Mulungushi University Multidisciplinary Journal
Vol. 2 No. 2

https://research.mu.ac.zm/research/index.php/mu

An assessment of online learning among students of higher learning institution in the midst of COVID-19 lock down: A case study of Levy Mwanawasa Medical University in Lusaka district of Zambia

Cynthia Mwansa[1*], Bwalya Bupe Bwalya[2] and Richard Mwenya[1]

[1]Levy Mwanawasa Medical University, Institute of Basic and Biomedical Sciences, Natural Sciences Department, P.O. Box 33991, Lusaka, Zambia. Email: cynthiakm22@gmail.com

[2]Mulungushi University, School of Social Sciences, Department of Economics, P.O Box 80415, Kabwe, Zambia; Email: bwalya1983@gmail.com; ORCID: https://orcid.org/0000-0002-8439-5390

[1]Levy Mwanawasa Medical University, Institute of Basic and Biomedical Sciences, Natural Sciences Department, P.O. Box 33991, Lusaka, Zambia. Email: rmwenya2@yahoo.com

*Correspondence: Cynthia Mwansa, Email: cynthiakm22@gmail.com

Abstract

Background: In Zambia, teaching in most educational institutions is based on the traditional methods of learning, usually face-to-face in a classroom. Nonetheless, with the COVID-19 pandemic, this trend changed completely due to government lockdown. Hence the institutions of higher learning had to adapt to online teaching to deliver content to its students. This swift change in the mode of learning requires understanding to benefit both learners and instructors especially for a less developed country like Zambia.

Methods: This study utilised both the descriptive and cross-sectional study designs aimed at assessing the impact that the COVID-19 lock down had on medical related field students at Levy Mwanawasa Medical University through an online survey. In addition, we also explored students preferred mode of learning and challenges that may help in designing and implementing of online learning for such students.

Results: Results indicate that, in 96.9% of the students who participated in the survey had attended online learning. The gadget most used for online learning is a mobile phone. Majority of the students opined that face-to-face was the preferred form of learning. It was observed that majority of the students experience with online learning at LMMU was poor. Poor internet network, lack of data bundles and load shedding by the country's power supply company where highlighted as the major challenges faced by students.

Conclusion: Practicals are a key component in the learning of medical students and hence as such it is important that the university strikes a balance as it incorporates online teaching in the delivery of its services by capturing the learning needs of the students.

Key words: Online learning, COVID-19, Education, Medical Students, Zambia

Introduction

The novel coronavirus (2019-nCoV)–infected pneumonia was identified in Wuhan city central of China (Li et al., 2020). World Health Organization (WHO) named the novel coronavirus as "COVID-19" on 11 February 2020. The COVID-19 pandemic brought about the largest disruption of education systems in the history of humanity by affecting 94% of the learners all over the world (MNDP, 2017; Pokhrel and Chhetri, 2021).

The rise in the cases of COVID-19 resulted in the schools/colleges and universities being shut across the world (World Economic Forum', no date). This introduced the transitioning of lessons to digital platforms such as online libraries, Television broadcasting of the lessons (Pokhrel and Chhetri, 2021), guidelines, resources, video lectures and online channels in different countries to increase the provision of the lessons world-wide (Basilaia and Kvavadze, 2020).

As a result, the education system changed dramatically with a distinct rise in online learning. Teaching shifting from the traditional classroom setup to remote learning on digital platforms (Zhao, 2020). The transformation in the education system was welcomed by many learning platforms that offered their products and services free of charge. However, the online learning came with its on challenges such as unreliable internet access and / or technology struggle for learners. Evidence also suggests that the gap in digital learning has been observed across countries and between income brackets within countries. For instance, about 95% of students in Switzerland, Norway and Austria have a computer to use for their school work, but only 34% in Indonesia have computers (OECD, no date).

It has been observed that good education is the key to liberating individuals, creating successful communities, enabling flourishing democracy and building a global economy that is both growing and sustainable (Donnelly, Nagarajan and Lipstein, 2019). Improved education creates a society that is able to respond to social and economic development challenges (MNDP, 2017).

Though education is supposed to be accessed by all learners, it has been observed that access to education is low in many developing countries because of the circumstances the learners face. There is need to ensure equity in education for every learner to access education and thrive regardless of circumstance. Equity in education means every student has the necessary materials for education in order to emerge successful. The essential drivers in equity education are fairness and inclusion. Fairness is ensuring that personal and social circumstances do not prevent students from achieving their academic potential (Simon, Malgorzata and Beatriz, 2007). Inclusion is setting a basic minimum standard for all students regardless of background, gender or location (D'Alessio, 2012).

Worldwide, there is a significant gap between those from privileged and disadvantaged backgrounds. E-learning requires 40 – 60% (World Economic Forum', no date) less time to learn than in a traditional classroom setting because students can learn at their own pace i.e by going through the lesson several times.

Institutions such as schools, colleges and universities are there to serve the purpose of education. COVID-19 brought about diversification in the delivery of education. This prompted the serge for new methods of teaching through different online platforms, among them being Moodle, Google classroom, WhatsApp, zoom, Skype, among others. Though several studies have been conducted on online learning as a result of COVID-19 lock-down in many developed and less developed countries, no study to the best our knowledge has tried to assess how students undertaking medical related studies perceive online learning as their profession mostly requires hands on and most face-to-face learning. Therefore, it's against such a background that this study was conducted in order to answer the following study objectives:

i. To assess the various methods of online learning students were exposed to during the lock down

ii. To examine students perceptions of online learning during the lock down; and

iii. To establish the major challenges faced by students with regard to online learning as a result of lock.

iv. To determine whether age of students, year of study and program enrolled for had any influence on the online learning characteristics during the lock down

Data and Methodology

Study Design

This study was descriptive and cross-sectional in nature and employed quantitative approach of data collection to solicit insights from students at Levy Mwanawasa Medical University (LMMU) with regard to online learning during the lock down.

Study population

The study population included undergraduate students enrolled at LMMU during the 2019/2020 academic year, regardless of the year of study.

Sample Methods

For us to ensure that this study is representative of the student population from which it's going to be drawn probability sampling will be used to select the actual sample size for the students targeted in this study.

Sample size Calculation

The sample size was drawn with a desire to obtain estimates representative of student population and with the study and objectives in mind.

The following sample size calculation was used:

$$n = DEFF * (z\ 2\ *(p)\ (1-p))/d2$$
$$n = 1.4 * ((1.645)^2*(0.50*(1-0.5))/(0.05)^2)$$
$$n = 383$$

Where:

DEFF = Design effect (1.4)
Z value = 1.654 for p = 0.05 or 95% confidence intervals
P = Estimated prevalence for students willing to participate in online learning (0.5)
q = 1-p

The sample size based on the estimates shown here was 383 students. However, in order to take into account unforeseen circumstances that might have affected the response rate, such as refusals, no internet connection, or busy schedule etc., the estimated sample size of 383 was adjusted upwards by a 10% non-response to 426 students. Since oversampling helps in ensuring the estimates are closer to the real population figures, this study yielded a total of 515 participants.

Data Collection Procedure

Google forms was used to collect information from students making use of the features that allow us collect data on both closed and open ended questions so as to get the students perspectives on online learning during the lock down period. The link was shared with students on the University website for them to answer the questions for a period of (7 days), of which a total of 532 students responded to the questionnaire. Seventeen (17) records were deleted as they were incomplete thus living us with 515 for analysis

Data Analysis

Once the data collection period elapsed, the data from google forms were exported to excel which was further exported to Stata version 15.0 for cleaning before actual analysis based on descriptive (frequencies and cross tabulations) statistics and presented in form of frequency tables and figures.

Results

Table 1 below shows that the majority of the respondents were females (60.4%). More than two thirds (71.3%) of the students were aged 20 or more years. Twenty (20%) percent had already attained some tertiary education while 80% had only completed grade twelve.

Majority (48.7%) of the students that participated in the survey are from Lusaka province while the least was Luapula province 1.4%. The survey also showed that 95.9% of the students were not employed, this maybe because majority of students about 80% had only attained grade twelve as the highest level of qualification.

Table 1: Demographic and socio-economic characteristics of the students

Variable	Frequency	Percent
Sex of student		
Male	204	39.6
Female	311	60.4
Age group		
19 or below	148	28.7
20 or more	367	71.3
Current marital status		
Single	497	96.5
Married	18	3.5
Highest educational level attained		
Grade Twelve	412	80.0
Tertiary	103	20.0
Province of residence		
Central	40	7.8
Copperbelt	77	15.0
Eastern	45	8.7
Luapula	7	1.4
Lusaka	251	48.7
Muchinga	16	3.1
Northern	22	4.3
North-Western	19	3.7
Southern	26	5.0
Western	12	2.3
Currently employed		
Yes	21	4.1
No	494	95.9
Year of study		
First	486	94.4
Second	13	2.5
Third	16	3.1
Qualification enrolled for		
Diploma	128	24.9
Degree	387	75.1
Total	**515**	**100**

Table 2 shows the distribution of student use of internet and online learning characteristics by age group of the students. Results indicate that overall, 61.2% of the students use the internet at home compared to 38.8% who only use it at times. The most widely used gadget for internet is a mobile phone 94.8%. Slightly more than one third (33.8%) of the students reported that they spend about 3 – 4 hours on the internet a day, 29.1% 1 – 2 hours with only about 16.3% spending 5 or more hours.

With regard to online learning in relation to students' age group, table 2 below shows that 96.9% use online for learning, with more students aged 20 or more years (98.4%) compared to those age 19 years or less (93.2%) using online learning for their classes. Among those who participated in online learning, most of students used WhatsApp (56.5%), Zoom (22.8%) and Google classroom (19.6%) as an on-learning platform.

Among the major challenges faced by students during online learning included poor internet network (48.3%), lack of data bundles at times (30.7%) and load shading (19.8%). Disaggregated by age, a statistically significant relationship was found between students' age and challenges faced with regard to online learning. Students aged 19 years or less mentioned lack of data bundles (39.1%) as the major challenge compared to those aged 20 years or more who mentioned poor network (52.1%)

Students were further asked to describe their experience with online learning during the lock down. Majority of the students revealed that it was poor (41.9%) with only about 3.2% of the students regardless of the age group mentioning that it was excellent ($p=0.045$). Among those who attended online classes, slightly less than half 49.1% rated the classes as being fair, good and very good ($p=0.011$).

When students were asked their preferred mode of learning, overall, less than two thirds (60.5%) revealed that they would prefer face- to-face, more than a quarter (27.5%) would prefer a blended with only 12.0% settling for online learning. Disaggregated by age group, students aged 20 or more years has a slightly higher percentage compared those aged 19 or less with regard to face-to-face learning (60.9% compared to 59.4%) whereas with regard to blended learning younger students (19 or less) than older students (20 or more years) preferred blended learning (20.4% compared to 26.3%)

Table 2: Percentage distribution of students' age group by internet and online learning characteristicss

Variable	Age group				Total		*p-value*
	19 or less		20 or more				
	n	%	n	%	n	%	
Use of internet							
Yes	90	60.8	225	61.3	315	61.2	*0.917*
Sometimes	58	39.2	142	38.7	200	38.8	
Gadget used for internet							
Phone	463	96.6	345	94.0	488	94.8	*0.235*
Mifi	2	1.4	16	4.4	18	3.5	
Router	3	2.0	6	1.6	9	1.7	
Time spent on the internet							
Less than 1 hour	23	15.5	84	22.9	107	20.8	
1 - 2 Hours	40	27.0	110	30.0	150	29.1	*0.101*
3 - 4 Hours	54	36.5	120	32.7	174	33.8	
5 or more hours	31	20.9	53	14.4	84	16.3	
Use of online learning							
No	10	6.8	6	1.6	16	3.1	*0.002*
Yes	138	93.2	361	98.4	499	96.9	
Total	**148**	**100**	**367**	**100**	**515**	**100**	
Online learning platforms used							
Edmodo	0	0.0	1	0.3	1	0.2	
Google Classroom	28	20.3	70	19.4	98	19.6	*0.002*
Moodle	0	0.0	4	1.1	4	0.8	
Zoom	20	14.5	94	26.0	114	22.8	
WhatsApp	90	65.2	192	53.2	282	56.5	
Challenges faced by students for e-learning							
Lack of device to access internet	2	1.4	4	1.1	6	1.2	
Load shading	29	21.0	70	19.4	99	19.8	*0.002*
No bundles	54	39.1	99	27.4	153	30.7	
Poor network	53	38.4	188	52.1	241	48.3	
Experience with online learning							
Excellent	3	2.2	10	2.8	16	3.2	
Good	14	10.1	34	9.4	34	6.8	*0.045*
Fair	45	32.6	108	29.9	108	21.6	
Poor	76	55.1	209	57.9	209	41.9	
Rating of online learning by students							
Very Good	9	6.5	10	2.8	19	3.8	
Good	20	14.5	57	15.8	77	15.4	*0.011*
Fair	40	29.0	109	30.2	149	29.9	
Poor	69	50.0	185	51.2	254	50.9	
Preferred mode of learning by students							
Face to face	82	59.4	220	60.9	302	60.5	*0.016*
Online	14	10.1	46	12.7	60	12.0	
Blended	42	30.4	95	26.3	137	27.5	
Total	**138**	**100**	**361**	**100**	**499**	**100**	

Table 3 below shows the chi-square test results for students' year of study and qualification enrolled for by online learning characteristics.

Year of study was significantly associated with use of internet 59.9% and 82.8% among first and second+ year students; 58.9% of the first years indicated they used WhatsApp for online learning compared to 55.2% among second+ year students who indicated zoom. Both first (51.3%) and second+ (44.8%) year rated their online classes as been poor. Further, a statistically significant association was found between year of study and preferred mode of learning by students, with first year students preferring face-to-face learning (61.9%) compared to second+ year students who preferred blended learning (62.1%).

Similarly, students who enrolled for both diploma and degree programmes indicated that use internet (50.8% and 64.6% respectively), spent 3 – 4 hours on

the internet per day (33.6%) and (33.9%). On the contrary, students enrolled for a diploma (54.8%) indicated that they used zoom for their online classes compared to those enrolled for a degree (64.5%) who indicated WhatsApp as the platform used.

Both diploma and degree students reported that their experience with online learning was poor (70.2% and 52.8% respectively) and rated the online lessons poorly (58.9%) and (48.3%). Both observed groups of students (diploma and degree) reported that their preferred mode of learning was face-to-face (75.0%) and (55.7%).

TABLE 3: Percentage distribution of students' year of study and qualification enrolled for by internet and online learning characteristics

Variable	Year of study				*p-value*	Qualification enrolled for				*p-value*
	First		Second +			Diploma		Degree		
	n	%	n	%		n	%	n	%	
Use of internet										
Yes	291	59.9	24	82.8	*0.014*	65	50.8	250	64.6	*0.005*
Sometimes	195	40.1	5	17.2		63	49.2	137	35.4	
Gadget used for internet										
Phone	463	95.3	25	86.2	*0.088*	126	98.4	362	93.5	*0.093*
Mifi	15	3.1	3	10.3		1	0.8	17	4.4	
Router	8	1.6	1	3.4		1	0.8	8	2.1	
Time spent on the internet										
Less tha 1 hour	99	20.4	8	27.6		36	28.1	71	18.3	
1 - 2 Hours	144	29.6	6	20.7	*0.692*	39	30.5	111	28.7	*0.007*
3 - 4 Hours	164	33.7	10	34.5		43	33.6	131	33.9	
5 or more hours	79	16.3	5	17.2		10	7.8	74	19.1	
Use of online learning										
No	16	3.3	0	0.0	*0.321*	4	3.1	12	3.1	*0.989*
Yes	470	96.7	29	100.0		124	96.9	375	96.9	
Total	**486**	**100**	**29**	**100**		**128**	**100**	**387**	**100**	
Online learning platforms used										
Edmodo	1	0.2	0	0.0		0	0.0	1	0.3	
Google Classroom	94	20.0	4	13.8		16	12.9	82	21.9	
Moodle	0	0.0	4	13.8	*0.000*	0	0.0	4	1.1	*0.000*
Zoom	98	20.9	16	55.2		68	54.8	46	12.3	
WhatsApp	277	58.9	5	17.2		40	32.3	242	64.5	
Challenges faced by students for e-learning		0.0		0.0						
Lack of device to access internet	5	1.1	1	3.4		1	0.8	5	1.3	
Load shading	92	19.6	7	24.1	*0.549*	23	18.5	76	20.3	*0.843*
No bundles	146	31.1	7	24.1		43	34.7	110	29.3	
Poor network	227	48.3	14	48.3		57	46.0	184	49.1	
Experience with online learning										
Excellent	11	2.3	2	6.9		4	3.2	9	2.4	
Good	43	9.1	5	17.2		4	3.2	44	11.7	
Fair	147	31.3	6	20.7	*0.185*	29	23.4	124	33.1	*0.005*
Poor	269	57.2	16	55.2		87	70.2	198	52.8	
Rating of online learning by students										
Very Good	18	3.8	1	3.4		3	2.4	16	4.3	
Good	66	14.0	11	37.9	*0.006*	5	4.0	72	19.2	*0.001*
Fair	14	30.	4	13.8		43	34.7	106	28.3	

Poor	524 1	59 51.3	13	44.8		73	58.9	181	48.3	
Preferred mode of learning by students										
Face to face	291	61.9	11	37.9		93	75.0	209	55.7	
Online	60	12.8	0	0.0	*0.000*	12	9.7	48	12.8	*0.002*
Blended	119	25.3	18	62.1		19	15.3	118	31.5	
Total	470	100	29	100		124	100	375	100	-

Discussion

Our study reveals that about less than two thirds (61.2%) of the students were able to use internet for academic purposes during the lock-down whilst at home. With the mobile being the main gadget used to for to access internet for students online learning. Further, unlike in more developed countries, where internet service provision is among several internet service providers (ISPs), for these students, the mobile service providers specifically Airtel and MTN where the main ISPs for the study respondents.

The fact that the lock down brought in a new dimension with regard to how learning needed to be conducted, our study reveals that, when it came to online learning most students (96.9%) reported that they attended online learning Similar studies conducted in other countries reveal contrasting findings for example a study conducted in rural India by Muthuprasad eta al (2020) found that only about 47% of the students had attended online classes in spite 82% of the students reporting that their colleges had started offering on line classes in the wake of COVID-19.

With regard to learning platforms used for online, studies reveal that Microsoft Classroom, Zoom and WhatsApp (Mahyoob, 2020; Muthuprasad eta al (2020) were the best platform to be used for communicating class related content to learners. This finding is similar to what our study found where WhatsApp, and Zoom and Classroom seem to be the more widely used platforms by students from LMMU. The study further revealed that, there was a statistically significant difference in the platforms used for online learning between students aged 19 years or less and those aged 20 or more years. Students aged 19 years or less indicated that WhatsApp, Google Classroom and Zoom were the ones used more compared to those aged 20 or more years who indicated that WhatsApp, Zoom and Google classroom where used to have their classes.

Though students where adapting to the new normal for learning as a result of COVID-19, this in itself did not come without any challenges. Several studies undertaken in other countries have identified various factors that may hinder online learning among them being, none access to internet, infrequent internet connectivity especially among students coming from rural towns (Muthuprasad et al., 2020; Mathrani, Sarvesh and Umer, 2021; Ntshwarang, Malinga. and Losike-Sedimo, 2021). These factors are similar to our study where it was found that, poor network by ISPs, lack of data bundles for use and load shedding by the electricity power supply company were the major challenges that impacted negatively on students' on-line learning. Further, our study found a significant association between students' age and major challenges faced during the online learning with students aged 19 years or less reporting lack of data bundles compared to those aged 20 years or more who reported poor network as a major challenge. This further highlights that the younger students though they may have the gadgets to use for their online learning, lack of bundles when it's time to have class may make it difficult for them to attend online classes compared to the slightly older students.

This situation, highlight the country's digital divide and lack of equitable distribution thus hampering access and utilisation of online learning among students in remote town. Therefore, if these are not fulfilled, provision on online learning among leaners may not be

effective as others will be excluded. Therefore, in order to overcome such challenges institutions of higher learning should ensure that there is interactivity between the learners and instructors, being flexible with platforms used to ensure that they cater for all categories of learners and also ensure that there are follow-ups especially among learners who are inconsistent.

The aforemtioned challenges, may somehow have affected students experience with on-line learning with our results showing that, most students experience with online learning was poor during the lock-down regardless of the qualification enrolled for that is either diploma or degree (*p=0.005*). This is supported by students views on the rating of online lessons, with both younger and older students (*p=0.011*), year of study (p=0.006) and qualifications enrolled for (p=0.001) reported to be poor. These results, may render the success of online classes not to be attained. Various factors may necessitate this results for example, nature of content and infrastructure may make rough ride to fully implement online learning. As such, recording of classes and uploading them for students to access them whenever they connectivity or convenient for them (Muthuprasad et al., 2020). In addition, lecturers need to design their course content in a well-structured manner, concise and relevant especially as there is less contact with the learners (Mathrani, Sarvesh and Umer, 2021).

In spite the fact that, COVID-19 hasn't had a cure yet, it simply means that online learning will be with us as long as the number of cases continue to be high, as such respondents' where further asked their preferred mode of learning our results reveals that, most students at LMMU would prefer face-to-face learning. This is almost three times higher than those who mentioned having a blended approach to learning during the lock-down period. With only about one in every ten respondents' mentioning online learning as their preferred choice. Our finding is more than half less what Muthuprasad et al, (2020) found where about 30% of the students reported preferred online leaning. There are various reasons that may hinder student's preference for online learning given the new normal among them being technical proficiency among instructors and learners with regard to navigating the computer or online learning platforms (Ntshwarang, Malinga. and Losike-Sedimo, 2021).

Therefore, in order to ensure online learning is incorporated as part of the new normal and also for future online learning that will be appreciated by students, institutions of higher learning and their governments in less developed countries should combat the social inequality among students from different social strata, instructors pedagogical challenges that is sudden switch from traditional face-to-face to online teaching of which some maybe technologically incapacitated (Kanwar, 2020, Zarei and Mohammadi, 2021) and the incorporating of technology during teaching even after COVID-19 is no more (Kanwar, 2020).

Conclusion

As the spread of COVID-19 continues, no industry has been spared, the education industry inclusive. This has necessitated the industry to adapt to new teaching methods particularly online teaching to ensure that the students are not lagging behind with the material they need to learn during the period of the lockdown.

The findings from our study highlight that though some students may welcome new method of learning during this period, majority of the students don't favour online learning. This might be due to various constraints faced whilst attending their online classes such as poor internet network, lack of data bundles and load shading by the country's electricity supply corporation.

Therefore, to ensure that online learning is appreciated by the learners institutions of higher learning in less developed countries like ours with similar students should combat several social inequality issues among students of various social strata; instructors pedagogical challenges that is switching from traditional face-to-face to online teaching; and incorporating technology during teaching and learning even after COVID-19 is no more. From the aforementioned, it is clear that for online learning to succeed, there is need for

institutions to focus on the three Cs for them to be effective and efficient that is: connectivity, content and capacity if students for such programmes are to continue having quality education

Research shows that blended learning works best in developing countries. Blended learning refers to a combination of eLearning and face-to-face provision.

Limitations

The analysis of is only limited to the data extracted from students responses and did not include the instructors. Only students who had access to the internet during the time of the study provided the data as such the findings are only be restricted to those who responded to the questions.

Availability of data and materials

The data used and analysed during the current study is available from the corresponding author on reasonable request

Abbreviations

TV: Television
nCoV: Novel Coronoa Virus
WHO: World Health Organisation
LMMU: Levy Mwanawasa Medical University
MTN: Mobile Telecommunications Network
ZAMTEL: Zambia Mobile Telecommunications
ISPs: Internet Service Providers

Appendices

None

References

Li, Q., Guan, X., Wu, P., Wang, X., Zhou, L., Tong, Y., Ren, R., Leung, K.S., Lau, E.H., Wong, J.Y. and Xing, X., 2020. Early transmission dynamics in Wuhan, China, of novel coronavirus–infected pneumonia. New England journal of medicine. https://doi.org//10.1056/NEJMoa2001316

MNDP, 2017. 7th national development plan: 2017–2021. Ministry of National Development Planning, Lusaka, Zambia.

Pokhrel, S. and Chhetri, R., 2021. A literature review on impact of COVID-19 pandemic on teaching and learning. Higher Education for the Future, 8(1), pp.133-141. https://doi.org/10.1177%2F2347631120983481

Basilaia, G. and Kvavadze, D., 2020. Transition to online education in schools during a SARS-CoV-2 coronavirus (COVID-19) pandemic in Georgia. Pedagogical Research, 5(4). https://doi.org/10.29333/pr/7937

Zhao, Y., 2020. COVID-19 as a Catalyst for Educational Change. Prospects, 49(1), pp.29-33. https://doi.org/10.1007/s11125-020-09477-y

Schleicher, A., 2020. Education disrupted–education rebuilt: Some insights from PISA on the availability and use of digital tools for learning.

Donnelly, K., Nagarajan, A. and Lipstein, R.L., 2019. Beyond the mirage: How pragmatic stewardship could transform learning outcomes in international education systems. Publisher: Unknown. Retrieved August, 15, p.2019.

Simon, F., Małgorzata, K. and Beatriz, P.O.N.T., 2007. Education and training policy no more failures ten steps to equity in education: Ten steps to equity in education. OECD Publishing.

D'Alessio, S., 2012. Inclusive education in Italy (Vol. 10). Springer Science & Business Media.

World Economic Forum, 2020. The Future of Jobs Report 2020. Geneva: World Economic Forum.

Muthuprasad, T., Aiswarya, S., Aditya, K.S. and Jha, G.K., 2021. Students' perception and preference for online education in India during COVID-19 pandemic. Social Sciences & Humanities Open, 3(1), p.100101. https://doi.org/10.1016/j.ssaho.2020.100101

Mahyoob, M., 2020. Challenges of e-Learning during the COVID-19 Pandemic Experienced by EFL Learners. Arab World English Journal (AWEJ), 11(4).

https://dx.doi.org/10.24093/awej/vol11no4.23

Mathrani, A., Sarvesh, T. and Umer, R., 2021. Digital divide framework: Online learning in developing countries during the COVID-19 lockdown. Globalisation, Societies and Education, pp.1-16. https://doi.org/10.1080/14767724.2021.1981253

Ntshwarang, P.N., Malinga, T. and Losike-Sedimo, N., 2021. eLearning tools at the University of Botswana: Relevance and use under COVID-19 crisis. Higher Education for the Future, 8(1), pp.142-154. https://doi.org/10.1177%2F2347631120986281

Kanwar A. 2020. Challenges for eLearning during COVID-19. 3rd International Conference on Distance and eLearning (ICDEEL-2020) International Islamic University Islamabad, Pakistan

Zarei, S. and Mohammadi, S., 2021. Challenges of higher education related to e-learning in developing countries during COVID-19 spread: a review of the perspectives of students, instructors, policymakers, and ICT experts. Environmental Science and Pollution Research, pp.1-7. https://doi.org/10.1007/s11356-021-14647-2

Gaba, A., Bhushan, B. and Rao, D.K., 2021. Factors influencing the preference of distance learners to study through online during COVID-19 pandemic. Asian Journal of Distance Education, 16(1), pp.194-206. http://asianjde.com/ojs/index.php/AsianJDE/article/download/529/344

Acknowledgement

The authors wish to thank Dr. Mable Mutengo for initiating the idea of this research

Funding

No funding was received for us conduct this study from any public or private institution including individuals.

Authors Contributions:

CM conceived, designed the google form tool, coordinated, interpreted the results and drafted the manuscript; BBB designed the google form tool, analysed, interpreted the results and drafted the manuscript. RM drafted the manuscript. We further wish to state that we all reviewed the manuscript to ensure that the content contained therein was correct before finally submitting it to the journal

Corresponding Author

Cynthia Mwansa

Ethical declarations

All participants who participated in the study consented before proceeding with responding to the questions. Nonetheless, this study didn't require any ethical approval from the Research Ethics Board.

Consent for publications

No images, individual details or videos for clients' data are part of this paper.

Competing Interests

The authors declare that they have no competing interests.

Declaration of interests

Not applicable

Submission declaration and verification

We declare that this paper has not been submitted to any journal besides this one

Use of inclusive language

Not applicable