

Digitalization of Teaching and Learning: Experiences and Opportunities in Selected Higher Learning Institutions in Zambia

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Abstract: The study was undertaken to analyze higher learning institutions' e-learning policies post COVID-19. A descriptive research design was used. The sample comprised 10 administrators and 15 lectures in 10 Universities, and 30 students who were randomly selected. Data was collected using questionnaires while analysis of data was done using SPSS to obtain descriptive statistics. The study revealed that Universities have e-learning policies in place and are prepared for digital teaching and learning. The study established that lecturers and students prefer traditional face-to-face learning to e-learning. Though e-learning has opportunities in the COVID-19 era such as time and cost effective, and enhancing learning to a larger crowd outside campus, it is expensive to many institutions of higher learning due to high costs of maintenance of equipment, software and training of staff on online teaching. In addition, learners also find it challenging to use e-learning platforms due to factors such as poor internet connectivity, electricity load shedding which results in prolonged power outage and expensive data bundles in Zambia. The study concludes that e-learning is the safest mode of teaching during this period of COVID-19 and that despite learners favoring the traditional face-to-face learning, they must adapt to e-learning. Therefore, the study recommends that institutions of higher learning create digital technologies at local level such as Personal Learning Network (PLN) and Virtual Learning Environments (VLE) which are cost effective and easy to setup.

Keywords: Digitalization, Teaching, Learning, Experiences, Opportunities, Institutions.

I. BACKGROUND

Over the last decade there has been an increasing interest in the use of technology, countries around the world have witnessed the drastic change and rapid development of technology. Governments, industries and educational institutions have all for example continued to promote innovation within its operations so as to become competitive in the global economy (Rossiter, 2006). In the midst of this revolution, the education system has evolved from traditional- 'learners in the classroom' to modern- 'learners away from classroom' learning systems. There has been an increase in the adoption of Information Communication Technology (ICTs) and E-learning technologies, and as a result, education institutions are on their toes in enhancing learning and

teaching through the system called digitalization or commonly known as e-learning (Ma, 2010).

The term digitalization from an academic perspective refers to the use of computers, mobile phones, software applications, internet and other type of technology to support learning practice (Kituyi, and Makerere, 2013). In simple terms it involves teaching and learning without any physical contact. This means all content is delivered through network technologies. In addition, it is about delivering courses through a connection via ICTs. With technological advances educational institutions worldwide have established policies and activities to support this kind of teaching and learning practice. Techniques and/or methods of learning have changed accordingly. Developed countries have fully optimized the use and benefits of ICTs, and for many years their education system does not require students to be stationed in one place to acquire knowledge (Kituyi, and Makerere, 2013). In the United States of America, for example, the use of technology in education broadened in the 1980s, with major investment in Information Technology (IT), and with effective and progressive educational policies there has been a massive shift from hardware infrastructure to software learning practices which supports flexible educational programmes which meet the needs of all students. As e-learning spread in Western countries, Europe, Germany, France, Italy, Japan, Nordic countries, the United States launched activities to connect learning institutions to communication networks, train teachers and develop software to meet pedagogical needs (Roumel and Salajan, 2014).

Similarly, developing countries embraced distance online platform which has triggered a shift from chalkboard education system to use of digital systems in teaching, learning and assessments. Even though digitalization of education system has been received with challenges in developing countries, efforts to embrace technological development can be seen with the mushrooming of Universities offering distance education. There have been reformations or changes in educational policies to promote ICT as a means equality in accessing education among other

things, for example in South Africa, e-learning was rolled out to all learning institutions immediately after attaining independence in 1994, with strict instructions to provide opportunities to all regardless of race or colour (Bagarukayo and Kalema, 2015). Further, South African Universities realized that they needed to compete globally, quickly the introduction of ICT in South African Universities was proposed and implemented, to date the South African education system is far much better than those in poorest countries, and as such the international ranking of its Universities outshines many other Africans.

However, in Zambia, e-learning is a new concept despite having Universities offering distance education as far back as in the 1960s. The integration of ICT in education was introduced recently. However, even though the country has a large population with digital immigrants, higher learning institutions have gone 'digital' in order to accommodate the teaching and learning system embraced by global Universities. With core aim to provide quality education, public and private institutions are now integrating ICT in education programmes even though the country lacks a national e-learning policy that embrace the digital system of teaching, learning and conducting assessments through the use of networking devices (Konayuma, 2015).

Digitalization system of learning and experiences globally

Having experienced technological advances and the growth of digitalization in education practice, higher learning institutions are using digitalization as a means to improve and expand education opportunities. This system plays a key role in promoting equitable access to education inclusive of disadvantaged learners; it gives recognition and promotes innovation (Staff, 2020). It also gives a learner better experiences, for instance, a learner may be free to express him or herself well, unlike a classroom arrangement coupled with fears of fellow classmates. Further, this system is advantageous in the sense that learners are now able to attend classes from various geographical locations. Moreover, the system enables learners to access online study materials by spending less money as compared to the traditional education system. In addition, the benefits of digitalization teaching and learning cannot be overemphasized, as they have also been extended to persons with disabilities, women and other vulnerable groups.

The same opportunity a student from Europe, America or Japan may have is the same as that of a Zambian student, for example all can access journals published by renowned scholars. However, universities differ in levels of institutional support, funding, and staffing. Developed countries have invested billions of dollars in ICT, hence, are far much better in terms of digitalization in the education system. It is noted in studies conducted in the UK, Germany and Malaysia that there are also limitations in teaching and learning even with technological advances in rich countries (Selvanathan et al, 2020). Though, third world countries have massive challenges

compared to them, notable ones include lack of e-learning policies, poor infrastructure, higher illiteracy levels, untrained staff among others, therefore even its effectiveness is questionable (Kunda, Chembe and Mukupa, 2018). This is one of the reason third world countries have struggled to adapt to the new normal of offering education through e-learning. Today the whole globe has been affected by the Coronavirus disease (COVID-19), which has caused a major disruption many sectors and education has not been exempted.

Statement of the Problem

During the Covid-19 era teaching and learning has been a common problem in Zambia. The problem has affected the delivery of education within expected or standard duration. This being as a result of continuous closure of higher institutions of learning in the first, second and third wave of Covid-19. Amidst these abrupt closures higher learning institutions need to find ways of ensuring that teaching and learning takes place within the stipulated course and programme schedule. Especially, with the anticipation of the fourth wave of Covid-19 institutional preparedness in the delivery of education is inevitable. Digitalization of teaching and learning is therefore, a key resource in addressing problems related to lesson delivery as it is the fastest way of interaction. Digitalization also improves the skills of lecturers and students; it offers access to higher education, and it boosts digital equity among students (Staff, 2020). However, despite digital learning having a number of benefits what is not known are the experiences and opportunities of digital teaching and learning in selected higher learning institutions in Zambia. It is for this reason that the study was conducted to analyze digitalization of teaching and learning as regards to experiences and opportunities in selected higher learning institutions in Zambia post Covid-19 era.

Objectives of the Study

- i. To analyse higher learning institutions' e-learning policies post COVID-19 era.
- ii. To investigate the institutions preparedness of digital teaching and learning during COVID-19 pandemic.
- iii. To explore lecturers' and students' experiences and opportunities with e-learning in higher learning institutions.

Research Questions

What are the higher learning institutions' e-learning policies post COVID-19 era?

How prepared are institutions for digital teaching and learning during COVID-19 pandemic?

What are the lecturers' and students' experiences and opportunities with e-learning in higher learning institutions?

Theoretical Framework

The study is tied to the Connectivism and Bloom's Taxonomy theories of learning. Connectivism provides a useful lens for

teaching and learning using digital technologies to better the understanding of students and management of educational systems (Goldie, 2016). The Bloom's Taxonomy developed by Benjamin Bloom in 1956 is also prevalently employed in the discipline of Instructional System Design (ISD) and has much room to be explored in the e-learning environment (Malissa et al, 2019).

Despite the existing criticism for further development and testing of the Connectivism theory, the theory views learning as a network phenomenon influenced by technology and socialization (Siemens, 2006). It also provides for diversity, autonomy, openness and connectivity as key principles in minimizing the challenges of employing traditional learning in modern day age (Downes, 2007).

According to the Connectivism theory, learning and knowledge rest in the diversity of opinion. This is very important as technological devices ensure that students and lecturers interact and share different opinions or views with regards to the subject matter. Therefore, this helps to expand perspective as an individual student gains a broader view on a particular subject or content. Connectivism theorists believe that learning environments are created through technological moods such as student WhatsApp, Facebook, Zoom or any groups formed using digital medium. In addition, these technological environments provide platforms to exchange information, images and videos that facilitate learning (Milligan, 2006, Downes, 2007).

However, in Zambia, higher learning institutions such as the University of Zambia (Institute of Distance Education) highly utilize *Astria*, WhatsApp and email platforms to share information. Specifically, the *Astria* e-learning platform is used to process payments, access course modules, transcripts, submission of assignments and presentations. This certainly shows that the Connectivism theory has a practical position as interactions and sharing of knowledge is indeed aided by digital or technological devices.

The Connectivism theory is also especially important because it promotes autonomy as the student develops the ability to research and inquire for new knowledge which is possible through technological modes such as Google, and various research engines and/or sites. This is an advantage for learners especially those who are self-motivated, self-driven and goal oriented as technology makes the work easy because one does not entirely depend on the information given by the lecturer but supplement information from various technological sources. Furthermore, this openness in Connectivism entails that through these interactions' students become aware of their weak thoughts and opinions and make objective and more rational adjustments in knowledge procession (Milligan, 2006).

Malissa et al (2019) argue that the utilization of Bloom's Taxonomy to assess students' learning in a traditional environment is ubiquitous; however, it has much room for exploration in the e-learning environments. Bloom looks at

three domains of learning cognitive, affective and psychomotor. Each domain constitutes different levels of learning and that higher order learning require learning levels under the cognitive domain which include; application, analysis, synthesis, comprehension, knowledge and evaluation to be evidently utilized and integrated as part of learning outcomes or objectives. These levels of learning in the cognitive domain can be systematically executed through the incorporation of technology (Malissa, et al, 2019, Bloom, 1956).

The Bloom's Taxonomy is very significant for the study because it amplifies on the assessment and evaluation of students in e-learning environments. This is why instructional designers worldwide use technology and Bloom's Taxonomy to define the required cognition level as well as to map the content type or multimedia enablement of an e-learning course (Malissa, et al, 2019). Therefore, the Bloom's Taxonomy favors the use of technology in modern day learning. This is so important in that students are enabled to enjoy their learning experiences as challenges that are persistent in traditional educational setting are minimized. Despite the very fact that technology bears its own limitations Goldie (2016) argues that modern society, with its rapid scientific and technological advances, has seen an exponential rise in accessible knowledge and continuously changing and emerging technologies and that previous ways of navigating information are likely to prove ineffective in these new contexts.

II. LITERATURE REVIEW

Defining Digitalization

Digitalization is transforming the world in almost every aspect of life. The access to internet, increase of people using mobile phones, social media and other ICT services have changed the way people interact, communicate, learn and work in many countries including Zambia (Laura Schelenz, 2018); (Parviainen, et al. 2017). Digitalization means the integration of digital technologies into everyday life at processes, organizational, business and other society domains. In the education sector however, digitalization focuses on the adoption and the use of digital technology by teachers to deliver their lessons and to interact with students (Parviainen, et al. 2017). On the other hand, Schurgers, et al. (2009) define electronic learning (e-learning) as the educational use of Information Communication Technologies (ICT), where technology is used to support the learning process.

E-Learning is a shift in teaching and learning and the rapid development in modern technology have spread the belief that education can be transmitted from the classroom and books to the electronic world with little adaptation (Zhang and Nunamaker, 2003). This method of teaching provides lecturers with the tools to encourage students to expand their horizons through access to the internet and digital technology. The process gives students the opportunity to interact and engage each other and sharing learning experiences.

In Zambia institutions such the University of Zambia (Institute of Distance of Education) and Rusangu University have adopted digital teaching and learning, as they use *Astria*, an e-learning platform used to process payments, access course modules, transcripts, submission of assignments and presentations.

The need for digital teaching and learning

The need for digital teaching and learning is very vital in the 'new normal'. The importance of digital teaching and learning cannot be overemphasized in that lecturers' efficiency can be increased by using digital equipment and digital resources to prepare for teaching. Similarly, digital tools and resources enable lecturers to do their job better in relation grade assessments and for professional development. Further, other benefits of digital teaching and learning include presenting a lesson to a wider audience such as in another school or another class within a school simultaneously; and helping learners who are off site to attend lessons (Hargis and Wilcox, 2008).

Furthermore, there is evidence according to Blackwell (2013) that digital learning can, where effectively used, build skills valued by employers: interactivity, collaboration, critical thinking and leadership of learners. Complimentary, Agomuo (2007) argues that e-learning or digital has the potential to enhance teaching and learning at every level and that for education programmes to meet the global standard and its recipients must to be made competitive lecturers and students must acquire the competencies and skills for today and tomorrow and this can be made possible through e-learning.

Types of digital platforms in higher learning institutions

Traditional teaching modalities are limiting. However though relevant, new developments in institutions of higher learning, such as the introduction of ICT, a new world of opportunities is available to further assist both the lecturer and student maximize learning experiences (Schurgers, et al. 2009). E-learning is advantageous in that it creates interests among students and promoting self-centered and self-directed learning especially during this time when physical or social distancing is most emphasized.

There are various types of digital technologies that are used in the teaching and learning processes in institutions of higher learning. These include Skype, YouTube, Facebook (live), WhatsApp, Twitter, Tik Tok and emails among others. However, it is important to note that these are Software Applications (Apps) which are designed to operate on mobile devices such as computers, smartphones and tablet computers. Further, the Web 2.0 also known as the second generation of the World Wide Web (www) includes features and functionality that were not available before, for example, podcasts, blogs, wikis, RSS (Rich Site Summary- used for updating regularly changing web content), social networking and tagging.

Conversely, at local levels such as in the school environment, home or classroom digital platforms can also be created. This type of digital technology is cheaper and easy to setup. There are various types of digital technologies at local level. These include but not limited to the following:

- i. *Bring your own device (BOYD)*, This enables learners to bring their own technology into the classroom for use as part of the learning activity. For example, learning is done using mobile phones to browse the internet as part of research;
- ii. *E-portfolios* enable both learners and teachers to create an electronic catalogue of work that tracks their learning journey. This is usually online and often uses multimedia files. For example, student portfolio of the assignment is presented online through an e-portfolio. This includes scans, photographs and narrated videos of their works.
- iii. *Flipped classrooms*, this means learners discover new content before the lesson from online videos or resources and then apply this knowledge in more personalized work in the classroom or online through Personal Learning Network (PLN) , for example, learners watch a video at home about the assignment. In class they work in groups to collaboratively finish the work.
- iv. *Personal Learning Network (PLN)* is an individual's loose collection of links with other people or resources. The aim of such a network is to facilitate an exchange of ideas that supports learning.
- v. *Virtual Learning Environments (VLE)* is an e-learning education system that is web-based, but modelled on conventional face-to-face education. It provides access to courses, course content, assessments, homework, links to external resources etc.

Lecturer's and student's experiences with ICT

Some students find the use of ICT easy while it is challenging to others. For instance, in a study conducted by Schurgers, et al. (2009: 120) one of the participants indicated that:

It was amazing how we could have a discussion with people from all over the world at the same time. Although we could not see all the images shown, it was great to learn from it. Interacting with other students made me realize how much I don't know. I guess this will make me a better student. I want more and more of it.

In addition, in the same study another student appreciated ICT by indicating that:

This was the first time I did an ICT trial and I thought it was going to be a complicated procedure.

However, the process was user friendly and the instructions were clear and self-explanatory... I learnt a lot from fellow students. It is my fervent desire that E-learning be made a continuous way of interactive learning at School of Medicine.

Nevertheless, some students' experiences with ICT are a nightmare due to many factors. For instance, some students do not have computers or smart phones, while others do know how to operate computers. Similarly, for those own computers face challenges such poor internet connectivity in many higher learning institutions in Zambia. As opposed to these who do not depend on such public internet connectivity buying data bundle is also expensive hence they will still have challenges in learning for a long time via ICT.

Students from rural areas who pursue their education via the distance arrangements also have various experiences in that in many rural areas in Zambia there is no internet connectivity and electricity. This makes it difficult for them to appreciate e-learning and distance education and favor the traditional face to face learning (Chikopela, et al. 2021).

Just like students have different experiences with ICT, lecturers too have different experiences. For instance, many higher learning institutions in Zambia lecturers enjoy the privilege and comfort of internet connectivity in their offices and conference halls but Schurgers, et al. (2009) argues that most lecturers are connected to the internet with variable accessibility and speed of connectivity due to technical complications. In addition, lecturers without initial training on how to use technology tend to feel unprepared in how to use it effectively in their teaching practices. Moreover, this takes away their confidence and fails to teach effectively (Blackwall, 2013).

Higher education e-learning policies

Sausen (2020) indicates that:

In 2013, the African Union (AU) founded the SMART Africa initiative, which aims to achieve socio-economic development through ICT's (Information and Communications Technology). It involves the strengthening of broadband connections and the implementation of e-government features. These include electronic services for citizens, electronic IDs, unified communication and a cloud-based infrastructure through a digital government platform. The member states also commit to promote and fund e-applications, e-education, e-health, e-tourism, e-agriculture and e-commerce.

With the above initiative many universities and other institutions of higher learning in many countries drew policies governing their education in light of e-learning. However, in many other countries, many institutions of higher learning have had e-learning policies guiding their provision of education before this initiative. What is not known is the e-learning policies post COVID-19. Therefore, this study is undertaken to analyze higher learning institutions' e-learning

policies post COVID-19; to establish the institutions preparedness of digital teaching and learning; to explore lecturers' and students' experiences with E-learning in higher learning institutions.

III. METHODOLOGY

Research design

A descriptive research design was used. It is a scientific method which involves observing and describing the behavior of subjects without influencing them in any way (Martyn, 2008). This design was used in order to obtain general overview of digital teaching and learning in higher learning institutions.

Study population

The study constituted administrators, lecturers and students in ten higher learning institutions.

Study sample and sampling techniques

The study sample comprised 10 administrators, 15 lectures and 25 Students. Simple random sampling was used to select participants as they all had an equal chance of being selected to be part of the study.

Data collection instruments

Semi-structured questionnaires were used to collect data from both lectures and students. A questionnaire was used because it enabled the researchers to reach a measure of objectivity, validity and reliability.

Data analysis

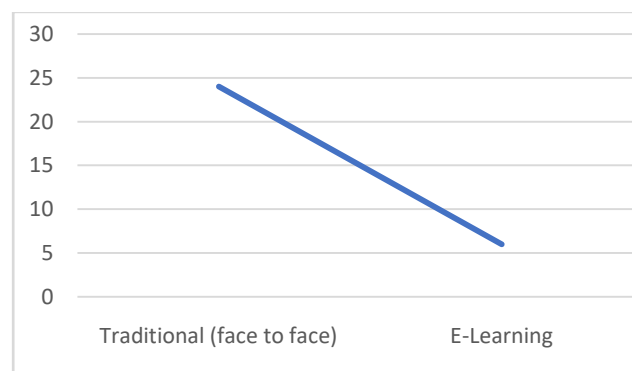
Quantitative methods of data analysis were employed. To be specific, data was analyzed using SPSS to obtain descriptive statistics.

IV. FINDINGS

Preference between traditional (face to face) learning and E-learning

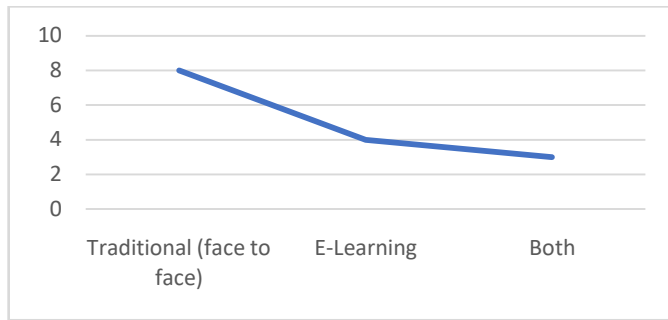
To establish which mode of learning was preferred, students and lecturers were asked to tick either traditional or E-learning. Findings were that 24 students preferred traditional face to face learning, 6 students opted for E-learning. As illustrated in figure 4.1.1

Figure 4.1.1 Students Preference



On the one hand, 8 Lecturers preferred traditional face to face learning, 4 opted for E-learning while 3 indicated both traditional and E-learning. As illustrated in figure 4.1.2

Figure 4.1.2 Lecturer's Preference



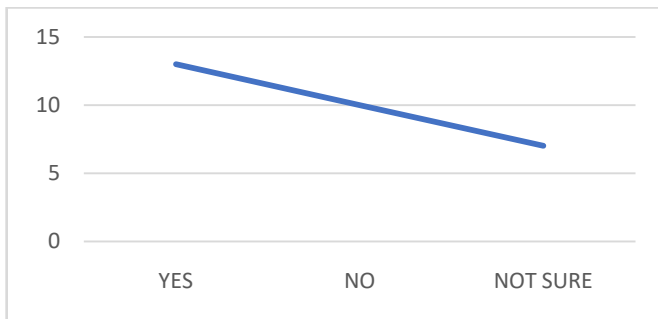
L5, "the current affairs on e-learning management by universities is poorly managed, imagine even as a lecturer I have no access to proper technology, I would rather have my students in class, it gives me fulfillment and students appreciate it... I feel as Zambians we are still far from having a great e-learning system.

L1: "As a university we encourage students to utilize the use of technology, I lecture distance students who come from various districts around the country. The submission of all assignments is done online, that's what we encourage but we encounter challenges of which some assignments are not received in good time, when I enquire feedback is network challenges especially those in the rural areas. Others it's even worse they have to cross rivers to access internet, like two of my students who are in remote areas.

Awareness/ Knowledge of E-Learning Policy

Respondents provided the following responses on the knowledge of e-learning policy followed by their learning institutions. 13 students indicated Yes, whereas 10 indicated No and 7 were Not Sure about the e-learning policy followed by their institution. The knowledge of E-learning by Students is illustrated further in figure 4.2.1.

Figure 4.2.1 Student's Knowledge of E-Learning Policy

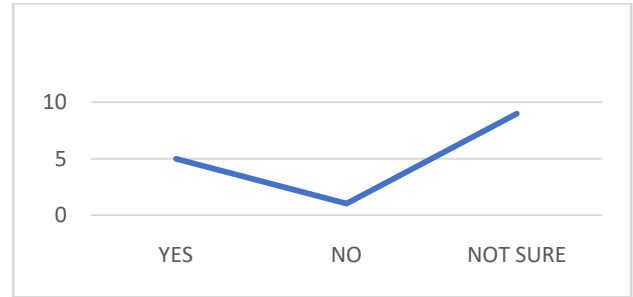


Responses indicate not much has been shared about e-learning 'policy documents', hence, leaving a gap to this knowledge. 'S4 "I have never come across any document about e-learning, all I know is that at least distance students use

technology, for us full-time students we are more on the traditional way of learning.

On the other hand, responses by Lecturers were as follows; 5 indicated Yes, 1 indicated No, and 9 were Not Sure about the e-learning policy followed by their learning institution. as shown in the figure below.

Figure 4.2.2 Lecturer's Knowledge of E-Learning Policy



It can be noted that majority of lecturers also had little or no information about e-learning policy, indicating that administrators share little with them. L3 "Not much has been availed to us about the current affairs of e-learning at the university, anyone you ask here will testify that it's just mentioned in passing (lack of a better term to use), worse, the infrastructure itself may not support the e-learning system. I am not against it all we want is proper management of it. In times of calamities, like it is now during Covid-19, we could have been utilizing it and no disruptions of lessons could have taken place.

However, Administrators provided a number of responses on the e-learning policy employed by their learning institutions prior to Covid-19. For example, A1 stated that; prior to Covid-19 the University policy was that all reference materials had to be uploaded on student's portal for students to access remotely. A2 the institution works under the policy of providing a virtual learning environment that allows the freedom to participate in class whenever and where ever you choose. A3 stated the use of 2016 policy of distance learning which provides for the use of Astria E-learning platform- a platform that makes it possible for students to access student portal, study materials, make payments and check results at their convenience a situation which was actually in practice even before the outbreak of Covid-19. A4. Also mentioned that their institution has an e-learning policy framework under distance learning which has been in place long before Covid 19.

Further on the policy the Administrators were asked if there was a difference to the e-learning policy before covid-19 times to the present covid-19 era. Of the 15 Administrators 13 indicated there was no difference of post e-learning policy from the previous one. However, A1 indicated there was a difference. In that the University adopted virtual classes to substitute physical classes for certain programmes this was in addition to the study electronic materials uploaded on the student's portal. A14 also indicated that the difference in

policy during Covid-19 times has paved way for the gradual implementation of online classes through digital platforms such as Zoom and formation of WhatsApp groups for purpose of communication, allocation of duties and making of tutorial presentations.

Experience with E-learning

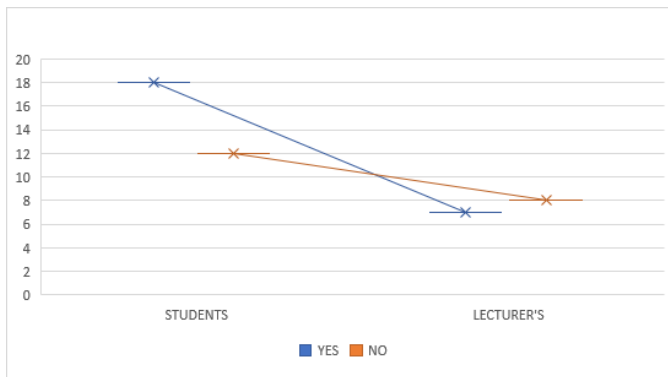
A number of responses were provided on the experiences that students and Lecturers had with the E-Learning. L1 “there no consistence and many students struggle in having access to the internet. L2 also maintained that; e-learning is good except that it should work alongside the traditional mode of teaching and learning. L3 added a similar view that; e-learning is good though we are not yet at a level where it can work independently.

On the other hand, students also provided that e-learning despite its advantages comes with a number of challenges which makes face to face learning a most preferred mode of learning as it caters for different students with or without electronic devices. S1 mentioned that *it is hard for students to understand. As much as my institution is trying its best to adapt to new normal the current status of network (internet connection in my country is quite bad hence making me not to be consistent with online learning.* S2 also stated that *it has not been a good experience. Challenging due to slow internet network. S7 Its draining in that classes are longer than face to face. It’s always good to have social interactions with lecturers. In this case one has no relationship and sometimes it’s hard to contribute and ask questions. Adding also that e-learning becomes a bit boring too.* S15 mentioned that; *in rural areas like Chinsali awemwandi its bad personally I missed a lot of lectures and important announcements during online lessons. S10 it is not as effective as they say it is. In as much as it helps to safeguard us from Covid-19 it has a lot of setbacks such as poor network.*

Appreciation of E-Learning Services

On the appreciation of e-learning services in the selected institutions. 18 students and 7 Lecturers indicated Yes, whereas 8 Lecturers and 12 students said No to whether they appreciated the E-Learning Services in their learning institution.as shown in figure 4.4.1

Figure 4.4.1



Opportunities in e-learning

All the students that participated in the study indicated that there were a lot of opportunities in e-learning during the Covid-19 era. S4 said that: *E-learning has made it possible for us to attend courses as one group in compulsory school courses that have a lot of students and end up being divided due to insufficient space in the lecture rooms. We are all able to interact with the lecturer as one group and this saves time.* S21 said: *Online learning is cost effective because I do not need to travel to the university to attend class instead, I have to learn from my home environment and save the money that was meant for transport on bundles which do not cost as high as transport fee.* S11 said: *I have a chance to catch up on the class when I miss once it is uploaded on the portal unlike the traditional way of learning where once you miss you have to rely on fellow students to help with notes and explanations on what they learnt.*

Suggestions on having a great e-learning system

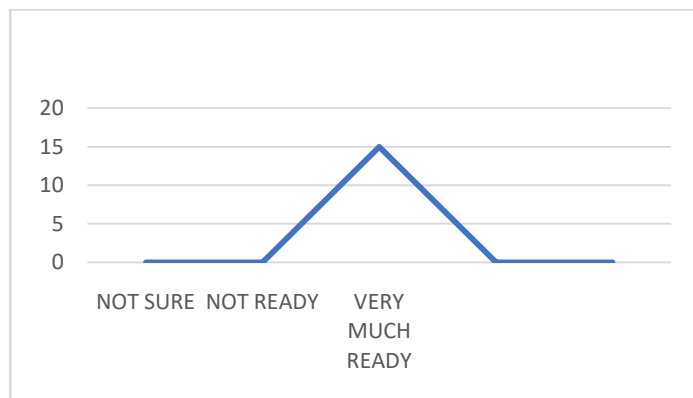
To change the current state of e-learning system, respondents shared opinions: L1 *Students should be able to access free internet service everywhere if the teaching and learning process is to become successful. If E-learning is to be successful, the institution should ensure a compulsory roll-out of electronic gadgets like mobile phones or tablets to all its students be it for cash or on pay slow so that no one is left behind. Secondly on campus Edurom should not be giving intermittent service connectivity as has been the case. Thirdly, the institution should designate an office for ICT free consultation services to computer illiterate individuals.* L5 *E-learning is a safer mode of learning during the Covid-19 era and the University and other Higher learning institutions should work at the successful implementation of virtual classes.* L6: *Administrators should share their plans to us, it is unfortunate that they assume we know everything, its only through knowledge sharing that together we shall succeed together. I would love to see both students and lecturers appreciate the system, we know change is a process but eventually we shall all adapt.*

S1 *“The effectiveness/efficiency of e-learning should begin with the university; proper e-learning infrastructure should be established. For example, they should improve the network system within campus, it’s frustrating to use a slow network. They can also do it in phases, maybe establish a powerful e-library. It is advantageous to us who are not in districts where the university is established, even those within may not have to visit campus physically to access a book.*

Preparedness in implementation of the e-learning system during Covid-19 era

On how prepared the learning institutions were to implementing the e-learning during the Covid-19 era. The responses were that all the 15 administrators indicated that the universities under study were all very much ready to implementation of e-learning. As shown in the figure below;

Figure 4.6.1 Preparedness in the Implementation of E-Learning



V. DISCUSSION

Preference between traditional (face to face) learning and E-learning

On the above subject theme, it was established that the majority of both students and lecturers involved in the study prefer traditional face to face learning to e-learning. This is in agreement with Nyemba and Zulu (2020) who indicate that lack of necessary ICT skills and the specific training needed to be able to use ICTs appropriately in the classroom among lecturers, teachers and students makes them not ready for e-learning.

However, some lecturers prefer both modes of learning. This could be attributed to the fact that some lecturers as well as students lack computer knowledge, others lack access to computer devices and tools. A few that maintained e-learning would be possibly coming from advantaged circumstances in terms of having computer knowledge and digital devices. The cost of living during the Covid-19 pandemic has gone up and most students are unable to afford most technological devices as business and sources of income have been limited. In addition, the current state of affairs even for students under government sponsorship are having a challenge as funds are only tied to tuition fees making a section of vulnerable students disadvantaged in having the much-needed digital resources.

Additionally, the preference of both modes of learning by some lecturers is also attributed to factors such as technological faults for example dysfunction mic or mouth piece during a zoom learning session, background disturbances and the fact that ICT has not been considered as a compulsory but optional subject in primary and secondary levels of learning this makes students and lecturers to progress to higher levels of education with so much difficulties in computer knowledge. Hence some technological faults are emanating from lack of computer knowledge. Meaning having both modes of learning will help to compensate on the time that would be lost in an event that only the digital learning was utilized. Agreeing with the reasoning of L3, Zambia is not yet at the level where e-learning stands on its own but it can successfully work if both modes of learning are utilized.

Furthermore, maintaining both modes of learning amidst covid-19 could also be attributed to loss of network during online lessons due to weather conditions such as rainfall as well as the national crisis of load shedding. Load shedding is especially a disadvantage to those students with laptops and devices that work while plugged to power or with low battery capacity. This means such students are definitely limited in accessing digital learning experiences.

The findings on the use of both traditional and e-learning are in line with the blooms taxonomy which support the use of technology in traditional face to face learning as application, analysis, comprehension, knowledge and evaluation are successfully aided with the use of digital resources. Again, findings by L1 agree with the Connectivism theory in that technology in deed makes it possible for lecturers and students to have academic interactions and feedback. These findings are also similar to arguments by Agomuo (2007) and Hargis Willox (2008) discussed in literature review earlier.

Awareness/ Knowledge of Institution's E-Learning Policy

As with regards to knowing of their institution's e-learning policy; some students had the knowledge of the policy, others were not aware, and while other students were not SURE aware of the policy. The study revealed that most students indicated yes to knowing the e-learning policy followed by their institution. The study also revealed that despite having most students indicate yes, the 10 students that said No and 7 students that indicated not sure shows that majority of the students that were involved in the study had no knowledge of the e-learning policy followed by the university.

The findings also show that majority of the lecturers were not sure about the e-learning policy by their respective institutions. Administrators also provided a number of responses on the e-learning policy employed by their learning institutions prior to COVID-19. For example, A2 stated that; *the institution works under the policy of providing a virtual learning environment that allows the freedom to participate in class whenever and where ever you choose*. In addition, another participant A4 also mentioned that their institution has an e-learning policy framework under distance learning which has been in place long before COVID-19.

The above findings are consistent with Sausen (2020) who indicate that many universities and other institutions of higher learning in many countries (in Africa) drew policies governing their education in light of e-learning. However, in many other countries, many institutions of higher learning have had e-learning policies guiding their provision of education even before the *African Union (AU) founded the SMART Africa initiative in 2013, which aimed to achieve socio-economic development through ICT's (Information and Communications Technology)*.

Further on the e-learning policy the study revealed that majority of administrators pointed that there was no difference of post e-learning policy from the one employed before

COVID-19. However, A1 indicated there was a difference in that the University adopted virtual classes to substitute physical classes for certain programmes this was in addition to the study electronic materials uploaded on the student's portal. A14 also indicated that the difference in policy during COVID-19 times has paved way for the gradual implementation of online classes through digital platforms such as Zoom and formation of WhatsApp groups for purpose of communication, allocation of duties and making of tutorial presentations. The views by A1 and A14 despite forming the minority view shows that the difference in policy by other institutions has indeed paved way for the possible use and effective implementation of digital learning during the COVID-19 era.

The finding above also presents a contradiction in response as administrators argue on the preparedness of institutions in providing e-learning in covid-19 times. Whereas the majority lecturers on the one hand argue that online learning cannot work independently without the use of traditional face to face. And that students also opt to maintain face to face learning. This is especially important for institutions to note because lecturers and students are key in implementation of online learning policy. The arguments by administrators on preparedness would also entail that at policy level the e-learning systems are supported but the response by both students and lecturers give an indication on the prevailing challenges which should not to be ignored if e-learning policy is to be successfully implemented during COVID-19 era.

Experiences with e-learning

A number of responses were provided on the experiences that students and Lecturers had with the E-Learning. For example, L2 also maintained that; *e-learning is good except that it should work alongside the traditional mode of teaching and learning.* L3 added a similar view that; *e-learning is good though we are not yet at a level where it can work independently.*

This is not consistent with the findings in the study conducted by Schurgers, et al. (2009: 120) where some students found the use of ICT easy. For instance, a participant in that study indicated that *it was amazing how we could have a discussion with people from all over the world at the same time. Although we could not see all the images shown, it was great to learn from it. Interacting with other students made me realize how much I don't know. I guess this will make me a better student. I want more and more of it.* In addition, in the same study another student appreciated ICT by indicating that *this was the first time I did an ICT trial and I thought it was going to be a complicated procedure. However, the process was user friendly and the instructions were clear and self-explanatory... I learnt a lot from fellow students. It is my fervent desire that E-learning be made a continuous way of interactive learning at school.*

On the other hand, students also provided that e-learning despite its advantages comes with a number of challenges

which makes face to face learning a most preferred mode of learning as it caters for different students with or without electronic devices. For example; S1 mentioned that *it is hard for students to understand as much as my institution is trying its best to adapt to the new normal, the current status of network (internet connection in my country is quite bad hence making me not to be consistent with online learning.*

The above finding is in line with Barr and Miller (2013) who indicate that technical problems and solutions for technical support may also hinder the effectiveness of online learning. Learner support should be in place with policies and services ready to assist students, including those technologies for students who need help with assistive devices including visual and audio elements.

In line with the finding above, Schurgers, et al. (2009) also adds that inadequate hardware capacity, insufficient internet bandwidth may prevent students from benefiting from effective e-learning resources and opportunities.

S7 Its draining in that classes are longer than face to face. It's always good to have social interactions with lecturers. In this case one has no relationship and sometimes it's hard to contribute and ask questions. Adding also that E-learning becomes a bit boring too.

This compliments Barr and Tagg (1995) and McInnerney and Roberts (2004) who confirm that research suggest that college students in online learning programs spend more time developing cognitive and critical thinking skills and less time in the social domain for growth and development creating a sense of isolation, not because of distance, but from the instructor and fellow learners. Isolation occurs when students are unable to interact with their peers, are not computer savvy while experiencing technical difficulties and often suffer from academic deficiencies; these factors may lead to unsuccessful online experiences.

S15 mentioned that; *in rural areas like Chinsali internet connectivity is bad, and as a result, I personally missed a lot of lectures and important announcements during online lessons.* This compliments Chikopela, et. al. (2021) who indicate that students from rural areas who pursue their education via the distance arrangements also have various experiences in that in many rural areas in Zambia there is no internet connectivity and electricity. This makes it difficult for them to appreciate e-learning and distance education and favor the traditional face to face learning.

S10 indicated that *e-learning is not as effective as they say it is. In as much as it helps to safeguard us from COVID-19 it has a lot of setbacks such as poor network.*

This compliments Barr and Miller (2013) who argue that as with any learning medium, the use of the Internet in distance and online learning has strengths as well as limitations. Conversely, Makunka (2015) stresses that despite the keenness by institutions of higher learning to establish distance education programmes, they are confronted with

enormous problems that may have impeded its proper implementation. The most significant of these problems is poor ICT penetration and usage among Zambian distance education practitioners. Almost all African countries' basic ICTs infrastructures are inadequate; this is as a result of lack of electricity to power the ICTs materials, poor telecommunication facilities, and a poor postal system. Above all the lack of access to the needed infrastructures is due to insufficient funds

Appreciation of E-Learning Services

The study shows that a significant number of respondents appreciated the e-learning provided by their institutions. This certainly agrees with the argument by Administrators that institutions were very much ready for the e-learning during the Covid-19 times. On the one hand having 20 (8 lecturers and 12 students) that did not appreciate e-Learning services in their learning institution is also a significant representation on the possible challenges and limitations that lecturers and students encounter in their e-learning experiences. Findings on the appreciation of e-learning are similar to Milligan (2006) and Downes (2007) who appreciate e-learning by arguing that learning environments are created through technological moods such as WhatsApp, Facebook, Zoom or any groups formed using digital medium. In addition, these technological environments provide platforms to exchange information, images and videos that facilitate learning.

Opportunities in e-learning

The findings show that there are a lot of opportunities in e-learning during the Covid-19 era. For instance, students in large classes that were divided in streams due to insufficient space were able to learn together as a whole class and as such time was saved. For this reason, interaction with the lecturers was maximized as time spent on the same lesson delivered for example in 3 hours as a result of teaching 3 streams was highly utilized.

In addition, results indicate that online learning is cost effective because students learn within the confines of their home environments instead of spending money on transport fee. This shows that students are able to save money spent on transport in order to carter for other expenses due to the current high cost of living. Limited movements during Covid-19 era has also helped reduce the spread of the virus as one of the measures outlined by the World Health Organisation and as indicated in the Zambian Ministry of Health reports on daily Covid-19 updates during school closures.

Results also show that students have a chance to catch up on the lesson when they miss once it is uploaded on the portal. This shows evidence that e-learning is very convenient for learners because they can easily listen and learn from the recorded actual missed lessons. As a result, no learner is left behind regardless of location and other personal circumstances.

How prepared are the higher learning institutions in implementing the e-learning during Covid-19 era?

The study shows that all learning institutions were very prepared to implementation e-learning as indicated in the findings by all the administrators that participated in the study. However, this finding contradicts Julian Küsel, Florence Martin and Silvija Markic (2020) who argue that the world has been facing changes since March 2019 due to the COVID-19 pandemic. COVID-19 resulted in enormous changes in teaching and learning in higher education, and with the changes enforced, most of the university lecturers were not prepared for leaving the lecture halls, the seminar rooms and the laboratories. Students struggled with these changes as well and voiced the fear in tertiary education. This implies that with sufficient e-learning resources and orientation, lectures can easily adapt to digital teaching.

VI. CONCLUSION

The study concludes that e-learning is suitable for institutions of higher learning and is the safest mode of teaching during this period of COVID-19 and that despite learners and lecturers favoring the traditional face-to-face learning, they must adapt to e-learning. However, these institutions must put every resource in place in order to easily implement e-learning activities which have disoriented lecturers and students.

VII. RECOMMENDATIONS

1. Institutions of higher learning should have a team to oversee implementation of the e-learning policy.
2. Institutions of higher learning should ensure that there is active engagement of teaching staff with regards to e-learning policy implantation.
3. Institutions of higher learning should create positive factors for the easy adoption of e-learning by both lecturers and students.
4. Students representation should be considered for purposes of feedback towards the e-learning system been implemented.
5. Regulatory bodies to which higher learning institutions are affiliated to should establish a team to keep a check on learning institutions with regards to implementation of e-learning system.
6. Lecturers should be oriented on how to use different e-learning platform.
7. Institutions of higher learning create digital technologies at local level such as Personal Learning Network (PLN) and Virtual Learning Environments (VLE) which are cost effective and easy to setup.

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