

## **CHAPTER 13**

### **Higher Education versus Covid-19 Impact: Toward an Inclusive Higher Education Reflections on UCT's Emergency Remote Learning and Teaching from a student perspective**

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#### **Abstract**

This paper aimed to explore and understand the University of Cape Town student perceptions and lived experiences of Emergency Remote Teaching and Learning (ERTL) during Covid-19. Covid-19 is a communicable disease instigated by a novel virus (SARS CoV-2 virus). After the inevitable subsequent national lockdown of South Africa, the university implemented ERTL measures for the second quarter of the first semester to curb the impact of the virus on its students while also enabling learning and teaching activities to continue remotely. This paper reports on the 707 students who responded to an online survey while engaged in their online courses. The Substitution, Augmentation, Modification, and Redefinition (SAMR) and Andersons' Online Learning Model were used to engage with students on the use of technology that enabled their interaction with lecturers, each other, learning and teaching activities, and other remote learning resources. Understanding the student experiences was achieved through a mixed-method paper approach that involved undergraduate and postgraduate students. The Google form online surveys, with both open and closed ended questions with some using the 5-point Likert scale ratings, were distributed using social media platforms and university email system to students in order to collect the data. MAXQDA and Excel software were

later utilised to analyse and code the data. Findings of this paper indicate that the ERTL experience of the participants during the Covid-19 pandemic presented both opportunities and barriers. Some of the perceived opportunities by students were flexibility and convenience, pedagogical improvements, time saving, self-directed learning (working anytime they want and creating and managing their working schedule), and spending time with family. Interestingly, some of these benefits turned out to be challenges for some of the students. Hence, some of the barriers students perceived were distractions, internet connectivity and technical issues, inequitable living and environment conditions, lack of hands-on experience and how this made their degree feel incomplete and difficult, mental health issues, and many other barriers. The disciplinary faculties that experienced most of the obstacles and difficulties associated with ERTL were those whose academic experience depended on practical work in labs and studios or needed software that can only be accessed through labs and would need a specific operating system. The carrying out of this research will help ensure the effectiveness, investment, and continual integration of technology in future programs that involve learning and teaching.

**Keywords:** Emergency Remote Teaching and Learning, Covid-19, online learning, higher education

### **Introduction and context**

It is over two years now since significant disruptions to education took place because of Covid-19. Covid-19 is a communicable disease instigated by a novel virus called SARS CoV-2 virus (World Health Organization 2021). The devastation caused by the virus also included loss of human life and lack of access of education from physical schools (Cilliers *et al.* 2020; Koninckx, Fatondji and Burgos 2021; World

Health Organization 2021; Donnelly, Patrinos and Gresham 2021). Businesses, social activities, and other essential activities and services in South Africa and the world at large were affected. As a result, this chapter aims to capture the experiences of the University of Cape Town (UCT) students who underwent Emergency Remote Learning and Teaching (ERTL) after Covid-19 affected Higher Education Institutions (HEIs) in South Africa. Consequently, South African public and private universities, colleges, and schools were all affected, and a central focus for this research was the UCT, in the Western Cape of South Africa. After the inevitable subsequent national lockdown of South Africa, the university placed ERTL measures in place for the second quarter of the first semester to curb the impact of the virus on its students while also enabling learning and teaching activities to continue remotely. ERTL meant that learning and teaching activities were 'rapidly' shifted from face-to-face learning to remote learning. Hence, the objective of the study was to understand students' experiences to improve ERTL for students at different levels of their learning. To achieve this objective, the study primarily focussed on student concerns, perceptions, and expectations regarding remote learning during the pandemic. It is therefore worth noting that UCT, as the first best African university (Times Higher Education World University Rankings 2022; Quacquarelli Symonds (QS) World University Rankings 2022; U.S. News & World Report Best Global Universities Rankings 2022) has over 28 000 students and 707 of these students participated in the research study. This number included undergraduate (first to third year) and postgraduate (honours to doctorate) students. The study used two models, Anderson's online learning model and the Substitution, Augmentation, Modification, and Redefinition (SAMR) model to investigate further the online learning and teaching experiences and to

understand the levels technology was integrated during ERTL. This chapter further evaluates and analyses the results using the data collected from students. This analysis includes ERTL benefits and disadvantages using both quantitative and qualitative methods. It was hoped that the results would divulge pertinent weaknesses, threats, strengths, and opportunities and better ways in which the university can intervene to help the most disadvantaged and adversely affected students.

### **Theoretical perspective**

In order to understand student experiences and fully capture them through the academic writing process, the Substitution, Augmentation, Modification, and Redefinition (SAMR) and Andersons' Online Learning Model were used to engage with students on the use of technology that enabled their interaction with lecturers, other students, learning and teaching activities, and other remote learning resources. The two models are shown below and Puentedura (2013) communicates that the SAMR model, shown in Figure 1, helps in evaluating the activities taking place between the three agents from Anderson model, i.e., student-content, student-teacher, student-student, by looking at the level in which technology is induced in the learning and teaching environment to enable the successful expressions of these agents. The shift from enhancement to transformation means that technology is used to impact the learning and teaching processes and resources in a more complex manner as we move from enhancement to transformation. Transformation is assumed to be better in the SAMR model because of how it better influences the experience of learning and teaching, and how it appeals to more styles of learning, which may affect the perception that students have on the education they consume. The

SAMR model helps categorise the different levels of technology integration, and the study used this model to classify how students perceived the use of technology during ERTL. Hence, survey questions were also categorised according to these different levels, and so was the coding of data when analysing student responses.

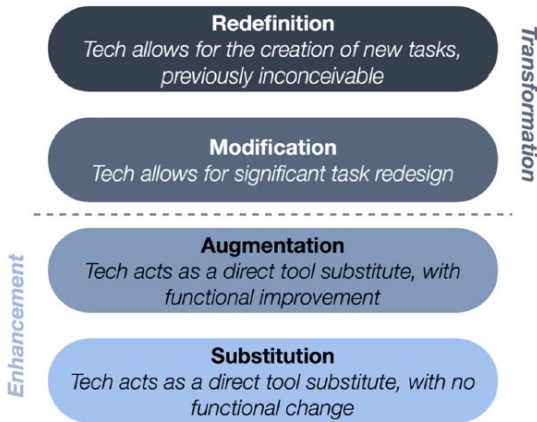


Figure 1: The SAMR Model (Puentedura 2013)

With regards to the online learning model in Figure 2, the teaching experience or presence provided by the technological environment and academic lecturer and the cognitive network of students creates a Community of Inquiry (CoI). As a result, the CoI enables learning and teaching – educational exchange. It follows that, the student, in this case, interacts with content as well as the academic lecturer. Given the above, the student, teacher, and content interaction bring about the sustainable process of creating knowledge. However, Anderson and Elloumi (2004) argue that it is enabled by these agents and the technological environment and activities carried out within that environment.

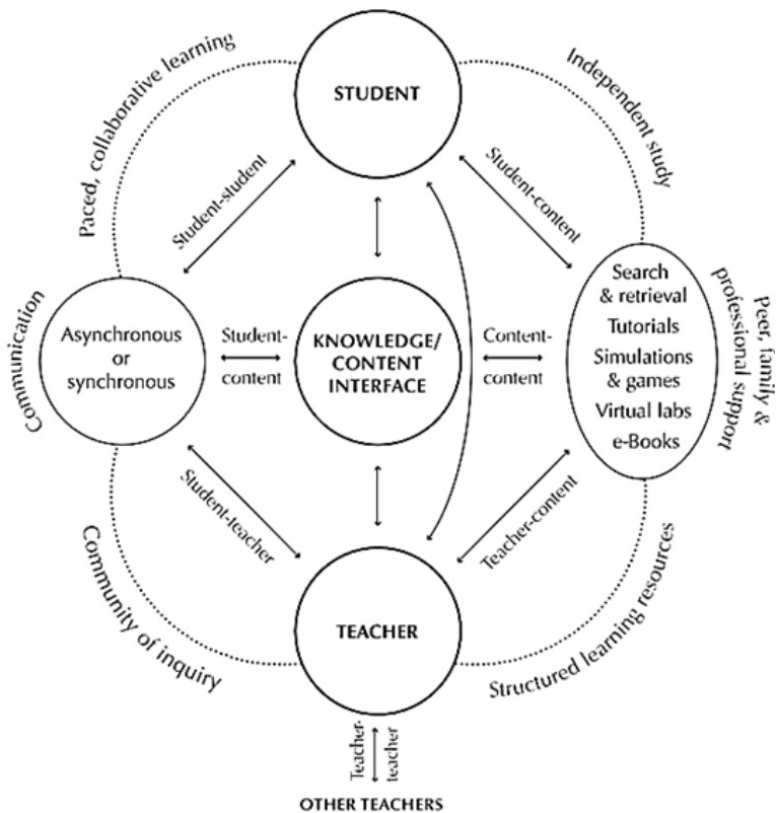


Figure 2: Anderson's Online Learning Model (Anderson 2011)

These two models were chosen because they provide a sound and meaningful conceptual and theoretical framing for the research study. Hence, the basis of this research, together with its questions and sub-questions, is paradigmatically and philosophically linked with the above-mentioned theoretical models and this also provides a linkage between reviewed existing literature as well as the real-world experiences of the students during ERTL. This suggests that, to best

answer the research question adequately and find a plausible solution to the problem mentioned, these two models must accommodate the evaluation of the student, teacher, and content dynamics within an online learning environment where technology is integrated into the learning experience at different varying levels as seen in the SAMR model in Figure 1. This also means the use of these two models provided an opportunity to explain why existing literature in this field of research needs to be extended and shows why the results of this research matter in the real-world. In summary, the next part of the chapter shows the impact of the pandemic and describes the research methods used to obtain the data from the students.

### **Higher education vs Covid-19 impact: University of Cape Town perspective**

As the impact of Covid-19 continued, the university committed to press on efforts to support its affected students, this partly meant enhancing the student-student, student-content, and student-teacher relationship to enhance the learning and teaching experience. Obi and Ticha (2021), in their study, mentioned that both the lecturers and university did not put in place strategies allocated by learning designers and technologists. An example of these strategies included being able to execute strategies that included learning experiences appropriately designed and facilitated for differently abled students, using a variety of large groups, small groups, and specific individual work experiences to create a suitable supportive and conducive online course community that would have enhanced the remote teaching and learning experience during the pandemic. This places a great deal of importance on the relationship between the university staff, learning designers and university management. It is worth noting, that before collecting data,

confidentiality and informed consent of the participants were kept as priority of the research and because the study involved human participants. Confidentiality was maintained and informed consent was received from participants before commencing with the survey.

The first few weeks of data collection using non-contact methods (google form) was an interesting learning experience since I was emotionally and academically connected to the impact of the pandemic on students and the university. To respond to the pandemic, UCT and other universities around the globe transitioned their learning and teaching to emergency remote learning and teaching (ERTL). Africa could only have 29% of its higher education institutions set-up with ERTL environments with Europe managing 85% of its institutions (Koninckx, Fatondji and Burgos 2021). Hence, this research paper has an in-depth focus on ERTL because the pandemic has shown that the education and preparation of leaders, innovative entrepreneurs, and effective workforce is a key priority for all countries around the globe and Covid-19 challenged how education was offered. Hence, this study is significant as it offers a particular interest in the student concerns, perceptions, experiences, and expectations regarding remote learning during a pandemic. 'Why is this important?' This was important because students are an important stakeholder in Higher Education Higher Education Institutions (HEIs). Thus, it is essential to satisfy their needs and interests by understanding their learning experiences and the teaching methods. To collect data from students, a google-form survey was used since physical contact and group gatherings were not permitted during the lockdown. The online survey provided a necessary and viable platform to get different insights and more in-depth information in an economical and valuable manner during Covid-19. The challenge with this option was internet access and student availability.



Regardless of the challenges, the survey investigated students' experience with regards to working and learning remotely and measured this using the preference and perception scales. The preference scale evaluated the degree of the students' preference for remote learning over face-to-face learning. For the quantitative questions, the survey used close-ended items (CEIs) using 5-point Likert scale ratings from 'strongly disagree' SD = 1 to 'strongly agree' SA = 5. This was deemed as a suitable scale to determine respondents' attitudes and perceptions by asking them to choose to place themselves on a scale regarding a given statement.

Consequently, data indicated that the research presented a valuable learning opportunity for the students. Although there were frustrating and overwhelming emotions induced by the writing process, many students, especially those who came from devastated homes and those who did not have a suitable environment for their mental health, participated and became vulnerable during data collection. It was concerning that first-year students got a tough and unexpected start to their academic and university life experience. The students engaged with their professional learning under extreme conditions induced by the pandemic. Below, the chapter evaluates and analyses the results of the study as well as qualitatively and quantitatively shows the prevailing benefits and challenges faced by the student during ERTL.

## **Evaluation and analysis**

### **Participant demographics**

As explained above, the data was collected from different faculties and the data was separated according to the different faculties and locations students came from. This was helpful for the qualitative data analysis. The student qualitative data is coded according to Participant

faculty (Law = Law, Health Science = Hea, Engineering the Built Environment = EBE, Science = Sci, Commerce = Com, Humanities = Hum, location (Rural = R, Township = T, Suburb = S), and the participant number (1 – 707). For example, this would result in a participant's reflection or contribution with a number ComR234, representing participant 234 who was under the Commerce faculty living in a rural community. A large number of participants, from a total of 707, came from suburb (city) locations as seen in Figure 3:

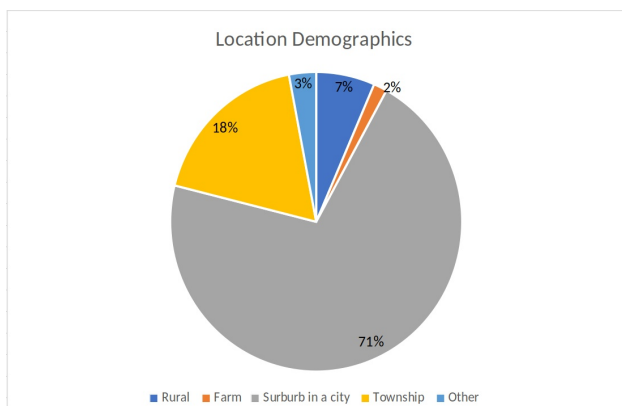


Figure 3: Location demographics

Participants were asked about their preferred mode of leaning as indicated in Figure 4:

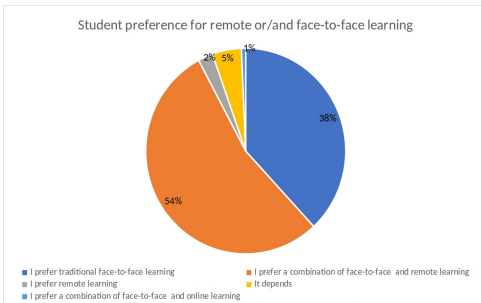


Figure 4: Student preference for remote or/and face-to-face learning

It was expected that a large number of the student body would prefer face-to-face learning since their experiences have been more aligned to this way of learning. Instead, majority of the students preferred a blend of remote and face-to-face learning. Hence, when given the statement 'I prefer remote learning over face-to-face learning', the students responded as depicted in Figure 5:

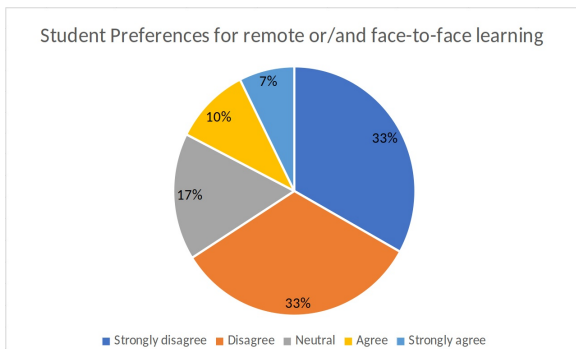


Figure 5: Student preference for remote or/and face-to-face learning

This further confirmed that students prefer a blended approach of learning and teaching. To summarise, below are the prevailing themes

that underpinned the students' experiences. To qualitatively show the extent of the impact of ERTL, some student reflections and feedback on the survey are in quotations.

## **Distractions**

A prominent theme in the study was the challenges experienced with environmental, social, and cognitive distractions in their working environments. Students shared both constructive and undesirable experiences of being home with family and it would have been interesting to study further which students or student grouping experienced these paradoxically varying experiences. For many students, access to campus resources, i.e., lecturers, Wi-Fi, etc., was a critical aspect of their learning. The notion, as Czerniewicz *et al.* (2020) mentions, of learning anywhere and anytime, was critically challenged during ERTL as students in this study complained about working at home. In many other studies, this was a paradoxical finding. In the study, some students enjoyed working at home as they claim this gave them a sense of freedom, more time to work and focus, and more family time to build relationships. For some students, which was a majority, working in home environments was a struggle because of the environmental, social, and cognitive distractions they experienced. These distractions came from their working environments with their family space being too cramped, noisy, having many responsibilities, or chores, etc. For many students, this tested their cognitive and organisational agility (Wu *et al.* 2020). Hodges *et al.* (2020) also share how universities need to plan for such distractions experienced by students in order to improve their academic offering. In this research study, as explained above, students strongly agreed that remote learning has many distractions and that most students suffer from

being distracted in the remote learning environment, and this same environment manages to test students' ability to manage both learning and non-learning events online. Some of the comments collected from the surveys are detailed below.

Many students commented on the disadvantage of distractions they experienced at home. A total of 512 commented (18,6% - second highest total) and below, they share external and internal distractions they experienced at home when asked what the challenges of ERTL are:

*At home there are many distractions. It is a depressing time for everyone. (Participant EBER231)*

*...distraction from family members (do not understand the work demands from school. (Participant EBER231)*

*Distraction, exhaustion, stress, anxiety, too much to do, lack of support, too high expectations etc. (Participant HumR10)*

*Family distractions, discipline, retaining information, motivation, lack of human interaction, less support. (Participant HumS157)*

*With an actual person in front of me, I pay attention. At home, I am always on my phone or browsing the internet. (Participant HumS56)*

*Distractions at home and also no one keeping me accountable (i.e., how a tutor would in tutorials). (Participant Law S59)*

### **Mental health challenges**

This theme was one of the most dominant (third largest) themes in the analysis of quantitative and qualitative data. Findings show that mental health and well-being was a common concern from the student perspective. The ERTL experience revealed that many students

struggled and were distracted by mental health and well-being issues induced or perpetuated by their experience with remote learning. Reading through the existing literature and research findings, the mental health and well-being issues seemed to have mostly been connected to living in a cramped and poverty-stricken home environment, induced family distractions, lack of discipline, lack of human interaction, and less support (Cao *et al.* 2020; Hussein *et al.* 2020); Trung *et al.* 2020). A total of 487 (17,7%) students commented on having experienced mental health problems that ranged from distress to anxiety and depression. Some of the participants mentioned:

*Face to face we can communicate, distress, and gain support from other students when complaining about the workload and that seems to have a psychological benefit to many students. However online. It is difficult to communicate and interact. It's very difficult to explain to your colleague when they have a problem or vice versa as you are not able to fully illustrate. (Participant HumR124)*

*...my anxiety levels are high, and my insomnia is worse so that doesn't help. (Participant ComR234)*

*.... living in emotionally abusive households, depression creeping in. (Participant HumT464)*

### **ERTL perceived advantages and disadvantages**

Figure 6 depicts the qualitative analysis of the student perspectives on the disadvantages they experienced.

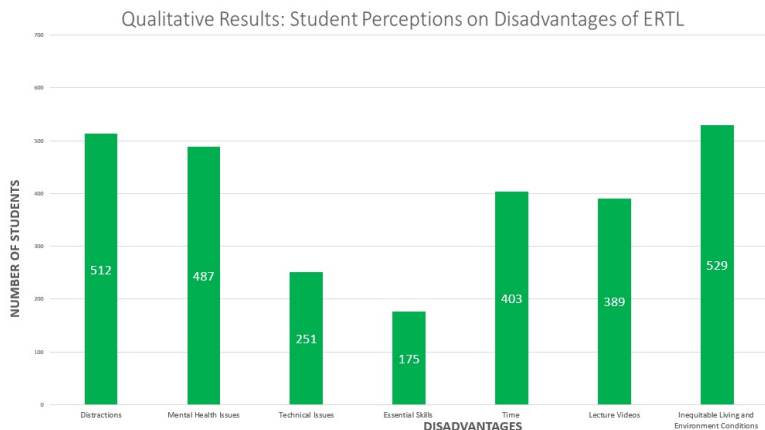


Figure 6: Student perspectives on disadvantages of ERTL

Figure 7 is an expression of the compartmentalisation of benefits of ERL experienced by students.

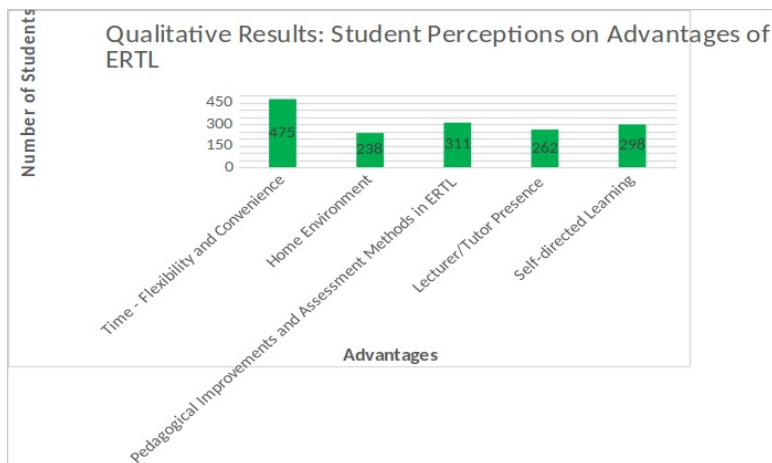


Figure 7: Student perspectives on advantages of ERTL

A total of 298 (18,8%) students commented on the advantage of self-directed learning. Some of the students said they experienced more self-directed learning, which enhanced their confidence in using multiple external sources of data and learning and teaching:

*I use multiple sources such as YouTube to explain things I don't understand. (Participant SciS589)*

*Taking better notes, watching lecture, & YouTube videos. (Participant HumT65)*

*I have the time, readings and other multimedia resources to enable me to engage with the topic at a deeper level of understanding than would be the case in a contact class session. (Participant HumS19)*

In summary, students showed more interest in blended learning and teaching, and their second option was a face-to-face learning and teaching environment, and they shared their views on why they currently appreciate learning remotely. In cases where some were displeased with not receiving sufficient practical experience and personal interaction, they noticed new skills like using computers, communicating with peers and teachers, and time management were less difficult because of ERTL. Some of the comments students shared regarding these new skills included, but are not limited to the following:

*Lots of content but practical experience also essential .... Yes, online learning isn't as personal, but it is easier to pace online learning. (Participant SciS23)*

*I have lecture recordings/videos/notes that are available to use given to us by the lecturer. wouldn't have these if it was face to face learning. (Participant HeaR542)*



Other writers mentioned similar experiences from students regarding mental health and well-being issues (Cao *et al.* 2020, Hussein *et al.* 2020; Trung *et al.* 2020) and these experiences seemed to have mostly been connected to living in a cramped and poverty-stricken home environment, induced family distractions, lack of discipline, lack of human interaction and support. What is also noticeable, regarding understanding student perceptions through the online learning design model, is that students felt lonely and detached from each other, the content provided, and their lecturer. This feeling refers specifically to the student-content, student-student, and student-teacher agencies that Anderson and Elloumi (2004) mentioned in the online learning model (Nzala 2021).

### **Internet connectivity and technical challenges**

The faculties that experienced most of the obstacles and difficulties associated with ERTL were those whose academic experience depended on practical work in labs and studios or needed software that can only be accessed through labs and would need a specific operating system (Nzala 2021). Some students commented on a complete lack of access where even data bundles could not work:

*No network in the villages. (Participant HumR464)*

*MTN being not zero rated and getting little to no support from ICTS and lecturers about this. The worst part is the 4 weeks of going back and forth with UCT support structure and no assistance. (Participant HumT4)*

*Online it is challenging, especially once the provides data bundles deplete. (Participant HumR238)*

*Data struggles, once the provided data depletes, one is subject to 6 hours of night data of which can barely keep awake. (Participant HumT187)*

*Many students don't have data/Wi-Fi, so you aren't able to effectively communicate with them until they manage to get more data or access to the internet. It makes it extremely difficult. To engage with other students. (Participant HeaS84)*

*Connectivity, WIFI is slow. (Participant LawS537)*

*I do not have access to Wi-Fi. The data UCT provides helped but the network coverage is sometimes very badly. (Participant EBER231)*

### **Inequitable living and environment conditions**

Students' living and environmental conditions contributed to their perception of ERTL, which is related to what distracts students during their learning and teaching. Some of the students experienced a challenge with video media delivery, among other problems. A total of 529 (19,3% - highest total) students commented on the disadvantage of inequitable living and environmental conditions. Some students commented on the complex environments they lived in:

*I am learning how to adapt to working in a difficult environment. (Participant SciT23)*

*Living in a cramped and poverty-stricken home environment. (Participant SciR21)*

*I live with a family of 23 people in a 4-bedroom house. I do not have space to study. It always noisy and the people in the house are not considerate at all. I have a 4-year-old kid that I have to take care of*

*and do the house chores. I only get one proper meal a day and always tired. (Participant SciR219)*

*It's not a comment on online learning but at this point I honestly need to go back to res to continue with online learning because I actually prefer it. My environment isn't just working out for me, I feel like I'd do better if I had a healthy environment. (Participant HumR404)*

*None really because day to day activities that come with the responsibility you end up taking on when being home and having to reason with people who don't understand what being a student entails end sup interfering with any sort of schedule you set for yourself. (Participant HumR228)*

*Spontaneous activities at home. Family noises, kids playing, no electricity at times, babysitting, errands, chores. (Participant ComT55)*

*No personal space. (Participant EBER231)*

Lack of space at home led to some students experiencing mental health challenges:

*Making time in the circumstance I live in and also requiring working space when I have none at home ... I've never been stressed in my life; I am having a hellish time. (Participant HumT241)*

*No network in the villages, living in emotionally abusive households, depression creeping in. (Participant HumT464)*

*I generally have low concentration span but now it's worse. I don't have a study room or a formal place to study I have to cook or do*

*something in the house which may take a lot of time. The network sometimes sucks, my anxiety levels are high, and my insomnia is worse so that doesn't help. (Participant ComR234)*

*At home there are many distractions. It is a depressing time for everyone. Getting up to date with my workload has been one of the biggest problems I have come to deal with. (Participant EBER231)*

*Before the corona virus kills us most of us would have died from the stress that comes from being expected to learn in the type of environments we come from. (Participant HumR102)*

As much as students struggled with living environments, they also struggled with the lack of practical experience in their courses, and this is detailed below.

### **Lack of hands-on experience**

The lack of practical experience for particular disciplines such as medicine, filmmaking, etc, led to students perceiving ERTL as an incomplete and difficult degree experience. This was especially true for first year students whose introduction to university, and HE was ERTL. Students alleged that they experienced distress and great trouble getting to learn a subject area that depends on personal practical experience. Additionally, they claim that they had to succumb to being satisfied with seeing the lecturer's practical experimentation only through video or watching it via YouTube or other websites. Many students complained about not having sufficient internet connection or data, thereby not being able to learn from other sources in an attempt to make up for the gap of knowledge from hands-on experience. What was surprising was how students intensely complained about this and expressed their painful experiences. Students claimed that the

knowledge they acquire in their current year under ERTL affects their progression to the next year. Students usually use their practical sessions and face-to-face learning to engage and learn. Their prerogative is that remote learning prevents them from engaging on the topics further with lecturers, which amounts to cognitive, lecturer, and student presence deficiency. The lack of practical experience students experienced contributed to their perception of ERTL, and this included seeing the lecturer face-to-face. The feedback from students when asked what their difficulty was with ERTL is presented below to further affirm the need for practical experience in the courses:

*It is difficult in the sense that my science courses have practical's that greatly help engage with course work and gain understanding from practical examples and visuals. I grasp things better when I hear it first and see someone talking about it (lecturing) then I go over it in my own time. Now with remote learning I am all by myself which needs me to find some efficient way of grasping new course content such as maybe YouTube. With Sociology we have class discussions that help bring different point of perspectives that help fully tackle topics but now I am limited to my own views. (Participant HumT402)*

*I'm doing medicine and I'm 3rd year. I feel like I really needed the patient interactions to keep me motivated and right now my motivation levels are dangerous low. Interaction with other students is at bare minimum. I interact with one group because we have a project to finish but that's about it. (Participant HeaT88)*

*It is okay when it comes to the theory only but the practical aspect where experiments must be conducted in labs is affected. And even though measures to record lab procedures and send them through*

*to students are being put in place, it is not the same because lab experiments require personal interaction with the equipment, i.e. some reactions may give off a particular smell which could be key in the experiment or give off heat of which the temperature changes of the equipment can be felt, of which all the latter, among other reasons makes online learning a bit tricky. (Participant SciS563)*

*I am a clinical year medical student and it's impossible to teach certain procedures we are meant to learn online. (Participant HeaS2)*

*In engineering there is a lot of theory that we would be able to study from home, however there are problems that arise when things like practical's, tuts, and tests need to occur. (Participant EBES412)*

*Statistics is easy as you just need to watch videos on the concepts and then practice the concepts. Information systems is a little trickier as all the work is group project work and some students don't have access to Wi-Fi/internet so you continuously having to carry 3-4 other group members and do way too much work. You feel for the students who don't have any access to resources as learning must be extremely tough but it's also difficult to try and to work meant for 4 people by yourself. (Participant ComS16)*

*Most will say that within the humanities faculty online learning is easier, however I don't seem to agree. I personally prefer contact learning due to it being more engaging. (Participant HumR4)*

*Doing a PhD in medicine means I need face time with my supervisor, I need practical work to become better, so it's frustrating. (Participant HeaS317)*

## Summary

The findings show that ERTL enabled flexibility and convenience, pedagogical improvements, time saving, self-directed learning (working at times convenient to them and creating and managing their working schedule), and spending time with family. These, of course, are some of the well-known advantages of online learning and teaching hence, these were the key benefits and opportunities experienced by students. Interestingly, benefits for some, turned out to be challenges for other students. Hence, some of the barriers students experienced were distractions, internet connectivity and technical issues, inequitable living and environment conditions, lack of hands-on experience and how this contributed to the difficulty of their degree, mental health issues, and many other barriers.

A wide range of literature displayed that lack of access to computers, internet connection, technical support, and personal expertise can be equated to inequity (Tienken 2020; Rahiem 2020; Dunbar-Smalley, Lukman and Hawkins 2021). Skills essential for remote learning success, emotional and mental health challenges, including internet access and technical challenges were one of the ills linked with inequity in the study and universal literature. It is notable that these findings confirm studies from India, Pakistan, Nigeria, etc. For example, Affouneh, Salha and Khlaif (2020) mentioned how some of the distractions and challenges students experienced were due to lack of internet access. This research also exposes that inequitable living conditions caused by poverty were a big challenge for many university students coming from rural and township homes. When one reflects, the university campus provided an environment of financial, emotional, social, and academic support for many students and being at home exacerbated their mental

and emotional health as some were exposed to inequitable living conditions. These living conditions contributed to many students being distracted and not being able to do well academically. In conclusion, a question that the study proposes is: *should ERTL, as temporary adjustment of learning and teaching, become a long-term solution, that would potentially prolong the struggles that many students face?*

### **Action plan**

Universities in South Africa need to invest more in developing emergency preparedness plans and resources in place for unexpected challenges such as pandemics. According to Andersons Model and the findings of this research, it is recommended that lecturers develop relationships with students, teaching assistants, educational technologist, and tutors. Academic and student assistants should be involved in engaging with students and assisting where lecturers cannot continue alone. Furthermore, educational technologist who are responsible for introducing the necessary technology into the teaching and learning environment should also form relationships with academics. This can be done during the training lecturers receive for the remote teaching (Nzala 2021). Their involvement in training is pivotal. To ensure that the UCT and other universities around the world respond better to emergency situations or pandemics, a helpful way forward would be to invest in digital infrastructure to decrease the digital divide that exists as well as ensure that there are reinforced practices to support the mental health of students through enhanced student-student, student-content, and student-teacher mechanisms. This includes the accelerated digitisation of learning and teaching for as many universities as possible. This also means providing additional online learning and technological support and opportunities for



students who come from poor households. The struggle most students faced was due to living in inequitable environments, distractions, and mental health. Another challenge was not having access to internet, and this can be an opportunity to, as mentioned by Koninckx, Fatondji and Burgos (2021), follow the example of Scaling Solar in the energy infrastructure sector which could be utilised to improve and scale the digital infrastructure improvement in South Africa and the rest of the continent. Since students experienced distractions, Hodges *et al.* (2020) also shared how universities, working with households and government, need to plan for such distractions that students experience in order to improve their academic offering. Another issue is that of confidence and motivation, as pointed out by Schlesselman (2020) as it refers to how pandemics that are still to come will require ERTL to operate with high student motivation and confidence.

Koninckx, Fatondji and Burgos (2021) replicate this research recommendations when they mention that impact at scale would need government, private and international institutions, non-governmental organisations (NGOs), and donors to be united in their efforts to uplift the country and continent from the impact of Covid-19. It is my thinking that governments have a great part to play in recognising the importance and indispensability of digital literacy and consistent access to the internet for all students.

## **Conclusion**

Other writers like Pillay *et al.* (2021) affirm that Covid-19 exposed the lived realities of students' lives and this included their home contexts, which were ultimately made more difficult as the pandemic continued. Their study added that students adapted to learning during the pandemic with varying and numerous physical, emotional, and psycho-

social conditions. I learnt that the students were both satisfied and aggrieved with the lecturers and tutors' availability, commitment, and resourcefulness. In general, students felt that they did not have much interaction with their peers during ERTL and missed the interaction they previously had with them on campus. To ensure that the students received all the help they could get, tutors and lecturers went the extra-mile to ensure that students appreciated and enjoyed the content and interaction with each other (Nzala 2021). As Kift, Zacharias and Brett (2021) mention in their writing, tertiary education institutions could, through funding arrangements and social impact (outreach), optimise the learning and teaching performance of HEIs.

The research focussed on students and their interaction with content and teachers. In hindsight, this limited the study to only those of students and excluded perspectives of the teachers, other academic staff, and instructional technologists who were responsible for the technology, learning materials, and activities induced in the learning and teaching environment. Overall, student perspectives foregrounded barriers regarding ERTL in the first semester at the UCT. The students regarded ERTL as unaccommodating and ineffective as a replacement for face-to-face teaching and learning. Some of the challenges and barriers students experienced ranged from insufficient digital skills and computer resources, internet and network connectivity, lack of hands-on experience leading to an incomplete and difficult degree experience, and finally, distractions. Paradoxically, students perceived some of the challenges as opportunities and advantages. This study showed that students regarded ERTL as an opportunity for reduced procrastination, self-directed learning, and growing relationships with family members because of being home.

The main research question for this study was: *How do university students perceive working and learning remotely during a pandemic?* The data provided in both qualitative and quantitative forms show that most students experienced more disadvantages than advantages. This is seen from a total of 2746 recorded complaints ranging from distractions to inequitable living and working environments from qualitative data analysis. This is compared to a total of 1584 recorded advantages ranging from flexibility to self-directed learning. Students shared their perceptions of student, lecturer, and content interaction. Most students (182) from 680 participants strongly disagreed that it was easy to interact with lecturers, with (166) disagreeing. The rest of the students agreed and strongly agreed to the same. An interesting part of the study was students detailing how the SAMR framework was not utilised or realised to its full extent as Substitution was the dominating technology integration level with limited to no Augmentation. This was a possibility due to the temporary nature of ERTL and the swiftness of its implementation. A high number of students commented on the impact of ERTL on their mental health. Some of the students commented on the disadvantage of having technical difficulties in their academic activities. Inequitable living environments were a major challenge for many students. The disadvantages and challenges students experience, highlights that universities need to prioritise providing psychological, psychosocial, and emotional support to students, especially students who reside in unequal and inequitable environments.

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