

Is Load Shedding Another Pandemic, Post COVID-19 at Institution of Higher Learning in South Africa?

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Abstract

In 1994, the African National Congress (ANC)-led government implemented a Reconstruction and Development Programme (RDP) program that entailed providing South Africans with stable and regular electricity supplies. Government through the state president declared COVID-19 a pandemic in 2019. Institutions of higher education resorted to introduce online teaching and learning as a method of ensuring that section 27(1) (a) (b) of the Constitution of the republic of South Africa was executed. Load shedding brought numerous challenges in the education settings in the institutions of higher learning. The crisis led to institutional economy and disrupted academic performance at institutions of higher learning. The purpose of this paper is to examine whether load shedding can be regarded as a pandemic post COVID-19. Access the impact of load shedding at institutions of higher learning. Therefore, this is a conceptual paper and it relied on existing data for analysis and interpretation. The paper recommends that institution of higher learning should invest in alternative sources of energy, and develop an effective communication strategy.

Keywords: institutions, learning, energy, load shedding, teaching.

JEL Classification: K32, K38

1. Introduction

The World Health Organization (WHO) declared COVID-19 outbreak as a worldwide epidemic and a Public Health Disaster of International Concern. According to Masipa⁴, the declaration of the outbreak was done on the 30th of January 2019. As the nation was put on lockdown, meetings were forbidden, physical contact was restricted, schools and businesses were closed in accordance with World Health Organization safety measures. The South African educational system was impacted by Covid-19's establishment in 2020, which compelled all higher education institutions to adopt online education⁵.

South Africa is now in the grip of an electrical crisis. According to Gehringer, Rode and Schomaker⁶, in 2014-2015, there were several instances of temporary power outages in the Republic of South Africa. The monopoly power supplier ESKOM employed this approach, also known as rotating load shedding, for many hours a day across much of the country due to its inability to meet electricity demand (due to loss of power output) and to prevent uncontrolled blackouts. According to Faranda, Pievatolo, and Tironi⁷, black outs are becoming more common in industrialized countries as a result of network flaws and increasing load. Golberg⁸ postulate that, one of the country's most pressing concerns is a structural deficit of electrical supply. Frequent load shedding episodes have

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⁴ Masipa, M.D., Ramoshaba, D.J., Mabasa, L.T., Maponyane, K.A., Monnye, K.N., 2022, *An Assessment of COVID-19 Pandemic Quarantine and Isolation Programmes: A Case Study of the University of Limpopo*, „Journal of Student Affairs in Africa”, 10(2), p. 17.

⁵ Jantjies, M., 2020. *How South Africa can address digital inequalities in e-learning*. Down TO Earth, 30 April 2020, <https://www.downtoearth.org.in/blog/africa/how-south-africa-can-address-digital-inequalities-in-e-learn-ing-70812>, consulted on 1.06.2023.

⁶ Gehringer, C., Rode, H. and Schomaker, M., 2018. *The effect of electrical load shedding on pediatric hospital admissions in South Africa*. „Epidemiology”, Cambridge, 29(6), p. 841.

⁷ Faranda, R., Pievatolo, A. & Tironi, E., 2007. *Load shedding: A new proposal*. „IEEE transactions on power systems”, 22(4), p. 2088.

⁸ Goldberg, A., 2015. *The economic impact of load shedding: The case of South African retailers* (Doctoral dissertation, University of Pretoria), p. 75.

had a substantial detrimental influence on educational settings. Findt, Scott, and Lindfeld⁹, contends that future load shedding is still a possibility because much of the nation's power generation infrastructure is reaching the end of its useful life and will need to be replaced, and that it might continue to have an impact on the educational system.

According to Ramoshaba and Kgarose¹⁰, several obstacles were encountered by students while being taught and studying online during the COVID-19 Pandemic, which amongst others is the electricity supply and internet connectivity. Contact activities in all South African institutions of learning have been eliminated due to the necessity for social distance and other precautionary measures. To ensure that education continues despite the pandemic, online learning was established¹¹. Students are required to attend classes and write assessments using digital platform, but the electrical crisis has prevented e-learning from properly achieving its goal. However, because they were not introduced to this technology and could not afford generators to have energy, the students from disadvantaged families were unable to benefit from the online learning. Online teaching and learning appear to be less effective academically compared to contact learning as a result of load shedding and connectivity issues. Gumede and Badriparsad¹² concur that frequent load shedding is to be blamed for connectivity issues.

Online teaching and learning guarantees equal and fair access to digital and cutting-edge learning resources which South African higher education institutions have turned to e-learning¹³. Due to their load shedding in unorganized informal settlements, the majority of underprivileged pupils do not have conducive learning settings, because of lack of backups nor generators. Lack of signal prevents students from using their digital devices during class and while completing assessments, forcing them to leave their residences in search of power and an internet connection¹⁴. The South African electrical crisis poses a long-term threat to educational development, particularly at resource-constrained higher education institutions. Due to their socio-economic standings, higher education institutions often have insufficient or non-existent power infrastructure.

2. Literature review

South Africa regularly faces Power outages that last for days. Johannesburg City Power technicians, for example, were allegedly taken hostage by some Alexandra residents who were furious following a five-day outage. The failure of Eskom to supply energy hampered access to online teaching and learning. It was more tougher for pupils who had to return to rural communities. According to Park, Freeman, and Middleton¹⁵, there are challenges with connectivity since the reception in rural areas is poor; nevertheless, the main issue is that Eskom is once again attacking black working-class communities. There is an abundance of load shedding, and the electricity supply is extremely erratic. Online teaching and learning has exposed a huge discrepancy between the academic discourses on existing developments on the ground. Unplanned outages are short even in well-planned systems, this can happen. Consumers do not expect them since they occur seldom, and

⁹ Findt, K., Scott, D.B. & Lindfeld, C., (2014). *Sub-Saharan Africa Power Outlook*, KPMG Infrastructure & Major Projects Group, Johannesburg: KPMG, p. 17.

¹⁰ Ramoshaba, D.J. & Kgarose, M.F., 2022. *Analysing coping strategies of students for online teaching and learning during the Covid-19 pandemic*. „International Journal of Research in Business and Social Science” (2147-4478), 11(9), p. 345; Mampa, S., Chuene, T.A., Kgarose, M.F. and Motloutse, K.J., 2022. *An Assessment of COVID-19 Pandemic Quarantine and Isolation Programmes: A Case Study of the University of Limpopo*. „Journal of Student Affairs in Africa”, 10(2), pp. 19.

¹¹ Gumede, L. & Badriparsad, N., 2022. *Online teaching and learning through the students' eyes—Uncertainty through the COVID-19 lockdown: A qualitative case study in Gauteng province, South Africa*. „Radiography”, 28(1), p. 195; <https://doi.org/10.1016/j.radi.2021.10.018>.

¹² Ibid, p. 196.

¹³ Jantjies, M., *op. cit.* (2020).

¹⁴ Qakoshe, N., 2022. Load shedding continues to be a threat to higher education. Available from https://www.researchgate.net/publication/358286057_LOAD_SHEDDING_CONTINUES_TO_BE_A_THREAT_TO_HIGHER_EDUCATION, consulted on 1.06.2023.

¹⁵ Park, S., Freeman, J. and Middleton, C., 2019. *Intersections between connectivity and digital inclusion in rural communities*. „Communication Research and Practice”, 5(2), p. 140.

they are unlikely to have invested in backup supplies to offset the expense of disruption¹⁶.

Due of its efficacy and capability in supplying the appropriate information to the right person at the right time, the Internet's use is rapidly rising. It operates around the clock and connects every part of the globe. The Internet has become an essential requirement for all higher education institutions¹⁷. Due to electronic technology the whole world has become a global village. The internet has evolved into an essential component of electronic services in academic institutions, serving as an indispensable tool for learning and teaching¹⁸.

To run base stations located within a geographical area, mobile telecom networks require a constant quantity of electricity. Telecom operators are expected to utilize litres of diesel fuel each year to power telecom base stations when grid power is unavailable¹⁹. This excludes the gasoline required to transfer the fuel to the cell installations. Running mobile networks is becoming more expensive and challenging as energy prices grow, and as operators expand the number of base stations in the network to deliver 4th generation networks (4G), wireless services at broadband data speeds, power consumption is expected to climb further²⁰. Students have difficulty hearing online lectures by lecturers on systems like Zoom due to poor internet access²¹. Both teachers and students experienced stress and concerns with their mental health as a result of the challenging circumstances such as load shedding, and some students chose to drop out. Online learning frequently excludes students from these places in a study that looked at the circumstances of students in remote locations. This occurs specifically as a result of the students' extremely limited access to online tools and the internet²². Endorsing the transition to online learning and teaching in the context of load shedding, blackouts and the very poor ICT infrastructure amounts to pursuing a fantasy. A great deal of research has shown that the real consultations should be about how to make sure that South Africa has an sufficient supply of electricity and ICT infrastructure.

3. Methodology

The conceptual method was used in this paper. This conceptual study is based mostly on a review and analysis of previously published research and data. Desktop research was one of the data collection methods used by the researcher. Desktop research refers to secondary data or data obtained without undertaking fieldwork. Desktop research does not necessitate a field survey. Instead, it is necessary to scour libraries and the internet. Secondary data is gathered by the researcher through internal sources, the internet, libraries, government agencies or departments, and published publications²³. Several documents dealing with the philosophy and subject will be explored. According to Mogalakwe²⁴, a document is an artifact that mostly consists of engraved writing.

¹⁶ Ting, M. B. & Byrne, R., 2020. *Eskom and the rise of renewables: Regime resistance, crisis and the strategy of incumbency in South Africa's electricity system*. „Energy Research & Social Science”, vol. 60, article 101333.

¹⁷ Thanuskodi, S., 2011. *Internet use among the faculty members and the students in the professional colleges at Tirunelveli region: an analytical study*. „Educational Research”, 2(13), p. 1868-1875.

¹⁸ Al-Ansari, H. (2006), *Internet use by the faculty members of Kuwait University*, „The Electronic Library”, Vol. 24, No. 6, pp. 793. <https://doi.org/10.1108/02640470610714224>.

¹⁹ Okundamiya, M.S., 2015. *Modelling and optimization of a hybrid energy system for GSM base transceiver station sites in emerging cities*. University of Benin, Benin City, Nigeria.

²⁰ Arthur, J.K., Forgor, L. & Frimpong, S.A., 2019, *The Effect of the Load Shedding on the Qoe and Qos of Mobile Network Operators*, 2019 International Conference on Communications, Signal Processing and Networks (ICCSPN), Accra, Ghana, pp. 1-10, doi: 10.1109/ICCSPN46366.2019.9150173.

²¹ Bangani, Z. 2020. *The Digital Learning Divide*. The Frame, June 18, 2020. Accessed May 12, 2023. <https://www.newframe.com/the-digital-learning-divide/>.

²² Dube, B., 2020. *Rural Online Learning in the Context of COVID-19 in South Africa: Evoking an Inclusive Education Approach*. „Multidisciplinary Journal of Educational Research”, 10(2), p. 137. <https://doi.org/10.17583/remie.2020.5607>.

²³ Zhou, L. & Nunes, M.B. 2016. *Barriers to knowledge sharing in Chinese healthcare Referral services: an emergent theoretical model*. „Global Health Action”, 9(1), article 29964, doi: 10.3402/gha.v9.29964.

²⁴ Mogalakwe, M., 2006. *The use of documentary research methods in social research*. „African Sociological Review/Revue Africaine De Sociologie”, 10(1), p. 225.

4. Problem statement

The influence of load shedding on the efficiency of online learning, specifically with reference to Institutions of Higher Learning, is a serious challenge. Online education is a type of remote learning that has long been a component of the American educational system and has recently overtaken all other forms of distance education as the largest sector²⁵. To guarantee that education continues despite the epidemic, online learning was adopted in South Africa as a mitigating strategy in institutions of higher learning during COVID-19 2020²⁶. In South Africa, impoverished and marginalized pupils can be reached through online learning. However, because of power outages, many students have difficulties during online teaching and learning²⁷.

The shift to the digital era has been severely impeded by the sporadic power outages brought on by Eskom's inadequate power production capabilities. As a result, the power outages have a negative impact on the expansion of education in South Africa²⁸. Gumede and Badriparsad²⁹ asserts that frequent load shedding causes connectivity issues. One of the unavoidable inconvenience of load shedding is the unpredictability regarding its duration and timing leaving many students in a state of distress regarding when or even if they will be able to access essential virtual classes or take part in any necessary e-learning activities outside class.

5. Theoretical framework

The paper adopted institutional theory as its theoretical framework. Institutional theory highlights the Informal understandings and cognitive frameworks that determine the social structure of markets. According to DiMaggio and Powell³⁰, markets are frequently conceptualized by institutional theorists as areas where companies observe, mimic, and create niches to replicate their positions. Institutional theory suggests that organizations, such as higher education institutions, are shaped by the norms, values, and expectations of their surrounding environment. Cai and Mehari³¹, states that Institutional theory has undoubtedly become a popular and useful explanatory tool for investigating a wide range of organizational difficulties, including those in higher education. The notions of new institutionalism established in the 1970s and 1980s dominate the application of institutional theory in higher education research. In the case of load shedding as another pandemic, post COVID-19 at institutions of higher learning in South Africa, the institutional environment includes the government, power suppliers, and the broader society. According to Adenikinju³², government is responsible for providing a reliable and uninterrupted power supply to the institutions, but load shedding has shown that this is not always the case. The power suppliers are also responsible for ensuring a stable energy supply, but they may face challenges such as aging infrastructure, insufficient capacity, and insufficient investment in the energy sector. These challenges are influenced by broader societal factors such as economic constraints, political instability, and environmental concerns³³. Therefore, higher education institutions in South Africa are not operating in a vacuum, but rather, they are influenced by the institutional environment within which they operate. To address the issue of load shedding, institutions need to adapt to the institutional pressures

²⁵ Bartley, S. J. & Golek, J. H., 2004. *Evaluating the cost effectiveness of online and Face-to-face instruction*. „Journal of Educational Technology & Society”, 7(4), p.170.

²⁶ Gumede, L. & Badriparsad, N., *op. cit.* (2022), p. 196.

²⁷ Queiros, D.R. & de Villiers, M.R., 2016. *Online learning in a South African higher education institution: Determining the right connections for the student*. „International Review of Research in Open and Distributed Learning”, 17(5), pp.174.

²⁸ Qakoshe, N., *op. cit.* (2022).

²⁹ Gumede, L. & Badriparsad, N., *op. cit.* (2022), p. 197.

³⁰ DiMaggio, P. J. & Powell, W. W., 1983. *The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields*. „American sociological review”, 48(2), pp.147-160.

³¹ Cai, Y. & Mehari, Y., 2015, *The Use of Institutional Theory in Higher Education Research*, in *Theory and Method in Higher Education Research*, Vol. 1, Emerald Group Publishing Limited, Bingley, p. 17. <https://doi.org/10.1108/S2056-375220150000001001>.

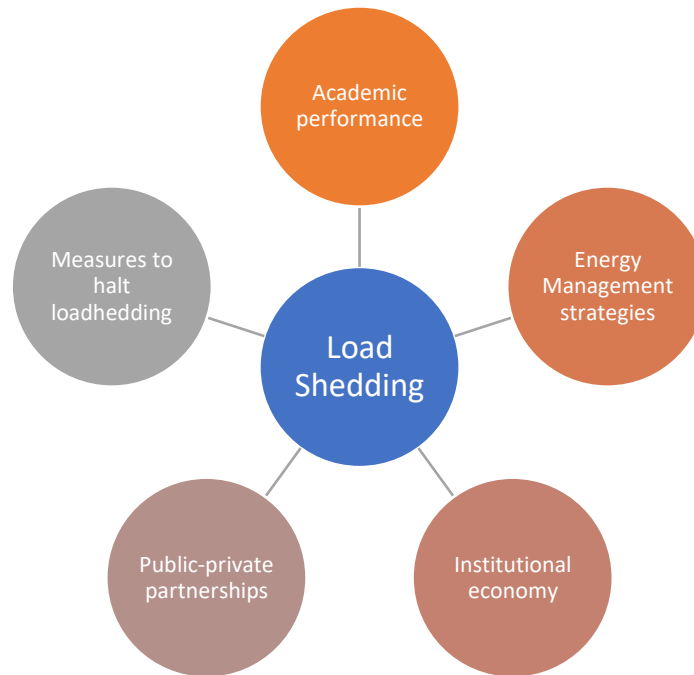
³² Adenikinju, A. (2005) *Analysis of the Cost of Infrastructure Failures in a Developing Economy: The Case of the Electricity Sector in Nigeria*. AERC Research Paper 148, African Economic Research Consortium, Nairobi, p. 14.

³³ Gifford, R. & Nilsson, A., 2014. *Personal and social factors that influence pro environmental concern and behaviour: a review*. „International journal of psychology”, 49(3), p. 145.

they face. This may involve developing contingency plans, investing in alternative energy sources, upgrading infrastructure, and advocating for policy changes that support a reliable and uninterrupted power supply.

Institutional theory also suggests that institutions can shape their environment by engaging in practices that are seen as legitimate and desirable by stakeholders³⁴. Therefore, higher education institutions in South Africa could engage in advocacy efforts to influence the government and power suppliers to address the issue of load shedding. By doing so, they may be able to create a more supportive institutional environment that enables them to function effectively and fulfil their academic mission.

6. Conceptual framework



7. Findings and discussions

Load shedding can be a major challenge for institutions of higher learning, as it can disrupt teaching, research and other activities that require a reliable supply of electricity. From the discussion below are some of the themes emerged.

Impact of load shedding on academic performance. Students have reaped several benefits from e-learning as a pedagogical concern. It has been discovered to be handy and can allow pupils to easily access instructional content. It has the potential to improve communication between and among students and professors³⁵. However, load shedding has a negative influence on online teaching and learning³⁶.

Students who have access to networked computers may be able to enjoy a more flexible learning process, while those who do not may miss out owing to connectivity challenges during load shedding³⁷. Some of the computers of the students and institutional staff members only work on charger so it is impossible to conduct/ attend classes or do assessments during load shedding.

³⁴ Brammer, S., Jackson, G. & Matten, D., 2012. *Corporate social responsibility and institutional theory: New perspectives on private governance*. „Socio-Economic Review”, 10(1), p. 12.

³⁵ Mapuva, J., 2009. *Confronting challenges to e-learning in higher education institutions*. „International Journal of Education and Development Using ICT”, 5(3), p. 110.

³⁶ Qakoshe, N., *op. cit.* (2022).

³⁷ Mapuva, J. & Muyengwa, L., 2009. *Conquering the barriers to learning in higher education through e-learning*, „International Journal of Teaching and Learning in Higher Education”, 21(2), p. 224.

According to Lee and Rice³⁸, since many students who enrol in higher education come from disadvantaged backgrounds and have limited financial resources may find it difficult to buy new computers that don't only function when they're charged. An increased reliance on technology in higher education could potentially cause social divisions to widen³⁹. Power outages prevent lecturers from using interactive technologies, digital presentations, or audio-visual aids, all of which are crucial to the educational process. Additionally, connectivity concerns could cause internet access to disappear, making it hard to do research or conduct online testing⁴⁰.

The effect of load shedding on education is a severe problem that not only interferes with learning but also puts educational outcomes in jeopardy. It is difficult for students to gain the knowledge they need to achieve in their studies, which could have a negative impact on the nation's future economic development. Some institutions lack sufficient energy storage devices, such as solar panels or generators, to keep the lights on during blackouts⁴¹. Some areas of the institutions of higher learning do not receive backup power during load shedding, so they are unable to access the Wi-Fi. As a result, they are unable to complete their assessments and submit them on time⁴².

8. The Institution of higher learning responds on energy management strategies

Lokailwe⁴³ claims that the method used to optimize and adapt energy use using systems and procedures to cut back on energy use at the same or lower cost is known as energy management. Because they are ancient and energy efficiency was not a consideration when they were built, buildings for higher education are the most energy inefficient users of all⁴⁴.

South African universities are under increasing pressure to control, manage, and reduce the cost of electricity consumption by implementing energy saving measures. This will help with overcoming resource and cost constraints. According to Maistry and Mckay⁴⁵, between 1994 and 2007 there was a 50% increase in electricity use, while the cost of electricity climbed by almost 200% between 2008 and 2014. This suggests that higher institutions are dealing with rising energy expenditures.

Renewable and non-renewable energy strategies can be utilized other than electricity as the original supplier. A non-renewable resource is one that cannot be regenerated or regrown in a reasonable amount of time on a scale comparable to its utilization⁴⁶. Renewable resources are limitless natural resources that can be regenerated quickly (such as sunshine, wind, rain, tides, and geothermal heat). Solar energy is one of the greatest renewable energy sources accessible since it is one of the cleanest. It is the direct conversion of sunlight into energy using photovoltaics or concentrated solar power, although owing to weather circumstances, it may not be possible on some days⁴⁷. Hydropower, often known as water power, is energy derived from falling or rapidly moving water that may be used for useful purposes. The movement of water creates energy that may be captured and transformed into electricity. This is known as hydropower or hydroelectric power. Water is stored in a reservoir behind a dam on a river in the most common type of hydroelectric power plant⁴⁸.

Tidal power is another potential source of energy. Tidal power supporters argue that while building costs are currently expensive, tidal power offers one of the lowest operating and maintenance

³⁸ Lee, J. J. & Rice, C., 2007. *Welcome to America? International student perceptions of discrimination*. „Higher education”, 53(3), pp. 381-409.

³⁹ Mapuva, J., *op. cit.*, (2009), p. 111.

⁴⁰ Gumede, L. & Badriparsad, N., *op. cit.*, 2022, p. 196.

⁴¹ Steenkamp, H., February, A., September, J., Taylor, A., Hollis-Turner, S. & Bruwer, J.P., 2016. *The Influence of Load Shedding on the Productivity of Hotel Staff in Cape Town, South Africa*. „Expert Journal of Business and Management”, 4(2), p. 72.

⁴² Qakoshe, N., *op. cit.* (2022).

⁴³ Lokailwe, O. G., 2021. *Energy management at a South African higher education institution: a case study* (Doctoral dissertation, Cape Peninsula University of Technology).

⁴⁴ *Ibid.*

⁴⁵ Maistry, N. & McKay, T.M., 2016. *Promoting energy efficiency in a South African university*. „Journal of Energy in Southern Africa”, 27(3), p. 7.

⁴⁶ Gorjian, S., 2017. *Renewable Energy Technologies*, p. 1-50, <https://fliphtml5.com/vlzff/sduq/basic>, consulted on 1.06.2023.

⁴⁷ *Ibid.*

⁴⁸ *Ibid.*

expenses. As a result, this is an unexplored resource with significant potential. The high cost of tidal projects is mostly owing to the industry's infancy, as opposed to wind and solar, which have received significantly more investment and research, resulting in reduced prices and efficiency.

9. The institutional economic impact of load shedding

Institutions of higher learning invest a significant amount of money on diesel so that the generators can run continuously during load shedding, but owing to unforeseen schedules, electricity can occasionally go out for longer than eight hours each day. As a result, this causes the organization to spend more than expected and purchase fuel so that some areas of the institutions can function. Institutions of higher learning have various units that bring in money, such as gyms, but when there is load shedding, the gym equipment breaks down, causing students or some employees to cancel their membership. In other words, the revenue from gym subscriptions will stop.

9.1. Public-private partnerships

According to Hodge and Greve⁴⁹, public-private partnerships are cooperative institutional frameworks in which public and private players collaborate to provide infrastructure and service delivery to public institutions. Typically, this means the private sector sharing the risks, expenditures, and resources with the public institution⁵⁰. PPPs are ongoing agreements between government and private sector organizations that allow private organizations to participate in decision-making and production of public goods or services that have traditionally been provided by the public sector, while also sharing production risk⁵¹.

The purpose of higher education institutions to offer students a world-class education at an affordable price and to conduct world-class research is coming under growing pressure. For many institutions, the reduction of public funding assistance and worries about overall affordability pose significant short- and long-term fiscal issues⁵². In South Africa, the private sector has been involved in education in a variety of ways to develop ways to give all students with high-quality public education, especially in institutions serving kids from low socioeconomic backgrounds. Up until now, NGOs have primarily supported educational institutions in underprivileged areas through unofficial charity programs. South Africa has more formal processes of deliberately locating and working with a group of outside funders to give support for government higher institutions that have been formed⁵³. Higher institutions can collaborate with Eskom so that the load shedding schedule does not interrupt academic activities.

9.2. Measures to be taken to halt load shedding issues

Following consideration of the literature review, outcomes, findings, and discussions, the institutions of higher learning can be given the following advice. The institutions should purchase a larger generator or more generators, whichever is more cost-effective, to power every area of the institution for at least five hours. To help with load shedding, the institution should soon install alternative energy power sources (solar, wind, etc.).

Governments should also contribute more financing to HEIs in order to aid impoverished students who cannot buy new computers. This should be supported by a dependable internet and network system that does not provide additional obstacles such as crashing or going offline at a

⁴⁹ Hodge, G. A. & Greve, C., 2007. *Public-private partnerships: an international performance review*. „Public administration review”, 67(3), p. 548.

⁵⁰ Tilak, J. B., 2010. *Public-private partnership in education*. The Hindu, 24, pp. 1-16.

⁵¹ Feldman, V., 2020, June. *Does learning require memorization? a short tale about a long tail*. In *Proceedings of the 52nd Annual ACM SIGACT Symposium on Theory of Computing*, pp. 954-959, <https://dl.acm.org/doi/pdf/10.1145/3357713.3384290>.

⁵² Ibid.

⁵³ Ibid.

moment when students want it the most⁵⁴. These suggestions will aid in acting as long-term preventive actions in regard to the recognition of load shedding concerns.

10. Conclusion and recommendations

The paper concludes that Load shedding has had a significant impact on institutions of higher learning in South Africa, particularly in the post-COVID-19 era. It has exacerbated the challenges faced by students and staff, affecting their academic progress and productivity. The frequent power outages have also highlighted the need for alternative sources of energy and better infrastructure to mitigate the impact of load shedding. It is imperative for the government and relevant stakeholders to prioritize addressing the issue of load shedding to ensure the smooth functioning of higher education institutions and safeguard the future of students in South Africa.

Based on the impact of load shedding on institutions of higher learning in South Africa, the following recommendations can be made:

- invest in alternative sources of energy: higher education institutions should explore the use of alternative energy sources such as solar power, wind power, and generators to mitigate the impact of load shedding. This will ensure that academic activities are not disrupted during power outages.

- develop an effective communication strategy: institutions should develop a communication strategy to keep students and staff informed about load shedding schedules and the measures being taken to address the issue. This will help to reduce anxiety and ensure that everyone is prepared for power outages.

- upgrade infrastructure: the government and relevant stakeholders should prioritize upgrading the infrastructure to ensure that higher education institutions have access to reliable and uninterrupted power supply. This will require significant investment in the energy sector in South Africa.

- encourage flexibility: institutions should adopt a flexible approach to academic activities during load shedding periods. This could include rescheduling classes or providing online resources that can be accessed during power outages.

- increase awareness and advocacy: there is a need for increased awareness and advocacy about the impact of load shedding on higher education institutions in South Africa. This can be achieved through public campaigns, workshops, and seminars to sensitize stakeholders about the issue and the need for urgent action.

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⁵⁴ Mapuva, J., *op. cit.*, (2009), p. 112.

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