Enhancing Online Learning in Higher Education Institutions in Zambia: An Evaluation of the Measures put in Place by the Government of Zambia, Internet Service Providers and Higher Learning Institutions

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ABSTRACT

The study investigated the innovative strategies for enhancing online learning in higher education institutions in Zambia. The objectives of the study were; to establish measures the Government of Zambia has put in place to ensure fast, accessible and affordable internet service in all higher learning institutions, to investigate what Internet Service Providers were doing to enhance internet connectivity in higher learning institutions for the benefit of all learners and educators; and to evaluate the support which higher learning institutions offered to educators and learners involved in online learning in Zambia. The study was guided by the Constructivist Learning Theory and Social Cognitive Theory. The researcher employed a pragmatism paradigm and a descriptive research design. The sample was made up of 180 educators who were purposely selected from four universities. Additionally, 4 Directors of Distance Education in charge of Online Learning in the four universities, 1 ICT Director from the Ministry of Technology and Science and 1 ICT engineer from the Internet Service Provider in the selected universities were also purposely selected. Four research instruments were used to collect data; a questionnaire which was used to collect quantitative data from educators and three interview guides which were used to collect qualitative data. Semi-structured interviews were conducted to validate the constructs and to create new items where need arose. Qualitative data was analysed thematically, while descriptive statistics were used to analyse quantitative data. The findings of the study showed significant steps taken by the Government of Zambia to enhance online learning such as introduction of 5G technology, connection of Zambia to satellite internet via Star Link, and mandating and funding of ZAMREN to provide cheaper and quality internet connectivity. Furthermore, the study showed efforts made by Internet Service providers to enhance online learning in higher education institutions in Zambia through provision of learning management systems such as zoom and Big Blue Button for free. Additionally, the study revealed that educators were generally satisfied with the computer expertise they acquired from the trainings conducted by the respective universities, but were not satisfied with the resources and the ICT support provided. Generally, educators had a negative perception of the online learning pedagogy. In view of the findings, the study recommends development of a regulation framework of online learning by the Government of Zambia through Ministry of Education and introduction of mandatory ICT training courses for both learners and educators in the training curriculum by Higher Learning Institutions.

Key words: Information Communication Technology, Online Learning, Internet Service Provider

BACKGROUND OF THE STUDY

Online learning is a wide range of curricula that is taught through the internet which includes Zoom, Google meet, MOODLE, and many others to facilitate teaching (Nguyen, 2015). It is also said to be a virtual classroom on the internet that provides a platform for educators to interact with the learners and assist learners to study in their own spare time (Kotoua et al., 2015). Thus, online learning can be said to be a way of teaching and learning through the internet.

A rapid rise in the use of online learning platforms especially in Africa has been observed in the last twenty years. Many colleges and universities have increasingly shifted from the traditional face to face teaching approach to online teaching for some courses, while others have adopted the blended teaching approach where part of the course is taught through the online platform and the other part or component is taught through the traditional face to face approach. This is because technology has been seen as a facilitator of better learning and training worldwide and as a tool that reduces temporal and spatial problems associated with traditional teaching and learning approaches (Panigrahi et al., 2018).

For instance, Pedro and Kumar (2020) highlighted that 31.6% of the students in the United States of America were taking online courses by 2016. The United States of America is viewed as one of the leading countries in the integration of online platforms in teaching and learning. Kenzig (2015) reveals that, approximately 5.5 million learners take at least one online course at every institution of higher education in the United States per year and over 70 million people take part in online learning opportunities for professional development, employment training, and personal growth each year, which shows a big evolution of the online learning pedagogy in this part of the world.

However, for developing countries like Zambia and many other African countries, online learning has not been a smooth sailing pedagogy. A study conducted in South Africa on online learning in South African higher education institutions revealed low levels of computer and internet access at home (Queiros and de Villiers, 2016). The study recommended that institutions migrating to online learning in developing countries should take into consideration their students' situations and perceptions and develop an approach that would accommodate both the disadvantaged and technically sound learners without compromising on quality. Additionally, a research carried out in west African universities such as the University of Ghana, Kwame Nkrumah University of Science and Technology and Cape Coast revealed that the rate of online education in the universities was still very low and that most of the students still preferred face to face classroom teaching to the online teaching due to a number of challenges associated with online learning (Kotoua et al., 2015). The findings of these studies show how vulnerable developing countries are when it comes to implementation of online learning.

Ineffective online learning has been a major problem in Zambia since the advent of online learning following the outbreak of COVID–19 in March 2020 (Mwansa et al., 2021;Magasu et al., 2022).The problem of ineffective online learning in Zambia has been studied by many researchers especially on the opportunities and challenges of online learning. However, challenges such as poor network connectivity (Hapompwe et al., 2021), high cost of internet bundle (Mwila et al., 2021), inadequate infrastructure and inadequate orientation (Magasu et al., 2022) and lack of basic Information Communication Technology (ICT) skills (Kaumba et al., 2021) among others in the implementation process have not been addressed.

Furthermore, findings of the studies conducted on the implementation of online learning in some higher education institutions in Zambia revealed a number of challenges which the institutions encountered. For example, a study conducted by Hapompwe et al. (2021)on the challenges and prospects for quality higher education via E-Learning platforms in private universities; a case study of Acacia University, Zambia; revealed that ClanEd platform, which was mostly used for textual interaction and posting of teaching and learning materials and the Zoom platform had challenges which include lack of effective interactions for ClanEd platform and network intermittence for the Zoom platform on both institutional and learner ends. Other noted online learning challenges included poor network connectivity, non-electrification of students' houses, electricity outages and costs associated with internet use (Henaku, 2020;Mwila et al., 2021).

The above stated factors were noted to have severely affected rural students' access to online learning and subsequently affected their academic work and performance. While researchers such as Hapompwe et al. (2021), Mwila et al. (2021), Magasu et al. (2022), and Kaumba et al. (2021) highlighted the challenges that affected effective online learning in Zambia, there was limited knowledge on the measures put in place by key stakeholders in online learning like the Government of Zambia, Internet Service Providers and Higher Learning Institutions to enhance online learning.

This study, therefore, engaged key stakeholders in the implementation of online learning, including Internet Service Providers (ISPs), Directors of Distance Education (DDE) in the selected universities, educators and the Directors of ICT in the Ministry of Technology and Science in order to gather data on how identified online learning challenges could be ameliorated. The study gathered views from the ISPs on what it could take for the current high cost of internet bundle to be reduced and how fast internet service could be spread to all parts of the country for all the online learning learners to access it with ease. The study also solicited views from educators and DDEs in the selected universities on how best the challenges of capacity building, lack of online learning equipment by learners and educators; and provision of adequate infrastructure in universities for online learning to thrive could be addressed. The outcome of the study provided data on the measures put in place to enhance online learning in higher learning institutions of Zambia.

Statement of the Problem

Online learning has taken a centre stage in facilitating distance learning in most of the higher learning institutions in Zambia. A study conducted by Mwalimu et al. (2017) revealed that; use of digital tools such as YouTube, SlideShare, Blogs, LinkedIn and Podcasts among University of Zambia lecturers in teaching and learning had positive benefits to online learning learners.

However, ineffective online learning has been a major problem since the advent of online learning following the outbreak of COVID–19 in March 2020 (Mwansa et al., 2021; Magasu et al., 2022). Some of the major challenges to effective online learning include erratic network connectivity, high cost of internet bundle, inadequate ICT infrastructure, inadequate orientation on the use of online platforms and lack of basic Information Technology (IT) skills (Kaumba et al., 2021; Hapompwe et al., 2021; Mwila et al., 2021).

On a global scale, most of the research has focused mainly on determining the cause of ineffective online learning (Queiros and de Villiers, 2016; Mikre, 2011; Kisanga and Ireson, 2015). Similarly, recent studies in Zambia have focused on challenges that hamper effective online learning in higher learning institutions (Kaumba et al., 2021; Hapompwe et al., 2021; Mwila et al., 2021). There appears to be a gap in knowledge on the innovative strategies for enhancing online learning in higher education institutions in Zambia. In view of the foregoing, this study investigated the innovative strategies which the Government of Zambia, Internet Service Providers and higher learning institutions were putting in place to enhance online learning in Zambia.

Purpose of the Study

The purpose of this study was to investigate innovative strategies put in place to enhance online learning in higher education institutions in Zambia.

Research Objectives

1. To establish measures the Government of Zambia has put in place to ensure quality internet connectivity in all higher learning institutions.
2. To investigate what Internet Service Providers were doing to enhance internet connectivity in higher learning institutions.
3. To evaluate the support which higher learning institutions offered to educators and learners involved in online learning in Zambia.

Theoretical Underpinning

This study was anchored on the Constructivist Learning Theory and Albert Bandura (1986)'s Social Cognitive Theory. According to Ültanır (2012), constructivism is a theory of knowledge and learning in which individuals generate knowledge in the process of tackling problems and the knowledge constructed lead to learners being connected to new ideas. In other words, the central focus of this theory is new

knowledge acquisition and learning. On the other hand, the Social Cognitive Theory is a theory that focuses on what learners learn from interacting with other people and also from observations on what is going on in the environment (Hapompwe et al.,2021). These two theories were chosen for this study because of their advocacy for hands-on experience, social interactions and construction of knowledge, which is the hallmark of online learning.

LITERATURE REVIEW

Review of related literature represented the foundational theoretical literature as well as relevant scholarly research on online learning.

The Role of Internet Service Providers (ISPs) on Online Learning

Zambia has over 15 active Internet Service Providers (ISP) and 3 active Mobile Network Operators (MNO) (Hanyama, 2018). The MNOs that operate in Zambia are MTN, Airtel and Zamtel, while ISPs include I-connect, Zamnet, Liquid Telecoms, Hai Technologies and ZAMREN among others. The current telecommunication companies provide mobile internet as well as broadband, which has generally triggered people's demand for these services across the country. This is because internet acts as a conveyor belt in the whole process of online learning. Without internet connectivity, online learning pedagogy would be a mere dream. This is evidenced by the findings of the study conducted by Mwila et al., (2021) where a particular learner from the rural part of Western Province of Zambia had to ride a bicycle for over 65 km to the nearest place that had at least stable internet connectivity for her to attend online lessons on each day. Not only did the learner face challenges with internet connectivity but also with lack of internet bundle as the cost proved to be too high and that subsequently made the learner to miss 75% of the online classes. These revelations show how important internet service providers are as stakeholders in the implementation process of online learning in Zambia and hence, the significance of this study.

The use of mobile internet has grown significantly over the past decade, though for people living in rural areas, there still remains very limited or no access to the internet at all largely due to the lack of adequate telecommunication infrastructure needed for the internet connection (Mambwe, 2015). The 2015 ICT Survey Report by ZICTA (2015) revealed that the most preferred networks among those individuals that have subscribed to more than one network were Airtel and MTN, represented by 44 percent and 47 percent respectively. Factors such as friends and family being on the same network, quality of services and cost determined the choice of the network. This shows that the aspect of the cost of data plays a significant role in terms of internet accessibility and that the need to engage ISPs to find long lasting solutions on these challenges is of great importance.

The ZICTA (2015) survey report further highlighted the fact that mobile internet use in Zambia has increased as a result of factors such as: relative ease of access and connection; the increased availability of internet enabled handsets on the market; relative affordability with the multiplicity of data packages available for every type of user; and the mobility factor of mobile internet gadgets which enables users to access internet services almost anywhere, or at least in places where fixed providers are currently not able to. The 2015 ICT survey also noted that the majority (71 percent) of households in Zambia with access to internet services use mobile broadband services, particularly a mobile phone. The survey revealed that only 2% of the households access the internet through fixed wireless broadband services.

A study carried out by Chipeta and Ngoyi (2018) revealed that mobile phone subscription per 100 inhabitants was at 74.95% against the regional average of 96.2% as of 2017 in Zambia, while mobile internet subscription was at 25.51%, fixed wired broadband subscription at 0.2%, fixed telephone subscription at 0.63% and households with computers at 8%. These statistics agree with the latest research findings by Kaumba et al. (2021), Hapompwe et al. (2021), Magasu et al. (2022) andMwila et al. (2021) who highlighted poor network connectivity, high cost of internet bundle and inadequate internet infrastructure among others as the major obstacles to effective online learning in higher education institutions in Zambia. This, therefore,

calls for an urgent but methodical bold step to engage the ISPs, who are key stakeholders in internet connectivity, to find out how best the highlighted challenges could be resolved for the benefit of all online learners, educators and the education sector. Hence, the findings of study will be of great value to the body of knowledge and the government through the ICT policy makers.

Government Role in Enhancing Policy Measures on Online Learning

The Government of Zambia, in its 8th National Development Plan, spells out its vision in the education sector of ensuring that all learners have access to equitable and inclusive quality education and that the delivery of education using ICT platforms will also be promoted (Ministry of Finance and National Planning, 2022). This is in line with the argument by (Hanyama, 2018) that every government has a role to meet in the country in relation to policies at national level. He highlights some of the roles which the Government of Zambia plays in relation to ICT policy implementations such as; the promotion of ICT in the country through e-government, education, science and technology systems, public health, social plans, and economic plans.

Other roles highlighted include support for internet uses and applications in all government departments and agencies, to campaign on the implementation of information and training about benefits of the internet and its potential and to ensure the creation of National Agencies, for instance, in the case of Zambia, ZICTA; which are specialized in Information Society.

These government responsibilities show that the Government of Zambia has a significant role to play in ensuring that there is collaboration between the government and the private sector on how best the challenges of internet connectivity, high cost of internet bundle, ICT infrastructure development and capacity building could be resolved so that online learning in higher education institutions can thrive. There is a need to change the old adage that ‘where the road goes, development follows’ to ‘where the internet goes, development follows.

Fan (2005) argues that, internet access, which is a critical component of online learning, is determined by the available telecommunication infrastructure and affordability of internet services, which are invariably related to government policies. The internet has been seen as the fastest-growing industry in the last decade or so and has also been viewed as a very significant component in the social and economic development of every country. However, the underlying issues of poor internet connectivity, lack of ICT infrastructure and high cost of bundles has had a negative influence on the current growth rates. Consequently, there is a need to identify the regulatory factors affecting internet access in terms of availability and affordability, especially those factors which encourage the creation of a regulatory and policy environment which would be favorable to the development of internet infrastructure and access.

Furthermore, Polat (2012) reveals that, over the last few years, the internet and associated technologies have become an essential part of everyday life, affecting education, employment, and leisure, amongst other activities. This is evidenced in the fact that a lot of services even in Zambia such as payment of corporate tax to Zambia Revenue Authority, application to universities and colleges, booking of flights, hotel reservations, teaching and learning just to mention but a few are becoming available online. The narrative in almost every company and social sector in Zambia nowadays is digitalization of the services.

However, many people have not been able to extract a lot of benefit from these technologies because of the significant obstacles bordering on internet access, usage and affordability. West (2015) argues that there are several key barriers to internet access in the developing world and a number of factors that make it difficult for people to obtain access to the internet which include poverty; inadequate policies, high data and telecommunications charges; infrastructure barriers; digital literacy challenges as well as operational barriers. Therefore, the outcome of this study has a lasting impact on the development of online learning in Zambia and the growth of the ICT sector as it highlights possible solutions to the challenges affecting accessibility from the stakeholders’ point of view.

Challenges of Online Learning in Higher Learning Institutions

The outbreak of the coronavirus pandemic in March 2020 brought several untold miseries in all the learning institutions globally. The school system as a social sector was not spared as millions of school children and young adults were sent out of school unceremoniously. With the persistent spreading of the COVID-19 disease across the world, online learning became the only solution for schools, colleges and universities to continue offering the education service (He and Wei, 2021). The use of the internet and other online technologies for teaching and learning became the sole choice.

While colleges and universities in countries that had a long history of using online learning such as the United States of America, China and Canada quickly switched on to the online learning paradigm from the classroom situation (Paschal and Mkulu, 2020), researchers such as (Kaumba et al., 2021, Hampompwe et al., 2021; Magasu et al., 2022; Mwila et al., 2021) posited that universities in countries which were not technologically advanced like Zambia struggled and experienced a number of challenges. These included; poor network connectivity, power outages, high cost of internet bundle, and inadequate infrastructure. Furthermore, there was inadequate orientation of both educators and learners and lack of basic Information Technology (IT) skills among others in the implementation process.

The experience was not different in other developing countries such as Nigeria and Rwanda. A study conducted by Samuel (2021) on the concept of e-learning amid Covid-19 pandemic in Nigeria: issues, benefits, challenges and way forward; highlighted challenges which learning institutions experienced after switching to online learning when Covid-19 broke out such as underfunding when it came to financing of the use of ICT in the education sector, high cost of data which led to very few among learners, parents and educators being able to afford the procurement of data to stay connected online, high cost of ICT facilities, poor technological infrastructure and low level of contribution of learners in terms of interaction via online learning channels.

Additionally, Sani et al. (2021) outlined the major challenges that affected the Nigerian public tertiary institutions after the shift from classroom learning to online learning in view of the outbreak of the Covid-19 pandemic globally and the subsequent closure of learning institutions. Firstly, lack of documented online learning policy which could determine the procedures, facilities specifications, personnel training among others proved to be a major setback. Secondly, inadequate funding was noted to have a major negative impact on effective online learning in Nigeria. The education sector in Nigeria was poorly funded and this made it difficult for the government to successfully implement and sustain online learning as it is a capital-intensive project.

Low ICT literacy level was another major challenge identified by Sani et al. (2021). They argued that full implementation of online learning was hampered by learners and educators' lack of requisite ICT competences. This was the case because many of the learners in public tertiary institutions were coming from remote villages or areas where they were unexposed to various technologies, which was a major limiting factor. Besides that, inequality of access to the technology itself by educators and learners was observed to be a common phenomenon. This was caused by the high cost of a personal computer (PC) and Laptop in Nigeria considering the low-income level of an average worker in the country. As a result of that, only a few learners were privileged to have a PC/Laptop or phones which were unfortunately still not connected to the internet as this attracted extra costs which they could not afford.

In Rwanda, Mporananayo et al., (2020), listed the challenges which higher education institutions encountered in the implementation of online learning. The list included lack of adequate ICT infrastructure, unprecedented drop out of learners, lack of teaching and learning materials. In addition, there were noted irregularities in learners' attendance, poorly developed content which learners had difficulties to grasp, and limited interaction between trainers and trainees and among trainees.

The findings in the Nigerian and Rwandan online learning implementation process shows that Zambia is not the only country that experienced challenges and is still experiencing some challenges in the implementation process of online learning in both public and private higher education institutions but other countries' learning institutions did too. Hence, there was a deliberate need to engage key stakeholders in the implementation process of online learning in Zambia such as ISPs, the Government of Zambia and Higher Education Institutions of learning so that a stakeholder-based approach or recommendation could be arrived at which would see some of the challenges, if not all, resolved for the good of the educational system in Zambia.

METHODOLOGY

The researcher employed a pragmatism paradigm and a descriptive research design. The sample was made up of 180 educators, 4 Directors of Distance Education, 1 ICT expert from the Ministry of Technology and Science and 1 ICT engineer from the Internet Service Provider who were purposely selected. Additionally, a questionnaire was used to collect quantitative data from educators, while three interview guides were used to collect qualitative data. Qualitative data was analysed thematically, while descriptive statistics were used to analyse quantitative data.

STUDY FINDINGS AND DISCUSSION

The findings of the study were presented systematically, following the objectives that guided the study.

Government Initiatives to Support Online Learning Enhancement

The first objective of the study sought to find out what the Government of Zambia was doing to ensure fast, accessible and affordable internet service in all higher learning institutions. It seemed prudent for the researcher to solicit for government's voice on the challenges that online learning pedagogy was facing because of its central role in promoting education in Zambia as a policy maker and as a player in the education sector. Participant's responses showed numerous steps that were being taken by the government to support online learning enhancement in Zambia.

ICT Projects

The study was informed of the measures which the government has put in place to attract private sector players in the ICT sector in Zambia such as introduction of tax incentives. One of the informants from the Ministry of Technology and Science revealed that:

Between 2023 and 2024; telecommunication has expanded with an addition of 5000km of optic fibre as a result of government intervention; bringing the total to 25000 km of optic fibre laid since Zambia got independence in 1964. Government has also given tax incentives in the ICT sector to increase private sector investment in digital infrastructure. One of the benefits of this measure is the introduction of 5G technology in Zambia, which will ensure fast internet connectivity. In addition to that, communication towers with 2G network will be upgraded to 4G network to increase the speed of internet across the country (Official A, 2024).

Furthermore, the researcher was informed that government, through Ministry of Technology and Science was working with Members of Parliament (MP) to identify places which needed urgent connection to phone and internet services across the country so that people could stop walking long distances in search for internet connectivity as can be seen from the excerpt below:

$54 million worth of investment has been attracted in the ICT sector between 2023 and 2024 as a result of government waiving taxes on importation of ICT equipment. ICT sector has been opened up to private sector

investment. Star link, a private satellite internet service company, has brought in 11 thousand kits to connect the country to fast, reliable and affordable internet service (Official A, 2024).

Digital Infrastructure Provision

The study was informed that, there is a general ICT policy that guides on provision of ICT across all sectors in the country, that includes the education sector. The Official who was interviewed in relation to this study pointed out that;

Zambia Research Education Network (ZAMREN) has been mandated and funded by government to provide cheaper and quality internet connectivity to higher learning institutions in Zambia. Government partners with higher learning institutions to enhance online learning, for instance, Ministry of Technology and Science partnered with Copperbelt University (CBU) to put a Video Conferencing Facility (VCF) that ensures online teaching and learning in Realtime at the main campus in Kitwe and 11 other branches that include Solwezi CBU branch. Partnership is not limited to public universities only but open to all higher learning institutions (Offical A, 2024)

Additionally, the research found that; affordability of internet bundle was regulated by the ICT regulator; ZICTA, to ensure that the cost is not beyond the market value, though the regulator was also careful with its controls so that it does not push a price that would make Internet Service Providers (ISPs) fail to function. The study was further informed that the current cost of internet bundle was cost reflective as it was being monitored by the regulator; ZICTA.

The study revealed future plans by the government for the ICT sector in Zambia. Thus, the research found that; the Government of Zambia has signed a Memorandum of Understanding with Google Cloud, a subsidiary of Google to drive the country's digital transformation journey. The study was informed that;

A centre of excellence in digital transformation, innovation, skills development and knowledge sharing will be constructed in Zambia and Zambia will be connected to UMOJA fibre optic project which will run from Kenya through South Africa to Australia; which will ensure fast and affordable internet service to the country. Government and the private sector are constructing 520 communication towers countrywide with a target of reaching 96% phone and internet coverage by the end of 2025 (Official A, 2024).

These measures taken by the government were definitely sparking some hope of an enhanced online learning system in Zambia as they were in tandem with the recommendations made in a study carried out by Daka et al. (2022) where a deliberate collaboration between government and the private sector was viewed as the best way to create holistic strategies that could help to overcome the barriers to internet connectivity and high cost of internet bundle.

Contrary to a previous study by Konayuma (2012)which highlighted financial and technological resource constraints on the part of government and policymakers' agony to justify spending scarce and limited resources on ICTs when many government institutions were still lacking basic amenities and educational supplies, the aforementioned findings of this study were definitely ground breaking as they showed a complete turnaround in terms of government effort to ensure a coordinated approach in the adoption and implementation of initiatives targeted at the deployment of ICT solutions in the education sector.

Besides that, government's decision to deploy innovative strategies such as upgrading of internet network towers from 2G to 4G network, deployment of 5G technology in the country and introduction of tax incentives in the ICT sector to attract more players is commendable because it catalyzes the attainment of government's ICT sector vision of ensuring that all learners have access to equitable and inclusive quality education through the delivery of education using ICT platforms as highlighted in the 8th National Development Plan (Ministry of Finance and National Planning, 2022). Above all, mandating and financing of ZAMREN to be the torch bearer in the ICT sector in terms of connecting higher learning institutions to

affordable and higher quality internet irrespective of the geographical location via the Eduroam facility is definitely a decisive turning point.

Internet Service Providers (ISP)' Contributions to Enhanced Internet Connectivity in Zambia

In this segment, the researcher focused on the second research question of the study which sought to document measures Internet Service Providers were putting in place to enhance internet connectivity in higher learning institutions and indeed across the country for the benefit of all learners.

Software Support

The study was informed that; ZAMREN, an ISP company, was mandated by government to connect higher learning institutions to fast, affordable and reliable internet service. One of the informants revealed that:

ZAMREN is a brain child of the University of Zambia (UNZA) and Copperbelt University (CBU) whose main objective is to connect fast and affordable internet service to higher learning institutions like UNZA, CBU, Mulungushi University, Kwame Nkrumah University among others on a non-profit basis (Informant B, 2023).

In addition to the foregoing, the study revealed that; ZAMREN was working with higher learning institutions to support online learning (Digital Learning). The informant stated the following when asked to say more about the collaboration:

UNZA, for example, access more than 600 megabits per second from ZAMREN in terms of internet connectivity. ZAMREN also provides learning management systems like Moodle where videos, audios and text content can be uploaded for learners to access and can also be used for administration of online examinations effectively. Apart from that, ZAMREN provides Zoom licenses to learning institutions connected to it for free and also has an open source application called Big Blue Button which works like Zoom (Informant B, 2023).

ICT Infrastructure Provision

The interaction with a participant in the study on the provision of ICT infrastructure revealed that; Internet access to educators and learners had been spread across the ten provinces of Zambia by ZAMREN through the institutions that subscribed to its internet service. The study was informed that:

ZAMREN has deployed Education Roaming (Eduroam) service across the 10 provinces of Zambia; connecting all public universities, colleges, STEM schools and private educational institutions that are willing to partner with it in quest for access to fast and affordable internet service. Eduroam service is free and students can access it for free (Informant B, 2023).

Additionally, the study revealed that; internet service providers were concerned with the high cost of the internet service in the country. The research was informed that, the motivation of the ISP was not to make profit but to provide quality internet service to the people. The informant who interacted with the researcher stated that:

To reduce the challenge of students using expensive internet bundle while in school; ZAMREN connects students' halls of residence at 50%-50% cost sharing with respective institutions. DALICE and Mulungushi University already connected students' halls of residence to ZAMREN internet under the 50%-50% arrangement model and students are accessing fast and cheap internet service. The idea is to eliminate the use of internet bundle because internet connection with bundles is not stable and its expensive (Informant B, 2023).

In conclusion, the participant advised the government to consider reducing tax on ICT equipment as it led to high internet cost in the country and also shared the company's future plan of providing a bigger internet capacity in Zambia at a lower cost so that there is no buffering.

The provision of free software support by ZAMREN to higher learning institutions in Zambia regardless of whether it was a public or private higher learning institution was a step in the right direction in terms of online learning enhancement. A study conducted in Nigeria by Sani et al. (2021) revealed that the high cost of software and licenses put off some of the students who showed interest in online learning. Hence, higher learning institutions in Zambia must take advantage of this innovative strategy by government and source their internet connectivity from ZAMREN, a company mandated and funded by government to provide cheaper and quality internet connectivity to all higher learning institutions for the benefit of educators and learners.

Higher Education Institutions' Support to Online Learning Educators and Learners

The third objective of the study sought to evaluate the support which higher learning institutions offered to educators and learners involved in online learning in Zambia. The experiences shared by the participants showed numerous challenges and positive developments arising from teaching learners via the online learning platforms. In this section, the researcher highlights the broad experiences of the participants on the subject of online learning.

ICT Support

The study revealed that; Public University 1 (PU1) offered both pure online learning under the E-Campus supported by Astria E-Learning Solution and blended learning under the distance learning programme. Thus, some programmes were taught fully, and learners were examined through the online platform, while students under the blended learning programme were partly taught through the online platform and partly in the physical classrooms during the residential school. The study was informed that; PU1 provides a Video Conferencing Facility installed by the government for teaching of online classes in real time. Additionally, the participant revealed that:

The university trains educators in online teaching through the Directorate of ICT but no learners have been trained on online learning platform usage by the university. The assumption is that learners are hands-on and do not need to be taught on how to use the online platforms for learning (Director 1, 2024).

Furthermore, the research revealed educators' experiences in teaching online since the introduction of the pedagogy after the outbreak of Covid-19 pandemic in March, 2020. The participant stated the following when prodded to say more about this:

Educators use their own ICT equipment to teach online because the desk top computers provided by the university are obsolete, with old software. Educators also use their own internet bundle for teaching online since lessons are mostly offered in the evening. The university does not provide laptops or tablets or data bundle allowance for educators or learners. Those who cannot afford data bundles have to teach from the university where there is free internet connectivity and its assumed that learners can afford to buy their own ICT equipment. The university only provided internet bundle for educators during the Covid -19 period (Director 1, 2024).

The study was further informed that, ZAMREN provided internet to the university and to students across the country through Eduroam. The research revealed that, students only needed a password or code given to them by the university to access the internet at any education institution connected to ZAMREN for free.

Similarly, sentiments expressed by the participant from Public University 2 (PU2) corroborated with sentiments expressed by the participant from PU1. The participant stressed that:

The university offer 100 percent online learning programmes under E-Campus and blended learning for distance students. The Institute of Distance Education (IDE) provides training to educators regularly to ensure that educators are able to deliver excellent service to the learners. IDE also has a help desk that attends to the needs of the students and educators on a daily basis (Director 2, 2024).

Resources

The study was informed that, PU2, through IDE provided to a limited extent, ICT equipment such as laptops to educators and gave monthly allowance to educators involved in online learning for internet connectivity when they were not on campus, a scenario which did not exist in PU1. Furthermore, the participant from PU2 intimated that; PU2 used to provide tablets and internet dongles to learners when it was still working with Astria Learning solutions at the point of registration during the Covid-19 period for students to use for online learning and accessing learning materials. However, the study was informed that, PU2 was now using Moodle for teaching online, which was cheaper compared to other online learning platforms. The participant informed the researcher that:

The PU2has an MOU with ZAMREN that provides internet service to the university and reaches out to the learners through ZAMREN eduroam connected across the country. The university also bought tailor made Live Virtual Classroom facility through Huawei Technologies Zambia which enables learners and educators to interface in Realtime during lessons (Director 2, 2024).

Furthermore, the research revealed that the Government of Zambia need to consider investing in establishing its own space satellite if the country is to enjoy quality and affordable internet connectivity across the country. The participant stressed that:

Zambia needs to get an own satellite in the cyber space as this will make internet cheaper and accessible even in rural areas (Director 2, 2024).

Computer Expertise

The study revealed that Private University 3 (PRU3) utilized an online learning platform developed by the university that housed google meet, WhatsApp and also another learning platform powered by Claned; which has links for WhatsApp, google meet among other services. The participant pointed out that:

Each learner is assigned an email address which he/she uses to register with Claned for purposes of accessing online learning services and materials. Every semester there is a training workshop for educators concerning teaching online. Learners have virtual clinics on the use of the online platforms for learning effectively every two weeks, where IT staff attend to the questions and concerns from the students within the time frame given. For educators, there is a desk menu where they are helped whenever they have challenges so that technology does not hinder teaching for both old and new educators (Director 3, 2024).

The study was further informed that, all educators at PRU3 are given laptops; while learners have access to tablets. The research revealed that; during Covid-19 period, all students used to be given tablets for free but at the moment, the university only facilitated the buying of tablets at an affordable price, which were given to each learner and the learner was expected to pay for it in instalments within the course of the semester. In addition to the forgoing, the participant added that:

The university provides free internet service across the campus but has no control over internet connectivity outside the campus. The university has fully equipped ICT facilities with Google Cloud based storage for storing all the online learning materials. However, government and internet service providers need to come on board and ensure quality and affordable internet is connected to private universities as well because education cuts across the types of educational institutions that offer it (Director 3, 2024).

The views of the participants who were interviewed on the institutional support provided to educators and learners engaged in online learning in higher education institutions seemed to suggest that more still needed to be done to enhance online learning in higher education institutions in Zambia. The sentiments expressed showed that the experiences of online learning in public and private universities were somewhat cross-cutting.

Besides that, semi structured interviews with Directors of Distance Education in the selected universities brought to the fore the real situation that was prevailing in the universities in terms of accessibility to resources that would enhance online learning. While private universities could give laptops to all educators engaged in online teaching and tablets to all learners who were engaged in online learning, public universities were neither giving ICT gadgets nor internet data bundle to both educators and learners. Only administrators in public universities received laptops and monthly internet data bundles in some instances. The common understanding in the public universities was that educators who could not afford data bundles were to teach from the universities where there was free internet connectivity.

Another assumption made in public universities was that, all learners who enrolled in online learning could afford to buy ICT gadgets like laptops and tablets; and could also afford to buy data bundles for themselves, which was not realistic. The findings of the study conducted by Mwila et al. (2021)reveal a scenario where a particular learner from the rural part of Western province of Zambia missed 75% of the online classes due to lack of internet bundle as the cost proved to be too high. Thus, the reality in the communities with regards to internet accessibility among learners is quite harsh compared to the assumptions made by public higher learning institutions.

These findings of the study under this segment were unfortunately, not in tandem with the ideology of the constructivist learning theory as discussed by Bada and Olusegun (2015) which emphasises on the importance of learner centred learning and use of multiple modes of presenting information such as video, audio and text during online learning. Lack of latest version of desk top computers or laptops with latest software makes the ideology of the constructivist learning theory untenable. In essence, higher learning institutions that offer online learning, need to anchor their teaching philosophy in the constructivist learning theory by providing the requisite resources required such as updated computers and affordable quality internet access to both educators and learners in order to make online learning the 21st century digital education platform of choice.

Educators' Perception of the Online Learning Pedagogy

From the quantitative analysis conducted on educators' perception of online learning, 76.4% of the educators were of the view that online learning was not performing to the expected standard as shown in Table 1. This could be explained by the challenges that were highlighted by the Directors of Distance Education in the selected universities.

Table 1: Educators' Views on the Performance of Online Learning

Is online learning performing to the expected standard?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	97	76.4	77.0	77.0
	Yes	29	22.8	23.0	100.0
	Total	126	99.2	100.0	
Missing	System	1	.8		
Total		127	100.0		

Source: Field Data (2025)

The results of the survey carried out among educators in the selected universities showed that educators were generally satisfied with the institutional support provided to educators engaged in online learning in higher education institutions in Zambia with regards to equipping them with computer expertise they needed to teach online but were not satisfied with the resources they received, the ICT Support they got from their respective universities and had a negative perception of the online learning pedagogy.

The findings of this study are in line with the results of the research conducted by Kotoua et al. (2015) in Ghana, where students' perceptions of the online learning was found to be negative primarily due to inadequate resources and lack of ICT support from the key stakeholders. Additionally, research conducted by Jayaratne and Moore (2017) on the perceptions of college students towards online classes at North Carolina State University, USA, revealed that learners who took classes online had a positive perception towards online classes because online classes were taught so effectively that the learning expectations of the learners were met. Therefore, higher learning institutions in Zambia need to invest more in ICT resources and technical support if educators and learners are to develop a positive perception of the online learning pedagogy.

CONCLUSIONS AND RECOMMENDATIONS

The study highlighted government initiatives, ISP and higher learning institutions' contributions towards online learning enhancement. The introduction of 5G technology, connection of Zambia to satellite internet via Star Link, mandating and funding ZAMREN to provide cheaper and quality internet connectivity in higher learning institutions are among the commendable achievements by the Government of Zambia. Additionally, the study showed efforts made by Internet Service providers such as ZAMREN to enhance online learning in higher education institutions in Zambia through provision of learning management systems like Moodle, zoom licenses and Eduroam service for free. The study also revealed that ZAMREN connects students' halls of residence at 50% - 50% cost sharing with respective learning institutions in order to eliminate the use of internet bundle because internet connection with bundles is not stable and it is expensive.

Further, the study showed that educators were generally satisfied with the computer expertise they acquired from the trainings conducted by the respective universities, but were not satisfied with the resources that were provided for effective teaching via the online platform, the ICT support provided by the ICT experts in the selected universities and had a negative perception of the online learning pedagogy generally.

Based on the conclusions derived from the study, the following recommendations were made:

1. Government, through Ministry of Education, must encourage all higher learning institutions to connect their institutions to ZAMREN, an ISP mandated and funded by the Government of Zambia to provide cheaper and quality internet connectivity to all higher learning institutions in Zambia. This will help to reduce the cost related to online learning for higher learning institutions, educators and learners at large.
2. Higher Learning Institutions need to introduce mandatory ICT training courses for both learners and educators in the training curriculum in order to empower them with the necessary computer skills. This will help educators to deliver online lessons efficiently and effectively, while learners will have the confidence to undertake online lessons whenever they will desire to. Inservice educators can be sponsored to undertake short courses in online teaching methodologies for enhanced performance.
3. Higher Learning Institutions need to provide incentives for educators engaged in teaching online, for instance, a laptop, monthly internet connectivity allowance etc. as a motivation factor.
4. All registered learners, especially those from rural areas must be provided with ICT gadgets for learning online like smart phones, tablets or laptops so that they can successfully learn online. Education is a right for every human being, not a privilege. Thus, government, being a major stakeholder in the provision of quality education to all citizens, needs to step up and meet this requirement as the case is with the provision of education loans to need students in higher learning

institutions. The Constituency Development Fund (CDF), under the Ministry of Local Government and Rural Development, could be a viable source of funding for such undertakings by the government as it is localized and needy students enrolled in higher learning institutions could easily be identified at that level.

Further research should be conducted to investigate mechanisms put in place to ensure quality assurance of the online learning approach. Additionally, researchers recommend that another similar study be conducted that would cover a wide range of higher learning institutions like colleges to ascertain the penetration levels of online learning in higher learning institutions and its effectiveness in delivering results.

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