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THE IMPLICATIONS OF THE DIGITAL DIVIDE ON RURAL STUDENTS ENROLLED IN OPEN AND DISTANCE E-LEARNING INSTITUTIONS

REPERCUSIONES DE LA BRECHA DIGITAL EN LOS ESTUDIANTES RURALES MATRICULADOS EN CENTROS DE APRENDIZAJE ELECTRÓNICO ABIERTO Y A DISTANCIA

Velisiwe Gasa [1 *]
E-mail: gasavg@unisa.ac.za
ORCID: https://orcid.org/0000-0002-3402-4268
[1] University of South Africa.
* Author for correspondence

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ABSTRACT

When compared to the semi or urban-student population, the rural student population in South Africa is far behind in technological advancement. Only a tiny percentage of the rural student population in South Africa enjoys access to technology. This digital divide is exacerbated by the uneven distribution of resources among urban and rural areas. The rural communities continue to be the most disadvantaged due to their remoteness, the ills of the past apartheid system, poverty, low income, and less access to technology. On this note, a survey of the rural student population registered in a selected Open and Distance e-learning (ODeL) institution was conducted to determine the implications of the digital divide. The data were collected from 150 students through face-to-face focus group discussions. The findings revealed that the students staying in rural communities are primarily disadvantaged due to the inaccessibility of online systems. They are isolated by their context, infrastructure, and limited access to electricity and internet services. The inaccessibility of online systems in their areas makes their learning objectives impossible to achieve. The challenges drawn from the findings indicate a need for alternative support measures. Therefore, this paper provides crucial strategies to bridge the gap and ensure equitable digital access to rural students.

Keywords:

Digital divide, rural communities, e-learning, apartheid system, poverty, technological access

RESUMEN

En comparación con la población estudiantil semiurbana o urbana, la población estudiantil rural de Sudáfrica está muy atrasada en cuanto a avances tecnológicos. Solo un pequeño porcentaje de la población estudiantil rural de Sudáfrica tiene acceso a la tecnología. Esta brecha digital se ve agravada por la desigual distribución de recursos entre las zonas urbanas y rurales. Las comunidades rurales siguen siendo las más desfavorecidas debido a su lejanía, los males del pasado sistema de apartheid, la pobreza, los bajos ingresos y a que tienen menos acceso a la tecnología. En este sentido, se llevó a cabo una encuesta entre la población estudiantil rural inscrita en una institución de aprendizaje electrónico abierto y a distancia (ODeL por sus siglas en inglés) para determinar las implicaciones de la brecha digital. Los datos se recogieron de 150 estudiantes a través de grupos de discusión cara a cara. Los resultados revelaron que los estudiantes que viven en comunidades rurales son los más desfavorecidos debido a la falta de acceso a los sistemas en línea. Están aislados por su contexto, sus infraestructuras y su acceso limitado a la electricidad y a los servicios de Internet. La inaccesibilidad de los sistemas en línea en sus zonas imposibilita la consecución de sus objetivos de aprendizaje. Los desafíos identificados a partir de los hallazgos indican la necesidad de implementar medidas de apoyo alternativas. Por lo tanto, este documento ofrece estrategias cruciales para salvar la brecha y garantizar un acceso digital equitativo a los estudiantes rurales.

Palabras clave:

Brecha digital, comunidades rurales, aprendizaje electrónico, sistema apartheid, pobreza, acceso tecnológico

INTRODUCTION

The digital divide in South Africa poses significant challenges for rural students enrolled in ODeL institutions. The digital divide refers to the gap between those with easy access to digital and modern information technology and those without access. The gap in access to technology and internet connectivity, compounded by socioeconomic, geographic, educational, and infrastructural limitations, has profound implications for education for rural students. It significantly hinders educational opportunities, affects these students' academic performance or educational experiences and outcomes, and widens existing inequalities. Furthermore, it affects their ability to access educational resources, develop digital literacy, and achieve academic success (Choung, et al. 2018).

According to the Independent Communications Authority of South Africa (ICASA), only 37% of households in rural areas have access to the Internet, compared to 68% in urban areas (ICASA, 2020). Many rural areas in South Africa lack reliable internet access and necessary technological devices, making e-learning difficult or impossible for many students. Limited access to online educational resources and platforms affects the quality of education that rural students receive, putting them at a disadvantage compared to their urban peers (Frans & Pather, 2021).

Without regular access to digital tools, rural students often have lower digital literacy, making navigating and benefiting from e-learning environments challenging. Research by Anthonysamy (2020) indicates that rural students generally possess lower levels of digital literacy than urban students, affecting their ability to engage with e-learning. E-learning requires technical and academic support that is often unavailable in rural areas, further hindering students' educational progress.

There are some drivers that continue to worsen South Africa's technological gap. Some of these drivers are the legacy of colonialism and apartheid regimes that were rooted in racial and spatial segregation (van Dijk, 2006; Faloye & Ajayi, 2021). Almost three decades after the end of the apartheid regime, the urban-rural divide continues to reinforce inequality. Rural areas are still neglected with no infrastructure such as roads, running water, power supplies and internet connections. This urban-rural divide that geographically and socially separated people through the apartheid regime systems contributes significantly to the digital divide, puts rural areas in a backward position and exacerbates inequality in terms of economy, education and infrastructure between urban and rural communities (Bunmi, et al. 2019). The World Bank in 2018 ranked South Africa as one of the most income unequal countries in the world, then in 2022 reported South Africa as the most unequal country in the world, where 10% of the population, with a given race, owns more than 80% of the wealth. This economic divide is evident in digital access, where wealthier urban households are more likely to own computers and have internet connections, while many rural households cannot afford these technologies.

Mostly in rural areas, there are high levels of poverty and unemployment, which restrict residents from accessing digital devices and internet services. Statistics South Africa (Stats SA, 2021) reports that higher poverty rates in rural areas significantly impact students' access to educational resources and technology. This financial barrier compounds the digital divide, making it even more challenging for rural students to keep up with their education. Meanwhile, Research ICT Africa (2019) highlighted the high cost of internet services and data prices as a barrier contributing to the digital divide, particularly affecting rural populations. It has been proclaimed that data costs in South Africa are among the highest on the continent, making it difficult for low-income households to afford regular internet access. The higher data costs may be attributed to insufficient infrastructure development, particularly in rural areas, as the rollout of broadband infrastructure is slower in these areas. The South Africa Connect was tasked to provide high-speed Broadband to all citizens, but progress has been slow, and many rural areas remain underserved (South African National Broadband Policy, 2013). As mentioned, the higher costs and logistical challenges associated with extending infrastructure to sparsely populated rural areas contribute to this disparity.

Disparities in educational opportunities and resources also lead to differences in digital access and literacy. Low levels of digital literacy prevent many individuals from effectively using digital technologies. Without education and training in digital skills, even those with access to technology may be unable to use it effectively (Muchie & Baskaran, 2006). This issue is particularly pronounced in rural areas, where educational resources are often limited. A study by Choung & Manamela (2018) found that rural students generally possess lower levels of digital literacy than their urban counterparts, hindering their ability to benefit from digital resources. Schools in wealthier, urban areas are more likely to be equipped with computers and internet access, enabling students to develop digital skills. In contrast, many rural schools lack even basic infrastructure, making it challenging to integrate digital technologies into the classroom (Chisango & Marongwe, 2021).

Access to technology and reliable internet connectivity is foundational for effective e-learning. However, rural students often face significant barriers in this regard. This lack of access means that rural students may be unable to participate fully in online classes, access digital learning materials, or engage with interactive educational platforms, putting them at a distinct disadvantage compared to their urban peers (Marongwe & Garidzirai. 2021). The

quality of education that rural students receive is closely tied to their access to digital resources. Limited internet connectivity and technological devices mean these students often cannot access the same breadth and depth of educational materials as urban students. Consequently, rural students may miss out on critical learning opportunities, affecting their academic performance and future prospects (Faloye & Ajayi, 2021; Moonasamy & Naidoo, 2022).

Digital literacy, or the ability to effectively use digital tools and resources, is essential in the modern educational landscape. However, without regular access to technology, rural students often lag behind in developing these skills and generally possess lower levels of digital literacy compared to their urban counterparts, which can impede their ability to navigate e-learning platforms and engage with digital content (Duma, et al., 2021). Insufficient digital education can lead to poor educational outcomes, such as repeating grades or difficulties securing a place in higher education (Afzal, et.al., 2023). Effective e-learning requires robust support systems, including technical assistance and academic guidance. In rural areas, such support systems are often inadequate. This lack of support can lead to frustration and disengagement among rural students, further hindering their educational progress (Hendricks & Mutongoza, 2023).

The digital divide contributes to broader educational inequalities. Rural students, already disadvantaged by factors such as limited educational resources, face additional hurdles due to the lack of digital access. The digital disparities exacerbate existing educational inequalities, making it harder for rural students to compete academically with their urban peers (Das, et al. 2021). The stress and frustration resulting from inadequate access to e-learning tools can negatively impact the mental health and well-being of rural students (Wang, 2023). This mental health impact can further affect students' academic performance and overall quality of life.

Thus, this paper is guided by the following research question: What are the implications of the digital divide on rural students?

MATERIALS AND METHODS

This paper adopted a qualitative approach in the form of a case study design. This approach was chosen to gain concrete, contextual and in-depth knowledge and experience about the implications of the digital divide on the education of rural students. The study aimed to gather data from the rural student population registered in a selected Open and Distance e-learning (ODeL) institution to determine the implications of the digital divide in their educational outcomes. Purposive sampling was used to identify the participating rural students who enrolled in distance education courses or programmes in that selected university. These rural students were selected from 3 provinces in South Africa, namely, KwaZulu Natal (66 students), Eastern Cape (35 students) and Mpumalanga (49 students), which gave a total of 150 students. These provinces were chosen because they are mainly rural and have students registered in the selected university. The data were collected through focus group discussions. These 150 students, consisting of 85 females and 65 males, had been registered at this selected university for more than two years while residing in their homes located in far-flung rural areas. As this university provides teaching at a distance through e-learning mode, students are not required to be face to face on-campus. This is advantageous to these students as they are from disadvantaged families who cannot afford to enrol them in face-to-face institutions due to financial constraints.

The data were collected from 150 rural students through focus group discussions as it was believed that it would yield more conversational responses. As it would be challenging to reach these students as they reside in scattered, far-flung rural areas, the data collection was conducted when the university conducted face-to-face workshops in those provinces. These workshops, conducted once or twice a year, usually run weekly in each province. During the first day of the workshop, rural students were given letters requesting them to participate in a focus group discussion that would take place on the last day of the workshop. The students who agreed to participate in the focus group discussion were requested to return consent forms during the course of the week. Ethics protocol was outlined to the students on the day of the focus group discussion. The students understood that they participated voluntarily, and their anonymity was guaranteed before the data collection began. They were made aware of their right to withdraw at any time during the proceedings. The participants also permitted the proceedings to be recorded and notes to be taken. Research ethics protocols were followed and upheld for the entire data collection.

After all focus group discussions were conducted, the data analysis began. The researcher followed five phases of analysis proposed by Braun & Clarke (2006), which included familiarising with data, generating initial codes, searching for themes, reviewing themes, and naming themes. The first phase was easy to follow as the researcher was familiar with the data as they collected it. The second phase involved coding the data's exciting features. Then, data relevant to each code were gathered and collated into verbatim texts. For the third phase, semantic or explicit thematic analysis was followed. Thematic analysis helps to identify, categorise, analyse, and report data patterns and themes (Braun & Clarke, 2006). This was a recursive process as the researcher moved back and forth throughout the phases to formulate potential themes.

Proceeding to phase four, the researcher generated a thematic map of the analysis. Finally, the researcher developed three broad themes: (1) inaccessibility of online systems, (2) restricted access to full support, and (3) prone to psychological and mental health.

RESULTS-DISCUSSION

This study explored the various implications of the digital divide on rural South African students, focusing on access to technology, quality of education, digital literacy, support systems, socioeconomic barriers, and educational inequality. The themes below were developed from the data collected.

Inaccessibility of online systems

Findings from the study exposed that the inaccessibility of online systems disadvantages students who reside in rural areas. They lack access to the Internet and modern technological devices, which are essential for effective e-learning. During focus group discussions, rural students had so much to say about their struggles:

We stay in rural communities, and access to technology is a significant challenge. We have no internet connectivity, which makes it difficult to participate in live online classes, virtual discussions, download materials, or upload assignments. We must travel long distances to where the Internet is available. When we get there, we spend a lot of money because they do not have high-speed Internet, and connections are slow. The expensive data, laptops, and tablets add to our financial burden, making it harder for us to engage in online learning.

The implications of online system inaccessibility to the educational outcomes of rural students have been discussed at length in the literature section of this study. It has been mentioned that rural students have limited access to online resources and learning platforms, which can lead to a lower quality of education than their urban counterparts (Marongwe & Garidzirai, 2021). High internet access and digital device costs have been found prohibitive for many rural families. Rural students are often exposed to frequent disruptions due to a lack of reliable technical infrastructure. Power outages, outdated hardware, and inadequate software support impede their ability to access online learning platforms effectively. Their limited exposure to technology often results in lower digital literacy levels. This lack of familiarity with digital tools and platforms, which is crucial for navigating and succeeding in e-learning environments, hinders effective learning and teaching.

The restricted access to full support

Research findings pointed out that rural students have restricted access to full support. Although they pay the same amount of tuition fees as urban students, the services they receive are restricted because they are far flung with less access to most of the amenities. During focus group discussion, rural students indicated that:

We are often isolated with no means to get support; we are unable to use online tools to communicate with our university, and other students are miles away. We often miss out on academic support services. We lose a lot of valuable information regarding our career advancement, such as career services, internships, job fairs, financial aid, scholarships, and other funding opportunities.

As highlighted above, rural students often express several concerns about restricted access to the university's full support. Literature indicates that e-learning requires a robust support system, including technical support and guidance (Hendricks & Mutongoza, 2023). However, rural students often lack access to immediate technical support and resources. Unlike urban areas, where tech support might be readily available, rural students may not have the same level of assistance for troubleshooting issues. The restricted access to full support can exacerbate feelings of isolation. Without reliable ways to connect with peers and lecturers, they may feel left out and unsupported. This lack of opportunities for virtual interaction with peers makes it harder for them to build a supportive social network. Networking is a vital part of the university experience, and restricted access can limit their ability to form valuable connections. Furthermore, access to academic advising and mentorship is less frequent for them. This is disadvantaging them as regular, personalised guidance is crucial for navigating university requirements, exploring academic interests, and planning for the future.

Moreover, they find it difficult to access online library resources, special collections, and research facilities that are readily available. This hinders their ability to conduct thorough research and complete assignments effectively. These services are crucial for their academic success, and restricted access often leads to difficulty keeping up with studies.

Prone to psychological and mental health

The study findings revealed that stress and frustration resulting from inadequate access to online systems, e-learning tools and full support can negatively impact the psychological and mental health of rural students. It was so disturbing to listen to these students narrating their sorbing stories which lend them to hospitals and pushed them to the verge of committing suicide during focus group discussions. They made utterances such as:

Adapting to university life with limited digital access and support is difficult. We are lonely, and no one understands our situation. We are under severe pressure but cannot deregister because our families sacrificed a lot for us. Our families depend on us to take them out of poverty. The rising

cost of university fees also burdens us and our families. Most of us have been admitted to hospitals due to stress. We are afraid to go out because community members ask us why we are not finishing our degrees; they want to see us graduate. When the university told me I was not graduating, I almost committed suicide.

The extract above shows that rural students feel isolated due to physical distance from university, peers and support systems. The lack of social interaction and a sense of community can lead to feelings of loneliness and depression. Their academic stress increases because they feel additional pressure to succeed, knowing their families' sacrifices for their education. Balancing these expectations with academic demands often causes significant stress. Moreover, they are overwhelmed by the expectations of adjusting to a faster-paced university environment with limited support. This contributes to feelings of anxiety. The financial burden of higher education, coupled with potential economic hardships in rural areas, exacerbates their anxiety and stress. Balancing work and studies to cover expenses adds to this strain. Many rural students have strong ties to their families and communities, which can lead to increased pressure to succeed and fulfil familial responsibilities. That is why some of them are sick and have suicidal thoughts.

The findings reveal that students living in rural communities are not copying well in their studies due to the inaccessibility of the online systems. They lack proper orientation and are isolated by their context and infrastructure. Access to online support services, resources and learning platforms remains a significant challenge for most of these students. These challenges range from limited access to electricity, internet services, and learning resources to unreliable and very slow system servers, passwords that are not working and inability to upload assignments. Students require all these support services to perform their learning activities. Universities sometimes do not address online challenges speedily to allow for uninterrupted online services for their students. Students, especially in rural areas, feel isolated and neglected as online support services, resources, and learning platforms are crucial in enhancing students' learning in an ODeL institution. The inaccessibility of online systems thereof hinders students' progress and learning. Some universities provide tutoring services to support these students through both online (e-tutoring) and scantly face-to-face interaction. However, it is often impossible for these students to attend face-to-face interaction because of the distance or remote areas in which these services are offered.

CONCLUSIONS

The paper concludes that the digital divide has multifaceted implications for rural students. The digital divide presents significant challenges for rural students enrolled in e-learning institutions in South Africa. From limited access to technology and internet connectivity to lower digital literacy and inadequate support systems, these students face numerous barriers that hinder their educational progress and widen existing inequalities. The lack of digital access to vital campus resources such as virtual libraries, online databases, and digital academic support services isolates them. This isolation limits their ability to conduct research, seek academic help, and access necessary learning materials.

The study provided much-needed information as it is believed that knowing the magnitude of the implication and challenge one is dealing with is the first step in the right direction. Drawing from these findings, the way forward shows the need to bridge the digital divide. Therefore, setting goals and achievable milestones is essential and ensuring that resources are available to support rural students. Poverty alleviation strategies must be implemented to impact the digital divide positively. No one without food and shelter will bother to access the Internet, but when this basic need is adequately addressed, an escalation to the next step in terms of developmental needs will take place. After that, stakeholders must be committed to looking into targeted interventions to improve digital infrastructure, provide affordable access, enhance digital literacy, and offer robust support systems for rural students. Moreover, addressing the issues raised by participants in this study requires universities and the government to implement strategies that ensure equitable access to support services for all students, regardless of their geographic location. This might include investing in rural broadband infrastructure, advancing affordable access to digital devices, offering digital literacy programs, enhancing online support systems, ensuring that online learning platforms are designed to be inclusive and accessible to all students, providing outreach programs, and tailored resources for rural students.

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