

# An Assessment of the Effectiveness Of E-Learning During Post Covid-19 At Kwame Nkrumah University in Zambia

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## Abstract

The Covid-19 pandemic has led to a significant shift in the way education is delivered, with a significant increase in the adoption of e-learning across the world and Zambia in particular. This study aims to examine the adoption and effectiveness of e-learning at Kwame Nkrumah University during the post-Covid-19 period. The study utilized a qualitative approach, questionnaires and document analysis methodology to collect data. This chapter was guided by the Innovation Diffusion Theory (Rogers, 2003). Data analysis was done thematically, descriptively and analytically. The findings of the study indicate that while e-learning has been widely adopted in higher learning institutions in Zambia and Kwame Nkrumah University in particular, there are significant challenges that hinder its effectiveness during the post-Covid-19 era. The findings show the following challenges of e-learning; the lack of adequate infrastructure, limited access to the internet, limited access to e-learning facilities, high cost of running the internet, inadequate technical skills among educators and students, the negative attitude among students and educators, and lack of consistency of e-learning programme. The study recommends that Kwame Nkrumah University should invest in improving its infrastructure and providing adequate training to educators and students to ensure the effective adoption and implementation of e-learning. Therefore, the findings of this study have implications for policymakers and educators seeking to improve the quality of education delivery in the Post Covid-19 era in Zambia.

**Keywords:** E-learning, higher learning institutions, post Covid-19 education, Zambia

## 1. Introduction

Learning is the acquisition of new skills and knowledge. According to Arkorful & Abaidoo (2014), e-learning is defined as the delivery of learning through technology and the Internet. This means learning that is empowered by the use of digital technologies. The process of e-learning requires creativity and innovation. Rogers (2003) describes the concept of innovation as an idea, practice, or project that is perceived as new by an individual or other unit of adoption. Innovation may have been invented a long time ago, but if individuals perceive it as new, then it may still be an innovation for them. It is worth noting that innovation and creativity during the post Covid-19 era can promote the effectiveness of e-learning for both the educator and the learner in higher learning institutions. The spread of Covid-19 caused fear, anxiety, and various concerns among citizens around the world (Dhawan, 2020). Rogers (2003) argues

that innovation brings newness in which some degree of uncertainty is involved in diffusion. However, UNESCO (2020) the circumstances caused by social isolation and other personal factors, parents' concerns are assumed to have been influenced by their unpreparedness to assist their children in e-learning, lack of access to the necessary technology and the internet, or the inadequacy of the technological formats used for children with special educational needs and economic difficulties.

Magasu et al. (2021) posit that e-learning is a 'New Normal' in Zambia and has emerged as a result of Covid-19 which has a new reality that has necessitated a rethinking of ways of doing business during and the post-pandemic era. Therefore, e-learning is closely related to technology and has come into a sharp focus as an enabler to the new way of learning. However, the present paper questions the effectiveness of e-learning during and after the Covid-19 period in higher learning institutions. To answer the above question, this study was undertaken to evaluate the effectiveness of conducting education using e-learning platforms as opposed to a face-to-face approach during the post-Covid-19 period. It is worth noting that a study conducted by Barboni (2019) does not downgrade face-to-face instruction methods but opines that e-learning can be used together with traditional methods to bring efficiency, effectiveness, and competitive edge over other competitors by imparting quality education. The paper progresses as follows; literature review, theoretical underpinning, methodology, results discussion and conclusion.

## 2. Literature Review

UNESCO (2020) has indicated that more than 1 billion and 575 million students in approximately 188 countries around the world are reported to have been affected by the closure of schools and universities due to preventive measures taken by countries against the spread of Covid-19. During the closures and post Covid-19 periods, e-learning became the appropriate alternative way of providing education.

Nsiah (2006) outlined the challenges of the online education system concerning access, quality, equity, and relevance faced by the students at the University of Ghana as follows: inadequate infrastructure and info-structure that includes poor infrastructure, inadequate classrooms, teaching aids, and poor learning environments due to neglect of the physical facilities at the various centres. There is a lack of adequate staff development programmes for a sustainable career structure as well as inadequate instructional materials, books, and learning materials. The other critical challenge affecting the effective implementation of online learning is the lack of funding from the government as well as the lack of effective monitoring of the management.

Saxena (2020) in Dhawan (2020) observes that in India, many learning institutions were reluctant towards online teaching and learning. However, with the advent of Covid-19, every institution of higher learning has been introduced to e-learning. Dhawan observes that e-learning in India is done via Google Hangouts, Skype, Adobe Connect, and Microsoft Teams, though ZOOM is proving to be the best. Essentially, Saxena (2020) postulates that online etiquette was shared with lecturers and students and this has proven the e-learning platform to be inclusive.

Musigafi et al. (2015) investigated the challenges of online learning faced by students at the Zimbabwe Open University (ZOU). The results show that learners are challenged with a range of obstacles in their course of study. The most reported challenges are lack of sufficient time for study, difficulties in accessing and using ICT, ineffective feedback, and lack of study materials. The scholars argue that the above challenges are a recipe for many other problems associated with online learning.

Duraku & Hoxha (2020) have observed that due to isolation, the use of technology has been considered the most appropriate (if not the only) alternative to keep educational systems functional in many parts of

the world during this period. Magasu et al. (2021) have argued that despite the challenges in implementation especially in Africa, several advantages have been acknowledged in the need to shift to remote or online learning, among which stands out the opportunity for rapid progress in the field of digital education. Many studies have also shown that the shift to an e-learning format has also been assessed as a good opportunity for students to become stronger, more creative, and more innovative. It is cardinal to argue that e-learning is not only required to be implemented during the Covid-19 pandemic but that educators and learners both in universities, secondary schools and primary schools should embrace it and conduct learning in an event of calamities. For example, Italy experienced three violent earthquakes in 2016 which left the University of Camerino structures collapsed. The above scenario shows that the face-to-face mode of learning was not possible. Therefore, the university had no choice but to adopt e-learning to keep the educational process in continuation and the mode of learning proved to be effective. Siame et al (2023b) observe that students are not comfortable with the online mode of education due to challenges of internet connectivity and other technical challenges associated with technology. The scholars also argued that there is over-dependency on face-to-face learning at Kwame Nkrumah University which affects the implementation of e-learning.

Another study was conducted by Kasse & Balunywa (2013) in Uganda who observed a slow adoption of e-learning at Makerere University Kampala; Makerere University Business School; Kampala International University, and Islamic University in Uganda. The study shows that 80% of e-learning was used to deliver learning materials to students, 12% was minimally used to conduct discussions and 2% was used for assessments. The study shows that infrastructural technical incompetence and attitudinal challenges by both lecturers and students were identified as the major factors limiting the full-scale adoption of e-learning in these institutions. This study is insightful during the evaluation of the effectiveness of e-learning during post Covid-19 era at selected universities in the Kabwe district, Zambia.

According to Sanga et al. (2007) in Mutisya & Makokha (2016), some universities in Tanzania had a slow implementation of e-learning. Among the 10 universities studied, only one university had managed to use e-learning software such as WebCT and Blackboard. Other universities had challenges with ICT infrastructures such as Local Area Networks (LAN), Internet, computers, CDs, and DVD facilities that formed the basis for the establishment of an e-learning platform. This shows that e-learning platforms require heavy investment in technology if e-learning activities are to be implemented in higher learning institutions successfully.

On the other hand, the concerns of lecturers engaged in teaching processes have been observed to be related to their capacities of conducting remote/online learning due to the level of their knowledge and skills in the use of technology, their access to technology, and at-home isolation. Such concerns have been reported in particular by countries that declared an extremely low-level use of classroom technology before the current circumstances (UNESCO, 2020). Rogers (2003) claims that if innovation is compatible with an individual's needs, then uncertainty will decrease and the rate of adoption of the innovation will increase. This shows that there have been significant challenges in the implementation of e-learning amidst the Covid-19 pandemic.

Magasu et al. (2021) document that in Zambia, due to restrictions imposed by the Ministry of Health as a result of the COVID-19 pandemic, nearly all higher learning institutions in Zambia have shifted to e-learning. This was achieved by publishing press statements for immediate release to inform students of the increased awareness and adoption of technologies for e-learning. In line with the Ministry of Health guidelines, the Kwame Nkrumah University (KNU) senate also resolved that in this closure, learning

would be conducted through e-learning platforms such as the modular object-oriented dynamic learning environment (MOODLE). This was followed by requesting the academic staff to expeditiously secure learning support material for them to facilitate teaching and learning using the e-learning platforms. Further, students were also guided to register and get connected to the e-learning platforms to avoid missing out on learning. However, the applicability of e-learning at Kwame Nkrumah University seems to have died a natural death after the reduction in the number of Covid-19 cases in Zambia. It is against the above background that this chapter evaluates the effectiveness of e-learning during Covid-19 at Kwame Nkrumah University.

### 3. Theoretical Locale

This paper adopted the Innovation Diffusion Theory (Rogers, 2003). Some scholarly works that have used this theory such as Zhang et al. (2014) and Venkatesh et al. (2003) have shown that it is one of the popular theories for studying the adoption of Information Technology (IT) and understanding how IT innovations spread within and between countries. The theory fits well to guide the analysis of the present study because e-learning concerns itself with innovativeness in the use of IT.

According to Rogers (2003), there are four main determinants of the success of an IT innovation. The determinants of successful innovations are communication channels, the attributes of the innovation, the characteristics of the adopters, and the social system. The communication channels refer to the medium through which people obtain information about the innovation and perceive its usefulness. The communication channels involve both mass media and interpersonal communication. Secondly, five attributes of innovation are regarded as user-perceived qualities namely, relative advantage, compatibility, complexity, trialability, and observability. In this regard, relative advantage can be described as the degree to which the user perceives the benefits of the existing technology by adopting an innovation. Tornatzky & Klein (1982) describe compatibility as a process that captures the extent to which an innovation is consistent with the existing technical and social environment. This quality is in line with the present study that evaluates the effectiveness of e-learning platforms in higher learning in institutions in Zambia during the Post Covid-19 era. The theory shows that innovation can integrate or coexist with existing values, experience, and the needs of potential adopters, the greater its prospects for diffusion and adoption.

The third user-perceived quality in this theory is complexity. Tornatzky & Klein (1982) complexity measures the degree to which an innovation is perceived to be difficult to understand, implement, or use. This entails that less complex innovation is more likely to be rapidly accepted by end-users. Tornatzky & Klein (1982) describe trialability as the ability of an innovation to be put on trial without total commitment and with minimal investment. The dual argues that an innovation with higher trialability is more likely to be adopted by individuals. The fifth user-perceived quality of innovation is observability which deals with the extent to which the benefits of an innovation are visible to potential adopters. It can be argued that it is only when the results are perceived as beneficial that innovation is adopted. Therefore, the advocacy and adoption of e-learning during the post Covid-19 are not only beneficial to the students but also to the educators and the nation because students are attended to during critical times when they cannot access the educators for physical lessons.

It can be argued that the four main determinants of the success of IT are crucial if e-learning during the post Covid-19 period has to be effectively implemented at Kwame Nkrumah University. Therefore, the university management should invest heavily in IT infrastructure and programmes. This is in line with scholars such as Winters (2013) in Chifuwe et al. (2020) who argue that an investment in education brings

out the capacity in the investor to work and adapt to new life because education instils in the individuals the correct approach towards life. This entails that investing in IT means equipping the lecturers, students, as well as IT personnel with knowledge and skills on how best e-learning programmes can be rolled out.

#### 4. Methodology

The article adopted a qualitative research design to guide the data collection and analysis. Scholars such as Brink & Wood (1998) and Siame et al. (2023) have argued that results obtained using qualitative research are holistic, non-numerical, inductive, subjective, and process-oriented methods used to understand, describe, interpret, and develop a theory on a phenomenon. The research findings obtained using the qualitative design are reported using words and sentential expressions (Mutch, 2005).

The study used questionnaires to collect the required data to assess the effectiveness of e-learning at Kwame Nkrumah University. The document analysis method was adopted to justify the descriptive objectives using secondary data (cf. Siame, 2019). In line with Chaleunvong (2009), identifying and retrieving secondary sources of data required for the study was the systematic starting point of efficient data collection. Therefore, data were elicited from thirty respondents who were sampled randomly and selected purposively. Five respondents were first years, five were second years, five were third years, five were fourth-year students, five were postgraduate students at the masters’ level and five were academic members of staff. Each intake and academic year had a representation from the school of education, humanities and social sciences, natural sciences, and business students.

Based on the principle of Mugenda & Mugenda (1999), data collection went hand in hand with analysis. Data were analysed analytically using descriptive, thematic, and tabular concepts. Being an academic member of staff, the researcher used introspection to arrive at valid issues themes or factors that hinder the effectiveness of the e-learning programme at Kwame Nkrumah University. The documents which were analysed were accessed from libraries, the internet, and published works.

#### 5. Results and Discussion

##### 5.1 Lack of Adequate Infrastructure

Results regarding the status of infrastructure development to support the effectiveness of e-learning at Kwame Nkrumah University during the post Covid-19 period are presented in the table below:

**Table 1:** No availability of e-learning infrastructure

Responses	Frequency	Per cent
Strongly agree	25	83.3
Agree	04	13.3
Not sure	00	00
Strongly disagree	00	00
Disagree	01	3.3
Total	30	100

The table shows that 96.6% of the students were not aware of the availability of the e-learning infrastructure at Kwame Nkrumah University during the post Covid-19 period. 3.3% of the respondents testified that the institution had a small computer laboratory which could only accommodate about 20 students at a time. The results show that the biggest population of students do not have access to e-learning facilities at the institution. These results are consistent with the findings of Sanga et al. (2007) in Mutisya & Makokha (2016), who observed that among the 10 universities studied, only one university had

managed to use e-learning software such as WebCT and Blackboard because other universities had challenges to do with ICT infrastructures such as Local Area Network (LAN), Internet, computers, CDs, and DVDs facilities that formed the basis for the establishment of an e-learning platform. Based on the above analysis, it can be argued that e-learning platforms require heavy investment in technology during and after the Covid-19 pandemic if e-learning activities are to be implemented in higher learning institutions with fewer difficulties. The results also suggest that Kwame Nkrumah University does not orient the students about the geography of the e-learning facilities hence are not aware of whether the infrastructure exists or not. The results further suggest that few students have access to the infrastructure because its capacity is small. Therefore, there is a great need to orient the students about the computer laboratory and also to expand the infrastructure so that more students can access the facility for e-learning. This entails that the institution should consider investing in the e-learning infrastructure to cater for many students at once.

### 5.2 Limited Access to the Internet

The responses regarding internet accessibility during the post Covid-19 era for students at Kwame Nkrumah University are recorded in the table below:

**Table 2:** Internet connectivity is limited

Responses	Frequency	Per cent
Strongly agree	30	100
Agree	00	00
Not sure	00	00
Strongly disagree	00	00
Disagree	00	00
Total	30	100

This finding shows that 100% of informants confirmed that internet connectivity is a critical challenge when teaching and learning are conducted using restricted and limited e-learning facilities. This result is in tandem with Musigafi et al, (2015) who report that students have difficulties in accessing and using the Information Communication Technology (ICT) facilities at Zimbabwe Open University (ZOU). The issue of limited internet connectivity at higher learning institutions such as Kwame Nkrumah University is also echoed by Nsiah (2006) who observes that the University of Ghana also lacks a systematic approach to information communication technology to use in e-learning settings. This result reveals that most students who are at the institution have no access to internet services. Internet connectivity is mainly active near the ICT room and offices for educators. This makes e-learning difficult if lectures are conducted either in the evening when students are in the hostels or when they are out of campus. The institution should aim at increasing the internet connectivity radius of internet so that learners can access services within the confines of their rooms, especially at night which is also not safe for students' warfare.

### 5.3 Limited Access to E-learning Facilities

The results concerning accessibility to e-learning facilities are illustrated in the table below:

**Table 3:** Restrictions to e-learning facilities

Responses	Frequency	Per cent
Strongly agree	30	100
Agree	00	00

Not sure	00	00
Strongly disagree	00	00
Disagree	00	00
Total	30	100

The table shows that 100% of the students have limited access to e-learning facilities. Firstly, the room with twenty computers is too small to accommodate a student population of about seven thousand (7000). Secondly, results show that the computer laboratory is not open to students all the time, hence they have limited access. There is a need to assign more officers to man the laboratory so that it is constantly open to students for them to freely access e-learning services which the educators upload to the institution’s website. The other limitation to accessibility of the facilities and materials is that students are denied access to e-learning platforms such as Moodle if they do not pay 50% towards their user/tuition fees. This limitation or hindrance poses a great challenge and compromises the effectiveness of e-learning at the higher learning institution. There is a need for the university to remove the restrictions to access e-learning. Otherwise, less access to e-learning facilities makes learning ineffective and the standards of learning go down. In such a situation, the institutions of learning can produce half-baked graduates.

#### 5.4 High Cost of Running Internet

The responses regarding challenges associated with the cost of internet connectivity are presented in the table below:

**Table 4:** Internet connectivity is expensive

Responses	Frequency	Per cent
Strongly agree	00	00
Agree	05	16.6
Not sure	05	16.6
Strongly disagree	10	33.3
Disagree	10	33.3
Total	30	100

This finding shows that more students are not aware that the costs of running internet services are usually high. This is a challenge which affects the effectiveness of implementing the e-learning programme and is in tandem with the study by Nsiah (2006). To effectively implement an e-learning programme, the institution is expected to allocate a big budget to internet costs. However, funding is dependent on the enrolment and revenue collection of the institution. Less budget allocation to running costs of the internet negatively affects the implementation of e-learning programmes. For instance, the inaugural publication of the first Issue of Kwame Nkrumah University Multi-Disciplinary Journal has taken longer than expected due to high internet costs which are not easy to meet.

#### 5.5 Technical Skills among Educators and Students

The responses regarding challenges associated with internet connectivity are presented in the table below:

**Table 5:** Educators and students have high technical skills

Responses	Frequency	Per cent
Strongly agree	00	00
Agree	00	00

Not sure	00	00
Strongly disagree	10	33.3
Disagree	20	66.6
<b>Total</b>	<b>20</b>	<b>100</b>

This finding shows that informants disagreed that both educators and students lack the technical skills to foster the effective implementation of the e-learning programme. This finding at Kwame Nkrumah University correlates with Musigafi et al, (2015) who report that students have difficulties in accessing and using ICT facilities at ZOU in Zimbabwe. The lack of technical skills by members of staff and students in the implementation of the e-learning programme is a testimony that the mode of learning was not effective at the learning institution during the post Covid-19 period. The results of this study agree with Kasse & Balunywa (2013) who report that infrastructural technical incompetence and attitudinal challenges by both lecturers and students were identified as the major factors limiting the full implementation of e-learning in institutions. The above result is in tandem with Nsiah (2006) who observes that most universities lack a systematic approach to information communication technology (ICT) to use during e-learning. This entails that the university should invest in equipping both educators and students with technical skills that foster effective e-learning.

### 5.6 Negative Attitudes among Students and Educators

The responses regarding challenges associated with internet connectivity are presented in the table below:

**Table 6:** Students’ dependence on face-to-face learning

Responses	Frequency	Per cent
Strongly agree	00	00
Agree	20	66.6
Not sure	00	00
Strongly disagree	00	00
Disagree	10	33.3
<b>Total</b>	<b>30</b>	<b>100</b>

This finding shows that 66.6% of informants agreed that most students are not comfortable learning online. This shows that they prefer face-to-face lessons to online learning, a situation which makes e-learning programmes ineffective. This finding is similar to Siame et al. (2023) who argue that in-service teachers undergoing distance education favour physical lectures instead of online or blended lessons due to internet challenges either on campus or at their duty stations. This challenge affects the implementation of e-learning programmes during the post-Covid-19 and also concerns educators. The negativity in the use of e-learning is also echoed by UNESCO (2020) which outlines that lecturers engaged in teaching processes were observed to conduct online learning reluctantly due to the level of their knowledge and skills in the use of technology, their access to technology, and at-home isolation which resulted into the low-level use of classroom technology during the Covid-19 period. It is sad to note that the same trend has continued during the post-Covid-19 and the effective implementation of e-learning has greatly been affected.

### 5.7 Lack of Consistency in an E-learning Programme

The responses regarding challenges associated with internet connectivity are presented in the table below:

**Table 7:** The e-learning programme is not consistent

Responses	Frequency	Per cent
Strongly agree	30	100
Agree	00	00
Not sure	00	00
Strongly disagree	00	00
Disagree	00	00
Total	30	100

The results show that the e-learning programme is not consistent at Kwame Nkrumah University. The informants indicated that while ICT facilities were not effective and easily accessible during the Covid-19 period, the effectiveness of e-learning during the post-Covid-19 era is questionable because even the lectures which used to be conducted on the Moodle platform are no longer there. This result is in line with Magasu et al. (2021) who report that the applicability of e-learning at Kwame Nkrumah University seemed to have died a natural death after the reduction in the number of Covid-19 cases in Zambia. The finding also correlates with Saxena (2020) in Dhawan (2020) who observes that in India, many learning institutions were reluctant towards online teaching and learning. The study shows that e-learning lessons were suspended by the institution immediately after face-to-face lecturers resumed. This situation has made both the educators and the students lose the little e-learning skills they acquired due to a lack of hands-on activities. Lack of consistency does not prompt management to invest in ICT facilities and e-learning infrastructure. It can be argued that e-learning should not only be implemented during the Covid-19 pandemic but that educators and learners in universities, secondary schools and primary schools should embrace it and continue teaching and learning online in case of calamities (Magasu et al., 2021). There is a need for the institutional management together with the information communication technology (ICT) manager to invest in e-learning materials and for the programme to continue running in case the pandemic resurfaces. This situation should help educators and students to be ablest with modern learning skills and knowledge and in the event of an outbreak, both parties can easily adapt and learn online.

## 6. Conclusion

The findings show that e-learning in higher learning institutions was not effective during the post-Covid-19 period in Zambia and Kabwe District in particular. The ineffectiveness of e-learning is attributed to several challenges which include; the lack of adequate infrastructure, limited access to the Internet, and inadequate technical skills among educators and students. Other challenges that hinder the effectiveness of e-learning during post Covid-19 are; limited access to e-learning facilities by students, students being denied access to E-learning platforms such as Moodle if they do not pay 50% towards their user/tuition fees, high cost of running internet, the negative attitude among students and lack of consistency in the implementation of the e-learning programmes and platforms. It can further be concluded that higher learning institutions in Kabwe District should invest in improving their infrastructure. There is a need to provide adequate training to educators and students to ensure the effective adoption and implementation of e-learning. The findings of this study have implications for policymakers and educators seeking to improve the quality of education delivery in the post-Covid-19 era in Zambia.

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