

Students' Challenges in an E-learning Setting at a University of Technology in South Africa

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Abstract

This study explores the challenges encountered by students in an e-learning setting at the University of Technology in South Africa. The study employed qualitative research methods, utilizing semi-structured interviews as the primary tool for data collection. Ten students, identified as S1 to S10, formed a purposeful sample and participated in the research. The collected data was thematically analyzed to identify and understand the challenges faced by these students. The analysis revealed four major themes: limited access to reliable internet connections, engagement and motivational challenges, inadequate institutional support, and socio-economic challenges. Based on

the findings, the main conclusions of the study suggest that students in the e-learning setting face multiple challenges that hinder their productive learning experience. To address these challenges, recommendations are made to improve internet infrastructure, enhance student engagement and motivation, provide stronger institutional support, and alleviate socio-economic obstacles. It is hoped that these findings and recommendations will contribute to the design and implementation of more effective e-learning strategies at the University of Technology and beyond.

Key Words: University of Technology, e-Learning, Challenges, Technology, Students

Introduction

The emergence of technology has revolutionized the mode of operations worldwide, in both public and private sectors. Within the higher education space sphere, technology shifted the way teachers teach and the way students learn (O-Connor, Kennedy, Wang, Ali, Cooke, and Booth, 2021:1; Pather, 2020:19). Galvis and Carvajal (2022:1) Having computers and the internet to support the substantive and operational work of HEIs is no longer an option. It is a strategic requirement to move forward in fulfilling the educational mission of organizations that, like many universities and advanced training centers, want to be in tune with the society they serve—the knowledge society. Nevertheless, this mode of delivery has its downside in the form of a negative effect on attrition or dropout rates (Mare and Mutezo (2020:164). Preliminary results of research by Letseka, Letseka, and Pitsoe (2018:122) indicate developing countries, such as South Africa, experience challenges in the adoption of online learning due to existing social inequalities, and a lack of conducive spaces to study and technology resources. Challenges are compounded by the lack of skills by students and staff and the cost of data. However, Simelane, Ojo, and Onwuegbuzie (2023:105); Crone, Rigoli, Patil, Pini, Sutton, Kallen, and Richardson (2021); Czerniewicz, Agherdien, Badenhorst, Belluigi, Chambers, Chili, De Villiers, Felix, Gachago and Gokhale (2020) offer that technology has since taken a centre stage in the changing role of higher education as sophisticated web-based learning systems are continuously developed and used for engagement between students and lecturers, and to facilitate teaching and learning linkage across global universities. According to Saeed (2021) incorporating technology into the instructional design process helps create more engaging and interactive learning experiences. On the contrary, Hodges, Moore, Lockee, Trust, and Bond (2020:1) argue that while moving instruction online can enable the flexibility of teaching and learning anywhere, anytime, the speed with which

this move to online instruction is expected to happen is unprecedented and staggering. The potential of technology implementation in increasing the teaching-learning process, and the effect of constructivism on classroom practices have been studied by many researchers (Chankseliani; Qoraboyev and Gimranova, 2021; Mhlanga and Moloi, 202); Prifti, 2020; Rahiem, 2020; Rotas and Cahapay, 2020; Gilagjani Lai and Ismail, 2013).

Shukla (2017:82) suggests that there is a close relationship between technology and constructivism, with the implementation of each one benefiting the other. According to Gilagjani *et al.* (2013:49), constructivism states that learning takes place in contexts, while technology refers to the designs and environments that engage learners. However, Saeed, (2021) and Makewa (2019) argue that the conception that technologies themselves do not directly cause learning to occur but can afford certain tasks that themselves may result in learning, locating problems, assisting to accomplish tasks, and improving the cognitive powers of students, by using pedagogical principles of constructivism and deep learning. In support of Saeed's (2021) assertions, Hodges, *et al.*, (2020:1) caution that online learning experiences should be well-planned to be meaningful and different from courses offered online in response to a crisis or disaster.

For O'Connor *et al.*, (2019) learning theories may help teachers to understand how students learn via technology. In pedagogical research, theories are used to gain an in-depth understanding of complex phenomena such as how a person learns in a particular context (Makewa, 2019:268; O'Connor, *et al.* 2022). They should offer an explanatory framework that moves beyond a basic listing of internal and external factors, to capture the dynamic interactions and relationships between variables, thus extending our understanding of adult learning (O'Connor, *et al.* 2022). Furthermore, at universities, technology offers a flexible and convenient way of teaching, allowing students to learn at their own pace and from any location, using learning management systems, multimedia, social media, and mobile devices. Technology can serve as a coach by locating the problem and allowing for as much rehearsal, practice, and help as necessary to accomplish the task (Mare and Mutezo, 2020:164). Technology can enhance the cognitive powers of students (Makewa, 2019:268; O'Connor, *et al.*, 2022). Findings from the learning analytics of all case studies demonstrated the capability to achieve course/project learning outcomes, with high engagement from students among peers and with tutors (Saeed, 2021). Furthermore, the diverse virtual learning tools used allowed students to display creativity and innovation efficiently analogous to physical learning (Saeed, 2021; Chankseliani *et al.*, 2021; Hodges, *et al.*, 2020:1).

Problem statement

The University of Technology that is being researched has a student population of about 20 thousand students coming from South Africa and across the African continent. Most of these students are Africans who were previously disadvantaged due to repressive measures of educational inequality that were perpetuated by the past by the Apartheid (segregationist) racist regime before democracy in 1994. The Apartheid regime had separate education departments, which were separate as follows: (i) a privileged one for white people (ii) one for Indians (iii) one for Coloured (mixed race), and (iv) the dehumanizing system for the African people in South Africa. This kind of educational segregation has harmed generations of African people in terms of inadequate educational and learning skills for critical thinking. In line with the foregoing, research by Letseka, *et al.* (2018:122) suggests that over two decades of democracy in South Africa, vast inequalities against race, class, and gender socio-economic status, persist particularly among African people. The role of e-learning for the poorest section of society in a country where technological devices in the form of information and communication technologies (ICT) and access to the Internet are perceived to be ubiquitous. Among the challenges experienced regarding e-learning at the University of Technology include insufficient technology infrastructure, digital literacy skills gap, engagement, and motivational challenges, lack of personal interaction, and peer learning (Carrillo and Flores, 2020). Alvarez (2020) further offers that, questions such as the choice of learning method, the choice of platform, and the set of resources and activities of which they are composed, among others, generate uncertainty in the design of effective educational practices, and often plague teachers. For Letseka, *et al.* (2018:122) implementation of e-Learning at the university has its downside in the form of a negative effect on attrition or dropout rates among students. Furthermore, Mare and Mutezo (2020:164) suggest that due to reasons specific to the individual student such as work commitments and ill health, research has shown that feelings of isolation, disconnectedness, and problems with technology are common reasons for the high drop-out rates (Mare and Mutezo, 2020:164). The results of Letseka, *et al.* (2018:122) reports that reflected five broad categories of experiences, which are electricity and internet (infrastructure), home (environment), personal, health, and other heterogeneous experiences. Electricity and the internet represent the infrastructure needed to participate in remote teaching and learning. The environment, which is home to most of the African students, was found not to be conducive for students to participate effectively in e-learning. Additionally, students experienced increases in health conditions such as depression, anxiety, and stress. Pedagogical challenges on the part of the lecturers included inadequate design and delivery of online

courses, learning assessment, and feedback limitations, and maintaining student interest and active participation.

Research purpose

The purpose of the current research was to understand how the challenges of student learning in an e-learning environment at one university of technology in South Africa.

Research questions

- What are the challenges of student learning in an e-learning environment at one University of Technology in South Africa?
- How can these challenges be overcome?
- How does e-learning enhance student learning?

Theoretical Framework

To provide a theoretical framework for the current study, the social constructivist perspective and constructivism as a framework for educational technology were found useful. Mare and Mutezo (2020) suggest that constructivism is both a philosophical and psychological approach based on social cognitivism that assumes that persons, behaviors, and environments interact reciprocally. According to O'Connor, *et al.* (2022) appreciating how individual psychological and cognitive processes work to acquire new information within a specific external environment, should guide the pedagogical approach to teaching and assessment, thereby improving student learning outcomes. O'Connor, *et al.* (2022); Zadjah (2021), and Makewa (2019) offer that social constructivism learning theories are conceptual frameworks that describe how knowledge is absorbed, processed, and retained during an intervention. Social constructivist theories also help to explain how student learning could be improved in e-learning environments. Gilagjani *et al.* (2013:50); Mare and Mutezo (2020:165) and (Makewa, 2019:268) suggest that the social constructivism theory of learning is described as the knowledge that is constructed within social contexts through interactions within a knowledge community. Gilagjani *et al.* (2013:50) and O'Connor *et al.* (2022) offer that constructivism adopts a more experiential perspective where students learn by constructing meaning from past and present personal experiences and their understanding of the sociocultural context. For Chankseliani, *et al.* (2021) the broad principles of education seen through theories of learning and applied to learning and teaching practice propose that pedagogy is the core of e-learning, while technology is a tool for enhancing teaching and learning. Technology is often conceptualized as

being the “underwear” that underpins the development of e-learning (Mhlanga and Moloi, 2020; Prifti, 2020; Rahiem, 2020 and Rotas and Cahapay (2020). Constructivist theories propose that learners have different learning styles, preferences, and needs and thus effective teaching should take these differences into account (McLoed, 2024:1).

According to Saleem, Kausar, and Deebea (2021:403), social-constructivist pedagogy acknowledges the social nature of knowledge and its creation in the minds of individual learners. Mare and Mutezo (2020) offer that there are three levels of social constructivism during the learning process, namely cognitive, social, and teaching presence. Thus, constructivist approaches tend to emphasise factors specific to individual learners such as motivation, beliefs, and behaviour (Aliakbari, Parvin, Heidari and Haghani, 2015). Hence (Makewa, 2019:268) offers that constructivism theory states that learning occurs when one constructs both mechanisms for learning and his or her unique version of the knowledge. Thus, in social constructivist theory the role of the learning facilitator is to encourage learners to discover principles of knowledge on their own and then help translate information into content that learners can understand, thus enabling them to acquire additional knowledge (Makewa, 2019:268). Makewa (2019); Mamphiswana and Bekele (2020); Mare and Mutezo (2020:164); Mhlanga & Moloi, (2020); Prifti, (2020:1); Rahiem (2020); Rotas and Cahapay (2020); Ng’ambi, Brown, Bozalek, Gachago, and Wood (2016) suggest that learning technologies have positive effects on teaching practices and student engagement. Despite the physical separation between students and teaching staff, online activities, multimedia tools, and discussion forums have been reported to increase emotional engagement in the e-learning environment and to be capable of providing the requisite elements for a community of learners (Jeong, Hmelo-Silver, and Jo, 2019).

However, Gilagjani *et al.* 2013:49) argue that while technology provides many new opportunities for issues like learning styles, student-centered instruction, and promotion of higher-level thinking, integrating technology into the course design leads to technology being used as a substitute for other tools in their traditional teaching styles, instead as a new approach to instruction. Makewa (2019:268) asserts that the construction of knowledge is a dynamic process that requires the active engagement of the learners who will be responsible for one's learning while the teacher only creates an effective learning environment. However, for Czerniewicz, *et al.* (2020) using technology in the classroom by itself is not effective unless teachers have a theory to model their instruction with. Makewa (2019:268) suggests that the use of technology

in the teaching and learning process is a necessary skill whilst technology becomes a learning tool.

Incorporating constructivist principles in an e-learning environment to enhance active learning

Bao (2020) suggests that active learning is an approach to instruction that involves actively engaging students with the course material through discussion, and problem-solving. According to Budd, Robinson, and Kainz (2021), in active learning students are not passive recipients of knowledge but are actively involved in activities that require them to process, apply, and reflect on the information they learn. Lookman, Balachandran, Xue, and Yuan (2019); Supena, Darmuki, and Hariyadi (2021) indicate that active learning manifests itself in several forms which entail group discussions, problem-solving exercises, case studies, role, role-playing, simulations, and hands-on exercises. Using active learning as an approach to teaching promotes deeper learning and retention as it engages learners in active activities that require them to think critically, analyse information, and apply their knowledge and skills to real-world situations. Research by Guo, Zha, Qian, and Chen (2019) reveals that the use of active learning as a teaching approach enhances student engagement and motivation since students are actively involved in the learning process. Furthermore, student engagement not only leads to improved retention but also leads to the development of critical thinking skills (Allsop, Young, Nelson, Piatt, and Knapp, 2020). Regarding improved retention, deeper learning and understanding, as well as the development of critical thinking, are enhanced, and students are equipped with the skills to analyse information, make connections, and solve problems (Yaodum, Mahapoonyanont, Jaidumrong, and Songsung, 2023). Relatedly, Guo *et al.* (2019), offer that active learning as a teaching approach prepares students for the real world. In this case, the approach simulates real-world situations. This helps learners develop the skills and knowledge they need to succeed in their future careers.

Against the above background, it can therefore be argued that incorporating constructivist principles to improve learning in an e-learning environment requires that interactive activities that require learners to actively engage with content be incorporated in the lessons. Thus, activities like simulations, games, and problem-solving exercises are very vital in this case. Allsop *et al.* (2020) indicate that these activities should allow learners to explore, experiment, and make connections between new and existing knowledge. By incorporating these activities into an e-learning framework, learners can become active participants in their learning process and

construct their understanding of the content. This can lead to deeper learning, better retention, and improved transfer of knowledge and skills to real-world contexts. It is important to note that it is not only sound theories on which one should base when constructing theoretical frameworks, but different student learning styles should also be considered, and the provision of specific mitigation strategies to support students regarding conflicts between their life or family responsibilities and their academic work (O'Connor, et al. 2022:1).

Designing interactive, engaging, and relevant e-learning environments

Instructional design, technology integration, and learner-centred approaches are all critical components that can be used to promote student learning in an e-learning environment (Lin, Jin, Zhao, Yu and Su, 2021). Instructional design does not only entail creating effective and efficient learning experiences that facilitate the acquisition of knowledge, skills, and attitudes, but it also entails identifying the learning needs of students, setting learning objectives, selecting appropriate teaching strategies and resources, and assessing student learning outcomes (Onwuegbuzie, Ojo, Burger, Crowley, Adams and Bergsteed, 2020). Additionally, Alvarez (2020) suggests that instructional design ensures that teaching is aligned with the learning goals and that the students are provided with meaningful and engaging learning experiences. The importance of instructional design, technology integration, and learner-centered approaches in promoting student learning. the need for instructors to design e-learning environments that are interactive, engaging, and relevant to student needs and interests such as personalised learning and collaborative learning, in promoting student engagement and motivation. If designed and implemented properly, technology-supported education can promote the acquisition of the knowledge and skills that will empower students for lifelong learning.

Designing an effective e-learning environment that is interactive, engaging, and relevant to students' needs can be a daunting task (Alvarez, 2020). Darling-Hammond, Schachner, Wojcikiewicz, and Flook (2024:1) such environments must support active learning and should have instructional systems that engage learners in realistic, authentic, complex, and information-rich learning contexts; support intentional, self-regulated learning, support cooperative learning efforts in learning and engage learners in complex problem solving to anchor meaning-making. Considering the foregoing, Galvis and Carvajal (2022) assert that teachers must build the means for e-learning to evolve and mature as part of the educational change process so that it achieves its promise of an improved system of effective student learning. Galvis and Carvajal

(2022) argue that while the ostensible aim is to use e-learning to improve the learning experience for students, the drivers of change are numerous, and learning quality ranks poorly among most of them. Consequently, to ensure improved learning, the judgment of pedagogic quality must be principled, in that any decision to create and use e-learning should be underpinned by some agreed principles of good teaching and learning. These principles may be derived from views of the purposes of education, for example, that it should be inclusive, be based on sound theoretical and research-based ideas of learning, and distilled practice as found in the institution (Bajracharya, 2021:3).

Seeletso (2022:11), reveals that digital technologies also present some challenges when used. Change in teacher education is key and needs to be prioritized. The theoretical model that incorporates instructional design, technology integration, and learner-centred approaches emphasizes the importance of creating effective and engaging learning experiences (Bajracharya, 2021:3). McLeod (2024:1) suggests that the theoretical model that incorporates instructional design, technology integration, and learner-centred approaches emphasizes the active role of learners in building their understanding. Chander and Arora (2021:10) argue that by incorporating instructional design, technology integration, and learner-centred approaches into teaching, teachers can create learning experiences that are meaningful, engaging, and effective in promoting higher-order thinking skills among students. Research by Galvis and Carvajal (2022); Bajracharya (2021); Budd *et al.*, (2021), and Alvarez (2020) indicate that several clear reasons can be seen to sit behind the popularity of technology-based education. Some of the more common factors and influences driving the uptake of technology-based education include (i) flexibility because in many universities, administrators, and teachers are seeing an advantage in the flexibility that online learning settings create for course delivery. Additionally, Mare and Mutezo (2020:164) indicate that technology can be used to provide students with access to a wide range of resources, facilitate collaboration, and communication, support differentiated instruction, and elicit positive feelings about their studies, particularly regarding convenience in terms of independence of location and time. Research on e-learning by Margarita and Homa (2020); Mpungose (2020); Ng'ambi, *et al.* (2020); Anthonysamy, Koo, and Hew (2020), and El-Sabagh (2021) submit that engagement of students in e-learning-environments is especially essential in situations where such students may be independently studying without the support of a physical classroom environment.

Research Methodology

A qualitative case study, positioned within an interpretivist, constructivist paradigm (Petty, Thomson, and Stew, 2012) was adopted in this study. Qualitative approaches are primarily used in the constructivist paradigm (Petty, Thomson, and Stew, 2012). The researchers sought to understand and describe a lived experience, including people's perceptions, personal perspectives, and interpretations, as well as understand the challenges and possibilities regarding student learning in an e-learning environment at one University of Technology in South Africa (Petty, Thomson, and Stew, 2012).

Sampling Method

Purposive sampling was utilized to pick ten students coded as S1 to S10 as participants for the current research. Participants were chosen from the study population because they met the same data adequacy criteria, which pertain to the appropriateness of sample composition and size (Palinkas, Horwitz, Green, Wisdom, Duan, and Hoagwood, 2015:8). These participants were further in their current positions for at least five years. Furthermore, the sample was chosen based on the researchers' understanding of the population and its components (Merriam, 2009). According to the researchers' schema, these informants had the necessary knowledge and expertise to serve the current study's goal (Sim, Saunders, Waterfield, and Kingstone 2018; Merriam and Tisdell, 2016:62-63). The researchers anticipated that the chosen sample would be able to deliver rich information to suit the current study's objectives.

Data Collection Method

Individual, in-depth, semi-structured interviews were used to collect data from ten students coded as S1 to S10 to source their attitudes, values, reasons, meaning-making, and self-understanding about the challenges regarding student learning in an e-learning environment at one university of technology in South Africa. The researchers sought answers to the "what" and "how" of human experience regarding challenges and possibilities regarding student learning in an e-learning environment; what is the nature of this experience and its significance (Neubauer, Witkop and Varpio, 2019; Creswell, 2013). The major goal of data collection methods was to acquire textual material for research, which was then analysed qualitatively (Bryman, 2012). According to Creswell (2014), qualitative interviews offer the advantage of interactivity and enable unexpected topics to develop, which can be pursued by the researchers. This can also aid in overcoming the researcher-centered bias that is common in written surveys, which can only measure what is already known or expected to be of significance to the researchers (Punch, 2013). Using the interview method, the researchers asked

questions and provided prompts to elicit as much rich information as possible from the participants (Hesse-Biber, 2017). The interviews were conducted until data saturation was reached (Saunders, Sim, Kingstone, Baker, Waterfield, Bartlam, Burroughs, and Jinks, 2018).

Data Analysis

Data analysis was carried out in an iterative process of carefully searching and organizing data, interpreting, and presenting the data in a meaningful way to reveal insights, patterns, themes, and stories that improved a better understanding of the challenges and possibilities regarding student learning in an e-Learning environment at one University of technology in South Africa (De Vault, 2011). Creswell (2013) proposes that the epoche in qualitative research, for example, is the process by which researchers can remove, or at least become aware of, their prejudices, perspectives, or assumptions about the topic under examination. Thematic analysis was found to be appropriate for this study (Creswell, 2014) and the method of analysis chosen was influenced by the researchers' constructivist perspective, as well as their scientific backgrounds. The researchers used a computer to transcribe the audio recordings of the interviews and file notes into paper and electronic files (Bawalan, 2012).

During the analysis, the researchers immersed themselves in reading and re-reading the transcripts, allowing them to become close to the data and analyse with an open practical attitude. Given that the data could not be seen, the researchers isolated them and then related them to the necessary theoretical notions. The analysis demonstrated the researchers' ability to think critically and extract meaning from data via critical reading and informing the researchers of theories and studies on student learning in an e-learning environment.

Results and Discussion

The data analysis revealed several challenges faced by students. The challenges included Limited access to reliable Internet connections, engagement and motivational challenges, lack of institutional support and resources, and socioeconomic and personal challenges. These challenges are corroborated by Letseka, Letseka, and Pitsoe (2018:122) whose research findings indicate that in South Africa, students experience challenges in the adoption of online learning due to existing social inequalities, a lack of conducive spaces to study and technology resources. The results are given in Table 1, structured into three columns. The first column presents the primary themes determined from data analysis, the second column enumerates the subthemes that

support these primary themes, and the last column offers operational definitions to elucidate the significance of each topic. This guarantees that readers possess an unambiguous comprehension of the themes that arose from this investigation.

Table 1: Themes, sub-themes, and operational definitions

Theme	Sub-themes	Operational definitions
Limited access to reliable Internet connections	• Inadequate infrastructure • Financial constraints • Technological barriers • Rural/remote areas • Bandwidth limitations	Restricted availability to internet connection
Engagement and motivational challenges	• Lack of Interaction with Peers • Absence of Personalized Feedback • Time Management and Self-discipline • Reduced sense of belonging to the academic community	Issues hindering student engagement and motivation
Lack of institutional support and resources	• Inadequate network connectivity within the university campus, affecting the smooth functioning of e-learning activities. • Lack of technical support services to assist students in troubleshooting technical issues faced during virtual lectures or assessments. • Insufficient training opportunities for both students and faculty to effectively use e-learning tools and platforms. • Inadequate funding towards acquiring necessary resources for a seamless e-learning experience.	Deficiency in support and resources
Socioeconomic and personal challenges	• Difficulties in balancing employment and studies to manage financial obligations, impacting the time available for e-learning activities. • Inadequate access to quiet and conducive study spaces, especially for students living in crowded households. • Limited availability of electricity or frequent power outages, hindering the ability to engage in e-learning activities.	Individual students' difficulties due to their socioeconomic circumstances

	• Unstable or uncomfortable living conditions, affecting concentration and motivation for study.	
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The themes (findings) as captured in Table 1 are now explained, discussed analysed, and interpreted against the literature as presented in this study.

Limited Access to Reliable Internet Connections

Limited access to reliable internet connections emerged as a significant issue during the interviews conducted. It became apparent that many students lacked the necessary infrastructure such as computers, tablets, and smartphones, which hindered their ability to effectively participate in e-learning classes. Without these devices, students were unable to access the online platforms required for virtual learning, resulting in a loss of education opportunities. In the words of S1, *‘the university supplied us with laptops but, not all students got one; and even the ones who got, many of the laptops ceased to work just in a matter of months.’* Thus, Hodges, *et al.*, (2020:1) caution that online learning experiences should be well-planned to be meaningful and different from courses offered online in response to a crisis or disaster. Furthermore, even those who possessed devices often faced a second obstacle - the lack of data to log in to online classes. While the university had made efforts to provide laptops and data to students, it was observed that a considerable number of students never received them. This left them reliant on their resources, and many were unable to afford the cost of purchasing their own devices or data plans. S10, concurring with the views of the majority of participants noted in this regard that, *“the issue of lack of data was very frustrating; personally, I went for months without university-supplied data. I had to use alternative means to get data such as burdening my mother who is a pensioner asking for money to buy data.”* Thus, Hodges, *et al.*, (2020:1) caution that online learning experiences should be well-planned to be meaningful and different from courses offered online in response to a crisis or disaster.

Another issue that arose was the poor quality of the devices provided by the university. Many students reported that the laptops and tablets they received were outdated, slow, and prone to technical issues. This not only hindered their participation in online classes but also added to their frustration and made the learning experience even more challenging. Additionally, technological barriers also proved to be a major challenge for students. For instance, some students lacked the necessary skills to operate the devices or navigate the online learning platforms effectively. Others faced difficulties

in setting up their internet connections, troubleshooting technical issues, or even understanding basic instructions for the online classes. Mare and Mutezo (2020:164) suggest that these challenges can be prevented by the university locating possible problems students might encounter and allowing for as much rehearsal, practice, and help as necessary to accomplish their tasks. Furthermore, most students interviewed resided in rural areas, where there was limited coverage of the Internet. This geographical constraint severely impacted their ability to connect to online classes, often resulting in unreliable or nonexistent internet access. This digital divide between urban and rural areas accentuated the inequalities faced by students, as those in urban areas had better access to quality internet connections and reliable e-learning resources. Letseka *et al.* (2018:122) corroborate these findings by stating that the role of e-learning for the poorest section of society in a country where technological devices in the form of information and communication technologies (ICT) and access to the Internet are perceived to be ubiquitous. Moreover, bandwidth challenges were also found to affect e-learning. With multiple students trying to access online classes simultaneously, the limited bandwidth available in certain areas presented a significant hurdle. This led to slow internet speeds, buffering issues, and frequent disconnections, making it extremely difficult for students to engage in live sessions or access course materials promptly. Contrary to our findings, Saeed (2021); Chankseiani *et al.*, (2021); Hodges, *et al.*, (2020) suggest that the diverse virtual learning tools used will allow students to display creativity and innovation efficiently analogous to physical learning. The participants' frustrations are captured verbatim in the following excerpts:

S2: *My major challenge was the device. The laptop was very slow and kept on breaking down.*

S4: *Our place in rural Giyani could not receive internet. I missed face-to-face classes because I could hardly connect. I would be lying if I said I participated in online classes more than twice a week.*

S6: *This online thing took most of us first years by surprise. Many of my friends had poor computer skills to log in and work on the learning platforms.*

S10: *My challenge was to set up the net connection and I was also not familiar with how to do it.*

S8: *Many of us could not log in. The internet was slow. It took ages to connect and when it connected it would go off within minutes.*

Limited access to reliable internet connections emerged as a critical barrier during the interviews. It became evident that students lacked adequate infrastructure, faced data scarcity, received poor-quality devices, encountered technological challenges, and dealt with limited internet coverage and bandwidth issues. These factors combined to

create significant obstacles for students, hindering their ability to fully participate in e-learning classes and compromising their educational opportunities.

The present study's findings corroborate the research conducted by Qurotul et al. (2020) and Izumi *et al.* (2021) regarding the significance of reliable and accessible internet connections for the successful implementation of online teaching and learning. Qurotul *et al.* and Izumi *et al.* both illuminate the need for students to have consistent and dependable access to the Internet to fully engage in online education. The present study's findings further corroborate this notion by highlighting the challenges faced by students due to limited access to reliable internet connections. This limitation not only hinders students' ability to participate effectively in online classes but also impedes their access to educational resources and materials. Therefore, the findings of the present study further support the assertion made by Qurotul et al. (2020) and Izumi et al. (2021) that students require reliable and accessible internet connections for the successful implementation of online teaching and learning.

Engagement and Motivational Challenges

The lack of interaction with peers, absence of personalized feedback, and struggles with time management and self-discipline were significant factors that contributed to the engagement and motivational challenges faced by participants in an e-learning setting. The findings suggest that students value social interaction and personalized feedback from lecturers to feel more connected, motivated, and engaged in their online learning experiences. The findings of the current study contradict the assertions by Makewa (2019); Mamphiswana and Bekele (2020); Mare and Mutezo (2020:164); Mhlanga and Moloi, (2020); Prifti, (2020:1); Rahiem (2020); Rotas and Cahapay (2020); (Jeong, Hmelo-Silver, and Jo (2019); Ng'ambi, Brown, Bozalek, Gachago, and Wood (2016) who suggest that learning technologies have positive effects on teaching practices and student engagement, despite the physical separation between students and teaching staff. These scholars further assert that online activities, multimedia tools, and discussion forums have been reported to increase emotional engagement in the e-learning environment and to be capable of providing the requisite elements for a community of learners. Additionally, addressing time management skills and providing structure and accountability mechanisms may help students improve their motivation and engagement in e-learning activities. These findings emphasize the importance of incorporating strategies that foster interaction, provide timely feedback, and support students' time management skills to enhance their engagement and motivation in online learning environments. In a way, participants' responses in this study revealed several

significant issues that hindered student engagement and motivation in e-learning activities. One such issue was the lack of interaction with peers. Traditional classroom settings provide students with the opportunity to engage in face-to-face discussions, collaborate on group projects, or simply socialize with their peers. Hence, Czerniewicz, *et al.* (2020) suggest that using technology in the classroom by itself is not effective unless teachers have a theory to model their instruction with. However, the researchers argue that in the e-learning environment, this social interaction is greatly limited, if not absent. S9 noted in this regard that, *“we missed each other. There was no one to talk to or to consult in cases where you did not understand the online teacher.”* As a result, students reported feeling isolated and detached from their classmates, leading to a decline in motivation and a reluctance to actively participate in online discussions or group activities. S7 confessed that *“it was not the same this online thing.....no it was as if you were alone in class.”*

The absence of personalised feedback was also identified as a major hurdle to student engagement and motivation. Participants indicated that in conventional classrooms, lecturers provided immediate feedback based on students' verbal responses, presentations, or written work. However, in e-learning settings, this personalized feedback was lacking. Students expressed frustration with the delayed or generic feedback they received, as it failed to address their individual learning needs. This lack of personalised feedback led to a decrease in motivation and a sense of detachment from the learning process. Capturing and epitomizing most of the responses concerning this matter, S4 indicated that, *“I did not like the lack of immediate and personalized feedback. Before COVID-19, and before this online thing, the lecturers would go around the lecture hall talking to each of us individually. This was lacking in an online teaching environment”*. Corroborating our findings, Allsop, Young, Nelson, Piatt, and Knapp (2020) suggest that student engagement does not only lead to improved retention but also leads to the development of critical thinking skills.

Time management and self-discipline were identified as additional challenges impacting student engagement and motivation. E-learning requires students to take more responsibility for their learning and manage their time effectively since there is no fixed schedule or physical presence of teachers to enforce deadlines. However, participants in this study struggled with balancing their academic commitments with other responsibilities, such as work or family obligations. This often resulted in procrastination, missed deadlines, and a lack of motivation to actively participate in e-learning activities. S5 lamented in this regard that, *“I found it difficult to police myself*

in an eLearning environment, and I found myself missing deadlines or unable to submit the assignments.” Thus, the lack of external structure and accountability affected their motivation to consistently engage in learning activities, as they found it challenging to maintain a steady pace and meet deadlines effectively. Moreover, the reduced sense of belonging to the academic community in an eLearning setting posed significant challenges to student engagement and motivation. Traditional educational institutions foster a strong sense of belonging through various means, such as campus events, student clubs, and face-to-face interactions. However, in the e-learning environment, participants reported feeling disconnected from the academic community. They expressed a longing for the sense of camaraderie and support provided by their peers and teachers, which ultimately impacted their motivation to actively participate in online activities. S3 revealed in a conventional setting, *“I would consult my smart friends, and in a team of two or three we would solve issues easily.”* It was such interaction with roommates, classmates, or sports club members that was nonexistent in the eLearning setting.

The lack of interaction with peers, absence of personalized feedback, challenges in time management and self-discipline, and diminished sense of belonging to the academic community emerged as critical issues hindering student engagement and motivation in e-learning. It is essential for educational institutions to address these challenges through innovative approaches that promote social interaction, provide timely and personalized feedback, teach effective time management skills, and foster a sense of community among online learners. Limited social interaction and feelings of isolation were common experiences, impacting students' sense of connection and engagement. The lack of access and support from teachers further affected students' perceptions of online learning. Considering our findings, Lookman, Balachandran, Xue, and Yuan (2019); Supena, Darmuki, and Hariyadi (2021) indicate that active learning manifests itself in several forms which entail group discussions, problem-solving exercises, case studies, role, role-playing, simulations, and hands-on exercises. Using active learning as an approach to teaching promotes deeper learning and retention as it engages learners in active activities that require them to think critically, analyse information, and apply their knowledge and skills to real-world situations. Consequently, it is crucial to address these technical challenges, enhance motivation and engagement, improve time management skills, and foster social interaction in online English learning. Furthermore, further study is suggested to the long-term effects of online learning and identify gaps for developing targeted interventions.

Lack of Adequate Institutional Support

The lack of adequate institutional support posed a significant challenge for the participants. Whilst the institution provided learners with laptops, they were limited. Without access to these resources, students some students were unable to access online learning platforms, putting them at a significant disadvantage compared to their peers. S 6 indicated that *“am going to repeat this year because I did not have money to buy a laptop when the one issued by the institution ceased to work.”* Additionally, inadequate network connectivity for those students who opted to work from the institution’s premises further exacerbates this issue, making it difficult for students to participate fully in virtual lectures and assessments. Participants lamented the lack of technical support services. Troubleshooting issues during virtual lectures or assessments were experienced but the absence of dedicated technical support hindered the participants’ ability to promptly address these hurdles. This leads to frustration and hampers their learning experiences. In the words of S7, *“There are times when we needed technicians from the IT department to assist but it was impossible. The majority worked from home. This was COVID-19 time.”*

Additionally, insufficient training opportunities for both students and faculty also impede the effective use of e-learning tools and platforms. Some students especially first-year students did not have adequate training. Such students faced difficulties navigating and utilizing Vutela, the learning platform. This impacted their engagement and ability to optimize available resources. Likewise, S7 further revealed that there were a few faculty members who struggled to adapt their teaching methods to a virtual environment, resulting in suboptimal e-learning experiences. The participant revealed that *“we never interacted with Mr. X (name withheld for ethical reasons) throughout the period we learnt online. This lecturer sent all his assignments to us via email, and we too returned the answers via email.”*

The issue of inadequate funding further compounded the challenges faced by the participants. It was for instance revealed that there was no online tutoring or mentoring programs put in place by the institution. This hindered the students’ understanding of course materials and content. Without these services, students had limited access to additional assistance in clarifying concepts or seeking guidance, ultimately impacting their academic performance. Moreover, the inadequate provision of virtual libraries or digital resources for research purposes also prevented students from accessing essential materials. Participants indicated that this presented a challenge concerning conducting thorough research and incorporating the latest information into assignments and

projects. Lastly, the lack of accommodation and study spaces for students who required physical facilities for studying further exacerbated the challenges faced. These students may experience a lack of privacy, limited access to necessary resources, and an environment that is not conducive to learning, hindering their academic progress.

These findings are consistent with the research conducted by Takako Izumi *et al.* (2022) regarding the challenges faced by higher educational institutions in the context of COVID-19. In their study, Izumi *et al.* aimed to comprehend the key challenges, approaches, and lessons learned by these institutions during the transition from face-to-face learning to online education. The authors found that this shift brought about significant changes for both lecturers and students. They also highlight the importance of institutional support when transitioning from traditional to online education. According to the authors, such support should include technical assistance and training, as well as financial investment in high-speed and stable internet connectivity, not only on campus but also in students' homes. These findings reinforce the notion that a successful transition to online education requires comprehensive support and resources from the institutions.

Socioeconomic and Personal Challenges

One of the major challenges identified in this study was the struggle faced by students who were balancing employment and studies simultaneously. Many students reported experiencing difficulties in managing their time effectively, resulting in compromised academic performance due to their work commitments. The need to fulfill both work responsibilities and academic requirements created increased stress and pressure. S4 for instance reported that some of the online classes were scheduled during his working hours and this forced him to choose work instead of learning. In line with S4, S2 stated thus, *“These online classes stressed us, workers. We used to attend conventional classes in the evenings after work; but during COVID-19, this changed! classes were scheduled during our working time. It was stress...”* Furthermore, participants, especially those living in rural or township settings, reported facing challenges in finding quiet and conducive study spaces. Living in crowded houses with extended families led to constant interruptions and distractions. These interruptions decreased concentration levels and hindered effective learning, leading to suboptimal academic outcomes. S8, whose class had been scheduled for 6 to 8 in the evening revealed that *“this was the time our uncle visited, and the family's attention was directed to the stories he had to share with us. All six of us had to listen to what the visitor had to say.”* S8 continued that several incidents of that nature constantly diverted him from

attending online classes. The lack of stable electricity access, particularly during load shedding or outages, emerged as another significant challenge for students. Electricity disruptions hampered online connectivity and access to learning materials, impeding the progress of e-learning. This constraint, as explained by the participants resulted in missed deadlines, incomplete assignments, and reduced motivation for study. Several students mentioned living in unstable or uncomfortable living conditions, such as inadequate housing or lack of basic amenities. These conditions adversely affect both physical and mental well-being, making it difficult to concentrate and stay motivated for extended periods. The challenging living conditions can lead to a decline in academic performance and hinder the overall learning experience.

The findings highlight the multifaceted challenges faced by students in an e-learning setting and confirm the findings from a study done by Zarifsanaiey and Shahraki (2024), which also found that students participating online did not only face challenges related to technical issues, but also experienced issues related to engagement and motivation. In their study, whilst motivation and engagement varied among students, it was also influenced by the absence of face-to-face interaction and distractions in the home environment. Time management was also a concern, with some students struggling to meet the demands of flexible online learning schedules. Balancing employment and studies become problematic, causing increased stress, and reduced academic performance. Inadequate access to quiet and conducive study spaces further hampers the learning process, resulting in diminished concentration levels. Limited availability of electricity during load shedding disrupts online connectivity and access to learning materials, affecting students' progress and motivation to study. Additionally, unstable, or uncomfortable living conditions adversely impact students' well-being, concentration, and overall academic outcomes. Addressing these challenges requires tailored interventions and support systems to ensure equitable learning opportunities. Solutions could include providing students with flexible work arrangements, creating dedicated study spaces, improving electricity infrastructure, and enhancing housing conditions. Additionally, promoting awareness and implementing policies that prioritize accessible and conducive environments for e-learning can help mitigate the impact of these challenges.

Recommendations

Considering the findings of this study it is recommended that the university should work towards providing reliable internet connections to all students, especially those in rural areas. This could be done by partnering with internet service providers or

exploring alternative methods of internet access such as satellite internet. Additionally, efforts should be made to provide students with the necessary devices and data plans to participate in e-learning classes. It is also important to invest in providing students with up-to-date and high-quality devices that can effectively support their online learning activities. Technical support services should also be readily available to address any device or connectivity issues faced by students. To enhance student engagement and motivation, the university should prioritize strategies that promote social interaction among students. This could be done through online discussion forums, virtual group activities, and collaborative projects. Additionally, personalized feedback from lecturers should be provided to address individual learning needs and enhance student motivation. Furthermore, it is recommended that the university incorporate training sessions or workshops on time management and self-discipline skills to support students in effectively managing their academic commitments. Providing structure and accountability mechanisms, such as setting deadlines and monitoring student progress, can help students stay motivated and engaged in e-learning activities.

Concerning the inadequate institutional support, the university should provide sufficient resources and services. This could include ensuring an adequate number of laptops, network connectivity, and technical support services. Training opportunities should also be provided to both students and faculty to enhance their proficiency in using e-learning tools and platforms. It is also recommended that to address socioeconomic and personal challenges, the university should consider the unique socioeconomic and personal challenges faced by students and implement targeted interventions. This may include providing flexible work arrangements for students who are balancing employment and studies, creating dedicated study spaces, improving electricity infrastructure, and addressing inadequate housing or lack of basic amenities.

Pedagogical recommendations could entail investing in improving course design and online delivery methodologies. This may involve incorporating multimedia elements, interactive activities, and varied instructional strategies to enhance student engagement and learning outcomes. To ensure a comprehensive assessment of student learning, the university should incorporate diverse assessment strategies in e-learning courses. This may include online quizzes, projects, presentations, and peer evaluations. Timely and personalized feedback should also be provided to students to support their learning and address any misconceptions or gaps in understanding. Finally, it is recommended that the University encourages faculty to explore and implement novel teaching strategies

that are suitable for online learning environments. This may include flipped classroom approaches, gamification, virtual simulations, or interactive online lectures. Providing faculty development programs and resources can support the adoption of these strategies. By implementing these recommendations, it is envisaged that the university can address the challenges faced by students in an e-learning setting and ensure a more inclusive and effective online learning experience.

Conclusion

This study highlighted the challenges faced by students in an e-learning setting at the University of Technology in South Africa. The study identifies limited access to reliable internet connections, engagement and motivational challenges, inadequate institutional support, and socio-economic challenges as the major themes affecting students' learning experience. To address these challenges, several recommendations were made. The university should improve internet infrastructure, provide necessary devices and data plans, and offer technical support services to students. Strategies to enhance student engagement and motivation, such as online discussion forums and personalized feedback, should be prioritized. Adequate institutional support should be provided through resources, training opportunities, and targeted interventions for socioeconomic and personal challenges. The university should also invest in improving course design, diverse assessment strategies, and faculty development programs. By implementing these recommendations, the university can create a more inclusive and effective e-learning experience for students.

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