

American Journal of Education and Practice (AJEP)



**The Effects of COVID-19 on Public Secondary Schools Operating
in Various Economic Environments. A Case Study of Schools in
Metros South and Central Schools, Western Cape**

Anthea Hurling, Professor Harry Ballard and Althea Whitaker



The Effects of COVID-19 on Public Secondary Schools Operating in Various Economic Environments. A Case Study of Schools in Metros South and Central Schools, Western Cape

 Anthea Hurling^{1*},  Professor Harry Ballard²,  Althea Whitaker³

¹Post Graduate Student, Cape Peninsula University of Technology

²Adjunct Professor, Department of Public Administration and Governance
Cape Peninsula University of Technology

³Lecturer, Department of Public Administration and Governance
Cape Peninsula University of Technology

ABSTRACT

Purpose: The aim of this study was to investigate the effects of COVID-19 on public secondary schools operating in various economic environments for schools in Metros South and Central Schools, Western Cape.

Materials and Methods: The research employed a mixed-methods approach, combining semi-structured interviews and structured questionnaires, to explore the impact of COVID-19 on public secondary schools from the perspectives of principals, teachers, learners, and parents. The data analysis involved qualitative coding and quantitative statistical analysis, while addressing ethical considerations throughout the process.

Findings: The study found that School A in the economically disadvantaged Metro South area experienced higher losses of relatives, friends, and income due to

COVID-19, compared to a school in Metro Central. School A also faced greater disruptions to sociocultural practices like school closures and outdoor restrictions, highlighting the pandemic's disproportionate impact on disadvantaged communities.

Implications to Theory, Practice and Policy: The study contributes to Transactional Distance Theory and Self-Regulated Learning Theory by showing how COVID-19 disruptions disproportionately impacted disadvantaged schools' ability to bridge distances and support self-regulation. For practice and policy, it highlights the need for targeted interventions and equitable resource allocation addressing systemic inequalities in South Africa's education system.

Keywords: *COVID-19, Public Secondary Schools, Economic Environments*

INTRODUCTION

The arrival of the Coronavirus Disease (COVID-19) in December 2019 sparked a global crisis, profoundly altering daily life and societal structures, including the education sector. This pandemic, driven by the severe respiratory syndrome coronavirus 2 (SARS-CoV-2), introduced a set of unprecedented challenges due to its rapid spread, leading to substantial uncertainty about its characteristics and impact over time (Paules et al., 2020). Governments worldwide responded to the crisis by implementing a range of mitigation strategies, notably the suspension of in-person educational activities, which disrupted established learning routines and posed significant challenges to both learners and educational management (Haug et al., 2020). The closure of schools, while a necessary public health measure, raised critical concerns about the immediate and long-term educational and socio-economic consequences for students across various economic environments.

Significant educational research, such as the studies by Woessmann (2020) and Haeck et al. (2020), predicted a considerable adverse effect on learning outcomes due to school closures, with potential increases in socio-economic achievement gaps. These projections pointed to an exacerbation of pre-existing inequalities in education, impacting students differently depending on their socio-economic backgrounds. The rapid shift to online and remote learning, although innovative, was not without its challenges. Issues such as access to technology, digital literacy, and the quality of educational delivery varied significantly, affecting the effectiveness of learning during the pandemic (Andrew et al., 2020).

The differential impact of COVID-19 on public secondary schools operating in diverse economic environments provides a fertile ground for investigation. For instance, in economically disadvantaged areas, the shift to digital learning platforms was hampered by a lack of access to necessary technological resources. Studies from various countries, including the United States and India, have highlighted how disparities in digital access have led to significant educational disruptions, disproportionately affecting low-income students (Azim Premji University, 2021; Education Endowment Foundation, 2020).

Conversely, schools in more affluent regions were better equipped to transition to online learning, with greater access to digital devices and internet connectivity. However, even in these environments, the shift raised questions about the quality of education and the potential for widening educational gaps due to varied capabilities in handling remote learning systems (Renaissance Learning, 2021). The global perspective also reveals significant differences in how educational systems managed the crisis. Countries with well-established online learning infrastructures prior to the pandemic, such as South Korea and Finland, were more adept at maintaining educational continuity compared to those where digital learning was not as prevalent (UNESCO, 2020).

The current study seeks to explore the effects of COVID-19 on public secondary schools operating in different economic environments by examining a range of variables including academic achievement, access to learning resources, and socio-economic impacts. The study will employ both quantitative and qualitative methodologies to provide a comprehensive overview of the pandemic's effects across diverse educational settings. This research aims to contribute to the broader discourse on educational equity and resilience by examining how different economic environments influenced educational outcomes during the pandemic. By understanding these dynamics, policymakers and educational leaders can better prepare for future disruptions, ensuring that learning continues effectively across all segments of society.

Problem Statement

The COVID-19 pandemic and resulting school closures severely disrupted South Africa's public secondary education system, exacerbating long-standing inequalities across diverse socioeconomic contexts. The rapid transition to remote learning modalities exposed significant disparities in access to digital infrastructure, devices, and internet connectivity, disproportionately impacting learners from disadvantaged backgrounds and rural areas. Many public secondary schools, particularly in provinces like the Eastern Cape, Limpopo, and KwaZulu-Natal, lacked the necessary resources and preparedness to facilitate effective remote instruction, leading to substantial learning losses and widening achievement gaps (Spaull & Jansen, 2022).

Additionally, the closures deprived learners of critical support services like school feeding programs, potentially exacerbating existing socioeconomic challenges (Wills et al., 2021). The disruption of routines and lack of in-person interactions contributed to increased mental health issues among learners, such as anxiety and depression (Ranchhod et al., 2021; Jacobs & Makhunga, 2021). Furthermore, educators faced significant obstacles in adapting to virtual teaching methodologies, monitoring student progress, and conducting assessments remotely (Rwigema, 2021). These multifaceted challenges highlighted the urgent need to address systemic inequalities, invest in digital infrastructure, upskill educators, and implement targeted interventions to support learners from marginalized communities, ensuring a more resilient and equitable public secondary education system capable of withstanding future disruptions.

Research Question

How did the COVID-19 pandemic impact the academic performance, mental health, and overall well-being of learners in public secondary schools operating in different economic environments, and what targeted interventions can mitigate these impacts?

Theoretical Review

Transactional Distance Theory (TDT)

Developed by Michael G. Moore, the Transactional Distance Theory (TDT) provides a robust framework for understanding the complexities of distance education, which became increasingly relevant during the COVID-19 pandemic due to the widespread adoption of remote learning modalities. TDT posits that the educational experience is shaped by three main components: structure, dialogue, and learner autonomy. The theory suggests that an optimal educational experience depends on a balanced relationship between these components. During the pandemic, the shift to online learning significantly altered these dynamics. Structure, which refers to the organization and design of educational content, had to be rapidly adapted to suit online platforms, potentially leading to inconsistencies in the delivery of instruction. Dialogue, the interactive component of education involving communication between teachers and students was transformed, often resulting in reduced immediacy and fewer cues for gauging understanding and engagement. Finally, learner autonomy became more critical yet challenging, as students were required to manage their learning processes with varying degrees of home support and resources. By applying TDT, this study can explore how the balance between structure, dialogue, and autonomy affected learning outcomes during the pandemic, providing insights into how remote education models can be optimized.

Self-Regulated Learning (SRL) Theory

The Self-Regulated Learning (SRL) Theory, articulated by Barry Zimmerman, is vital for understanding how students manage their own learning processes, especially under conditions

where traditional educational structures are disrupted. SRL involves strategic approaches to learning where students set goals, monitor their progress, and adjust their behaviors in response to feedback. During the pandemic, as educational settings moved online, students' ability to regulate their learning became even more crucial. They needed to navigate new forms of content delivery, maintain motivation despite the lack of physical classroom settings, and adapt to new ways of interaction with peers and instructors. This theory underscores the importance of developing self-regulation skills that enable students to learn effectively in any environment. For instance, understanding the components of SRL can help educators design interventions that improve students' goal-setting, self-monitoring, and strategic planning capabilities, thereby enhancing their capacity to learn independently. This research could further investigate how interventions aimed at improving self-regulation could mitigate the challenges posed by sudden shifts to remote learning, as experienced during the COVID-19 pandemic.

Both TDT and SRL provide essential lenses through which this study examines the disparities in educational outcomes caused by the COVID-19 pandemic. TDT helps explain how the educational experience varied across different economic environments due to the imbalance in structure, dialogue, and autonomy in remote learning. SRL complements this by offering insight into how students' ability to manage their learning was differentially affected, particularly in disadvantaged areas. Together, these theories inform the study's approach to understanding how the pandemic widened educational gaps and what targeted interventions can address these disparities.

Empirical Review

Schleicher (2020) presents a detailed examination of COVID-19's impact on OECD education systems, focusing on dimensions such as school closures, public financing, and digital learning. This global perspective is crucial for understanding similar impacts in diverse economic settings within South Africa, helping to contextualize local experiences within a broader international framework.

Kuhfeld et al. (2020) analyze the effects of the pandemic on student learning outcomes in the U.S., employing longitudinal growth models. This approach offers a valuable framework for assessing similar educational impacts in South Africa, particularly to quantify learning disparities across different socioeconomic backgrounds.

The NCES (2022) report provides insights into the adaptations of U.S. schools during the pandemic, including the transition to remote learning and engagement challenges. These findings can help evaluate how South African schools across various economic environments have navigated similar challenges, assessing their adaptive strategies and effectiveness.

Goff et al. (2021) explore the resilience of rural school leaders during the pandemic, emphasizing the importance of community engagement and resource management. This study can inform an examination of leadership responses in South African schools, particularly in under-resourced areas, and suggest strategies for enhancing educational leadership during crises.

Zalat et al. (2021) and Maatuk et al. (2022) focus on the challenges and acceptance of e-learning during the pandemic. Their findings are particularly relevant for South Africa, highlighting the need to address the digital divide and improve e-learning platforms across different educational settings.

This study aims to address several research gaps by providing an in-depth analysis of how public secondary schools in South Africa's diverse economic environments have responded to

the pandemic. It seeks to build on Schleicher's (2020) broad analysis by focusing on local conditions, using Kuhfeld et al.'s (2020) methodologies to explore specific learning impacts, and drawing on the NCES (2022) report to assess the effectiveness of remote learning strategies. Additionally, it will examine leadership strategies highlighted by Goff et al. (2021) in the South African context and investigate the technological challenges and solutions identified by Zalat et al. (2021) and Maatuk et al. (2022), thus offering targeted solutions to enhance educational resilience and equity in South Africa.

This study aims to address several research gaps by providing an in-depth analysis of how public secondary schools in South Africa's diverse economic environments have responded to the pandemic. It builds on Schleicher's (2020) broad analysis of educational inequities but grounds it in the unique socio-economic conditions of South Africa, where structural inequalities play a more prominent role in shaping educational outcomes. Similarly, Kuhfeld et al.'s (2020) methodology for quantifying learning loss will be adapted to South Africa's context, where longitudinal data is often scarce, and the digital divide more pronounced.

The insights from Goff et al. (2021) on leadership resilience will be applied to examine how school leaders in economically disadvantaged areas have adapted to pandemic challenges, though this study will go further by exploring systemic solutions beyond resilience. Lastly, the challenges identified by Zalat et al. (2021) and Maatuk et al. (2022) around e-learning adoption will be critically examined, with particular focus on how South Africa's digital divide complicates the adoption of such solutions.

MATERIALS AND METHODS

The research methodology for this study utilized a mixed-methods approach, combining qualitative and quantitative data collection methods to explore the effects of COVID-19 on public secondary schools in the Western Cape, South Africa. The interpretivist paradigm guided the study, focusing on understanding participants' experiences. An exploratory research design was employed, with qualitative data collected through semi-structured interviews and quantitative data gathered via structured questionnaires. The target population comprised 63 teachers from two schools: 33 from School A and 30 from School B. Stratified random sampling ensured a representative sample size of 54 participants, with 28 from School A and 26 from School B. Data was analyzed using both thematic analysis for qualitative data and t-tests for quantitative data, with ethical considerations rigorously followed to protect participant confidentiality. Limitations, such as participant bias and pandemic-related challenges, were addressed by offering virtual interviews and fostering trust.

FINDINGS

Quantitative Results

COVID-19 Intermediate Outcomes

The study aimed to investigate the effects of COVID-19 on public secondary schools operating in different economic environments, Metro South and Metro Central. The intermediate outcomes assessed included loss of lives, loss of livelihoods, and disruption of sociocultural practices. Table 1 presents the group statistics for the relevant statements from Section B of the questionnaire.

Table 1: COVID-19 Intermediate Outcomes

	School	N	Mean	Std. Deviation	Std. Error Mean
I lost a close relative due to COVID-19 infections.	School A (Metro South)	23	4.74	0.689	0.144
	School B (Metro Central)	20	3.50	1.933	0.432
I lost a friend due to COVID-19 infections.	School A (Metro South)	23	4.83	0.834	0.174
	School B (Metro Central)	20	3.60	1.957	0.438
I have friends who lost their close relatives due to COVID-19 infections.	School A (Metro South)	23	5.00	0.000	0.000
	School B (Metro Central)	20	4.00	1.777	0.397
My income got affected negatively due to COVID-19.	School A (Metro South)	23	3.78	0.998	0.208
	School B (Metro Central)	20	2.65	1.461	0.327
I have friends who lost their jobs due to COVID-19.	School A (Metro South)	23	4.48	0.898	0.187
	School B (Metro Central)	20	4.65	1.089	0.244
I have friends whose businesses went under due to COVID-19.	School A (Metro South)	23	3.87	1.325	0.276
	School B (Metro Central)	20	4.80	0.894	0.200
Schools attended by my children closed due to COVID-19.	School A (Metro South)	23	4.91	0.417	0.087
	School B (Metro Central)	20	4.20	1.642	0.367
Schools in my locality closed due to COVID-19.	School A (Metro South)	23	5.00	0.000	0.000
	School B (Metro Central)	20	4.60	1.231	0.275
Children were less likely to play outdoors due to COVID-19 fears.	School A (Metro South)	23	5.00	0.000	0.000
	School B (Metro Central)	20	4.30	1.342	0.300

The results indicate that both School A (Metro South) and School B (Metro Central) experienced significant impacts related to the loss of lives due to COVID-19 infections. School A reported a higher mean score of 4.74 (SD = 0.689) compared to School B's mean score of 3.50 (SD = 1.933) for the statement "I lost a close relative due to COVID-19 infections." This suggests that respondents from the Metro South area were more likely to have lost a close relative to COVID-19 infections. Similarly, School A had a higher mean score of 4.83 (SD = 0.834) compared to School B's mean score of 3.60 (SD = 1.957) for the statement "I lost a friend due to COVID-19 infections." Additionally, School A strongly agreed with the statement "I have friends who lost their close relatives due to COVID-19 infections" (M = 5.00, SD = 0.000), while School B reported a lower level of agreement (M = 4.00, SD = 1.777).

Regarding the loss of livelihoods, School A reported a higher mean score of 3.78 (SD = 0.998) compared to School B's mean score of 2.65 (SD = 1.461) for the statement "My income got affected negatively due to COVID-19." This indicates that the pandemic had a more significant impact on the income of respondents from the Metro South area. Both schools agreed that their friends lost jobs due to COVID-19, with School A having a mean score of 4.48 (SD = 0.898) and School B having a mean score of 4.65 (SD = 1.089). However, School B reported a slightly

higher mean score of 4.65 (SD = 1.089) compared to School A's mean score of 3.87 (SD = 1.325) for the statement "I have friends whose businesses went under due to COVID-19."

The results demonstrated a significant disruption of sociocultural practices, including school closures, due to COVID-19. School A strongly agreed that schools attended by their children closed due to COVID-19 (M = 4.91, SD = 0.417), while School B reported a lower level of agreement (M = 4.20, SD = 1.642). Both schools strongly agreed that schools in their locality closed due to COVID-19, with School A having a mean score of 5.00 (SD = 0.000) and School B having a mean score of 4.60 (SD = 1.231). Furthermore, both schools strongly agreed that children were less likely to play outdoors due to COVID-19 fears, with School A having a mean score of 5.00 (SD = 0.000) and School B having a mean score of 4.30 (SD = 1.342).

The findings suggest that the COVID-19 pandemic had a substantial impact on public secondary schools in both the Metro South and Metro Central areas, resulting in loss of lives, loss of livelihoods, and disruption of sociocultural practices. However, there were notable differences between the two areas, with School A (Metro South) appearing to be more affected in terms of loss of close relatives and income, while School B (Metro Central) reported a higher impact on businesses going under. These differences could be attributed to the varying economic environments of the two areas, as well as other factors such as population density, access to healthcare, and the specific measures implemented in each region during the pandemic.

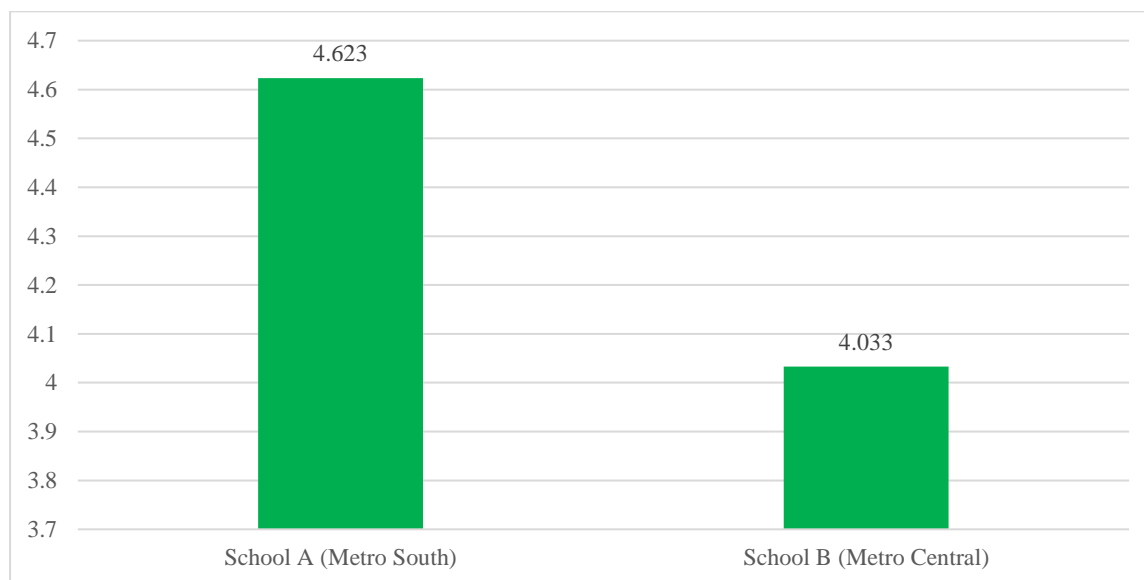


Figure 1: Summary of Comparative analysis on COVID-19 Intermediate Outcomes

Qualitative Results

The effects of COVID-19 on school management, learners' academic performance, and well-being varied significantly between schools in different economic environments. In School A (Metro South), which is located in an economically disadvantaged area, the management faced numerous challenges in coordinating staff, maintaining regular meetings, and ensuring safety due to financial constraints. Conversely, School B (Metro Central), situated in a more affluent area, managed to adapt to new guidelines and maintain coordination more effectively. Academic performance in School A suffered significantly due to limited access to technology and the internet, hindering effective participation in online learning. In contrast, while School B also faced challenges, the availability of resources helped maintain a better level of

educational continuity. The well-being of learners was adversely affected in both schools, with students experiencing stress, anxiety, and isolation. However, the severity was more pronounced in School A, where economic hardships exacerbated these issues. The economic environment played a crucial role in influencing the severity of COVID-19 effects, with School A's disadvantaged status worsening the impact, while School B's relative affluence provided a cushion against some of the pandemic's negative effects.

Discussion

The study reveals that public secondary schools in the Metro South and Metro Central areas experienced varying levels of impact due to the COVID-19 pandemic. School A (Metro South), located in an economically disadvantaged area, reported higher losses in terms of close relatives, friends, and income. This suggests that the pandemic had a more substantial effect on this community, aligning with Schleicher's (2020) observation that the pandemic exacerbated existing inadequacies and inequities in education systems, particularly for students from disadvantaged backgrounds who were at greater risk of falling behind.

The findings regarding the disruption of sociocultural practices, such as school closures and restrictions on outdoor activities, are consistent with the challenges documented in education systems across OECD countries, as highlighted by Schleicher (2020). These disruptions underscore the extensive impact of the pandemic on educational continuity and societal norms, regardless of the economic context. In the South African education system, characterized by significant socio-economic disparities, the study's results emphasize the urgent need to address the differential impacts of the pandemic on schools operating in diverse economic environments.

By identifying the specific challenges faced by schools in economically disadvantaged areas, policymakers and stakeholders can develop targeted interventions and support mechanisms to mitigate these disparities and promote educational equity.

The stark contrast in the pandemic's impact on the two schools underscores the profound influence of socio-economic factors on educational resilience and adaptability. School A, situated in the economically disadvantaged Metro South area, not only faced higher rates of loss of life and income but also experienced more significant disruptions to sociocultural practices. These disruptions likely exacerbated existing vulnerabilities within the community. These findings resonate with broader literature on the intersectionality of poverty, health outcomes, and educational attainment, where poverty often serves as a significant barrier to accessing quality education and healthcare services. The COVID-19 pandemic, with its far-reaching health and economic consequences, has further amplified these disparities, disproportionately affecting marginalized communities.

Schleicher's (2020) observation about the pandemic exposing inadequacies and inequities in education systems is particularly relevant in the South African context. The country's complex history of systemic discrimination and unequal resource allocation has contributed to entrenched disparities in educational opportunities and outcomes. The study's results underscore the urgency of addressing these long-standing issues, as the pandemic has exacerbated existing inequalities, threatening to widen the achievement gap further.

Given these findings, it is imperative for policymakers and stakeholders in South Africa to adopt a multifaceted approach that addresses both the immediate and long-term impacts of the pandemic on schools in diverse economic environments. This approach should involve targeted interventions tailored to the specific needs and challenges faced by schools in economically

disadvantaged areas. Such interventions could include the provision of additional financial resources and support services to mitigate the economic impact of the pandemic on these schools and their communities. Measures might include subsidizing operational costs, providing emergency funding for essential resources, and offering financial assistance to families affected by loss of income.

Furthermore, efforts should be made to address the sociocultural disruptions experienced by these communities. This could involve initiatives aimed at promoting mental health and emotional well-being, fostering community resilience, and supporting the continuation of cultural practices and traditions that may have been disrupted by the pandemic.

Ultimately, the study's findings underscore the need for a holistic and equity-focused approach to educational policymaking and resource allocation in South Africa. By prioritizing the needs of schools in economically disadvantaged areas and addressing the systemic factors that contribute to educational disparities, South Africa can work towards building a more resilient and equitable education system, capable of withstanding future crises while ensuring that every child, regardless of their socio-economic background, has access to quality education and the opportunity to reach their full potential.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study revealed significant disparities in the impact of COVID-19 on public secondary schools operating in different economic environments. School A (Metro South), located in an economically disadvantaged area, experienced more substantial losses in terms of close relatives, friends, and income due to the pandemic. The school also faced severe challenges in managing school operations, academic performance, and student well-being, primarily due to financial constraints and limited resources. These issues were further exacerbated by disruptions to sociocultural practices such as school closures and restrictions on outdoor activities, which had a profound impact on both the learners and the broader community.

In contrast, School B (Metro Central), situated in a more affluent area, managed to adapt more effectively to the pandemic's challenges. The school was better equipped to maintain educational continuity, adhere to new guidelines, and mitigate the negative impacts on students' academic performance and well-being. The ability of School B to leverage its resources highlights the role of economic factors in influencing how schools cope with crises.

The COVID-19 pandemic has had a profound and disproportionate impact on public secondary schools in South Africa, exacerbating existing socio-economic disparities and inequalities within the education system. This study's findings underscore the urgent need for targeted interventions and comprehensive support mechanisms to address the differential effects of the pandemic across diverse economic environments.

Recommendations

The recommendations focus on several key areas to address the challenges faced by public secondary schools during the COVID-19 pandemic, particularly in economically disadvantaged communities. These include targeted resource allocation and funding support to schools in these areas, bridging the digital divide through infrastructure development, device provision, and capacity-building for digital literacy. Additionally, capacity-building for school management in crisis management, change leadership, and strategic planning is recommended. Providing psychosocial support services for learners, families, and educators to address mental health and well-being is emphasized. Fostering stronger parental and community engagement

through family resource centers, workshops, and community-based initiatives is recommended. Lastly, addressing systemic inequalities and socio-economic disparities through collaboration across sectors is highlighted as a crucial step towards achieving educational equity and success.

To address the challenges faced by public secondary schools during the COVID-19 pandemic, particularly in economically disadvantaged areas, a multi-faceted approach is recommended. This includes targeted resource allocation through a pro-poor funding model and the creation of a COVID-19 Recovery Fund. Bridging the digital divide can be achieved by implementing a national digital education strategy, providing devices to students, and establishing digital literacy training centers. School leadership should receive crisis management and strategic planning training, while mental health services should be integrated into schools, supported by initiatives like tele-counseling and mental health education. Parental and community engagement can be strengthened through family resource centers and workshops, and addressing systemic inequalities will require a national taskforce on educational equity, alongside cross-sectoral collaboration and expanded school feeding programs. These steps aim to create a more equitable and resilient education system in South Africa.

REFERENCES

- Andrew, A., Cattan, S., Dias, M. C., Farquharson, C., Kraftman, L., Krutikova, S., ... & Sevilla, A. (2020). *Family time use and home learning during the COVID-19 lockdown* (No. R178). IFS Report.
- Azim Premji University. (2021). Covid-19 and school education in India.
- Goff, P., Goldring, E., Guthrie, J., Bickman, L., and O'Doherty, A. (2021). Rural School Leadership During COVID-19: Resilience, Reorientation, and Reinvention. *Frontiers in Education*, 6:637075. [online] Available at: <https://ororwww.frontiersin.org/articles/10.3389/educ.2021.637075/full>.
- Haack, C., and Lefebvre, P. (2020). Pandemic school closures may increase inequality in test scores. *Canada. Pub. Policy* 46, S82–S87.
- Haug, N., Geyrhofer, L., Londei, A., Dervic, E., Desvars-Larrive, A., Loreto, V., et al. (2020). Ranking the effectiveness of worldwide COVID-19 government interventions. *Nat. Hum. Behav.* 4, 1303–1312.
- Jacobs, L., & Makhunga, S. (2021). The Impact of COVID-19 on the Mental Health of Teachers and Learners in South African Schools. *Journal of Psychology in Africa*, 31(3), 271-274.
- Kuhfeld, M., Soland, J., Tarasawa, B., Johnson, A., Ruzek, E. and Liu, J. (2020) How is COVID-19 affecting student learning? Brown Center Chalkboard. Available at: <https://ororwww.brookings.edu/blog/brown-center-chalkboard/2020/12/03/how-is-covid-19-affecting-student-learning>.
- Maatuk, A.M., Elberkawi, E.K., Aljawarneh, S., Rashaideh, H. and Alharbi, H. (2022) The COVID-19 pandemic and E-learning: challenges and opportunities from the perspective of students and instructors. *Journal of Computing in Higher Education*, 34(1), 21-38. Available at: <https://ororwww.frontiersin.org/articles/10.3389/educ.2021.637075/full>.
- National Center for Education Statistics (NCES) (2022). The Impact of the Coronavirus Pandemic on Public and Private Schools, Principals, and Teachers in the U.S. During the 2019–20 School Year. NCES 2022-019. Available at: <https://orornces.ed.gov/pubsearch/pubinfo.asp?pubid=2022019>
- Paules, C.I., Marston, H.D. & Fauci, A.S., (2020). Coronavirus infections—More than just the common cold. *Jama*, 323(8), pp.707-708.
- Ranchhod, V., Daniels, R. C., Zuze, T. L., Branson, N., Lam, D., & Leibbrandt, M. (2021). Vulnerable Youth and COVID-19: *The Impact of the Pandemic on Young People in South Africa*.
- Rwigema, P. C. (2021). Impact of COVID-19 lockdowns on the education sector. The case of Rwanda. *The Strategic Journal of Business & Change Management*, 8(1), 150–169.
- Schleicher, A. & Reimers, F. (2020). The Impact of COVID-19 on Education – Insights from Education at a Glance 2020.
- Spaull, N., & Jansen, J. (Eds.). (2022). The Impact of the COVID-19 Pandemic on Education: *Insights from South Africa*. Stellenbosch University.

United Nations Educational, Scientific and Cultural Organization. (2020). COVID-19 education response. <https://www.unesco.org/covid19/educationresponse>

Woessmann, L. (2020). Folgekosten ausbleibenden Lernens: Was wir über die Corona-bedingten Schulschließungen aus der Forschung lernen können [Follow-up costs of an absence of learning: What research can teach us about corona-related school closures]. *ifo Schnelldienst* 73, 38–44. <http://hdl.handle.net/10419/225139>

Zalat, M.M., Hamed, M.S. and Bolbol, S.A. (2021) The experiences, challenges, and acceptance of e-learning as a tool for teaching during the COVID-19 pandemic among university medical staff. *PLoS ONE*, 16(3), e0248758. Available at: <https://doi.org/10.1371/journal.pone.0248758>