gago, 2020; Johnson et al., 2020; Raaper & Brown, 2020). Developing countries, however, during the COVID-19 pandemic, countries faced many lack health medical infrastructure and were disproportionately affected by the pandemic, due to a lack of resources (Hossain, Abdulla & Rahman 2022; Blundell et al., 2020).

In response around the world have implemented various protocols and limitations in an effort to mitigate the widespread impact of the virus. These measures have often included implementing a state of national lockdown, which includes limiting social gatherings and encouraging individuals to practice physical distancing (Josephson, Kilic, & Michler, 2021; Kinnucan-Welsch, 2020). As a result of these measures, most places of public assembly, including schools, have been closed, as well as other places of entertainment and commerce (Kinnucan-Welsch, 2020).

The educational system has also been significantly impacted by the COVID-19 pandemic. The full extent of these disruptions is still being investigated, but it is clear that there have been significant challenges brought on by the widespread adoption of online learning (Bacher-Hicks et al., 2020). Despite these challenges, the potential for driving innovation in higher education should not be overlooked (Bacher-Hicks et al., 2020). Online learning has provided opportunities for new pedagogical approaches and has opened up education to a wider audience, including those who may not have been able to access traditional in-person classes (Kinnucan-Welsch, 2020).

Aside from its economic influence, the COVID-19 has greatly impacted the education system in many countries. In South Africa, previous researchers revealed that schools were closed entirely during the period of the pandemic, which resulted in online learning during the COVID-19 pandemic (Mukuna & Aloka, 2020; Maphosa, 2021).). South Africa implemented lockdown and social distancing measures, resulting in the closure of all schools and higher education institutions in the country (Mncube, Mutongoza & Olawale, 2021; Mahaye, 2020). Despite the challenges posed to both educators and learners, education systems have been forced to transition from traditional face-to-face pedagogical classroom methods into remote virtual platforms during the lockdown in South Africa.

In addition to its economic impact, the COVID-19 pandemic has greatly affected the education system in many countries. Studies have shown that in South Africa, schools were closed down entirely during the pandemic, leading to a shift towards online learning (Mpungose, 2021; Makgala, 2020; Mhlanga & Moloi, 2020). In response to the pandemic, South Africa implemented lockdown and social distancing measures, which resulted in the closure of all schools and higher education institutions across the country (Department of Basic Education, 2020).

The transition to remote learning has presented numerous challenges for both educators and learners in South Africa. Educators have had to quickly adapt to new teaching methods, such as virtual classrooms and online instruction, while learners have had to navigate the difficulties of learning from home, including lack of access to technology and resources (Makgala, 2020). Despite these challenges, education systems have been forced to transition from traditional face-to-face pedagogical classroom methods into remote virtual platforms (Department of Basic Education, 2020). However, studies such as Bacher et al 2020 noted that the Covid 19 had expedited the digital transition of higher education, forcing universities to establish virtual cultures. Higher education institutions in South Africa have had to ensure learning continues through transitioning to virtual classes.

Although several studies have argued that the COVID-19 has led to increased adoption of digital tools and digitization, there are concerns about the inequality this transition created (Amankwah-Amoah, Khan, Wood & Knight, (2021). according to Martin-Berbero (2020), students with and without resources are greatly impacted negatively. This poses a threat to the 4th goal of the United Nations'

Sustainable Development Plan which aims to “provide inclusive and equitable quality education and encourage lifelong learning opportunities for everyone.” Even before COVID-19, concerns were raised that SDG 4 was moving at too slow of a pace, putting the attainment of its objectives by 2030 at risk.

Based on the foregoing, this study therefore aims to examine challenges in teaching, learning, and SDG 4 during and after the COVID-19 pandemic in South Africa. The latest framework of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) framework was adopted for this research. The PRISMA paradigm is widely used to perform systematic reviews due to its adaptability in leading searches and synthesis of literature. To find relevant prior studies, a systematic literature search was conducted across 9 databases which include; AJOL, JSTOR, SA ePublications, ScienceDirect, SciVal, Scopus, South African National Bibliography (SANB), SpringerLink, Taylor and Francis Online Journals, Web of Science. Recent articles from 2020 were included in the search results. The keywords used in COVID-19 OR SARS 19, higher education, pedagogy Education and online learning, or e-learning and Sustainable Development Goal 4 (SDG) on Education or Education Equality and South Africa.

Inclusion and Exclusion Criteria

Inclusion and exclusion criteria were established to help choose the best papers for the comprehensive evaluation. Included were studies conducted during and after the COVID-19 period and assessed its impact on higher education learning and teaching, Databases pertinent to the search were located using the DUT online library and are shown in Figure 1 below.

We chose published peer-reviewed articles that were available up to December 2022. A total of 50 articles were retrieved from electronic databases. The selected articles were screened based on the following: titles, abstracts, and full-text. The selection of relevant studies all met the following inclusion criteria: (1) written in English or having English translations; (2) peer-reviewed; and (3) published during and after the outbreak of SARS COVID-19 (4) The study focused on South Africa education.

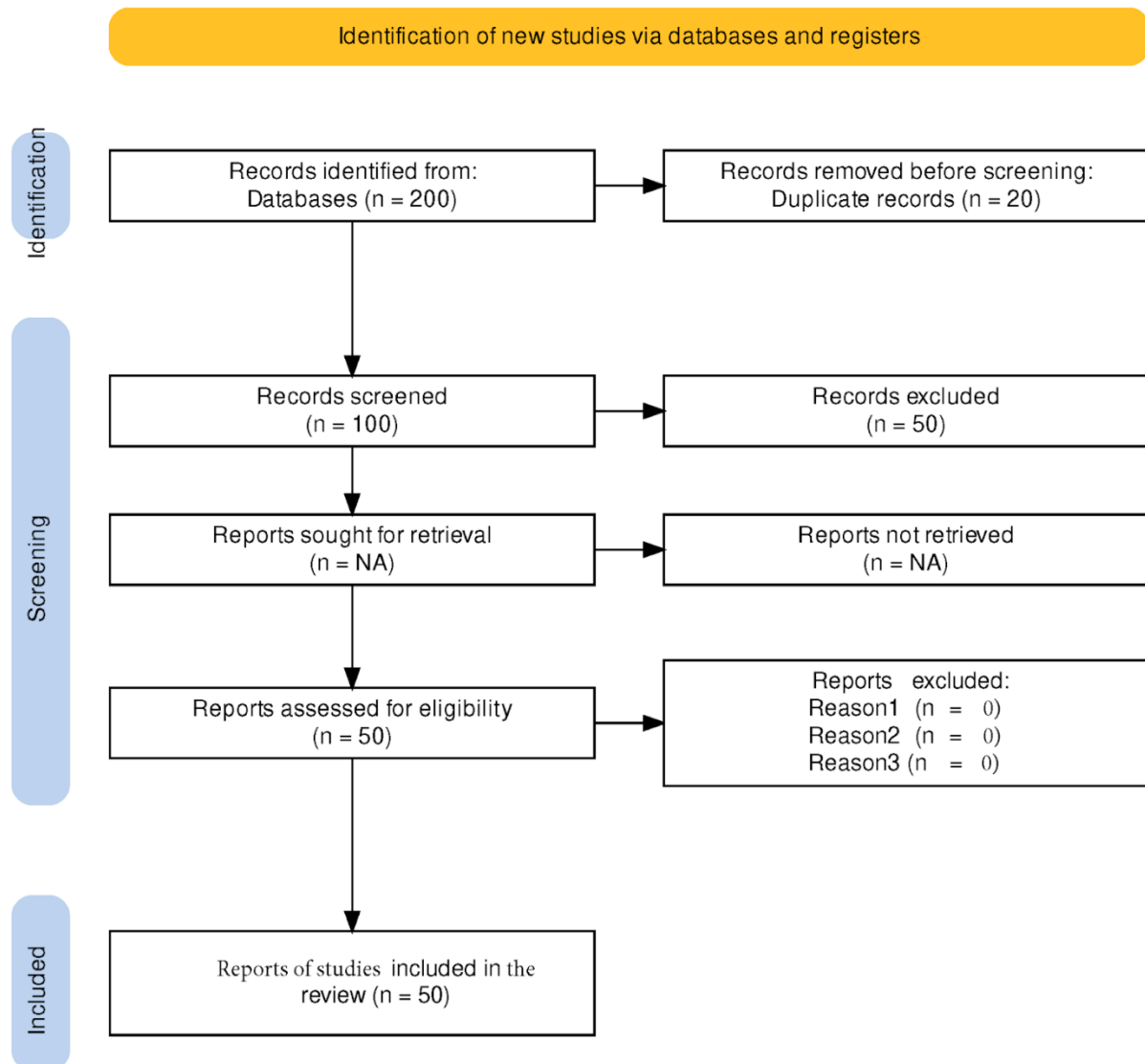


Figure 1: Identification of New Studies via Databases and Registers

Source: Author's Representation – based on Prisma

Study Selection and Data Extraction

Articles that were not peer-reviewed or were not available in English were also not included. The authors ran a citation chain for each retrieved article to ensure that all relevant publications were included. After culling 103 duplicates and other articles with similar content, the writers were left with 197 unique pieces. In addition, 97 pieces were either not full or were reprints, letters to the editor, or were not peer-reviewed by the authors. We looked over the abstracts more thoroughly and took out 34 that did not make the cut. All the writers double-checked the remaining 66 articles and the ones that did not make the cut were disregarded. The abstracts of the selected publications were then separately evaluated by the authors, who ultimately determined that 34 of the articles met the criteria for inclusion in the review. Ten articles were disqualified after we reviewed their entire texts to determine their eligibility. In all, only 24 papers met the inclusion criteria for this analysis. Digital health technology for remote medical assistance was the primary focus of the COVID-19 research plans. The PRISMA flowchart shown in Fig. 1 outlines the procedures that must be followed when reporting the total number of publications. All writers independently evaluated

the studies included. The complete texts of the studies were read, and information was gathered on the digital health technology used, healthcare services provided, geographic region or province of study, goals, obstacles, and dangers.

Discussion of Result

The findings of this research are based on an examination of previously published studies related to teaching and learning during the COVID-19 Pandemic, especially in South Africa. The majority of the studies examined in this study focused on how educational institutions responded to the pandemic and lockdown difficulties faced during virtual teaching and learning. However, there were a limited number of studies that examined the potential benefits and academic outcomes arising from the pandemic. The results of the literature review have been organized into four main themes:

- Teaching Challenges in South Africa During the Pandemic;
- learning Difficulties During the Covid 19 Pandemic;
- higher education institutions' response to the COVID-19 Pandemic; and
- Post Covid 19: blended approach to teaching and learning in South Africa.

Teaching Challenges in South Africa During the Pandemic

The sudden escalation of the COVID-19 pandemic has presented numerous challenges for academics and educators in South Africa. Recent studies looked at the experiences of teacher educators in the shift to remote teaching and learning, highlighting the challenges and barriers faced in the transition. (Mhlanga, Denhere & Moloi, 2022; Glietenberg, Petersen, & Carolin, 2022; Chasi & Quinlan, 2021). Overall, these studies suggest that while the pandemic has presented significant challenges to the higher education sector in South Africa, it has also served as an opportunity for digital transformation and innovation.

Many studies revealed that the pedagogy shift to online learning required educators to rapidly adapt to the new normal in teaching and learning, often with limited support and resources (Burgess & Sievertsen, 2020; Chen et al., 2020; Wang et al., 2020). In South Africa, the challenges faced by educators have been further compounded by inadequate access to IT infrastructure and internet access in many communities.

Another challenge educators face is the lack of IT expertise and knowledge of online instruction which further compounded these difficulties (Chen et al., 2020). These challenges include difficulties in organizing online classes, implementing online teaching plans, selecting appropriate teaching platforms, and assessing the quality of online instruction (Chen et al., 2020; Goh & Sandars, 2020; Teras et al., 2020). Additionally, academics have reported concerns about their ability to connect with students in an online setting as effectively as in traditional, in-person classrooms (Jegade, 2020; Ratten, 2020). Bryson and Andres (2020) argue that attempting to replicate in-person instruction in an online environment is not only impossible but also detrimental to student learning.

The sudden shift to online learning has also resulted in a lack of familiarity with online tools among faculty members, which can impede their ability to effectively deliver instruction (Chang & Fang, 2020; Donitsa-Schmidt & Ramot, 2020). Technical difficulties, such as network congestion, can also pose challenges for online instruction (Chen et al., 2020). Furthermore, instructors with limited experience in online education may struggle to address common student issues, such as lack of self-discipline and negative learning attitudes (Bao, 2020).

Learning Difficulties During the COVID-19 Pandemic

The COVID-19 pandemic has brought about significant challenges for students in South Africa (Mhlanga & Moloji, 2020; Maree, 2022). The sudden shift to remote learning and the closure of educational institutions have disproportionately affected students from low-income households, who may not have access to the necessary technology or resources to participate in online learning (Department of Basic Education, 2020). Additionally, the economic impact of the pandemic has led to increased poverty and food insecurity, further exacerbating the challenges faced by students (Statistics South Africa, 2021).

The COVID-19 pandemic has led to a significant shift in higher education institutions in South Africa, with many turning to online technologies such as Microsoft Teams, Zoom, and Blackboard to continue instruction remotely (Mhlanga et al., 2022). However, this shift has highlighted the digital divide that exists in the country, with students in remote and rural areas facing significant challenges in accessing the necessary technology and resources for online learning. According to a report by the Department of Basic Education (2020), many rural schools in South Africa have limited or no internet connections and no access to electricity, making it difficult for students to engage in online learning.

This digital divide has the potential to exacerbate existing issues of marginalization, particularly for black and colored students who already struggle to access mainstream education. To prevent this, efforts must be made to include rural youth in online learning and address the lack of infrastructure and resources in these areas (Department of Basic Education, 2020). In addition to issues of access, students also faced difficulties in adapting to online learning methods. Reports such as have noted that students struggled to adjust to the new format, with many having trouble completing tasks at home and inadequate communication between them and their instructors (Aboagye et al., 2020; Chung, 2020; Rapanta et al., 2020).

The literature suggests that students' access to digital devices such as smartphones, tablets, and laptops, as well as a dependable network infrastructure, are critical for effective online instruction (Mamun et al., 2020; Naciri, 2020; Aboagye et al., 2020; Rose, 2020; Wargadinata et al., 2020). Studies such as Chang and Fang (2020) have found that between sixty and seventy percent of educators feel that "network speed and stability are inadequate," which creates barriers to students' use of digital resources for education. Overall, the literature implies that to effectively support students in online learning during and after the pandemic, efforts must be made to address issues of access and adaptability, particularly for students in remote and rural areas.

Higher Education Institutions Response to COVID-9 Pandemic

To mitigate the spread of the virus and keep students and staff safe, many universities and colleges in South Africa have transitioned to online learning platforms (e.g., Nkuna, 2020). This has allowed institutions to continue providing educational opportunities to students despite the challenges posed by the pandemic.

For example, studies found that the majority of universities in South Africa have adopted online learning platforms to keep education going in the aftermath of the COVID-19 pandemic (Johannes, 2022; Ntombozuko et.al, 2022; Samantha et.al, 2022; Mokgoro, 2022). This shift towards online learning has allowed students to continue their education despite the challenges posed by the pandemic, but it has also highlighted the need for further research and development in this area to ensure that these platforms provide high-quality virtual education. This shift forced higher education institutions in South Africa to rapidly adapt and shift to online learning and digitalized curriculum, with varying degrees of success (Ntombozuko et.al, 2022; Samantha et.al., 2022; Mokgoro, 2022). The

pandemic has also highlighted the need for academic researcher coaching, curriculum adjustments, and inclusive considerations for different groups of students and academic activities virtually.

Other studies according to Ratten (2020) have shown that universities and colleges typically respond by closing their campuses and calling off all in-person classes. Face-to-face graduation ceremonies, workshops, conferences, sports (both intra and inter-university), and other activities on campus were all postponed or canceled as a result (Crawford, Butler-Henderson, Rudolph, Malkawi, Glowatz, Burton, & Lam, 2020). However, most educational institutions face several obstacles in implementing online teaching and learning, such as network concerns, a lack of resources, student and academic difficulties in adjusting, etc. The difficulties associated with online education are elaborated upon in the next section. Research like this shows that most educational institutions throughout the world took the same approach to dealing with the COVID-19 crisis.

The Impact of the Covid 19 on the SDG 4

The United Nations Sustainable Development Goal 4 (UN SDG 4) strives to provide all individuals with inclusive and equitable access to quality education and to promote opportunities for lifelong learning (United Nations, 2015). However, in South Africa, the ability to achieve this goal has been greatly hindered by the outbreak of COVID-19. The pandemic has resulted in widespread school closures (Department of Basic Education, 2020), which has disrupted education for millions of students (Moloi, 2020). Additionally, many students in South Africa, particularly those from low-income families, lack access to the technology and resources needed to participate in remote learning (Chisholm, 2020). Furthermore, the socio-economic disparities that existed before the pandemic have been exacerbated (Department of Basic Education, 2020), making it even more difficult for marginalized communities to access quality education. Consequently, the pandemic has highlighted the need to address the digital divide (Moloi, 2020) and other systemic issues that impede access to education in South Africa and other countries. The shift to online learning has highlighted the disparities in access to technology and resources, particularly for marginalized groups such as black and colored students and students in remote and rural areas (Department of Basic Education, 2020). According to a report by the Department of Basic Education (2020), many rural schools in South Africa have limited or no internet connections and no access to electricity, making it difficult for students to engage in online learning. This digital divide has the potential to exacerbate existing issues of marginalization and impede the achievement of SDG 4.

Post-COVID-19: Blended Approach to Teaching and Learning in South Africa

One approach that has been suggested as a solution to the challenges posed by the pandemic is the blended approach to teaching and learning (BTL) (Makgala, 2020).

The BTL approach combines traditional face-to-face teaching with online and digital elements to create a more flexible and personalized learning experience for students (Garrison & Vaughn, 2008). This approach has been found to be particularly effective in addressing the needs of diverse student populations, such as those found in South Africa (Garrison & Kanuka, 2004).

In South Africa, the BTL approach has been advocated by the Department of Basic Education as a way to address the challenges posed by the pandemic, such as the lack of access to technology and internet connectivity, which affects many students in the country (Department of Basic Education, 2020). However, the implementation of the BTL approach in South Africa has been met with some challenges, such as a lack of teacher training and support, as well as inadequate infrastructure and resources (Department of Basic Education, 2020).

Studies such as Sven et.al (2022), Johannes (2022) Charity et.al (2022) Enoch (2022), Ramashego (2022) Mohale et.al (2022) Nomzamo et.al (2022), and Ramashego et.al (2021) suggests that the shift to remote teaching and learning in South African higher education institutions during the COVID-19 pandemic has had both positive and negative impacts on the teaching and learning experiences of teacher educators and students. While blended learning is seen as having long-term value, the lack of access to technology and internet connectivity, as well as the unique demands of teacher education, pose challenges to the implementation of online education. The authors recommend more emotional support for teacher educators, and more investment in technology and internet infrastructure to improve the quality of online education.

For students living with disabilities, Dube and Baleni (2022), explore the experiences of higher education students with disabilities in online learning during the pandemic. the study finds that online learning has both advantages and disadvantages for students with varying disabilities and that students with mobility and visual disabilities prefer online learning, while students with intellectual disabilities prefer traditional, face-to-face methods. The study also highlights that most online lecturers are not aware of students' disabilities, leading to a lack of inclusivity in instruction and assessment.

In a comparative study, Isabella et.al (2022) Isabella et al. conducted a study in 2022 that examined various aspects of digital and network readiness in Hungary, South Africa, and Wales. The study found a correlation between a country's GDP and their network readiness and also discovered variations in digital access and trust among participating universities. These findings provide useful information for improving teaching methods and practices, particularly for universities that primarily offer on-campus instruction. The study emphasizes the importance of recognizing and addressing challenges and barriers to student learning experiences caused by uneven access to digital technologies and communication and provides recommendations for future educational policies and practices.

Motala, S., & Menon, K. (2020). In search of the 'new normal': Reflections on teaching and learning during COVID-19 in a South African university. *Southern African Review of Education with Education with Production*, 26(1), 80-99.

Conclusion and Recommendations

There is no denying that the COVID-19 pandemic has hastened the shift towards digital education in higher institutions, as universities have had to rapidly create virtual learning environments to continue providing education to students (Choi, Robb, Mifli & Zainuddin, 2021). This has been particularly felt in South Africa, where higher education institutions have had to adapt to virtual classes in order to ensure continuity of learning (Motala & Menon, 2020). Though this transition has come with its own set of challenges, such as the need to quickly adapt to new teaching methods and technologies, it has also presented opportunities for innovation and has expanded access to education for a broader range of individuals. While this transition was seen as a potential solution for higher education during this time, our study has revealed that it has also brought a number of difficulties for both students and teachers. The research identified various obstacles to online education, including difficulties for educators and students to adjust, internet connectivity issues, unfavorable learning environments, mental health concerns, lack of necessities, and a lack of tools for teaching and learning. Despite these challenges, the study also highlights potential areas for improvement and growth in the field of online education in South Africa (Aruleba & Jere, 2022).

In recommending, as the COVID-19 pandemic has presented a number of challenges for educators and students in South Africa. The sudden shift to online learning has highlighted the digital divide that exists in the country, with many students from low-income households, rural areas, and marginalized

communities facing significant difficulties in accessing the necessary technology and resources to participate in online learning. Educators have also faced challenges adapting to new teaching platforms and methods with limited support and resources, as well as difficulties in connecting with students in an online setting. The pandemic has also led to increased poverty and food insecurity, exacerbating the challenges faced by students. To address these challenges, efforts must be made to bridge the digital divide, capacity building in training and retraining of students and educators in technological tools in education including rural youth in online learning, and address the lack of infrastructure and resources needed in ICT pedagogy in traditional education.

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