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Digital literacy: a foreign language for students from rural areas in South Africa

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ABSTRACT

The Digital literacy has become an imperative part of higher education, since the Covid19 outbreak, traditional institutions had to adapt digital learning techniques. However, students from rural schools were left in the dark. Since there are still some extremely poor schools in the rural parts of South Africa, where there is still no access to electricity. Therefore, the ability to use any digital tools remains a huge challenge for such students. The transition from a rural school to an urban higher education institution that is very tech savvy and living in the 4th industrial revolution is extensively difficult. Subsequently, the success of students from rural schools gets hindered. However, this doesn't necessary mean that these students are incapable of succeeding in their respective programs. This paper aims to explore the challenges faced by students from rural schools regarding digital literacy. The research methodology will be a quantitative approach, the sample will be drawn from students in traditional universities who are coming from rural high schools. The findings of this paper will be used to recommend ways of increasing the success rate of learners from rural schools in digital literacy and skills development for traditional universities in South Africa.

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Introduction

According to Azionya and Nhedzi (2021) the COVID-19 pandemic compelled 19 higher education institutions (HEIs) in South Africa to carefully consider health guidelines in relation to the circumstances faced by their students, a significant portion of whom are adversely affected by the digital divide that separates individuals with unrestricted Internet access from those without such access. There has been an increasing level of dissatisfaction with the rapid transition to online education at higher education institutions (HEIs) in response to the coronavirus pandemic and subsequent lockdown. This discontent has been met with significant criticism from marginalised students, concerned academics, and members of the public. The primary reason for the challenges faced in implementing emergency online teaching was the limited access to devices and data among marginalised students, as well as the impact of their socio-economic status. These factors created substantial barriers that hindered the intended effectiveness of remedial measures. As a result, it exacerbated the pre-existing disparities in digital access and usage among students.

The significance of online higher education has become increasingly prominent. In 2021 Alam established that the primary objective of online higher education is to facilitate the integration of educators into the digital realm, thereby enhancing the range of learning opportunities available to students. The rapid growth of the online education market in recent decades prompted higher education institutions to adjust their course offerings and design to accommodate online learning. The utilisation of online technology in higher education has gained significant popularity on a global scale. In the interim, the advent of online technology has attracted a multitude of individuals to engage in online educational opportunities. These factors have led us to contemplate the utilisation of online higher education agents (Zamora-Antuñano, et al. 2022).

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Research on Innovation Diffusion Theory (IDT) has identified that innovative people are more likely to accept new ideas and are able to manage with high levels of uncertainty (Rogers et al. 2014). This study used IDT as the theoretical foundation. A number of research regarding the impact of personality factors on the stimulus for internal motivation are presented in the literature on this topic. According to (Pinho et al. 2021; Watjatrakul 2020) only a small percentage of those research take personality factors into account when analysing technological adoption, and even fewer when analysing intentions to use innovations in information technology (IT) and information systems (IS).

Diffusion, according to Rogers et al. (2014), is the process by which innovations spread over time among members of a social system through certain channels. IDT states that the following factors influence the diffusion of innovations: (1) relative advantage; (2) compatibility; (3) complexity; (4) observability; and (5) trialability. Innovations and new IT will be more readily accepted and applied if they are characterised by unique qualities, align with users' values, are easy to use, have been observed in institutions, and are available for users to evaluate them out (Rogers et al. 2014). The degree to which the adoption or use of innovative IT is perceived as an advancement above the preceding version is known as relative advantage (Pinho, 2021).

The effectiveness of IT systems has been found to have a significant impact on students' decisions and behaviours in the classroom (Utomo et al. 2017). Learner Management System (LMS) design is a determining aspect of students' satisfaction and the success of these tools. Additionally, using these tools is positively correlated with one's assessment of the LMS's effectiveness (Ashrafi et al., 2022). According to Al-Debei et al. (2015), system use at the individual level is determined by how a person uses one or more system resources to carry out tasks. Ashrafi et al. (2022) claim that students' positive perceptions of the utility of LMSs influence their usage. Regarding the impact of consumers' perceived utility on the adoption of these platforms, there is disagreement in the literature. According to Kuadey (2023), there was no apparent relationship between students' intention to utilise the LMS and their perception of its usefulness. The degree to which people's actions and the adoption of innovative IT are consistent is known as compatibility (Yuen et al, 2021).

According to Rogers (2014) innovations should be in line with users' beliefs, values, and previous experiences. To create effective e-learning environments in the university setting, it is vital to comprehend the factors that induce students to utilise learning management systems (LMS) (Kuadey, 2023). According to Ashrafi et al. (2022), developing instructional models that cater to students' requirements is crucial to the success of these platforms. In terms of the beliefs and actual demands of the students, the LMS ought to be customised. Students' perceptions of the LMS's usability would rise as a result (Jagadeesan and Subbiah 2020).

Studies indicate that the degree of complexity or simplicity of use of these platforms by students could play a significant role in their adoption. There is a purpose behind students' resistance to LMS. They will use the LMS platforms if it is advantageous to them and they see it as such (Ashrafi et al. 2020; Sakala and Chigona 2020). One attribute that is associated with how apparent innovations are in an organisation is observability. Furthermore, a high degree of observability suggests that people may be able to tell others about an innovation in addition to simply observing it being used (Almaiah, 2022).

Conversely, trialability refers to the extent to which an innovation may be tested in a small-scale setting prior to being decided to be adopted or rejected (Navya & Rani 2022). The literature points to trialability's beneficial impact on technology usage. High trialability also correlates with high technology utility, usability, and simplicity of use (Ullah 2021).

Literature Review

This section will comprise of various contexts regarding digital literacy, there will be a discussion on digital division in South Africa, followed by the impact of online learning techniques in higher education. Thereafter, there will be a review of literature on curriculum delivery and digital literacy for Generation Z.

Digital Division in South Africa

South Africa, renowned for its status as the most unequal country globally, faces aggravated discrepancies in digital access and resources due to its prevailing disparities in income and wealth (Czerniewicz et al. 2020). This has an impact on the digital proficiency of marginalised students as they do not have access and/or cannot adapt to technological advancements. Socioeconomic aspects, including race, age, gender, income, and educational attainment, have been considered in earlier study on the disparities brought on by the development of digital technologies (Czerniewicz et al. 2020; Hasan and Bao, 2020). The concept of the "digital divide" revolves around the availability and utilisation of several aspects of information and communication technology (ICT), encompassing factors such as physical accessibility, motivation, proficiency, and practical use of digital technologies (Soomro, et al. 2020). Hidalgo et al. (2020) assert that the primary cause of the digital divide is the inadequate utilisation and availability of information and communication technologies (ICTs). Another dimension of the concept "divide" pertains to the disparity between individuals who possess the means to access e-learning resources and those who lack such means.

Frequently observed inequities encompass discrepancies in technology access, disparities in acquiring essential skills for proficiently navigating the Internet and assessing information, and disparities in the benefits derived from technology usage due to socioeconomic status (Lombana-Bermudez et al. 2020). The utilisation of abilities includes the frequency, duration, and characteristics of actions performed. Given the limitations imposed by the COVID-19 shutdown, there has been an increasing focus on studying how Higher Education Institutions (HEIs) in South Africa are integrating technology into their courses (Mhlanga and Moloji 2020).

The term "digital divide" refers to the disparity in the availability and use of ICTs among individuals from different geographical, demographic, and socio-economic backgrounds. Steele (2019) states that there is a noticeable difference in the availability and use of digital resources between urban and rural areas, as well as among various socioeconomic categories. Moreover, this disparity is evident not just among individuals with varying educational qualifications, but also within nations with different degrees of economic advancement. The categorization of humans into digital divisions may take place among those who possess a broadband connection. Additionally, the inequality is worsened by the existence of underperforming computer systems, limited broadband connectivity, and limited access to subscription-based content.

Steele (2019) classifies the digital divide into three distinct categories: the social divide, gender divide, and universal access divide. The digital gap has a significant impact on various aspects, such as the economy, education, and social spheres, especially in underprivileged neighbourhoods. Moreover, Steele proposed that the problem of digital inequality in education becomes more noticeable in circumstances where there are difficulties with internet access, the cost of data, technological skills, and reliance on various teaching methods, as well as student engagement (Steele, 2019).

There is a clear difference in the availability and use of digital resources, which is made worse by differences in technological skills, ability to create information, and financial resources. In addition, Du Preez, and Le Grange (2020) assert that the distribution of digital skills and affordable high-quality internet access in South Africa is characterised by significant disparities. Individuals with higher incomes in their youth possess the capacity to obtain a quality education and enhance their skill set in preparation for the digital era. Nevertheless, it is worth noting that a significant number of economically disadvantaged young individuals in South Africa graduate from educational institutions without acquiring even the most fundamental skills in digital literacy. If the forecasts indicating a decline in the need for low-skilled workers are accurate, this is a legitimate reason for concern.

Nevertheless, there is still a lack of research that specifically examines how students use technology and evaluation practices in this dynamic educational context. According to earlier studies, the lack of affordable internet access, digital literacy, and adequate digital infrastructure are the three main causes of the digital gap in developing nations (Hidalgo, et al. 2020; Lombana-Bermudez et al. 2020).

The Impact Online Learning Techniques in Higher Education

The existing body of literature demonstrates that the acquisition of knowledge through the utilisation of e-learning. These forms include totally online learning, mixed modes characterised by a combination of online and in-person instruction (referred to as hybrid or blended learning), as well as web-assisted learning where online resources are utilised to support traditional classroom instruction (Reilly, et al. 2017).

The online classroom, sometimes referred to as distance or remote learning facilitated by technology, can be categorised into two modes: synchronous, where teaching occurs in real-time online, and asynchronous, where learning takes place at different times. This kind of education offers increased flexibility in terms of the location and timing of student learning (Lee 2017).

According to Auster (2016) blended classrooms aim to improve student learning outcomes by combining in-person instruction with technology-based platforms. This creates more engaging and dynamic learning environments. Additionally, the concept of flipping the classroom aligns with these approaches. However, despite being hailed as a groundbreaking option to address various educational inequalities (Lee 2017), online education encountered many obstacles in South African HEIs, due to the aforementioned digital division factors.

Curriculum Delivery and Digital Literacy for Generation Z

Generation Z, often known as Gen Z, refers to the demographic group comprising individuals who were born following the millennial generation. Members of Generation Z are currently enrolled as undergraduate students in higher education institutions (HEIs). According to Mosca, Curtis, and Savoth (2019), scholarly discourse highlights the superior proficiency of Generation Z in the domains of digital technology, visual media, and global awareness as compared to preceding generations. According to Mosca, Curtis, and Savoth (2019), the individuals belonging to this group have never experienced life in the absence of the internet. In the context of South Africa, this is likely to be applicable to individuals who possess wealth and resources, rather than those who lack them.

Universities in developed environments are modifying their pedagogical approaches based on the understanding that Generation Z heavily engages in social interactions through texting and social media platforms. This generation's reliance on technology has led to a blurring of boundaries between academic pursuits, recreational activities, and the distinction between their personal and public lives. Considering the substantial online material consumption observed among Generation Z, universities are expanding their range of course delivery platforms. This includes offering entirely online courses, blended learning options, and traditional face-to-face instruction (Yu and Canton 2020).

Nevertheless, the issue of the digital gap and educational disparities continues to be a prominent societal concern within the evolving landscape of South Africa, impacting underprivileged children hailing from low socioeconomic backgrounds. Considering this, colleges face the task of addressing the requirements of students who possess different levels of digital literacy. It has been shown that weaknesses in information and digital literacy can impede student achievement (Takavarasha, Cilliers and Chinyamurindi 2018).

The process of Africa's transition to democracy in 1994 continues to be impacted by enduring challenges that impede effective governance. These institutions are commonly referred to as marginalised universities, while their predominantly white and well-funded rivals are commonly known as privileged universities. Universities that are marginalised cater to a significant portion of Black African and historically disadvantaged students inside the university system (Mzangwa 2019). In the context of students from rural schools, it is evident that technology access and device ownership are not as widespread as they are in urban schools. In addition, students from rural schools demonstrate a decreased degree of proficiency in utilising the internet, basic computer apps, and digital resources for academic pursuits (Takavarasha, Cilliers, and Chinyamurindi 2018).

Research Methodology

Research Design

The research employed a quantitative methodology to investigate the relationships and causal effects among variables. Quantitative research is characterized by its formal, objective, and systematic approach, as defined by Mohajan (2020). This method allows for the establishment and analysis of correlations and the investigation of cause-and-effect interactions between variables. Ingham-Broomfield (2014) also defined quantitative research as a survey method that collects information from a sample of people through self-report, where participants respond to a series of questions posed by the researcher. This methodology begins with a body of knowledge containing generalizations and hypotheses regarding correlations between occurrences.

Population Sample

The study focused on students from rural schools, employing a purposive sampling technique. A total of 400 questionnaires were disseminated, out of which 300 were returned, resulting in a 75% response rate. All 300 returned questionnaires were deemed usable for analysis. The sample was chosen purposively to exclusively target students from rural schools, aligning with the specific aim of the study.

Data Collection

Data collection was conducted using a structured questionnaire designed based on challenges identified in the literature. The questionnaire was crafted in English, suitable for the educated respondents who were students and lecturers. It was distributed electronically via email and WhatsApp, with a link to a Google Form provided for ease of response. Participants were allowed to skip any questions they found unsuitable, maintaining voluntary participation. Confidentiality and anonymity were assured throughout the study, with no link between specific responses and individual respondents.

The questionnaire was divided into five sections:

Section A: Biographical information (gender, age, education level, Internet usage frequency, and type of university or college).

Section B: Challenges of online learning.

Section C: Factors affecting e-learning.

Section D: Students' technological challenges.

Section E: Benefits of online learning.

The primary data collected included demographic information and responses measured using a 5-point Likert scale. This scale ranged from 1 (strongly disagree) to 5 (strongly agree), allowing for a quantifiable measure of respondents' attitudes, perceptions, and opinions.

Analytical Procedures

Before analysis, the textual data from the questionnaire were converted into a numerical format, as the data had been pre-coded with numerical codes assigned to different responses. The analysis was conducted using SPSS (Statistical Package for the Social Sciences). The Likert scale responses were analyzed by calculating the mean item score (MIS) for each element. These mean scores were then used to rank each item in descending order of relevance.

The data were analyzed using various statistical methods appropriate for the research questions and objectives. The average scores of respondents for each item on the Likert scale were calculated, providing a measure of central tendency for the data. These scores facilitated the identification of key challenges and factors affecting online learning and digital literacy among students from rural schools.

The statistical analysis provided insights into the following:

- i. The overall attitudes and perceptions of students towards online learning and digital literacy.
- ii. The specific challenges and factors that hinder online learning.
- iii. The technological difficulties faced by students.

- iv. The perceived benefits of online learning.

The results of the analysis were then presented in the subsequent section of the study, offering a comprehensive understanding of the digital literacy challenges faced by students from rural schools and the factors influencing their online learning experiences.

Data Analysis

The data was organized and shown as frequency distributions and percentages to facilitate data analysis. After the generation of frequency tables, the data were afterwards shown in the form of tables, bar graphs, and pie chart diagrams. To conduct an analysis of the quantitative data that was gathered, the researcher utilised the Statistical Package for the Social Sciences (SPSS), which is a computer software commonly employed for the purpose of analysing data related to social phenomena. Cronbach's coefficient alpha was used to assess internal consistency and establish the validity of the acquired data. Furthermore, as a matter of ethical concern, this research investigated the obligations towards professionals in the field whose work was appropriately referenced and recognised in the scholarly literature.

Ethical Clearance

This study was approved by the Vaal University of Technology's (VUT) ethics committee approved this research. A letter of consent were sent to each participant before the survey began. The goal of the study was fully explained to each respondent. The participants were made aware that identity and secrecy would be maintained even though the subject matter might not be debatable. This research has no direct or indirect potential for harm to humans, animals, the environment and the law. **Results**

Three hundred questionnaires were administered to the study sample. Of the 400 disseminated, 300 were returned (indicating a 75 percent response rate), and all 300 were usable. The first section presents demographic statistics of the participants.

Table 1: Demographic statistics of the participants

Demographics	Category	Frequency
Gender	Male	43%
	Female	47%
	other	10%
Age	< 20 years	20%
	21 to 30 years	40%
	31 to 40 years	25%
	41 to 50 years	15%
Education level	Undergraduate	38%
	Diploma	24%
	Degree	12%
	Honors	13%
	Master's degree	8%
	Doctorate	3%
	Not classified	2%
Internet Usage	Daily	8%
	Once a week	16%
	Bi-weekly	15%
	Only when I have an assignment	61%

Based on the results of the 300 usable questionnaires, the results in Table 1.1 demonstrates that 47% of the study's participants were females and 43 % were male and 10% were personnel who refused to be classified. Subsequently, the respondents' age range, as demonstrated in Table 1, the results show that 20% of respondents were in the age 20 years and younger, 40% were in the age range of 20 to 30 years, 25% were in the age range of 31 to 40 years, 15% were in the age range of 41 to 50 years. With regards to education, the results showed that, of the 391 respondents, 38% were undergraduate students, 24% had a Diploma, 12% had a Bachelor's degree, 13% had an Honours degree, 8% had a Master's degree, 3% had PhDs, and 2% could not be classified. Regarding internet usage, the results depicted that 8% of the participants use the internet daily, 16% used the internet once a week, 15% use the internet bi-weekly, while 61% of the participants use the internet only when they have an assignment.

Challenges of Online Learning (COL)

This section outlines the findings regarding challenges of digital literacy and potential impact it has on students' performance and development. This section presents and analyses research on digital literacy challenges in higher learning education. The table shows each factor's means and standard deviations. The descriptive result lists all criteria from highest to lowest.

Table 2: Challenges of online Learning

Challenges of digital literacy in higher education	\bar{x}	σX	R
Technological affordability: The costs of digital devices, such as computers, tablets, and smartphones are costly for previously disadvantaged students	3.91	1.187	1
Access to Technology: The availability of digital devices, such as computers, tablets, and smartphones	3.88	1.179	2
Technological Training and Support: Adequate training and support students	3.83	0.974	3
Inadequate Learning Environment: Safe and conducive for learning	3.82	0.188	4
Digital Skills Gap: Many students enter higher education without adequate digital skills	3.81	0.183	5
There is not adequate network coverage for all remote areas of students	3.79	1.107	6
Digital Security and Privacy: With increased online activities, students are exposed to digital security threats, such as phishing, hacking, and identity theft	3.66	0.954	7
Lack of trained facilitators to teach online classes	3.52	1.188	8
Social Isolation: The inability to actively participate in online discussions and interact with peers can lead to feelings of social isolation	3.50	0.963	9
Mental and Emotional Well-being: The challenges associated with inadequate studying conditions can contribute to increased stress and anxiety among students from disadvantaged backgrounds	3.48	1.051	10

Below is a presentation and discussion of the results and skewness of the MIS analysis of the questions.

\bar{x} = Mean item score; σX = Standard deviation; R = Rank

There are several statements that can be used to assess the possible challenges of online learning at higher institutions. Table 2 displays the respondents' evaluations of challenges of online learning in higher learning institutions. The study's results indicate that the Technological affordability: The costs of digital devices, such as computers, tablets, and smartphones are costly for previously disadvantaged students was ranked first, with a mean score of 3.91 and a standard deviation (SD) of 1.187; Access to Technology: The availability of digital devices, such as computers, tablets, and smartphones, was ranked second, with a mean score of 3.88 and a standard deviation (SD) of 1.179; Technological Training and Support: Adequate training and support students was ranked third, with a mean score of 3.83 and SDs of 0.974; Inadequate Learning Environment: Some students might not have a quiet, dedicated space to study at home was ranked fourth with a mean score of 3.82 and a standard deviation of 1.188; Digital Skills Gap: Many students enter higher education without adequate digital skills ranked fifth with a mean score of 3.80 and standard deviations of 0.183. There is not adequate network coverage for all remote areas of students was ranked sixth with a mean score of 3.79 and SD of 1.107. In addition, the seventh-ranked item, Digital Security and Privacy: With increased online activities, students are exposed to digital security threats, such as phishing, hacking, and identity theft, had a mean score of 3.66 and a standard deviation of 0.954; the eighth-ranked item, Lack of trained facilitators to teach online classes, had a mean score of 3.52 and a standard deviation of 1.188; the ninth-ranked item, Social Isolation: The inability to actively participate in online discussions and interact with peers can lead to feelings of social isolation, had a mean score of 3.50 and a standard deviation of 0.963; and the tenth-ranked item, Mental and Emotional Well-being: The challenges associated with inadequate studying conditions can contribute to increased stress and anxiety among students from disadvantaged backgrounds with a mean score of 3.48 and SD of 1.051.

Discussion

From the analysis above, it can be concluded that there is fair balance of participant's gender. Subsequently, most respondents are between the ages of 20 – 40 years, have matric and studied towards doctoral level and majority are black who attended rural schools. The study reveals a range of challenges faced by higher learning institutions in implementing online education effectively. The top two challenges highlighted are related to technological accessibility and affordability. Students from disadvantaged backgrounds face difficulties due to the costs associated with acquiring necessary digital devices like computers, tablets, and smartphones. Additionally,

the availability of these devices remains a concern. Adequate training and support for students in utilizing technology effectively is ranked as the third challenge. This suggests that students may struggle with the digital tools required for online learning, highlighting the need for comprehensive training resources. The fourth-ranked challenge indicates that some students lack a quiet and dedicated space for studying at home. This issue could hinder their ability to focus and engage effectively in online coursework.

The fifth-ranked challenge underscores the importance of digital literacy. Many students entering higher education may not possess the necessary digital skills, making it essential to bridge this gap to ensure successful online learning experiences. The sixth-ranked challenge suggests that there are remote areas with inadequate network coverage. This issue can hinder students' ability to access online resources and participate in virtual classes. Concerns about digital security and privacy highlight the need to educate students about online threats and best practices to safeguard their information. The eighth-ranked challenge indicates that there might be a shortage of trained facilitators who can effectively teach online classes. Adequate training for instructors is crucial for maintaining the quality of online education. The potential for social isolation among students participating in online discussions and interactions, efforts should be made to foster a sense of community and engagement in the virtual learning environment. The tenth-ranked challenge points to the impact of inadequate studying conditions on students' mental and emotional well-being. Addressing this challenge is important for promoting a positive and supportive learning environment.

Implications

Digital Training and Support for Students

Initiatives:

- i. **Comprehensive Onboarding Programs:** Implement orientation sessions focused on digital tools and platforms used by the institution.
- ii. **Regular Workshops:** Offer workshops on the use of digital tools such as Learning Management Systems (LMS), online libraries, and productivity software.
- iii. **Help Desks and Support Centers:** Establish digital support centers or help desks that can provide real-time assistance to students facing technical issues.

Best Practices:

- i. **Peer Support Programs:** Develop peer support programs where tech-savvy students can help their peers with digital challenges.
- ii. **Faculty Involvement:** Train faculty members to integrate digital tools in their teaching, ensuring they can guide students effectively.

Availability of Digital Resources for Students

Initiatives:

- i. **Digital Libraries:** Expand digital library resources, ensuring access to e-books, journals, and other academic resources.
- ii. **Open Educational Resources (OER):** Encourage the use of OER to provide students with free and accessible learning materials.
- iii. **Software Access:** Provide students with access to essential software, either through institutional licenses or partnerships with software providers.

Best Practices:

- i. **Resource Sharing Platforms:** Develop platforms where students can share and access digital resources.
- ii. **Regular Updates:** Keep digital resources updated to ensure they remain relevant and useful.

Digital Literacy Bridging Courses

Initiatives:

- i. **Introductory Courses:** Offer mandatory introductory courses on digital literacy, covering basic computer skills, internet usage, and online safety.
- ii. **Advanced Digital Skills:** Provide optional advanced courses on topics like coding, data analysis, and digital content creation.
- iii. **Certification Programs:** Develop certification programs that allow students to demonstrate their digital competencies.

Best Practices:

- i. **Customized Learning Paths:** Create customized learning paths based on students' initial assessments to address individual needs.
- ii. **Incorporate into Curriculum:** Integrate digital literacy components into existing courses across disciplines.

Extended Curriculum Programs

Initiatives:

- i. Foundation Programs: Implement foundation programs for students needing extra academic support before they start their main degree courses.
- ii. Supplementary Modules: Offer supplementary modules to help students reinforce their knowledge in critical areas.
- iii. Mentorship and Tutoring: Establish mentorship and tutoring programs to provide additional academic support.

Best Practices:

- i. Continuous Assessment: Use continuous assessment methods to monitor student progress and adjust support as needed.
- ii. Flexible Scheduling: Allow for flexible scheduling to accommodate students' varying needs and commitments.

Implementation Strategy

- i. Needs Assessment: Conduct a comprehensive needs assessment to understand the digital training and resource requirements of students.
- ii. Stakeholder Engagement: Involve students, faculty, and staff in the planning and implementation process to ensure the initiatives meet the actual needs.
- iii. Pilot Programs: Start with pilot programs to test the effectiveness of new initiatives before full-scale implementation.
- iv. Feedback Mechanisms: Establish robust feedback mechanisms to gather insights and make continuous improvements.
- v. Sustainable Funding: Secure funding through partnerships, grants, and budget allocations to ensure the sustainability of digital initiatives.

Conclusion

This study shed light on the multifaceted challenges faced by higher education institutions in South Africa during the transition to online learning, particularly in the context of the digital divide. The COVID-19 pandemic accelerated the shift to online education, revealing disparities in technological accessibility, affordability, and digital literacy among students. The study underscores the critical challenge of technological affordability, as the costs of digital devices pose a significant barrier for students from disadvantaged backgrounds. Access to technology also emerged as a major concern, highlighting the need for initiatives to bridge the digital divide and ensure equitable access to educational resources. Challenges such as networks (connectivity, network speed), this are foreign to students from rural areas as they are not accustomed to them. Moreover, the study emphasized the importance of technological training and support for students, indicating that many lack the necessary skills for effective online learning. Inadequate learning environments, digital skills gaps, and network coverage issues in remote areas further compound the challenges faced by students.

Addressing these challenges requires a comprehensive approach that includes financial support for students, initiatives to improve digital literacy, and infrastructure development to enhance network coverage in remote areas. As higher education institutions continue to navigate the evolving landscape of online education, it is imperative to prioritize efforts to reduce the digital division, enhance digital literacy by increasing technological accessibility, and providing comprehensive training and support to students and educators. To overcome these obstacles related to digital literacy, it is crucial for institutions to provide a major priority in ensuring that students from all socioeconomic backgrounds have equal opportunities for high-quality education.

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