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# Emergency remote education in higher education institutions during COVID-19: Students' voices

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## Abstract

*The outbreak of the coronavirus pandemic was declared a public health emergency of international concern. In South Africa (SA), institutions had to adopt emergency remote education, thus resulting in significant challenges for both students and lecturers. This article investigated students' views and perceptions towards emergency remote education. The Diffusion of Innovations (DoI) model was used as a lens to understand students' views regarding emergency remote education. The researchers applied a qualitative research approach within the interpretivist paradigm since it offered an opportunity to explore and understand participants' lived experiences. Purposive sampling was used. The participants included nine undergraduate students from a public university in Gauteng province. Findings highlighted students' ambivalent views towards online teaching and learning. Some participants support emergency remote education, while some believed that they did not acquire the depth and scope of the content of the module in comparison to contact lectures. Participants indicated that it was challenging to follow lecturers due to unstable network connectivity. They highlighted socio-economic conditions, lack of resources and an uncondusive learning environment affected their education. For effective online teaching and learning, appropriate planning and infrastructure were recommended to be available and accessible to all students.*

**Keywords:** COVID-19; Emergency remote education; Technology; Diffusion of Innovations; Higher education;

## 1. Introduction

The outbreak and spread of COVID-19 in 2020 have significantly impacted the lives of students at higher education institutions (HEIs) globally (Aristovnik *et al.*, 2020; Schleicher, 2020). The COVID-19 pandemic has resulted in the transformation of the social society and the delivery of higher education curriculum (Schleicher, 2020). HEIs were suddenly experiencing challenges to conduct traditional face-to-face teaching and learning and therefore opted for online teaching and learning to ensure the safety of students and staff, at the same time attempting to complete the curriculum (Paideya, 2020; Schleicher, 2020). Both Mpungose (2020) and Schleicher (2020) highlight

that education in HEIs has been transformed to accommodate emergency remote education (ERE) due to the impact of the pandemic.

This paper explored students' views and experiences of ERE at an HEI. Emergency remote education is defined as the urgent but temporary adjustment to an alternative mode of delivery in education (Hodges et al., 2020). In this paper, the authors presented the voices of the undergraduate students of a South African HEI in the Gauteng province. Emergency remote education refers to the rapid shift to online teaching and learning due to the influence of the COVID-19 pandemic. The authors formulated the primary research question: What are students' views and experiences of ERE during COVID-19 at the HEI?

The ERE challenged students at HEIs who were not familiar with online teaching and learning. Similar sentiments have been reported by Paideya (2020), who stated that most students at HEIs are not as competent with technology as academic staff believe them to be. O'Sullivan (2017) also found that most students lacked the appropriate skills and knowledge to adequately use technology for online learning. A qualitative case study design was adopted to explore students' experiences with online teaching and learning. The theoretical framework anchored in this study was the Diffusion of Innovations (DoI) model proposed by Rogers (2003). The findings in this paper presented the participants' voices and recommendations for future improvement of ERE.

## 2. Literature review

### 2.1 Impact of COVID-19 on higher education

The outbreak of the COVID-19 pandemic has significantly impacted numerous perspectives in human social activities, including education in HEIs. Sahu (2020) reveals that the pandemic has affected more than three-quarters of the world's student population. This view concurs with Rashid and Yadav (2020), who state that both developed and developing countries were significantly affected by the pandemic. Since the announcement of the global pandemic in March 2020, many actions have been implemented to reduce the spread of the virus worldwide. These actions included the shutdown of schools and universities, which led to the adoption of ERE (Salmi, 2020). Evidence in support of this view can be found in the works by the European University Association (EUA) (2020) and the Ministry of Education, Culture, Sports, Science and Technology (2020), which report that more than 90% of HEIs have shifted to ERE.

Many HEIs have tried to implement online learning programmes; however, most programmes are still face-to-face (EUA, 2020). The sudden adoption of ERE places challenges on both academic staff and students. This view concurs with Paideya (2020), who reported that more than half of academic staff had never taught online before the pandemic, from studies conducted in the United Kingdom, the United States, and the Irish. This challenge is particularly critical among African universities.

Salmi (2020) articulates that most African universities have poor infrastructure and lack appropriate resources due to the high poverty rate. Therefore, few African universities are well equipped to conduct academic activities online. This view agrees with Marinoni, van't Land and Jensen (2020), who indicate that 61% of African universities could not conduct online examinations due to insufficient infrastructure and competencies to use the limited available technology. For this reason, students in SA, Ghana and Zimbabwe have attempted to request

the government to stop online learning as some students neither have the device nor access to the internet (Marinoni *et al.*, 2020).

In SA, the President announced a national lockdown on 23 March 2020, a few days after the declaration of 'National State of Disaster' [National Institute for Communicable Diseases (NICD), 2020]. The lockdown regulation has compelled HEIs to adopt ERE. This transformation required urgent and rapid implementation of a system that was not fully equipped to migrate to a new mode of delivery. Salmi (2020) reported that most programmes at South African HEIs are still offered face to face. Therefore, the adoption of ERE is new and novel to students. Despite the challenges with ERE, the researchers believe that this is an opportunity for African universities to adapt to the digital world and become technologically knowledgeable and advanced. This agrees with the Association for the Development of Education in Africa (2020), which affirms that the COVID-19 crisis can accelerate education in Africa's move to the digital era.

## 2.2 Challenges on emergency remote education at HEIs

Due to the impact of COVID-19, the urgent adoption of ERE has significantly influenced how HEIs approach teaching and learning during the pandemic. For instance, many countries have instituted the cancellation of contact classes in HEIs to prevent the further spread of the pandemic (Aristovnik *et al.*, 2020; Paideya, 2020). Marinoni *et al.* (2020) point out that the rapid transition to ERE limits the contact between students and lecturers. Aristovnik *et al.* (2020) further reported that 86.7% of contact academic activities were cancelled which forced the implementation of ERE among HEIs. According to Rashid and Yadav (2020), the mode of online teaching and learning encouraged HEIs to select appropriate technologies to enhance ERE.

However, there are numerous practical problems after implementing ERE in HEIs (Rashid & Yadav, 2020). For example, South African HEIs are faced with digital inequality. Many students and lecturers, especially in rural SA, do not have access to the internet and devices such as laptops, iPads and smartphones (Hedding *et al.*, 2020; Thaba-Nkadimene, 2020). Some HEIs cannot transform to online teaching and learning due to the inherited disadvantages from the previous apartheid era (Thaba-Nkadimene, 2020). According to World Bank (2020) and Thaba-Nkadimene (2020), this challenge is still eminent in most universities. Although some HEIs have provided students with laptops and data, students face a lack of internet signals in their rural areas in SA. The researchers agree with Thaba-Nkadimene (2020) that the financial burden for technological devices and data and poor internet connectivity have negatively affected the implementation of ERE.

Different forms of online learning have been proposed to adapt to the changes due to the pandemic (Aristovnik *et al.*, 2020). Literature reveals that some students support online learning being more convenient in terms of accessibility and flexibility, while others argue that online learning disadvantages students from low-income families (Thaba-Nkadimene, 2020). Many students still experience difficulties in ERE because they are not familiar with technology and learning software (World Bank, 2020).

Rashid and Yadav (2020) believe that before implementing ERE, all students and lecturers need to be trained on the effective use of technology and the different platforms. Furthermore, some programmes require practical work; these are difficult to be taught virtually (EUA, 2020), especially laboratory experience and clinical exposure for medical training. This view concurs

with Hedding et al. (2020), who specifies that ERE gives access to those modules that do not need access to laboratory or clinical practices.

Access to the provision of technology is crucial in developing countries like SA, as many students do not have a digital device and lack technological skills (Chau, 2010; Thaba-Nkadimene, 2020). Similar sentiment has been reported by Aristovnik (2020), who state that poverty, internet connectivity and a lack of electricity negatively affected teaching and learning in developing countries, especially in rural areas. Evidence can be obtained from Aristovnik's (2020) study, which reports that students from African countries are mostly unsatisfied with online teaching and learning. Due to the impact of the financial burden and poor infrastructure, accessibility and affordability may negatively affect students' performance at HEIs (Cloete, 2017; Rashid & Yadav, 2020).

### 2.3 Role of technology in emergency remote education

Modern technology has changed the world significantly by removing barriers of distance and time. This view concurs with Cloete (2017), who states that the internet has become an essential technology in HEIs worldwide. Remote education, which is ensured by the utilisation of the internet, has been developed and implemented for decades to aid traditional face-to-face teaching and learning to improve the outcomes of education (Tejedor *et al.*, 2021). This view is further strengthened by Budhwar (2017), who asserts that students' performance and achievement can be improved by using technology. Both Chau (2010) and Cloete (2017) agree that ERE offers flexibility in education based on modern technology.

Chau (2010) states that the barrier of access to education can be eliminated by using technology, which also reduces the financial costs of education. Budhwar (2017) specifies some advantages of applying technology in education, such as convenient access, distance learning, and sharing knowledge and experience worldwide. The researchers concur with Chau (2010) and Budhwar (2017) that the use of technology will significantly promote the development of Africa, especially in the field of education. However, other impact factors need to be considered, such as accommodating students from poor socio-economic backgrounds.

### 2.4 Influence on students' learning experience

The use of modern technology in education at HEIs has significantly eliminated the risk of COVID-19 infection by means of maintaining social distancing. However, students still face challenges with ERE, especially for students who are more comfortable and confident with face-to-face lectures (Marinoni *et al.*, 2020). Paideya (2020) agrees with Scott (2020) that the shift to ERE may be overwhelming, resulting in anxiety and uncertainty among students. As stated in the previous section, Aristovnik *et al.* (2020) found that students have expressed negative experiences on ERE despite the advantages of technology. For example, a lack of computer skills and focus during online learning.

According to Mpungose (2020), most universities in SA conduct face-to-face teaching and learning with minimal online or virtual teaching and learning. While many students prefer technology for texting more than physical face-to-face communication, he believes that online teaching and learning without physical communication will negatively affect students' performance. The lack of contact communication also reduces the opportunity for students to study in a physical group.

Aigbavboa and Thawala (2016) point out that the lack of physical group study will negatively influence students' learning. The ERE limits the opportunity for students to learn in groups physically, and it seems to be a cultural practice among African students that they prefer learning in groups physically (Aigbavboa & Thawala, 2016). Students will tend to experience isolation and frustration due to the lack of engagement and participation with peer groups even online. This view concurs with a study by Aristovnik *et al.* (2020), who reported that studying at home may result in stress, anxiety and frustration. Paideya (2020) states that the isolation due to lockdown may adversely affect students' performance, mental health, and well-being.

According to O'Sullivan (2017) and Scott (2020), the rapid adaption and implementation of ERE potentially increase the stress and workload of students. One of the reasons for the uncertainty and stress expressed by students is supported in a study by Cloete (2017), who ascertain that online degrees are less likely to be accepted by institutions. According to Aristovnik *et al.* (2020) and Rashid and Yadav (2020), studying alone requires greater self-discipline and motivation. They agree that a lack of motivation and self-discipline will negatively affect students' performance. Aristovnik *et al.* (2020) and Schleicher (2020) reveal that students from a poor financial background, who do not have access and or the skills of using technology, including devices and knowledge of technology, are at the risk of failing their modules or the degree programme. Another study conducted by Aristovnik *et al.* (2020) revealed that most students do not have a conducive environment at home to study.

### 3. Theoretical framework

In this study, the Diffusion of Innovation (DoI) model by Rogers (2003) was used to explore university students' experiences of ERE during the COVID-19 pandemic. Rogers developed the DoI model to investigate the adoption of technology (Bakkabulindi, 2014). Both Sahin (2006) and Bakkabulindi (2014) agree that the DoI model is the most influenced model to explore the use of technology in HEIs. There are four main elements in the DoI model, namely innovation, communication channels, time and social system (Bakkabulindi, 2014; Rogers, 2003).

Innovation refers to "an idea, practice or object that is perceived as new by an individual or other unit of adoption" (Rogers, 2003:12). In his book, Rogers used the terms technology and innovation interchangeably. He pointed out that uncertainty is a critical obstacle in adopting innovation or technology (Rogers, 2003; Rogers, Singhal, & Quinlan, 2019). To promote the adoption and implementation of technology, the advantages and disadvantages of technology should be explained in detail to individuals (students) (Bakkabulindi, 2014). In this study, innovation refers to the use of technology in the identified programme. The focus is on how innovative and creative higher education institutions prepared technology to accommodate students during the COVID-19 pandemic.

The element of communication, according to Rogers (2003:5), is "a process in which participants create and share information in order to reach a mutual understanding." The communication channels refer to the approaches where communication takes place, such as television, radio, the internet, and other platforms. Bakkabulindi (2014) agrees with Rogers (2003), who points out that media is more useful at the introductory stage of technology, while interpersonal channels are more suitable to promote the adoption of technology. Due to the COVID-19 lockdown, higher education institutions had to find novel ways of introducing technology and technological applications for teaching and learning.

Rogers (2003) states that the adoption of technology includes a time dimension. The social system is defined as “a set of interrelated units engaged in joint problem solving to accomplish a common goal” (Rogers, 2003:23). The social system will influence the DoI since the process of DoI takes place in the social system (Rogers et al., 2019); this was evident in the HEI where this study was conducted.

The adoption of innovation goes through five stages: knowledge, persuasion, decision, implementation and confirmation (Rogers et al., 2019; Sahin, 2006). According to Rogers et al. (2019), the knowledge stage refers to the awareness of the technology. In the persuasion stage, an individual develops an attitude toward the technology, either positive or negative. Sahin (2006) explained that the persuasion stage would be influenced by the uncertainty of the advantages and disadvantages of technology. In the decision stage, individuals will accept or reject the technology. Once the decision is made, the use of technology will be implemented. In the last stage, individuals seek support for their decisions which is significantly influenced by attitudes developed in the persuasion stage. In this study, it was evident that the various stages were prevalent among lecturers and students alike. The findings of the study revealed that some of the participants lacked the knowledge had to be persuaded to make a concerted decision to engage in technology for teaching and learning.

## 4. Research methodology

In this study, the researchers agreed that a qualitative research method of a descriptive nature was most appropriate; since it provided an in-depth study of the phenomenon using an interpretivist paradigm (Maree, 2020). The descriptive design allowed the researcher to explore the lived experience of participants regarding ERE during the COVID-19 pandemic. The interpretive paradigm was appropriate because it is a subjectivist epistemology that relies on the researcher’s understanding and comprehension when making sense of participants’ experiences (Creswell, 2014).

### 4.1 Sampling technique

A single case study design was selected for this study. This method offered an opportunity to explore and make meaning of participants’ experiences. Yin (2018) agrees that studying a single case will provide a particular in-depth investigation of significant factors of the phenomenon. The population consisted of 150 students who were registered for the Bachelor of Health Science in Complementary Medicine (BHsCM) at an identified public university in Gauteng province. The purposive sampling technique was used since it was an appropriate approach to recruit participants (Cohen, Manion & Morrison, 2018). A sample of nine (9) BHsCM students were purposively selected. The inclusion criteria were specified during the selection process. Only a) students studying at a recognised HEI in Gauteng were invited to participate; b) students had to be registered as full-time students on campus; c) students who were affected by the lockdown; d) students had to be willing and voluntarily consent to participate in this study. To invite participants, the researchers displayed an invitation for participation in this study on the notice board on campus, where all students had access to information. The poster was displayed for two months. Nine (9) students consented to participate in the study (Table 1). The researchers, after that, sent out consent forms to each of the 9 participants to confirm their participation. Pseudonyms were used during the reporting phase of the study. The table below illustrates the codes used for each participant to ensure anonymity and confidentiality.

**Table 1:** Participants information

Participants	Gender	Age
P1	Male	21
P2	Female	20
P3	Female	24
P4	Female	20
P5	Male	22
P6	Male	23
P7	Male	22
P8	Female	24
P9	Male	25

## 4.2 Data collection and analysis

Data collection is a systematic process of gathering information to answer the research questions and evaluate the outcomes (Creswell, 2014). For this purpose, semi-structured interviews with an open-ended questionnaire (Google Forms) were used. This approach assisted in achieving anonymity and confidentiality since there was no personal information requested on the questionnaire. This approach also reduced any form of contact with the participants, thus preventing the spread of the COVID-19 pandemic (Cohen *et al.*, 2018). The interviews were conducted for two months, from October 2021 to November 2021.

For this study, thematic analysis was used. Creswell (2014) states that it identifies similar and dissimilar opinions with qualitative data. This approach assisted the researchers in making sense of the data transcripts and identifying critical themes. The authors followed Creswell's (2014) six-step framework of thematic analysis and inductively analysed the data. The six steps include familiar with data, coding, generating themes, reviewing themes, defining themes and writing up (Creswell, 2014). Qualitative validity criteria, including credibility, transferability, dependability, and confirmability, were ensured in this study by a second coder's member checking and auditing techniques. The Research Ethics Committee approved ethical clearance at a public university (Reference: EDU137/21).

## 5. Findings and discussion

Findings from this study highlighted students' ambivalent views and experiences towards online teaching and learning during the COVID-19 pandemic. Two major themes emerged from the data during the coding process, namely:

- a. Factors affecting online teaching and learning; and
- b. Advantages of online teaching and learning.

### 5.1 Theme 1: Factors affecting online teaching and learning

Within theme 1, the following subthemes emanated: the lack of appropriate technological skills; financial constraints on students; lack of conducive environment; the importance of proper infrastructure and influence of isolation and uncertainty.

### 5.1.1 Sub-theme 1: Lack of appropriate technological skills

Although some participants perceived that technology enhanced their studies, other not so positive voices were brought to the authors' attention. Some participants expressed that they were quite reluctant to online teaching and learning for various reasons. They indicated lecturers' lack of technological skills in delivering ERE efficiently often frustrated students. P3 and P6 both stated that some of their lecturers did not know how to use Blackboard, Blackboard Collaborate and other media. Most lecturers merely upload information without sufficient guidance or explanation to students—this frustrated students; since they had no opportunity of engaging with the lecturer on the content.

P3 mentioned:

I remembered that in one live online collaboration, we had been waiting for more than 10 minutes for the lecturer to share the presentation. When he came online, I could not hear his voice and he was not well articulated.

Due to ERE, many lecturers were not familiar with online teaching because they lacked the knowledge and skills since they were entrenched in the traditional lecturing mode. This affected students' attitudes towards online teaching and learning because they felt that the lecturers they looked up to were not appropriately skilled and qualified to use technology. This view concurs with Rashid and Yadav (2020) and World Bank (2020), who agree that most lecturers lacked the knowledge and understanding of using online technology. According to the DoI model, individuals tend to be reluctant to accept technology if they do not possess knowledge of technology (Bakkabulindi, 2014).

Apart from lecturers lacking the appropriate knowledge and skills of using technology, there was evidence of students who did not possess the necessary knowledge and skills to use technology. As a result, most students were challenged to participate in online teaching and learning. This is evident in the response of P1, who indicated:

I am familiar with face to face teaching and learning. My lack of skills in using the "Blackboard" was a significant challenge to me. I did not know how to manipulate the programme, which caused considerable distress. It was the first time I had to contend with 'Blackboard'. This was shown to us on campus during the orientation, but we were not participating in the programme".

Other participants also experienced this lack of knowledge and understanding. P3 stated, "*Most of my online learning time was spent trying to figure out which keys and functions I had to use to engage with the lecturer.*" P5 wrote, "*Not only I did not know how to use the programme, but I also did not know how to access the programme from start to finish*". According to P7, she penned that she could only use her cellphone to access the programme.

These challenges are genuine to students and lecturers who were compelled to use technology for teaching and learning. Rashid & Yadav (2020) agree with World Bank (2020) that all students and lecturers must be appropriately knowledgeable in using technology. The lack of knowledge will lead to a high rate of failure among students and a lack of respect for lecturers if they are not competent (Aristovnik *et al.* 2020). The researchers agree that all HEIs should ensure that technical skills are well-grounded and taught to all students and lecturers before being implemented, although this may be a challenge due to the urgent implementation of ERE. However, the researchers believed both lecturers and students should be introduced to technology to support their adoption and use of technology. This view concurs with Rogers'



DoI model, which reveals that technology should be introduced to individuals since this process can assist in promoting the adoption of technology (Rogers et al., 2019). The absence of uncertainty on technology will positively influence the positive of individuals' attitudes to technology (Bakkabulindi, 2014; Sahin, 2006).

### 5.1.2 Sub-theme 2: Financial constraints on students and conducive environment

The current recession in SA has placed much strain on the economy. Many families are living below or within the breadline. Many students attending HEIs are from low-income families, and these students are dependent on government subsidies for their studies (Aristovnik et al., 2020). Since teaching and learning at HEIs has shifted to online, this move has placed financial constraints on students.

To ensure students complete the academic year, HEIs supported online teaching and learning by using the following: ICT connectivity, internet; cellphone technology; laptops and iPads (Tejedor et al., 2021). Some students could not afford this technological equipment. When the availability of resources was asked, most students highlighted the financial impact and constraints they experienced. P5 wrote: *"I cannot afford a laptop, iPad or a smartphone. It's too expensive; therefore, this means that I am excluded from the higher education learning during the pandemic."* P6 stated, *"I cannot afford data. It is too expensive and unaffordable. I am unable to watch lecture videos or attend live collaboration classes."* P7 indicated, *"Due to my family's financial situation, we do not have many rooms. I have to study in my living room while all my family members are present, which is disturbing. Living space is a big problem in my house."*

The findings above revealed that most of these participants could not afford the essential technological equipment to participate or engage in online teaching and learning. Furthermore, it was found that students did not have a conducive learning environment to study. This finding concurred with Schleicher (2020) and Aristovnik et al. (2020), who highlighted that students from financially low-income families might be experiencing a higher risk of failure due to not having the appropriate learning technologies and a conducive environment due to financial challenges.

### 5.1.3 Sub-theme 3: Importance of appropriate infrastructure

Infrastructure plays a crucial role in implementing online teaching and learning. Appropriate infrastructure can either enhance or hamper online teaching and learning. According to the DoI model, the access and use of proper technologies would improve the effectiveness of teaching and learning. Sahu (2020) states that many universities do not have the appropriate infrastructure or resources to facilitate online teaching. The poor infrastructure in some areas in South Africa has significantly affected this mode of delivery. According to P3's actual response, *"I live in a rural area with no electricity and cellphone signal. It is challenging for me to get access to the internet and participate in my online studies."* P8 mentioned, *"Although I have the internet at home, the connection is not stable"*. Aristovnik et al. (2020) say that poor infrastructure is a critical problem in implementing online teaching and learning in the African continent. Students' performance and achievement at HEIs is dependent on access to appropriate infrastructure. Cloete (2017) states that these infrastructures are readily available on the campuses but are non-existent in students' domicile.

Although universities granted most students free data and devices after a few months of migrating to online teaching and learning, some participants were experiencing challenges due to network failure and lack of internet facilities in remote areas. Students complained that the internet connection was unstable and affected their studies. The constant load shedding also negatively affected students' learning, and this was evident in P3 and P8 agreeing that their learning was disrupted due to connectivity and load shedding.

#### 5.1.4 Sub-theme 4: Influence of isolation and uncertainty

Aristovnik *et al.* (2020) agree that group learning seems prevalent among African students. Therefore, working in isolation impacts students' stress and anxiety levels. This study also found that students who had to study online experienced high levels of stress and anxiety due to isolation and studying alone. The findings also revealed that participants expressed their unwillingness to learn independently at home in front of a computer or cellphone. P7 stated in his response: "*I love to study in a group with my classmates where we can ask questions and support each other during the study. I can learn and engage with others in a group, and studying alone at home does not allow me to know and share knowledge with my peers.*"

This study also found that the closure of campuses and cancellation of contact classes had caused much uncertainty and anxiety amongst students. Some participants expressed that they did not acquire the depth and scope of the content knowledge of the programme due to the lack of integration during lectures and practice. P4 indicated, "*I also miss contact classes as I would like to ask questions during lectures. Studying on my own does not allow me to ask questions, and sometimes the lecturer does not have time to take questions during classes.*" Participants were also concerned about the quality of the education they received. P6 said: "*I am not sure if I will be competent to implement what I have studied online in my future work.*" Cloete (2017) stated that online degrees are less likely to be accepted on a similar note. The researchers agree with Cloete (2017) that online qualifications are less valuable than full-time studies since there is no proper assessment and physical practice supervision.

## 5.2 Theme 2: Advantages of online teaching and learning

Critical challenges were presented in education due to the reduction in in-person exposure to different study aspects (Click *et al.*, 2020). Thaba-Nkadimene (2020) and Rashid & Yadav (2020) believe that the quality of higher education will be strengthened with the use of technologies in the 21<sup>st</sup> century. The findings of our study also highlighted that some students welcomed the migration to online teaching and learning, despite being rapidly implemented. P1 wrote, "*I prefer online teaching and learning. It allows me to watch pre-recorded lecture videos more than once and whenever I would like. I am not bound by a specific time. This kind of learning also allows me to plan my study programme.*" Another student, P9, stated, "Online learning is much safer and less expensive for me. I don't have to travel to campus daily and expose myself to the virus." P7 responded, "*For me, the online learning helped because I can study during my own time. I still have time to assist my younger brothers and sisters with their schoolwork since I am at home the whole day.*"

It was also revealed that most students felt safer when studying at home and they believed that the fewer people they contacted, the safer they were. Sahu (2020) found that most lecturers and staff members at HEIs embraced and appreciated the use of technology during the pandemic.

This study also found that some students were eager to migrate to online learning. Researchers agreed that the internet had eliminated the barrier of distance and time. Similar sentiments were reported by Raja and Nagasubramani (2018), who stated that their engagement with technologies would enhance students' knowledge and interactivities. This study highlighted that some students were confident that they could study effectively using technology rather than face-to-face contact classes. This finding concurred with Budhwar (2017), who found that technology would improve students' performance and achievement. Chau (2010) and Cloete (2017) both agree that online teaching and learning and the use of different technologies allow for and provide opportunities for flexibility in learning. It further allows students to become responsible and accountable for their studies, and it gives them a chance to plan and engage with their studies during their flexible time management plan.

According to the DoI model, individuals who develop positive attitudes to technology will make decisions to implement it in actions. Positive attitudes also will be strengthened from the feedback of the decision. The findings of this study concur with scholars such as Aristovnik *et al.* (2020) and Rashid & Yadav (2020), who found that many HEIs were unprepared for shifting to online teaching and learning. This was due to a lack of technological skills, isolation, financial constraints and appropriate infrastructure.

## 6. Recommendations and conclusions:

This paper aimed to explore students' views and experience of online teaching and learning during the closure of universities in Gauteng. Despite the rapid implementation of online teaching and learning, this study revealed some pertinent findings which provided the opportunity to make valuable recommendations for the future. The interpretive approach and semi-structured interviews allowed participants to share their experience and understanding of the current phenomena. From the findings, the authors proposed the following recommendations:

- Strengthening digital technology skills for both students and lecturers – although most students and lecturers commonly use technology, computer skills should be introduced to students and lecturers for specific purposes. Focused training should be provided to use online learning platforms, software engagement and the accessing and utilising of different learning programmes (Rashid & Yadav, 2020; World Bank, 2020).
- Lecturers should use various communication strategies to engage students in a participatory learning model. It is proposed that lecturers use live video presentations, video conferencing, WhatsApp messaging and email communications to ensure that students participate in their learning. According to Aristovnik *et al.* (2020), they agree that these communication strategies may minimise students' anxiety and stress and help them engage in their studies.
- It is recommended that government, together with HEIs, should improve infrastructure and resources to ensure that all students have access to online facilities to promote teaching and learning. This infrastructure and resources should include internet facilities, network connectivity, availability of data and all students should be provided with appropriate devices. Policymakers are advised to consider the need for online education and its implement it in future.

In conclusion, the ERE during the COVID-19 pandemic has significantly impacted students' studies in the HEI environment. During the pandemic, teaching and learning were delivered through technologies to support students' learning continuously. Universities provided students with sufficient free data and devices for online study to facilitate students' learning.

However, there were still challenges in implementing online teaching and learning since some students who study at urban universities reside in rural or informal settlements in SA. The findings presented in this study can assist HEIs in how restructuring their policies to support online teaching and learning in the future. Further research should be conducted across other HEI's to elicit the experiences of their students.

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