Factors that Impact on E-Learning in a Selected South African University: a pedagogical perspective

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Abstract

There is already a myriad of evidence in the literature to show that historically black universities in South Africa (SA) are struggling with the adoption of e-learning for a number of reasons. The advent of the COVID-19 pandemic on the 5th March 2020 added more challenges to these already struggling institutions. This article offers a brief discussion of the current situation regarding higher education institutions in SA. After a brief account of the general background to these institutions, the article focuses on the main thrusts of the document: exploration, identification, interrogation and analyses of the factors that hamper effective e-learning as a pedagogical aspect due to the advent of COVID-19; and further offers remedial interventions through which these institutions can be enabled to overcome the challenges hampering e-learning amid COVID-19.The study adopted an ethnographic approach, gathered data from twenty-two lecturers and students through interviews, focus group conversations and hanging out approaches. This qualitative study that uses an exploratory design sought to identify, examine, interrogate and analyse the factors that negatively impact on the prospects of a successful e-learning pedagogy in the selected university. Data were elicited using a self-designed questionnaire and in-depth focus group interviews with twenty-two (22) research subjects from a specifically selected university in Limpopo Province, SA. These two instruments were also complemented by other relevant scholarly texts. Furthermore, the study used a dual theoretical framework, namely, Environmental Equivalence Theory and Afrocentricity. An analysis of the data revealed the following key findings: low motivation to study through e-learning among students (particularly first year students); the shift from conventional teaching to technology based learning, have been viewed pejoratively by a significantly high number of students and lecturers. Lack of lecturers' training to facilitate e-learning based pedagogy; lack delivery of electronic gadgets to enable learning; poor internet connectivity in some remote villages; no tutors to help blind students; infrastructure that is not suited for 'social distance' protocol; lack of teaching and learning materials that are tailored for e-learning purposes. Some students argued that e-learning does not suit their learning style and somehow infringes on their right of academic freedom. The findings may inform curriculum developers in various academic institutions to better plan for effective e-learning in future.

Keywords: COVID 19; Pedagogy; Higher Education, Learning; Self-Regulated Learning; E-Learning

Introduction

It is a year, two months, since the detection of COVID-19 in SA, and this has pushed SA institutions of higher learning to an unavoidable 'pedagogic drift', that is, from conventional teaching and learning to technology based teaching and learning. This, of course, came with numerous challenges and opportunities in as far epistemology and pedagogy are concerned in these institutions. In this article, particular focus is on the factors that hamper successful delivery of e-learning pedagogies at a selected South African university. For institutions that suffer lack of resources like the one in this study, the shift from conventional teaching to technology based learning has a potential to be viewed pejoratively by both students and lecturers.

The challenges that come with this 'forced' change of operation are not yet fully understood and most institutions are not adequately capacitated to deal with it. Therefore, the main aim of this article is to explore, identify, examine, interrogate and analyse the factors hampering e-learning due to the emergence of COVID-19 in a specifically selected institution of higher learning in Limpopo Province, SA. This article examines these factors from the viewpoint of the lecturers and students themselves. It explores issues related to e-learning pedagogy with a special focus on the factors that hamper e-learning in the context of South African historically black institutions. Even though there is a robust tradition of research on e-learning globally (Heugh, 2008; Kamwangamalu, 2002; Makoni, 2011; Stroud, 2001), research on the factors that hamper effective and successful e-learning pedagogy that are brought by the emergence of COVID-19 at formerly black universities in SA is relatively low. Research on e-learning globally has largely been concerned with its advantages in aiding teaching and learning (c.f. Uziak and Oladiran, 2012; Alshammari, Ali and Rosli, 2016) but the problems and challenges that e-learning brings with it, particularly to institutions that are not well resourced, are often overlooked. The findings in most of these studies are pro e-learning pedagogy. However, the reality is that some of the institutions are not capacitated and consistent enough with what is required by e-learning as a form of pedagogy to function successfully due to a myriad of reasons, most of which are discussed in this article.

To identify, unpack and understand some of the challenges COVID-19 poses in some SA institutions of higher learning (particularly impoverished ones) with regards to e-learning as a

pedagogy, it is necessary to develop a nuanced analysis of these factors in context. As impressive as this e-learning as a pedagogy is, it is disheartening to observe that some institutions are still struggling to reap its reward. In fact, most if not all, of the historically white institutions in SA are adequately equipped to realise this era of technology in education without a hassle. Therefore, it was felt appropriate and relevant for this research to focus primarily on a historically (i.e. impoverished) black institution in SA so that the picture regarding e-learning pedagogy under the COVID-19 situation in SA can be observed and scrutinised objectively. Thus, this article explores, identifies and analyses the factors that hamper e-learning in a formerly black university due to COVID-19 and proposes remedial interventions against the situation in higher education in SA. The article's aim was accompanied by a research objective, which set out:

- To explore, identify and analyse the factors that impact negatively on the effective implementation of e-learning as a pedagogy in an academic institution in one of the provinces of SA.

Whilst a number of studies were carried out on e-learning in HEIs around the world, very few were carried out in SA and Sub Saharan Africa (Matariano and Jere, Sibanda & Panicker, 2021:61). In lieu of this, the present article examines the impact of COVID-19 on students' teaching and learning and further identifies the factors that impact on teaching and learning due to the emergence of COVID-19. In addition, the SA government vehemently announced that even though the country like the rest of the world was in a state of crisis because of COVID-19 in institutions of higher learning, 'no student should be left behind' when embarking on e-learning. This mantra has been embraced by many institutions in SA. For this reason, factors that hamper a successful e-learning pedagogy should be fully investigated, understood and addressed. It should be noted that the factors are only on the selected institution in a specific geographical area. In order to realise its aim, the article will endeavour to answer the following question:

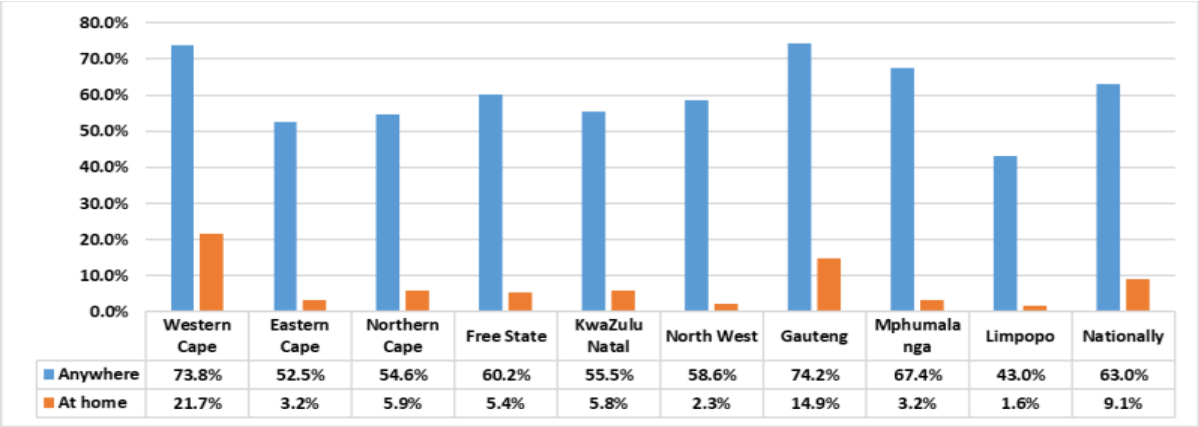
- What are the factors that impact negatively on the effective implementation of e-learning as a pedagogy in an academic institution in one of the provinces of SA?

Literature Review

Though the benefits of using technology in education as a form of new pedagogy (which is 4IR compliant) have long been acknowledged (Hakim, 2020; Moonsamy & Govender, 2018, Uziak, Oladiran, Lowrencowicz & Becker, 2018; Mohammed & Shafeeq, 2014; Bradford, Porciello, Balkon & Backus, 2007), however, a widespread view persists that this seems to advocate the idea that all institutions of higher learning in SA are all well and adequately resourced to implement this form of pedagogy successfully. Kekana and Mogoboya (2021) identify this view as one of the fallacies that have not been adequately interrogated and challenged, particularly when it comes to impoverished institutions like the ones in Limpopo Province. Su, Tzeng and Hu (2016) also affirm that this view is problematic. The implementation of e-learning in SA as handled by the government (particularly Department of Higher Education), is done with no thorough consideration of how this new form of pedagogy introduces a new layer of complexities and challenges in terms of pedagogy. In South African literature, the foregoing view is also seem gaining notable traction (see, Matarirano, Jere, Sibanda, & Panicker, 2021; UNESCO, 2006; Moonsamy & Govender, 2018; Nkonki & Ntlabathi, 2016).

The idea that all academic institutions, irrespective of their situation and background, will implement this 4IR orientated pedagogy, it would seem, was not well thought-out and this is also reflected by the below graph regarding internet access in households in SA.

Table 2.1 Proportion of households with access to the Internet



	Western Cape	Eastern Cape	Northern Cape	Free State	KwaZulu Natal	North West	Gauteng	Mphumalanga	Limpopo	Nationally
Anywhere	73.8%	52.5%	54.6%	60.2%	55.5%	58.6%	74.2%	67.4%	43.0%	63.0%
At home	21.7%	3.2%	5.9%	5.4%	5.8%	2.3%	14.9%	3.2%	1.6%	9.1%

Source: StatsSA GHS, 2019

The above figure shows that at the Provincial level, Gauteng was the province with the highest proportion of households with access to the Internet at 74.2%, followed by the Western Cape at 73.8%. The province with the lowest access to the Internet was Limpopo at 43.0% and this

is according to the report by StatsSA GHS 2019 (ICASA, 2021:13). The institution of higher learning selected for this study is in the Limpopo Province. If the province has such a statistic when it comes to internet access and use, how then can e-learning pedagogy be successful without drastic intervention by government (in particular, the Department of Higher Education and other related stakeholders)?

The rationale for integrating technology into teaching and learning lies in the novelty offered by technology, a belief in its efficiency, and the economic benefits associated with its use (Salmon, 2005). It is clear that the identified positive spin-offs by various scholars regarding e-learning, the affordances and possibilities it brings, often cloud teaching and learning challenges that also come with it. In this regard, Patten, Sanchez and Tangney (2006) warn against naïve optimism in relation to their ability to enhance teaching, foster and drive learning.

A survey conducted in 2007 on the use of technology by teachers in the US indicated that though teachers used technology in classrooms, their use of technology was limited to administrative purposes rather than pedagogical tasks (Ottenbreit-Leftwich, Glazewski & Ertmer, 2010). In addition, research points out that technology has not been leveraged to its key resources to foster effective learning and teaching, because the major task of using technology by most teachers is still to search for the material, notify students to write assignments, and use drill and practice (Ertmer & Ottenbreit-Leftwich, 2010; Koc, 2013). This was evidenced by one lecturer who during deliberations with the researcher said the following:

> *'We only teach on Blackboard and post announcements to students, we also post assignments but tests are still venue based. It is a bit difficult to set a reliable test on Blackboard'.*

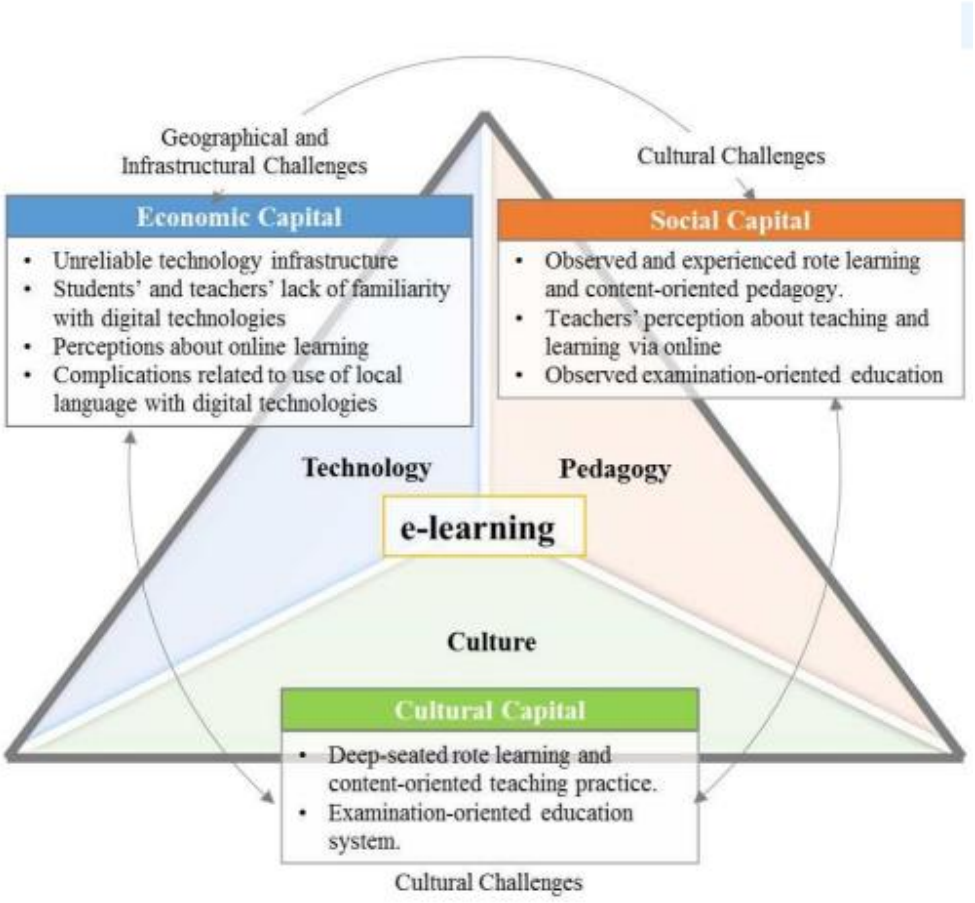
It is becoming a reality that today's effective teaching requires effective technology use. However, research suggests that we have yet not achieved high levels of effective technology use even in technologically advanced countries (Kozma, 2003; Mueller, Wood, Willoughby, Ross & Specht, 2008; Smeets, 2005; Tondeur, van Braak & Valcke, 2007). This is also the case in the Limpopo Province of SA where most individuals still lack basic computer literacy skills. Furthermore, technologies used in many parts of the world are incapable of facilitating student learning, as they simply support lecture-based instruction and do not enhance student-

centred pedagogy (Cuban, Kirkpatrick & Peck; 2001; Law-less & Pellegrino, 2007; Zemelman, Daniels & Hyde, 2005).

Still, numerous teachers view technology as a supplementary teaching tool, and not as an essential component of a successful teaching-learning process of our time, and some teachers even fear that online interaction between teachers and students replaces face-to-face interaction (Walker, 2004). Others do not have the motivation or time to become expert users of online systems and limit their use of innovative pedagogies.

All of the above can be best described by the Three Forms of Capital Model suggested by Adam (2016), as indicated below in Figure 2.2

Figure 2.2 Three Forms of Capital Model



The negative factors identified and classified by various scholars predominantly lean on the above mentioned model. Thus, this study found this model to be very relevant for grounding

purposes. The next section delineates the conceptual framework of the study and also highlight the lens through which the researchers engaged and analysed the data.

Theoretical Framework

Firstly, it has to be remembered that the study is an ethnographic research. According to Hesse-Leavy (2011), ethnographers are researchers who "go inside" stories through the 'hanging out' approach in order to provide "thick descriptions" about individuals' social context. Thus, this article used both Fosnot and Perry's (2013) Environmental Equivalence framework and Afrocentricity as propounded by Asante (1988) as its underpinning theoretical framework. The philosophy behind the Environmental Equivalence framework is that life evolved from the chemicals and substrates on early Earth and that complex inorganic and carbon-based chemicals coevolved with their environment; therefore, one cannot separate from the other any more than we can separate the construction of knowledge from its environment. This theory emphasises the importance of the idea of equivalence – the active interplay of the surround (environment), to evolution and to learning. The environment of an organism is composed of itself. Organisms create their environment and are created by their environment. Thus, the environment itself has about the equivalent power and influence as the biota and both communicate with each other in equilibrated and successful ways to keep the total system going (Krumbein and Dyer, 1985:150). This theory further argues that neither the organism nor learners are passive objects to their change. Accordingly, the time between the emergence of the chaotic environment that leads to bifurcations and novel structures and a preceding time of stasis is a transition zone (Perry & Kolb, 2003, 2004). Krumbein, Dyer Perry and Kolb's views are thus apt when one attempts to establish whether or not an external chaotic factor such as a pandemic (i.e., COVID-19) can have such an impact on the teaching and learning of students in their cultural context that is e-learning-based.

Secondly, to properly explore, examine, analyse and understand the impact of an external factor such as a 'global pandemic' on the teaching and learning of African students in particular, it is evident that this kind of a situation would need to be addressed from an African perspective. Therefore, an apt and relevant foundational theory in this regard would be Afrocentricity (Asante, 1988). In this theory, phenomena are viewed from the perspective of the African person (Asante, 1988: 171). The emphasis here is that for long lasting solutions, problems

afflicting African countries such as SA, can best be understood, illuminated and resolved from an African perspective, not Western or Asian, as is presently the norm (c.f. Madadzhe, 2019:208).

The next section delineates the issues and reasons that guided the collection of the data and their analysis. This research methodology section also serves as a prelude to the discussion of the data that follows thereafter.

Context of the Study

The choice of the site of a study resulted from combination of criteria including availability, accessibility and theoretical interest (Schwedt, 1997:140). This study was conducted at the University of Limpopo, Limpopo Province in SA. The researchers, in this study, are residents of Mankweng Village, popularly known as Turfloop and employees of the University. Therefore, the research subjects were accessible to them.

Research Design

The researchers have employed the qualitative approach as a research design to this investigation and this was mainly because data was collected mainly through interviews. This was relevant because this study focused on an in-depth investigation of a single unit (a relatively bounded phenomenon) in which the scholar's aim is to elucidate features of a larger class of similar phenomena (c.f. Gerring, 2004:341), and this is so because the study looked at the factors impacting negatively on the effective implementation of e-learning as pedagogy at a selected institution. This makes this study a case study.

A total of twenty two (14 females and 8 males) research subjects participated in this study (Six lecturers and sixteen students).

Table 5.1 Number of Research subjects interviewed and their gender

Research Subjects	**Number**	**Gender**		**Percent**
Lecturers	6	M	F	27.3%
		2	4	
Students	16	3	13	72.7%
Total	22			100%

They were all from the same university. All research subjects were randomly selected using convenience sampling. The assumption was that these research subjects would have reliable information since they were affected by the situation (e-learning as a result of COVID-19). The researchers knew the research subjects because the researchers are lecturers at the same university.

Data Collection and Analysis

According to Creswell (2014), the purpose of data analysis is to make sense of data. In other words, data analysis helps one to figure out what the data reveals. Data in this study was qualitative in nature and was analysed using principles from both interpretational analysis (c.f. Winegardener, 2001) and 'method of agreement' (c.f. Neuman 2000:428). According to Newman (ibid), the 'the method of agreement' focuses a researcher's attention on what is common across cases. Thus, the method of agreement focuses on the common causes across the cases and eventually brings out the common cause. In this study, various research respondents (i.e. tantamount to various cases) expressed different perspectives regarding the factors that impact negatively on effective e-learning as a form of pedagogy. The interviews were held through a phone (due to COVID-19 protocols at the time of data collection) and recorded. The data was then transcribed to identify recurring themes.

Data

The below selected data indicates some of the problems identified by the research respondents. Below are the verbatim responses to the above aspect:

Respondent 4 *"(Yes) 'Ja' yesterday my course disappeared from Blackboard and I am going to write a Test on the 4 of April and I might miss the Test. I told my lecture and he said he will tell the HOD about it and since it is taking forever ,'eish' I do not know what to do (Nna)"*
Respondent 5 *"…the system is not user friendly, some students register late and lecturers are not made aware that there is a student in a particular module…you only realise late when semester marks are needed then you run helter-skelter to teach and administer assessment as quickly as you can…"*
Respondent 8 *"I personally think is a good move, but you not resources and proper training. I mean you don't just train for three hours….. be excepted to become an expert of e-learning overnight."*

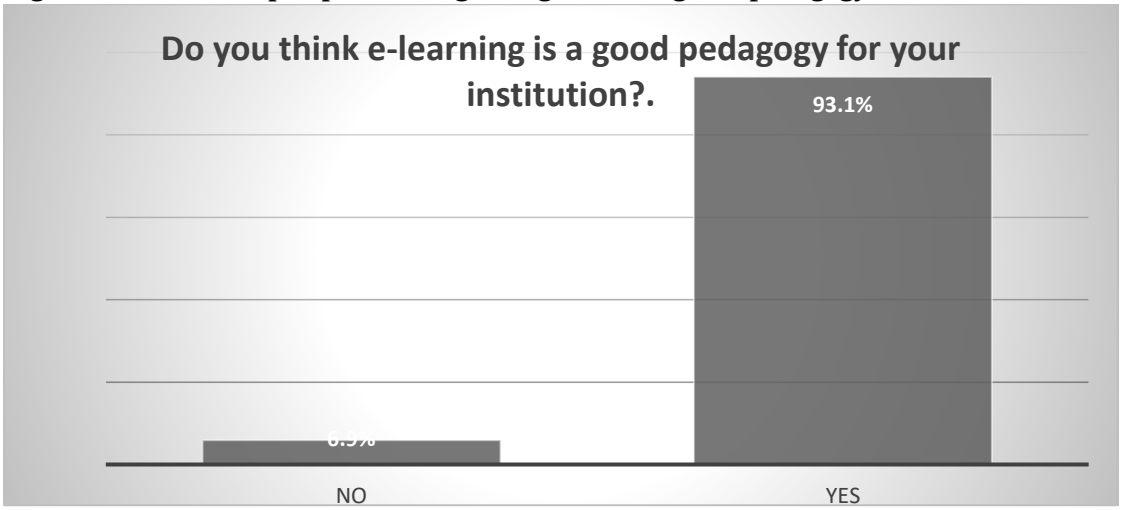
Respondent 9 *"You are left on your own…the chances are that examination question papers with questions that are meant for face-to-face will be given students to write…remember we should implement everything that is e-learning based."*
Respondent 10 *"…system overload that kicks students out of the session during a Test and this can also happen during examination time . The other problem is that South Africa is inundated with load shedding schedules from ESKOM and this create lot of problems for effective e-learning to take place because electricity has an impact on internet connectivity"*
Respondent 14 *"…take for example blind students, how do you get them teaching and learning materials that they are able to read online, you can't you simply need to get them hardcopy braille documents which is a problem according to COVID-19 protocols."*
Respondent 15 *"…you are only told that you must contact your school librarian and this person will help you. These people forget that we are too many and this librarians get overwhelmed. This is a problem"*
Respondent 19 *"I think University of Limpopo should provide us with systems like the J Router or Moodle which is being used by higher institutions like the University of South Africa. That system has all the marking tools to enable one to do his or her work perfectly. How am I supposed to mark online sir without the tools?..."*
Respondent 20 *"… for example sometimes students when they are many in an online session or lecture, students who login late sometimes struggle to log in perhaps to due system overload…this is a serious problem as far as e-learning is concerned."*
Respondent 21 *"The programme you are talking about will be very important. We need policemen who can write good English in this department because at the moment I think they are not too many."*
Respondent 22 "…online assessment credibility is questionable….we suspect that some of our students are out-sourcing our assignments…there is no way to monitor the situation because of lack of ICT resources"

A detailed discussion of these findings follows.

Results

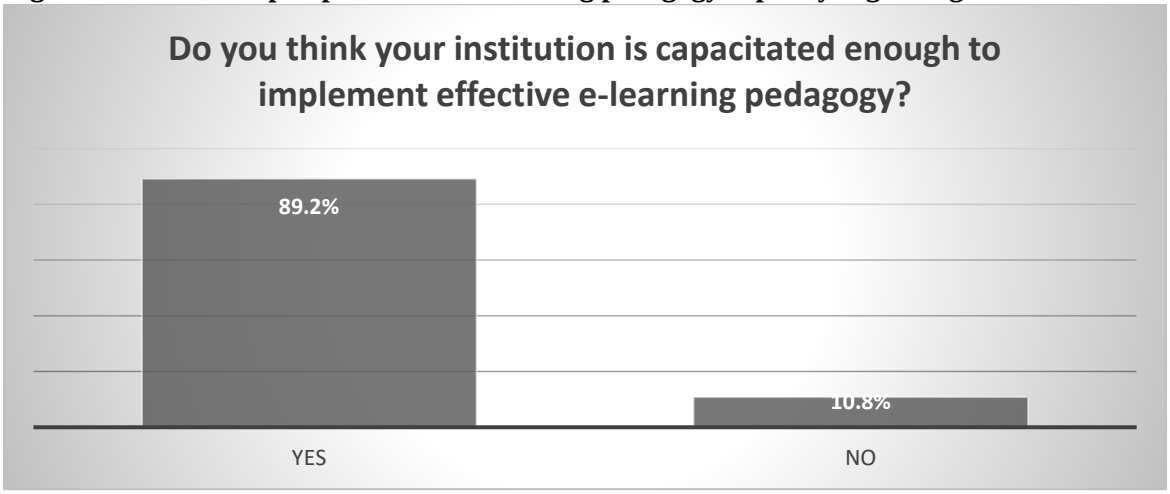
Research participants were asked if they thought e-learning as pedagogy is a good system to their institution, as it shown in Figure 7.1. The purpose of this question was to establish the extent to which they viewed e-learning as far as their institution is concerned. A significant number (93.1%) of them responded in the affirmative. The results are reflected in Figure 7.1 below:

Figure 7.1 Lecturers perspectives regarding e-learning as a pedagogy.



The very same research participants were asked if they thought their institution was capacitated adequately to implement effective e-learning as a pedagogy. This time around, a significant number of them (89.2%) responded in the negative. The results are reflected in Figure 7.2 below:

Figure 7.2 Lecturers perspectives on e-learning pedagogy capacity regarding the institution



The researchers were also interested in comparing the lecturers' answers to the same question to those of students. This was done to check if the students and the lecturers harbour the same views regarding their institution's capacity to implement an effective e-learning as a pedagogy during the COVID-19 pandemic. Surprisingly, a substantial (33.5%) number of students indicated that they thought their institution was capacitated enough to implement an effective and successful e-learning system as a pedagogy though a whopping 66.5% indicated that they

do not think the institution was ready to implement an effective and successful e-learning as a strategy of pedagogy. The results are reflected in Figure 7.3 and 7.4 below:

Figure 7.3 Students perspectives on e-learning pedagogy capacity regarding the institution

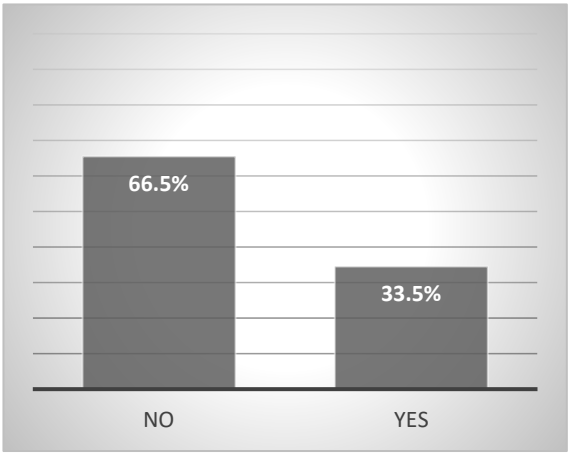
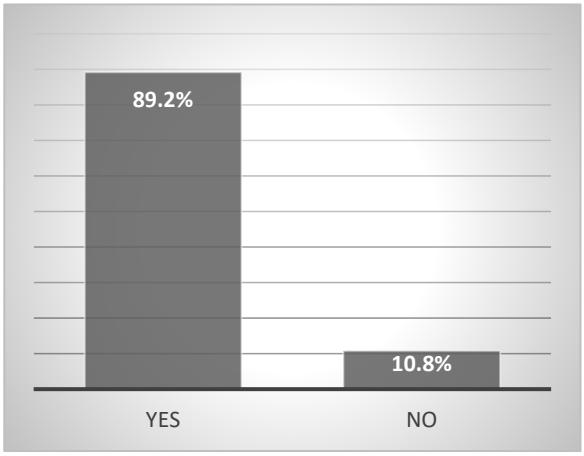
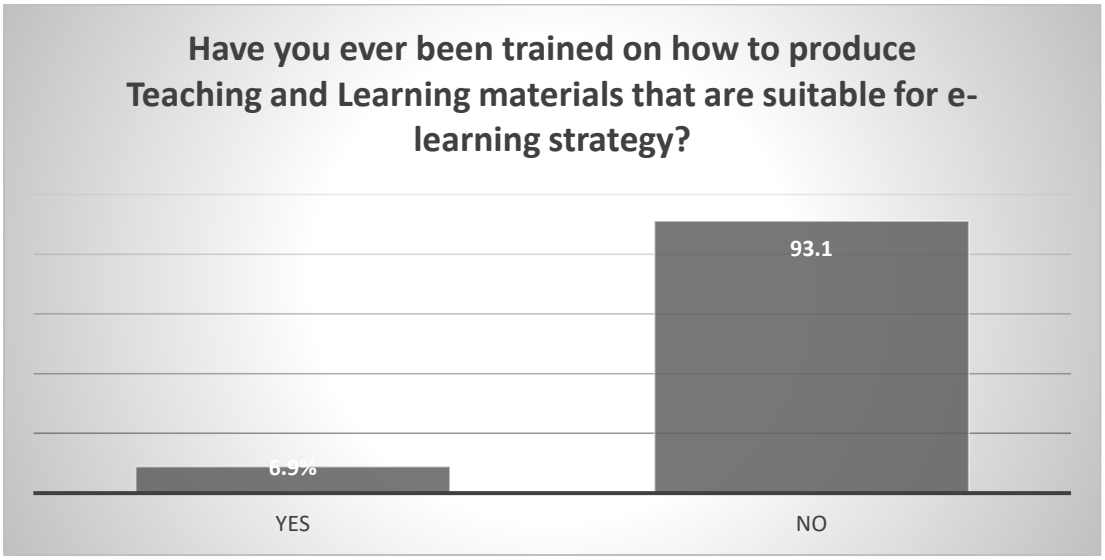


Figure 7.4 Lecturers perspectives on e-learning pedagogy capacity regarding the institution



Lecturers were also asked if they had been trained to produce Teaching and Learning Materials that tailored to an e-learning environment. A staggering 92.1% indicated that they had never been taught how to produce Teaching and Learning materials that are e-learning compliant. Figure 7.5 below indicates their answer to the question:

Figure 4.11 Lecturers perceptions on how to create relevant Teaching and Learning materials.



The Teaching and Learning at UL is silent regarding ICT issues at the institution and below is an extract (and the ONLY extract about ICT in the Teaching and Learning Policy: UL) from the Policy on page 8 where it talks about ICT:

The university encourages the use of ICT and library as a means to facilitate student access to and engagement in meaningful learning experiences. ICT and the library could be utilised in one or more of the following ways:

- *As a communication tool with and among students;*
- *As a means to facilitate learning through the integration of face-to-face teaching and ICT. This implies that some components of the learning process are facilitated through ICT, and other components are facilitated in the classroom. Modules/courses/programmes that employ such an approach are developed by lecturers in collaboration with the E-Learning Section of the Information, Communication Technology and Library Divisions of the university.*
- *For assessment of learning.*
- *For provision of access to information to support teaching and learning.*

The impact of COVID 19 on conventional teaching and learning calls for various institutional policy reviews, precisely Teaching and Learning policies. Teaching and Learning policies must be reviewed to address in detail ICT issues faced by each institution and be done in consonance with what COVID 19 protocols require so that e-learning teaching and learning can happen effectively and successfully.

Due to spatial limitations, the following compressed findings emerged from this study in response to the question, *what are the factors that impact negatively on the effective implementation of e-learning as a pedagogy in an academic institution in one of the provinces of SA*?

- Lack of internet connectivity

Students from the remote parts of Limpopo Province struggle with internet connectivity due to the fact that most part of the province (which is where most of the students reside) is yet to be developed. Shortage of electricity affects internet connection. Moreover, SA is faced with

serious problems of recurrent load shedding from ESKOM (i.e. what is normally referred to as Blackouts) and this affects e-learning negatively.

- Lack of motivation from students and Self-Regulated Learning (SRL)

Students in some parts of Limpopo have never been out of their villages either for leisure or any form of entertainment. Their only hope was to enjoy university infrastructure while studying and be motivated to study. Now, with the advent of COVID-19, which 'forced' institutions to resort to e-learning to avoid face-to face lectures, most students, particularly first entering students, are quite demotivated to study using computers on their own in their homes and this significantly affects the strategy of an institution to implement a successful and effective e-learning pedagogy. First entering students are mostly still fresh from high school and are still used to the system of having a teacher in front of them. (NB: COVID-19 started early in the year around March in 2020). These students were not yet adjusted to lectures at the university (face-to-face) when they got interrupted. Expecting them to perform well academically through e-learning as a pedagogy is just too much to ask from them. To begin with, they struggle to self-regulate their learning.

- Access to Teaching and Learning Materials and also lack of training

A significant number of students, particularly first entering students, have indicated that they have not been provided with training on how to get Teaching and Learning materials online, let alone how to learn through e-learning. They are only told '*Librarians will help them*' (c.f. 6.1). Librarians are sometimes overwhelmed by number of helps required by students.

- Lecturers inadequate knowledge about online learning or e-learning pedagogy and inadequate training

Lecturers have not been adequately trained on how to teach online. They only received short (i.e. one day, if not, half-day) training sessions from the institutions and these trainings are not adequate. This impacts how lecturers lecture and assess their students. Thus, the quality of teaching and learning is compromised significantly. Furthermore, it is evidenced in the data of this study that a significant number of lecturers in the institution who participated in this study are not trained to develop and produce teaching and learning materials that are tailored to e-learning and not the conventional teaching and learning materials that they are used to.

Discussion

The issue of a turnaround time as far as resolving ICT problems is also an issue that hampers effective e-learning. For example, the institution in this study has an ICT system where some problems can only be submitted by the HOD (Head of Department) through that system to the ICT before a technician can be assigned to resolve the problem. In other words, the student identifies the problem and reports it to the lecturer who then reports it to the course or module coordinator who then reports it to the programme coordinator before it reaches the HOD's office. Some students names on the class-lists appear twice with different names. Needless to say, this red-tape consumes too much time. Lecturers or even students should be given permission to the system to speed up the process of resolving ICT related issues.

The new students fresh from school are abruptly forced to navigate the mazes of the "new normal" of online learning in the form of e-learning. This cohort of students needs intensive student support and that is where units such as CAE (Centre for Academic Excellence) must play an important role. However, these units or centres are not capacitated enough. For example, Tutors are not well trained to help first year students online. The tutors themselves must be trained to offer their services online because this has a potential to aid the effectiveness of the e-learning system as a pedagogy. The new form of pedagogy is essentially a culture shock to them.

> *"According to an article on the daily vox, schools in peri-urban and rural areas account for 75% of the schooling system in SA. These schools predominantly serve impoverished black children,… and insufficiently resourced."(*Mokotedi, 2022)

Most of the first entering students in this study come from the above described situation. How then can they associate with e-learning when they come from such a background?

E-learning as a pedagogy requires very sophisticated technological tools for its effective and successful implementation. However, in this study, a significant number of the lecturers interviewed indicated, among other things, the challenge regarding assessment practices that were not consistent with e-learning as a pedagogy. They lamented that most students '*just copy and paste*' answers when they are given work and this seems to indicate that autonomous learning is quite a challenge to students, particularly the first entering ones.

Based on the findings discussed in this study, it becomes clear that this 4IR orientated pedagogy is a challenge in many African institutions where infrastructure is not yet adequate for this form of pedagogy. This study will contribute to the constellation of institutional impediments to the adoption of effective e-learning even beyond the COVID-19 era. Lastly, these factors should be addressed even post COVID-19 because of the ambition of many institutions like the one in this study towards 4IR.

Conclusion

The study concludes that e-learning as a pedagogy requires a lot of planning and adequate infrastructure capacity (including adequate human training). Furthermore, the study concludes that all the various factors that are identified in this study as hurdles to an effective and successful e-learning pedagogy should be addressed even at the level of policy. Thus, the institution where this study took place is encouraged to do more in its development of strategies to circumvent all these negative factors. Institutions should be adequately resourced if they hope to have a modicum of success in e-learning as a pedagogy.

Recommendations

The study makes the following recommendations as a means to alleviating or lessening the impact of these negative factors towards a successful and adequate e-learning pedagogy:

- Adequate training of lecturers on how to develop Teaching and Learning materials that are consistent with e-learning as a pedagogy;
- Provision or a clause in the Teaching and Learning Policy that should articulate clearly how e-learning should be implemented in an institution and what the requirements are;
- Adequate training of students on the overall workings of an e-learning pedagogy;
- An ICT division that is adequately resourced should be available at every institution of higher learning;
- E-learning pedagogy knowledge should be imparted to lecturers, and
- Adequate provision of technological resources (i.e. both to students and lecturers) should also be addressed.

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