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DOI: http://dx.doi.org/10.18820/2519593X/pie.v39.i3.4

e-ISSN 2519-593X
Perspectives in Education
2021 39(3): 30-43

PUBLISHED:
16 September 2021

RECEIVED:
18 February 2021

ACCEPTED:
20 April 2021

STUDENT TEACHERS' EXPERIENCES OF THE EMERGENCY TRANSITION TO ONLINE LEARNING DURING THE COVID-19 LOCKDOWN AT A SOUTH AFRICAN UNIVERSITY

ABSTRACT

The outbreak of the COVID-19 pandemic brought about an abrupt transition from face-to-face to online learning, which caught higher education institutions off guard. Universities had to scramble for solutions to ensure that learning was not disrupted and there was adequate technological infrastructure to conduct classes online; that academics were capacitated to conduct virtual teaching and that students had access to the necessary technology and internet connectivity. To understand this move, this study explored student teachers' experiences of the emergency transition to online learning during the COVID-19 lockdown at a South African university. The study was underpinned by the Technology Acceptance Model (TAM) and adopted a qualitative research design, generating data from ten fourth-year student teachers using a Zoom focus group discussion and analysing the data using an inductive thematic framework. The discussion focused on the students' views on digital equity and access to technology; the teaching and learning modalities they were exposed to; their proficiency with the technology and training received; assessment as well as views on the learning management system (LMS, which is Moodle in this case). The study found that among the issues that universities had to deal with were the digital divide; constrained pedagogical approaches; inadequate proficiency in the use of the learning management system; the fact that the quality and integrity of assessment were somewhat compromised as well as students' unfavourable living conditions which make learning from home difficult.

Keywords: *COVID-19; online learning; Technology Acceptance Model (TAM); South African university.*

1. INTRODUCTION

Many countries have briefly cancelled classes in higher education institutions due to the unprecedented COVID-19 pandemic. The availability of educational technology and e-tools learning channels in higher education institutions

has proved to be extremely beneficial in facilitating the emergency transition to online learning and ensuring educational continuity (Hussain, Al-Mannai & Agouni, 2020). In employing technology, lecturers could diversify the way they present lectures, provide additional information and improve student learning (Aljawarneh, 2020). Although technology was used in some institutions before the COVID-19 pandemic, most institutions are now being forced to rely on technology in an endeavour to continue teaching and learning activities, thus leading to a dramatic increase in online teaching and learning (Mishra, Gupta & Shree, 2020). Consequently, lecturers and students have had to intensify their knowledge and skills in the use of online tools. However, because students are the ones who are expected to prove, by progressing to the next level, that they have benefited from the online teaching, it was deemed important to obtain their views on this abrupt transition from face-to-face to online learning.

2. LITERATURE REVIEW

Face-to-face teaching and learning was disrupted by COVID-19, resulting in institutions moving online and implementing what is known as "emergency online learning" (Marinoni, Van't Land & Jensen, 2020). Additionally, a recent study by Mukhtar *et al.* (2020) reports that the spread of COVID-19 has led to the closure of educational institutions all over the world and that such closure has accelerated the development of online learning environments so that learning would not be disrupted. The total lockdown left little time for the university under study to lay the groundwork for all the academics to teach and for students to learn remotely. The rapid translation of modules from traditional face-to-face teaching to online learning came with its challenges. For instance, lecturers found it difficult and stressful to develop effective online lessons within a short period of time (Hew, Jia, Gonda & Bai, 2020 :1). The authors further highlight that lecturers used different methods during the transition period and those mainly included uploading PowerPoint slides and recording lecturers. The methods are not seen as effective as they do not promote active learning (Hew *et al.,* 2020) and peer interaction (Sutterlin, 2018). Based on the above, it was important for the current study to be undertaken to get student teachers' experiences of the emergency transition to online learning during the COVID-19 lockdown at a South African university.

Mukhtar *et al.* (2020) define online learning systems as web-based software for distributing, tracking and managing courses over the internet. It involves the implementation of advancements in technology to direct, design and deliver the learning content, and to facilitate two-way communication between students and faculty. Similarly, Kim *et al.* (2020) define online learning as an educational process that takes place over the internet. It is a form of distance education, providing learning experiences for students, both children and adults, who may access education from remote locations and who, for various reasons, cannot attend a school, vocational college or university. However, Harandi (2015) cautions that basic knowledge of technology, including academic and technical knowledge, is required for e-learning to work effectively. Hence, Mukhtar *et al.* (2020) highlight the need to train faculty on the use of online modalities and to develop lesson plans with reduced cognitive load and increased interactivity. Authors such as Mailizar, Maulina and Bruce (2020) are of the view that e-learning is the best possible approach to continue the teaching and learning process during the pandemic, especially in the light of the strict measures that were applied such as social distancing and the lockdown policy.

Nguyen, Nguyen and Huynh (2019:9) are of the view that e-learning saves time especially for the teachers as it reduces workload, for example teachers can access questions that they

have banked before the time in a learning management system of their choice when compiling a test for students. The authors further argue that e- learning has practical benefits that include "the automatic and speedy students' learning process supervision, scoring and evaluation". There are indeed advantages that are brought about e learning on the lecturers' side.

The importance of online learning and its benefit to students has been examined worldwide. For instance, Harandi (2015:424) is of the view that technology "makes instruction more interesting to students". This idea is supported by Smith (2013), who affirms that online learning enables greater engagement between students and teachers. It is thus seen as having a positive effect on student learning. Online learning offers students the ability to share different learning resources such as class notes, as well as to communicate with other students who may be experiencing similar challenges (Masonta, Ramoroka, & Lysko, 2015). Furthermore, the benefits of deploying technology and e-learning materials in the university classroom include more active learning, improved student focus and grasp and visual simulation (Aljawarneh, 2020). Additionally, Hoq (2020) asserts that through e-learning more courses are delivered and this allows flexibility for learners, as they can learn anytime, anywhere, no matter how large the number of learners. Additionally, Hoq (2020) indicates that some of the advantages include the fact that students may access materials directly on electronic devices, may participate in examinations using the internet and can measure their performance.

While e-learning has benefits and advantages, it has some challenges as well. This was evident in a study conducted by Paechter and Maier (2010) in all the Austrian universities that offered e-learning courses from a sample of universities specialising in applied sciences. The findings revealed that in one of the five fields of instruction that were covered in the study, i.e. interaction between students and an instructor, the students preferred face-to-face contact especially when the role of the instructor was to develop knowledge. The students indicated the same in relation to interaction among students themselves, especially regarding the exchange of ideas, the development of knowledge and the establishment of socio-emotional relations. One other challenge is what Nguyen *et al.* (2019) call "low participation rate" which is caused by the fact that some of the activities require interactions that can only be achieved through traditional classes.

Looking closely at the South African context, as a developing country, South Africa still has its fair share of challenges in as far as information and communication technology (ICT) is concerned. One of the challenges is the lack of ICT infrastructure especially in rural communities and schools (Masonta *et al.,* 2015). Such infrastructure plays a vital role in supporting the delivery of online learning. ICT infrastructure is defined as referring to the devices (such as computers or tablets) and the telecommunication infrastructure which is responsible for bringing internet connectivity (Masonta *et al.,* 2015). The authors further caution that "connectivity is key to bridging the digital divide"; accordingly, in areas where there is no connectivity, it is difficult if not impossible for students in those areas to participate in online learning.

Additionally, online learning presents various challenges to higher education institutions in South Africa, for instance many students from lower socioeconomic backgrounds do not have access to the internet due to the network coverage in rural areas (Jappie, 2020) and cannot connect to the internet even when the universities have made data available so that data costs are not the limiting factor. The other challenge is that universities are at different levels when

it comes to online learning as they differ in levels of institutional support, funding, uptake and staffing (Bagarukayo & Kalema, 2015:170). The rapid move to online modes of delivery in order to keep students engaged in learning has led to significantly intensified workloads for staff as they work to move teaching content and materials into the online space and also to become sufficiently adept in navigating the requisite software (Allen, Rowan & Singh, 2020).

3. THEORETICAL FRAMEWORK

The current study used the Technology Acceptance Model (TAM) to explore student teachers' experiences of the emergency transition to online learning during the COVID-19 lockdown at a South African university. The model is based on the principle that "by measuring the perceived usefulness (PU) and perceived ease of use (PEOU) after using tools for several months the model can predict behavioural intention (BI) and actual usage" (Sprenger & Schwaninger, 2021:2).

The model was introduced by Davis in 1989 and has been used in various sectors, for example the education sector (Mohammadi, 2015) and the agricultural sector (Miller & Khera, 2010), and has continued to be widely applied in the field of Information Systems (IS). It is viewed as the "most influential and commonly employed theory for describing an individual's acceptance of information systems" and has captured most attention in the IS field (Chuttur, 2009:1). Thong, Hong and Tam (2002) define perceived ease of use as the extent to which a potential information technology (IT) user perceives or believes that the use of an IT system will be free of effort, while perceived usefulness is defined as the extent to which a potential IT user believes that the use of that IT system will enhance that user's job performance. The model was developed to understand why people accept or reject information systems (Szajna, 1996); over the years it has been taken as a valid framework and a reliable predictor of IT adoption (Miller & Khera, 2010).

In the words of Szajna (1996:85), the purpose of TAM "was to explain and predict user acceptance of IS from measures taken after a brief period of interaction with the system". For students to continue to learn during the COVID-19 era they have to accept the use of online learning which is primarily driven by the use of technology. This theoretical framework is relevant for this study in order to understand whether student teachers have adopted online learning as forced upon them by COVID-19. The core of the TAM model is that "the more users are willing to accept the technology, the more likely they will use technology" (Gamble, 2017: 27). Additionally, Gamble (2017) asserts that TAM has been used for over 25 years, mainly by studies concerned with how users accept technology.

4. RESEARCH METHODOLOGY

A qualitative study was used to answer the research question. The focus of a qualitative orientation is to explore the experiences, meanings, beliefs, experiences and perspectives that participants assign to a social phenomenon (Nieuwenhuis, 2020). This study sought to understand student teachers' experiences of the emergency transition to online learning during the COVID-19 lockdown in a South African university.

Ten participants, all student teachers at a South African university, were purposively selected for this study. Purposive sampling was used to identify and select student teachers who held information-rich and practical experiences of generating ideas to move from contact to online learning. The participants were selected using the following criteria: a full-time student

who had access to the University LMS, Moodle. Data were generated using a virtual focus group discussion. According to Dilshad and Latif (2013:192), a focus group interview "provides a rich and detailed set of data about perceptions, thoughts, feelings and impressions of people in their own words". A virtual focus group discussion was conducted with ten participants using the Zoom App. The focus group took place during the South African COVID-19 lockdown, on 12 May 2020, and lasted 68 minutes. The participants were university students being taught by means of online learning in the wake of the COVID-19 lockdown initiated on 26 March 2020. The discussion adopted a conversational style, as suggested Kvale and Brinkmann (2009). The discussion was based on the following key questions:

- What are your experiences with the transition from face-to-face learning to online learning during the Coronavirus lockdown?
- What are your views about your ability to access technology and the internet from home?
- How have you adapted your content, learning materials and teaching strategies for the online environment?
- What teaching and learning modalities have you been exposed to in the online learning environment?
- What is your level of proficiency with the technology and learning management system (LMS) adopted by your institution?
- What are your views on the LMS in enabling or constraining effective online learning?

The focus group discussion was recorded using the Zoom App recorder. The interview discussion was then transcribed and later analysed. Data were thematically analysed using Braun and Clarke's (2006) thematic analysis framework. Braun and Clarke (2006:79) note: "thematic analysis can be an essentialist or realist method, which reports the experiences, meanings and reality of the participants".

5. PRESENTATION OF FINDINGS

Five themes resulted from the analysis of the data obtained in answer to the research questions. The findings of the study are discussed here in detail in terms of these themes: digital inequities; online teaching and learning pedagogy; the learning management system; assessment and unfavourable home learning environments.

5.1 Digital inequities

The digital divide continues to exclude many students from meaningfully participating in online learning, especially under COVID-19 conditions. The challenges of access to digital devices such as laptops and tablets, stable and reliable access to internet connectivity and access to affordable mobile data bundles have proven to be a constraint in the shift to online curriculum delivery. Universities have committed themselves to the South African citizenry not to leave a single student behind, however a lack of devices and data stands in the way of achieving this goal. The findings reveal that students are concerned that a significant number of students who are based in underprivileged communities may not have a fair and equal opportunity to complete their academic year.

> Prof, with regard to NSFAS funding we have students who are unfunded. Then they don't have money for data and then they don't have smartphones and laptops (Participant 9).

Participation in online learning is low because students do not have access to the learning devices, network coverage and connectivity required to enable a conducive remote online learning environment during the national lockdown. Participant 1 said:

> I think also Prof, the numbers that we see on Moodle when we examine the participation numbers of students entering, it speaks for themselves, that majority of the students are not accessing Moodle.

This student was of the opinion that students who face access challenges should be given an opportunity to return to their residences, under strict conditions, to allow them to use university infrastructure for their learning: Participant 1:

> I would also – if it would be possible, I don't know, if we can organise maybe some like, quarantine on the campus for those students that are in difficulties with internet, maybe they can be allowed to come back to their residences and work on this e-learning there, not saying that they will go to classes and attend.

Although the government had assured the nation that no student will be left behind, the findings show that online learning is not for all, and that access to data and the internet is still a barrier, especially for students from marginalised communities in rural areas.

5.2 Online teaching and learning pedagogy

Online learning has emerged as a desideratum amid COVID-19 to deliver teaching and learning in universities The Coronavirus pandemic has left students and academics with a challenge to navigate education in a completely new online environment Academics have been forced to shift their entire pedagogical approach to respond to the new conditions imposed by the pandemic and to adapt to the changing situation. Academics and students have to become accustomed to virtual teaching and learning. Therefore, quality enhancement of online teaching and learning is crucial at this stage. The findings revealed that academics have resorted to depositing learning materials on the LMS without any engagement. Participant 5 had this to say in this regard:

> …the lecturers just leave the slides on Moodle without explaining anything. Just like me I sometimes like the lecturer to explain like the slides before I even try to attempt them myself. I think that is really a problem.

Participants feel neglected in online learning owing to the lack of guidance by their lecturers. Participant 9 said in relation to this:

> Prof I was saying that regarding the online learning personal experience, so far it's not well. There are tasks that we have been given, assignments without any explanations on how we should do them. So far with e-learning it's not well on our side.

Students indicated that they are expected to work in groups as part of virtual learning. For this purpose, an LMS needs to have features or virtual tools for creating groups and enabling group participation and interaction. Students found it challenging to work in groups because of the lack of internet access and ICT gadgets. The LMS either does not have the features for group work or lecturers have not set these up for their modules. Participant 2 felt that group work was not being accommodated:

> The major problem with e-learning is that we are given tasks that we have to do, in groups or either individually at some point. Those tasks they need us to gather up as the

> groups. We need to have a plan of meeting of which some of the students have a problem accessing to gadgets. Others have problems accessing to internet or having access to the network coverage of which that is the major problem that we find.

Generally, students had embraced online learning as a necessity and as part of digital transformation and the Fourth Industrial Revolution. Participant 3 had this to say:

> E-learning we must not run away that it is part and parcel of learning.

5.3 The learning management system

Innovative technologies and LMSs for teaching and assessment are flourishing and have given education some valuable tools for delivering courses remotely during COVID-19. The findings reveal that before COVID-19 students had not been encouraged to use the LMS/online learning, which had a negative impact on online participation during lockdown. Participant 1 confirms this by saying:

> Prof, maybe that one let me first explain that before COVID-19 before we were evicted on campus, Moodle was there but students were not active on it. It was not used as it was expected now. Students will face challenges in adhering to e-learning.

Within a short timeframe, academics had to rework and adapt the curriculum for remote or online delivery using materials that had originally been prepared for face-to-face teaching and learning. The findings indicate that challenges were experienced with the creation of appropriate e-learning curriculum content by academics. Participant 8 had the following to say:

> About the content I think as we all know that on Moodle, they usually post notes that are being shortened, meaning that they are being summarised. Which leads us to a point that there is some information that is not included there which we can find in books…

Online learning requires lecturers to engage regularly with the students and to promote interaction and collaborative learning among the students themselves. The findings reveal that there was limited interaction online during this period. Numerous participants confirm this as they commented as follows:

> Thank you very much Prof, for the opportunity however, there is zero interaction. What one is saying that when a lecturer tends to post, they post the slides on Moodle followed by the activity. And then on Moodle there is something that has been designed for you to leave a comment, but it is not used (Participant 6).

> Yes, Prof, I think there is no interaction at all. Simply because this thing is more like "do as I say" because we are not given the opportunity to ask questions as our participants have mentioned earlier on (Participant 8).

> Now you see Prof, when you going to give me work that I must do without you explaining – whether that work I am in encoding in the manner that you would have explained it and in the manner that it is supposed to be encoded – that one is not being monitored (Participant 9).

Participant 9 was also unhappy with the teaching strategies adopted by the lecturers, which did not include interaction with the students. He had the following to say:

> Prof, I want to comment on the strategies, the first bad strategy it's not to use the discussions platform on Moodle. There is a platform where a lecturer can interact with

> students on Moodle but none of my lecturers are using that platform. And then number 2 when giving task without any examples or samples it's a bad strategy for me because the students as they are at home, they are not quite clear what is expected from them.

As an alternative to communicate with the lecturers, WhatsApp has been adopted:

> Yes, Prof, in terms of interacting with the lecturers some have created WhatsApp groups and invited students. But we note that it's not all students who can be accommodated in that. But we have tried such means to communicate with our lecturers with the content and also to get further explanations of what is expected of us to do as students (Participant 1).

Academics who develop online courses must be appropriately qualified and supported professionally. They need to know how to prepare an engaging online pedagogical experience and how to best support the online learning process.

Participant 1 thought that academics are not proficient in the use of Moodle (the LMS). She had this to say:

> Some of the lecturers are not proficient Prof, I once informed you about it that there was a quiz of which we were expected to do but it only reflected only the options without the content of what we are choosing on.

Participant 6 confirmed that the use of Moodle needs to improve through the provision of technical support. He had the following to say:

> On the issue of proficiency, the e-learning is not friendly so I doubt it will ever, we will ever master that thing.

Participant 9 agreed that online support is necessary to enhance learning:

> Regarding support that we have been given so far from my side there is no support that I've got towards helping with the online learning. And then my expectations are that we must be – as the minister once said, we must be given data. And then number 2 the Moodle itself needs to be upgraded as we have indicated. And then there is IT department, that is giving us some difficult time. I have tried to call them a number of times regarding the issue of Moodle is not logging in – some of the students it's just write error…

Participants were of the view that academics need training too. It is therefore essential to address the rapidly changing skill requirements for a world increasingly shaped by ICTs. Participant 6 made the following comment:

> I have encountered 2 problems if I'm not mistaken when you've asked the one lecturer to post the work on Moodle she said "Oh, the other lecturer is not here and I can't do it. It's usually done by him." So, I picked that one there. Number 2, when the lecturer enters the lecture hall another problem that we have with lecturers they just can't connect the projectors.

5.4 Assessment

Conducting assessment through online tools has been difficult for students. The findings reveal that the quality and integrity of assessments have been somewhat compromised. This aspect is critical to avoid compromising the quality of graduates of university programmes. Participant 6 pointed out that online assessment during lockdown had not encouraged students to demonstrate learning in terms of Bloom's taxonomy to assess varied knowledge, skills and abilities. He had this to say:

> With regard to assessment – it is being said that each and every paper that is being structured it has to contain create, evaluate, analyse, apply, understand and remember. You really testing all the components of a learner whether how much he understands, how is he or she able to apply and does she understand and is able to remember. Can she evaluate? Now when you go to online here is a quiz, you have to click true or false. Or whether you have to click the answers that are being provided for you whether it's A, B or C. In that case Prof some things are being left out. Like evaluate, creating, add; we can't. Now the question will be what types of student will be produced as the Faculty of Education.

Participant 9 noted the lack of rubrics with online assessment that they need to use to reflect, analyse and improve their own work. He had the following to say:

> Prof, in assessment during this period I'm not sure whether it's a new way of doing things or what, but it seems as if we no longer have rubrics. There's no rubrics that we have been given so far. The last time I saw a rubric I was on varsity premises but with this online learning so far there's no rubric. They really help us to assess ourselves, to understand what is expected from us. We can do the self-assessment and peer assessment through rubrics.

Participant 8 lamented the lack of guidelines for assessment activities:

> I think any assignment or assessment activity given to students must be accompanied by the guidelines. For instance, I think each assignment should come with a video or an audio of the lecturer explaining what is exactly expected. I think that one can work for us but now assessments are just meaningless without these guidelines.

Students are of the view that as a result of the problems brought on by COVID-19 they preferred continuous assessment as a method of assessment and they believe that assessment can be validated through Turnitin to maintain ethics in assessment activities. Participant 1 commented:

> I think it will be okay if we are graded on continuous assessment. I think Prof. when it comes to the accumulation of a final mark it will be better if we count all the activities that have been done by the students.

Participant 6 had this to say about ensuring ethics and in support of participant 1 on the administering of continuous assessment during online learning:

> I want to concur with participant 1 because we have something called Turnitin. Under no circumstances or it is very rare I can submit an assignment which is identical to that of participant number 1 because we have to run it through Turnitin. So, for our safety the continuous assessment it's much better for us.

5.5 Unfavourable home learning environments

Universities need to be aware of unfavourable living conditions that can make learning from home difficult in terms of providing the necessary support or alternatives for these students. The findings reveal that the support that students would normally receive on campus is no longer available when they are at home and overcrowded households create an environment that is not conducive to learning. This is especially applicable if students are living in economically poor environments. Participant 4 had the following to say about family conditions:

> Yes, the kind of support that we require that we might be thankful as the students is for those students who are living in an unfriendly environment whereby you find maybe five

members of the family living under one roof. For those students it is very hard to study to do their work.

6. DISCUSSION

The COVID-19 pandemic has forced universities around the world to migrate from face-to-face to online teaching and learning environments. Online learning unites two main areas, learning and technology (Aparicio, Bacao & Olivera, 2016). Learning is a cognitive process for achieving knowledge and technology is an enabler of the learning process, meaning technology is used like any other tool in education. E-learning has become the main teaching and learning modality since the closure of South African universities in March 2020. This posed challenges that demanded significant adaptation, preparation, support and engagement. Among the issues that universities had to deal with were the digital divide; constrained pedagogical approaches; inadequate proficiency in the use of the LMS; the quality and integrity of assessment being somewhat compromised and unfavourable living conditions that make learning from home difficult.

To examine the reception of technology-mediated instruction during the pandemic, the Technology Acceptance Model (TAM) was used. TAM is a commonly used model for examining a subject's attitude and adoption behaviour, especially in university settings (Venkatesh & Davis, 2000; Pituch & Lee, 2006; Al-Azawei *et al.,* 2017). The model helps us to examine the acceptance of technology-mediated teaching, especially in terms of its perceived use and ease of use by students, for the purposes of this research. According to TAM, two fundamental factors, namely perceived ease of use and perceived utility, are primary causes of person attitude toward technology-powered products/services, which ultimately leads to behavioural purpose (Davis, 1989). Perceived ease of use refers to people's subjective likelihood of believing that using a specific technology will improve their work performance, while perceived utility refers to people's subjective likelihood of believing that using a specific technology will improve their work performance (Kim, Kim & Han, 2021).

The digital divide continues to exclude many students from meaningfully participating in online learning, especially under COVID-19 conditions. The COVID-19 crisis has laid bare the inequalities in education systems. Among the major problems highlighted were access to internet networks and data costs. Moore, Vitale and Stawinoga (2018) observe that the digital divide, which they describe as the gap between people who have sufficient knowledge of and access to technology and those who do not, can perpetuate and even worsen socio-economic and other disparities for already underserved groups if it is not arrested. The higher education system in South Africa is still hamstrung by historical inequalities dating back to apartheid and most of the students come from disadvantaged communities. The provision of gadgets (smartphones, tables, laptops) and affordable data will go a long way in bridging the digital divide. The government, universities and the private sector have started working together to provide access to a number of zero-rated online content. This would greatly benefit students from disadvantaged backgrounds.

The findings reveal that academics could not master the online teaching and learning pedagogy, being forced to shift their entire pedagogical approach to respond to the new conditions imposed by the pandemic and adapt to the changing situations. Furthermore, academics did not adequately engage with students and maintain contact throughout their studies. The findings reveal that academics resorted to depositing learning materials on the

LMS without any engagement or fostering of student-to-student contact, which constrained the learning on the part of the students. Rapanta *et al.* (2020) concur that the COVID-19 emergency situation demanded that teachers become designers and tutors overnight, using tools that few have fluently mastered. When it comes to online teaching strategies, Kebritchi, Lipschuetz and Santiague (2017) argue that the content for online learning should include collaborative activities that have corresponding rubrics detailing criteria for interaction and engagement. They further argue that interaction between the instructor and the students play a major role in the success of online learning. Interaction among the students as well should not be underplayed as it promotes cooperative learning.

The findings reveal that despite the institution having innovative technologies and LMSs, for teaching and assessment, students had not been adequately exposed to these valuable tools to deliver courses remotely. Before COVID-19 students had not been encouraged to use the LMS, which impacted negatively on online participation during lockdown. Academics themselves did not have adequate proficiency in the use the LMS, which was evident in the challenges they encountered with the creation of appropriate e-learning curriculum content. Alenezi (2020) argues that LMSs have been adopted in many learning institutions because of their functionalities and applications to improve pedagogy. The findings of his study revealed that the main barriers to the use of LMSs were inadequate technical support by the universities, negative attitudes toward technology and inadequate training on the LMS platforms.

The findings also reveal that unfavourable living conditions, particularly in rural communities, and overcrowded households create an environment that is not conducive for learning. The quality and integrity of online assessment has been questioned during lockdown. The participants found online assessment during lockdown do not require students to demonstrate learning in terms of Bloom's taxonomy to assess varied knowledge, skills and abilities.

7. CONCLUSION

The digital divide continues to exclude many students and was regarded as one of the challenges South African universities had to grapple with as universities migrated to online at the start of the COVID-19 crisis. Universities in South Africa were urged by the Department of Higher Education Minister not to leave a single student behind, but a lack of devices and data stood in the way of this goal being met uniformly across all institutions. Among the key issues that universities had to deal with in this study were the digital divide; constrained pedagogical approaches; inadequate proficiency in the use of the LMS; the quality and integrity of assessment being somewhat compromised and unfavourable living conditions that make learning from home difficult. To contend with the complexities of online education, developing multimodal methods to meet course material goals for improved learning outcomes could be a better idea. Government, universities and the private sector must ensure the provision of effective networking resources, high-quality interactive academic experiences and encourage technology-enabled learning for students in order to bridge the gaps that existed in the education system prior to and after the COVID-19 pandemic, which is also inescapably needed for uninterrupted learning.

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