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Effectiveness of eLearning During the Lockdown Period- Kenya Case Study.

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Abstract

eLearning can be defined as learning conducted via electronic media, or technology assisted learning typically over the Internet. It is an area that came into existence more than a decade ago and has then evolved slowly being introduced as part of technology assisted learning, especially in Kenya. First it has been integrated into a blended learning as both learners and teachers ensure pedagogy and proper use of tools. However, with the present pandemic of COVID-19, countries have been forced to close institutions of learning indefinitely. Education has a direct impact on sustainable development therefore learning needs to go on. So, it is on this basis that various learning tools have quickly been adapted with speed so that learning may progress. In Kenya, different university lecturers adopted several eLearning tools informally or formally. This paper investigates tools that are being used during this difficult period. Further, the effectiveness of the tools as far as the learners and field of study is concerned is investigated. Another objective was to find out the extent to which mobility devices were used for eLearning. Effectiveness is assessed using factors such as the satisfaction of the students in relation to the achievement of their learning objective is assessed. In addition, as this research seek to finds out eLearning tools that were applied it will relate effectiveness to how favorable the learner's environment and infrastructure supported their application. Primary data was collected using online questionnaires to the learners and teachers using an online research tool. The scope covered a study of science and computing students in a private institution of higher learning in Kenya. A total of 48 students from the faculty of science of a private university participated in the research. The analysis of the effectiveness of eLearning in education was done by analyzing the feedback from the data collected.

Keywords: *eLearning, lockdown, elearning tools, elearning effectiveness*

Investigating the effectiveness of eLearning during lockdown- Kenya case study.

The integration of Information Communication Technology (ICT) and education gave rise to eLearning. eLearning can be defined as learning conducted via electronic media, or technology assisted learning typically over the Internet. Today's eLearning has evolved from Computer Based Training (CBT) to full fledge online classes managed through Leaning Management Systems (LMS) (Downes, 2005). (Connolly & Stansfield, 2007) suggests that there has been three generations of eLearning, the first generation was passive on the Internet, with some repurposed course material and mentoring that was done via email. The second generation was characterized by use of rich stream media and virtual leaning environments backed by higher Internet bandwidth. The third generation is characterized by interactive and collaborative learning over internet. eLearning can either be implemented as pure online teaching or blended learning. In blended learning learners maintain a face-to-face interaction while using ICT to ensure pedagogy. Blended learning is preferred to pure online learning as learners have a sense of belonging to a community (Tayebinik & Puteh, 2013).

The outbreak of the corona virus forced governments to shut down learning institutions to curb the further spread of the virus. Most universities in Kenya had till COVID-19, introduced only blended learning. However, with the pandemic, they were left with no choice but to either go fully online or close indefinitely. Daystar University, a private university in Kenya quickly transitioned to ensure continuity of learning during such a challenging time. Lecturers used a myriad of technological tools to complement the existing Learning Management System (LMS) in ensuring continuity of learning. This study was carried out among students of Daystar University and specifically the faculty of science. The objective of the study is to measure the level of students' exposure to eLearning and related tools, investigate the leaners satisfaction

with eLearning during the lockdown period. The research sought to find out the extent to which mobility devices were used for eLearning.

Literature Review

The effective use of eLearning tools can empower innovative learning (Mudassir Khan, 2016). According to (Mudassir Khan, 2016) there are a variety of devices to consider in eLearning. Apart from the desktop, eLearning depends on a variety of mobile devices such as the laptop, palm top, media players and in addition is the smartphones. All these devices can now be electronically connected to a network at any time enabling eLearning. Modes of communication in eLearning technologies can be in any form (Mudassir Khan, 2016) such as: educational websites with learning scenarios, worksheets and interactive exercises, or business sectors with cost effective online training, screen casts, e-portfolios, EPSS(electronic performance support systems), web based teaching materials, websites and discussion boards, blogs, wikis, text chat, computer aided assessment, animation, simulations and games, electronic voting systems. Web-conferencing is a system that performs live meetings between participants from different locations over the Internet and in that way expand communication, sharing of knowledge and experience. At present web conference tools are one of the most employed methods for synchronic communication between lectures and students (Nedeva, Dineva, & Atanasov, 2014). Web conferencing tools are being used to improve the current eLearning infrastructure (Gubiani, Matjaž, Mozetič, & Koroušić, 2020). It is a remarkable opportunity for online courses within higher education (Nedeva et al., 2014) and it is also an adaption to the needs of the new generations of students**.**

Integration of eLearning for most students has been learning via an Learning Management System that supports a variety of online tools as it manages a variety of educational activities (Al-Sammarraie, El-Ebiary, Kazem, Almandeel, & Alshamasi). Moodle is an LMS that is commonly used and is effective in eLearning as it allows teachers and students to learn together (Dharmendra, Kumar, Abhishek, & Soni, 2011). According to a study conducted in Malaysia and based on students experience on using LMS (Al-Sammarraie et al.), factors that impact students online effectiveness include communication, content, practical lab or work, time and money, The benefits of eLearning are cost effectiveness, time saving, learning 24/7 and at any location (Mudassir Khan, 2016). Some problems faced in eLearning vis LMS include creating quality learning material and technical issues such as internet connectivity

It is also evident that eLearning provides greater access to education as well as the ability to take the course from anywhere (Abou El-Seoud, Taj-Eddin, Seddiek, El-Khouly, & Nosseir, 2014). Research by (Abou El-Seoud et al., 2014)also revealed that in increase in level of IT skills and communication skills is needed for students to benefit significantly from eLearning as lack of confidence in using IT maybe an obstacle to effective eLearning. eLearning and student motivation for several higher institutions in Egypt revealed that success depended on effectiveness of delivery and adequate training of instructors (Abou El-Seoud et al., 2014). Most students are motivated by application of eLearning tools and enjoy the ability to hand in assignment and view grades online though they experienced a lack of physical interaction.

Blended learning can be defined as learning systems that combine face-to-face instruction with computer mediated instruction and also involves a combination of conventional face-to-face and online technology-based learning (Gambari, Shittu, Ogunlade, & Osunlade, 2018). This

combination may include activities such as mixing various event-based activities such as face-to-face classroom, live eLearning, self-paced learning, synchronous online conference and training, or asynchronous self-pace learning. Hybrid also known as blended learning increased students satisfaction of eLearning (Buzzetto-More, 2008).

In a study on student needs in relation to eLearning, the findings support that mobile phones should be selected as required equipment for use of mobile devices in eLearning setting (Yilmaz, 2016). (Yilmaz, 2016) also noted that mobile phones provided students with an opportunity for freedom of movement in learning activities. The feature and power of a mobile phone could handle the eLearning activities effectively. An assessment of science students revealed that most of them were positive about application of mobile phones in eLearning.

Research methodology

To investigate the effectiveness of eLearning during the lockdown period, the research adopted a quantitative study. An online questionnaire was comprising demographic questions and questions to gauge leaners satisfaction was developed and disseminated online. A 5-point Likert Scale with options such as (1) *Strongly disagree*; (2) *Disagree*; (3) *Neutral;* (4) *Agree;* (5) *Strongly agree* was employed. Online survey was preferred since it was a period when movement was restricted. The study focused on student who had been in session before the lockdown since the had been forced to transition to fully online mode of eLearning as opposed to the blended option.

Data from a total of 48 usable online questionnaires was analyzed by use of Statistical Package for the Social Sciences (SSPS) and Microsoft Excel. The findings are presented in the section that follows.

Results/Findings

An aggregate of 48 students responded to the questionnaire. Descriptive statistics were analyzed by used of the SPSS software. Majority of the participants were male, with 52.08% and female 47.92% as shown in Table 1.

Table 1

Respondents gender distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	25	52.1	52.1	52.1
	Female	23	47.9	47.9	100.0
	Total	48	100.0	100.0	

41.7% of the respondents were in their final year of study,25% third year, 12.5% second year while first year students were 20.8% as shown in Table 2.

Table 2

Respondents year of study

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1st year	10	20.8	20.8	20.8
	2nd year	6	12.5	12.5	33.3
	3rd year	12	25.0	25.0	58.3
	4th year	20	41.7	41.7	100.0
	Total	48	100.0	100.0	

The fields of study amongst the respondents were as tabulated below. Computer science and Actuarial Science topped with each having 29.2% of the respondents. Physics had the lowest number at 2.1% See Table 3.

Table 3

Respondents field of study

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diploma in IT	4	8.3	8.3	8.3
	Actuarial Science	14	29.2	29.2	37.5
	Applied Computer Science	14	29.2	29.2	66.7
	Biomedical	1	2.1	2.1	68.8
	Env Health	12	25.0	25.0	93.8
	Physics	1	2.1	2.1	95.8
	others	2	4.2	4.2	100.0
	Total	48	100.0	100.0	

A self-assessment of the level of Computer skills revealed that most of the respondents felt that they were *Good,* at 66.7% while 20.8% believed that they were *Experts* See Table 4.

Being that 37.5% of the respondents were either pursuing Computer Science or Diploma in IT, it is expected that their computer skills would be above average

Table 4

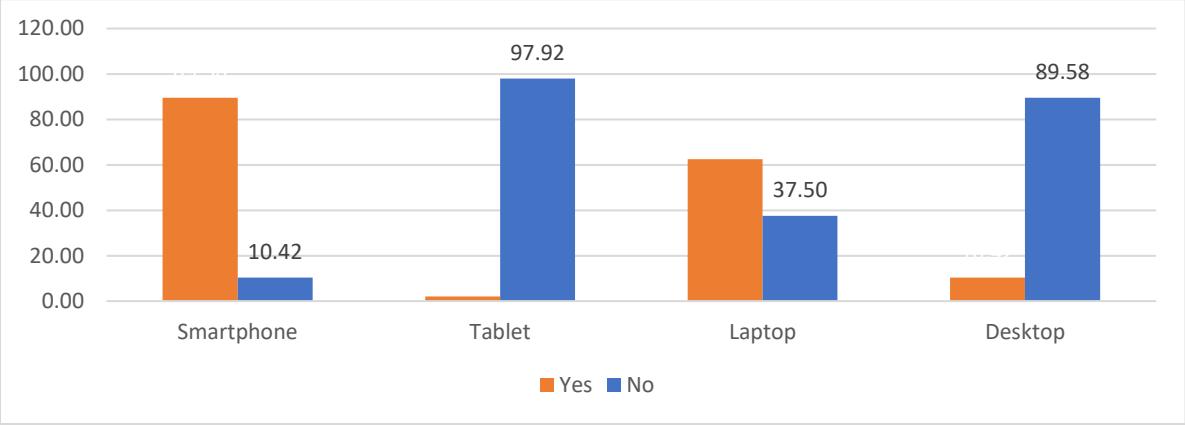
Respondents Computer Skill self-assessment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Expert	10	20.8	20.8	20.8
	Good	32	66.7	66.7	87.5
	Beginner	4	8.3	8.3	95.8
	Poor	1	2.1	2.1	97.9
	No knowledge	1	2.1	2.1	100.0
	Total	48	100.0	100.0	

The respondents mostly used their smartphones to access eLearning content at 89.58%. Those who used Tablets were 2.08%, Laptop users were 62.6% while Desktop users were 10.42% see Chat 1. It is evident that as (Arokiasamy, 2017) claims, mobile phones have reformed teaching and learning. Smartphones are no longer used only for communication only. Learners are not just interested in content but also mobility.

Chart 1

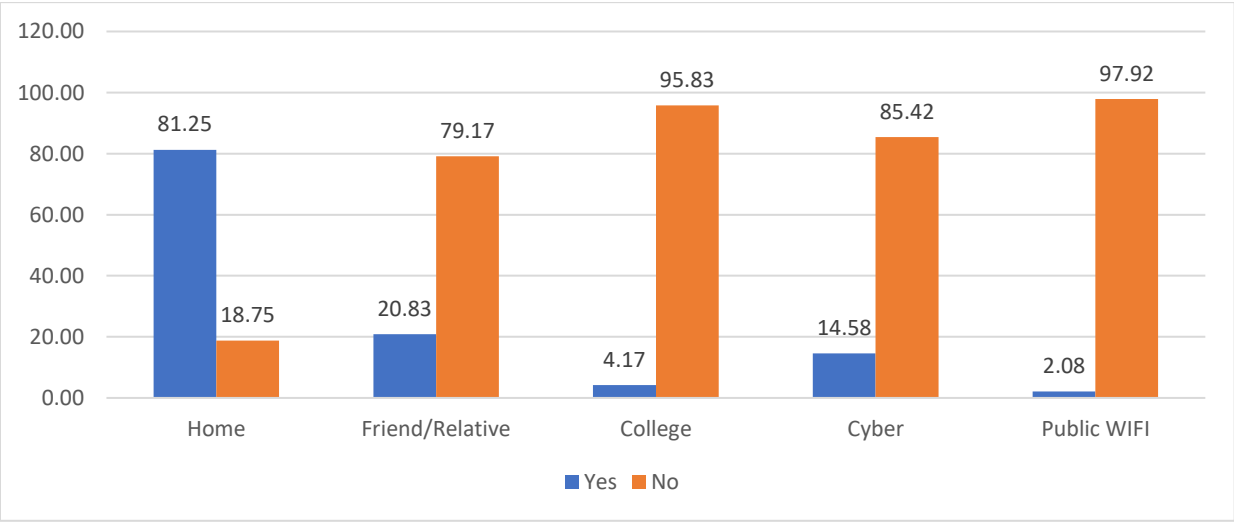
Devices used for eLearning



As for the place of Internet access,it was found out that Internet acces from home had the highest number of respondents at 81.25%, those who had to move to a friend's or relative's place were 20.83%,4.17% had to go to the collge despite the restriction on movement,14.58% accessed the Internet from Cyber cafes while only 2.08% accessed the Internet from Public WIFI services see Chart 2.

Chart 2

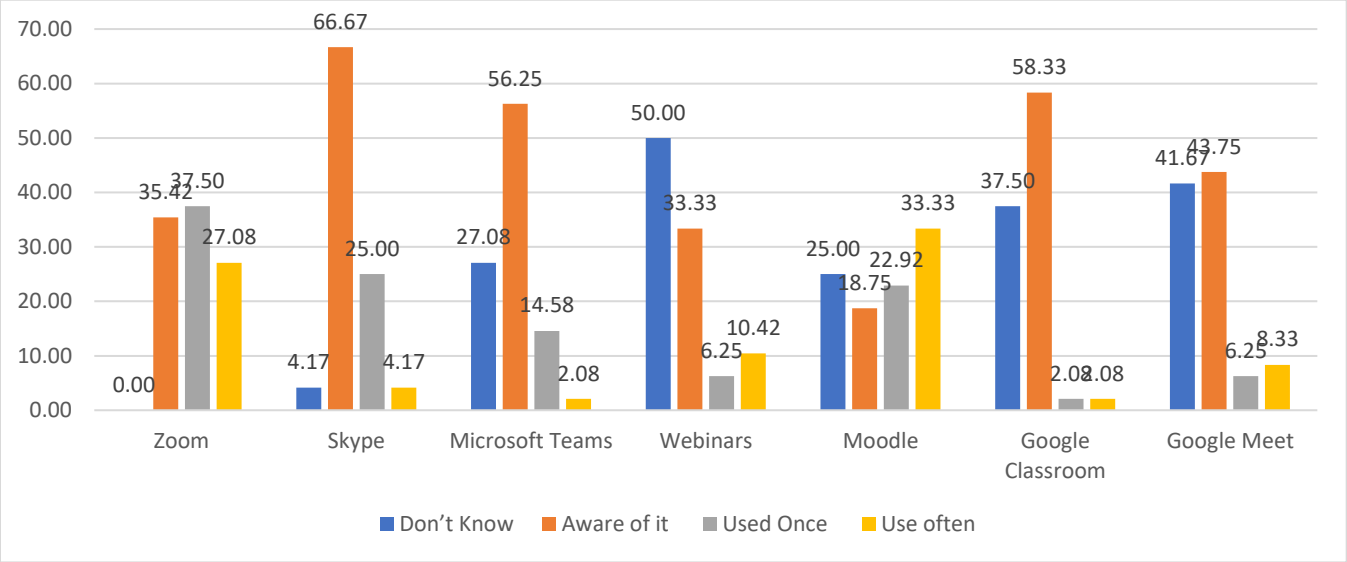
Place of Internert access for eLearning



In addition, the research sought to establish level of students' exposure to eLearning and related tools. Even though the most known tool was Skype at 66.67%, most respondents often used Moodle at 33.33%. This is because Moodle is the University's official LMS. Zoom was the second used platform for learning during the period under study at 27.08%. Most respondents had no knowledge of webinars, with 50%. 41.67% of the respondents had no knowledge of Google Meet see Chart 3.

Chart 3

Knowledge of, and utilization of eLearning tools



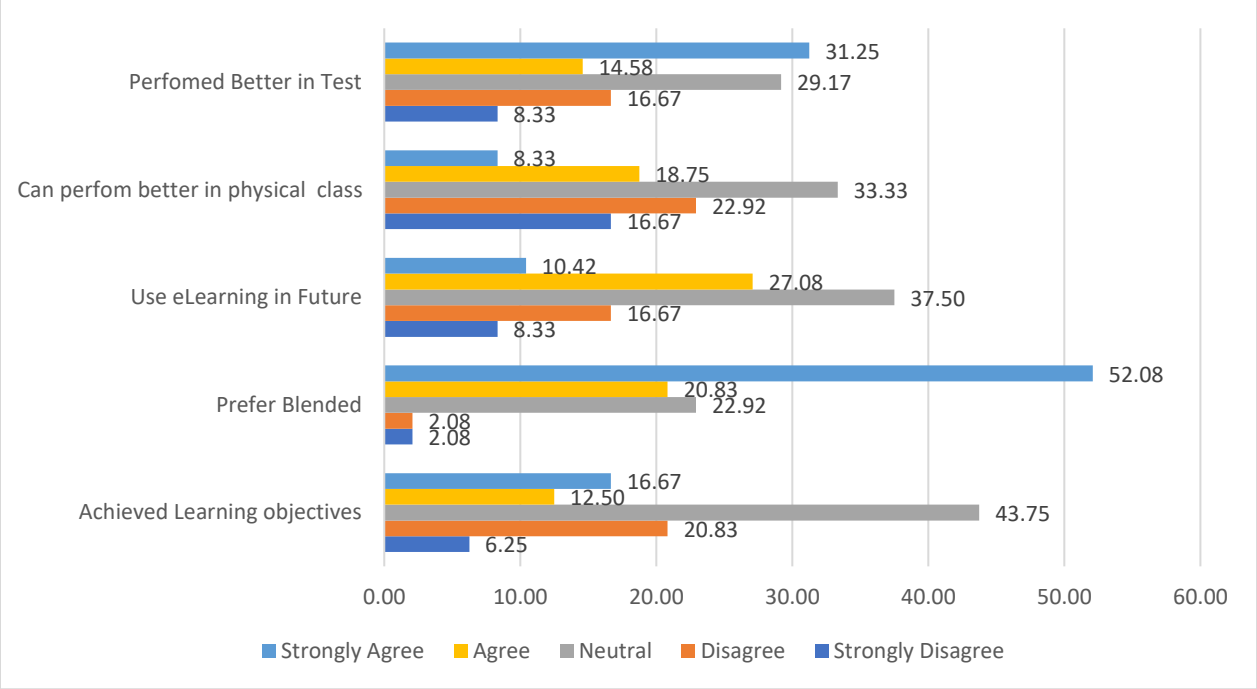
The researchers' sough to find out the degree to which leaners were satisfied with eLearning during the period under study.31.25% *Strongly Agreed* that they performed better in tests online while 14.58% *Agreed* to the same statement. To the question whether they preferred blended learning over the pure online earning, 52.08% *Strong Agreed* while 20.83% *Agreed*. The study thus founded the blended mode of learning to be the most preferred.

On their future intention to use eLearning, the research revealed that 10.42% *Strongly Agreed* while 27.08%, most respondents were *Neutral*, at 37.50%. The study concludes that most

respondent had the intention to use pure online learning in future. On whether respondents felt that the learning objectives were met,16.67% *Strongly Agreed*, 12.50% *Agreed*. Majority of the 43.75% were *Neutral*, not sure whether their learning objectives were met.

Chart 4

Effectiveness of eLearning

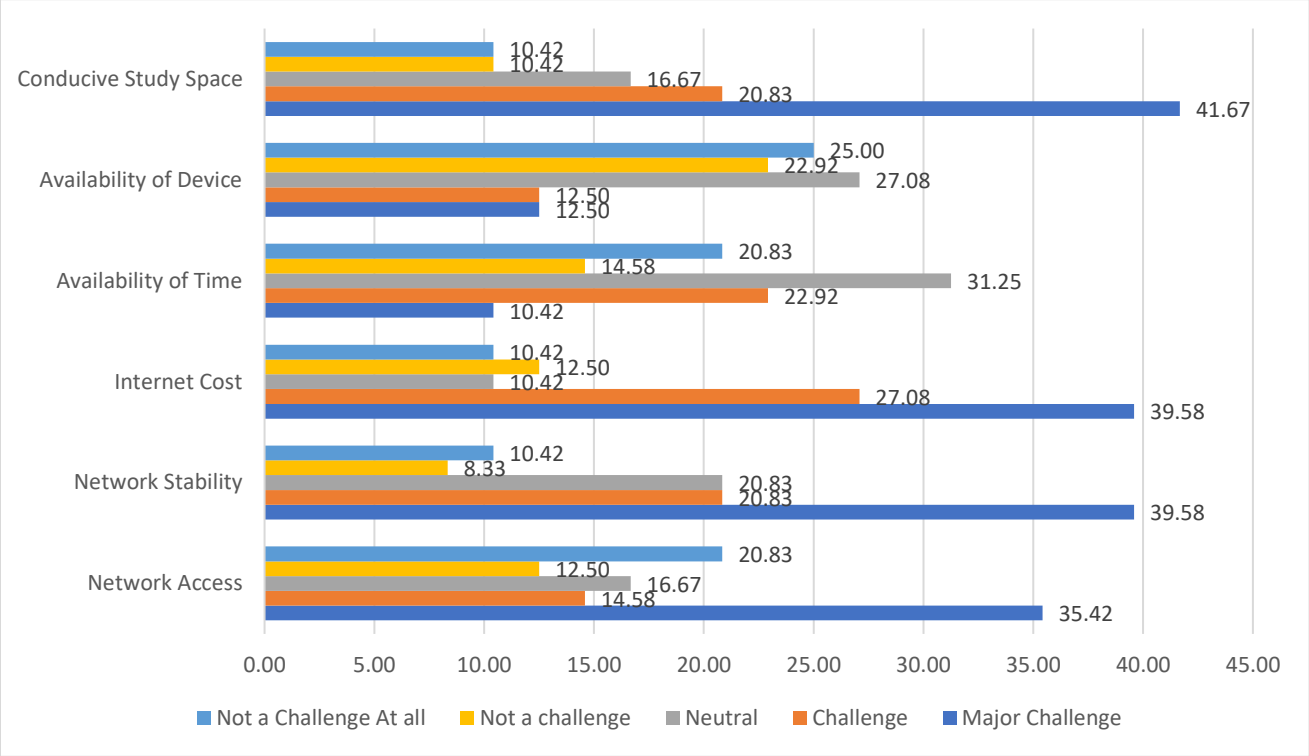


Concurrently, we sought to find out the challenges that respondents experienced relating to eLearning over the lockdown period. The research found out that the major challenge was conducive study space with 41.67% terming is as a Major Challenge, 20.83% viewing it as a challenge only 10.42% did not have a challenge at all with study space.

Network access and stability is still a major challenge, most responds at 39.58% and 35.42% respectively terming it as a major challenge. Majority of the responds did not think access to a device was a major challenge. It was also found out that time was not a challenge to most research participants see Chart 5.

Chart 5

Challenges faced during elearning



Discussion and Conclusion.

The research sought to provide insights on the level of leaners exposure to eLearning and related tools. The study concludes that even though many leaners were aware of Skype, Moodle LMS was widely used. Zoom, a video conferencing tool had also enjoyed wide usage. (Cavus & Zabadi, 2014) carried out a study to find out the most common LMS, the conclusion was that Moodle was the popular LMS. Regarding the place from where learners accessed Internet for eLearning, we conclude that most learners, at 81.25% could access Internet from the comfort of their homes. A survey conducted in Kenya by the Communication Authority of Kenya, (CAK) agrees with these findings that majority of Kenyans living in Nairobi accessed Internet from their homes (Kenya, 2018) . Regarding the leaners level of satisfaction with pure online learning, we

conclude that learners were generally satisfied. Majority of them expressed their intention to use pure online learning we, however, note, that more needs to be done to meet course learning objectives in the context of pure online teaching.(Nortvig, Petersen, & Balle, 2018) reviewed a myriad of published studies that compared the level to which learning outcomes were met in face to face, blended and pure online. The review concluded that what yields better, or poorer learning outcomes is not the mode of teaching such blended or pure online teaching but circumstantial and context depended factors. A comparison of blended and pure online learning revealed that learners preferred blended learning.

As for mobility, researchers conclude that learning has gone mobile, institutions seeking to launch pure online programs should have mobility of learners in mind. Mobile learning popularly known as m-learning. Mobile learning offers course creators endless opportunities to personalize and contextualize learning (Ennouamani, Mahani, & Akharraz, 2020). The high prevalence of mobility devices established in this study, can also influence policy amongst educators and policy makers. A standard on the basic specifications need for m-learning devices can be set and enforced for all devices imported into the country.

Further, we hypothesize that the challenges that leaners experienced during COVID-19 period with regards to pure online learning impacted their level of satisfaction. The major challenge was the availability of conducive study space followed by network stability and access. Internet cost is also reported to have been a challenge. The study recommends that the government does more to provide study centers with free or subsidized Internet access, free public WIFI and to launch more stable Internet such as 4G and 5G Internet technologies.

Further research on the effectiveness of eLearning related video conferencing tools such Zoom, and Skype is recommended. This study reveals that their use is high yet there is not much study on their effectives in the Kenya context.

References

Abou El-Seoud, M., Taj-Eddin, I., Seddiek, N., El-Khouly, M., & Nosseir, A. (2014). E-learning and students' motivation: A research study on the effect of e-learning on higher education. *International journal of emerging technologies in learning (iJET)*, *9*(4), 20-26.

Al-Sammarraie, N. A., El-Ebiary, Y. A. B., Kazem, S. I., Almandeel, S., & Alshamasi, A. E-Learning and Students Satisfaction–Case Study MEDIU.

Arokiasamy, A. R. A. (2017). A qualitative study on the impact of mobile technology among students in private higher education institutions (PHEIs) in Peninsular Malaysia. *Journal of Entrepreneurship and Business, 5*(2), 25-36.

Buzzetto-More, N. (2008). Student perceptions of various e-learning components. *Interdisciplinary Journal of E-Learning and Learning Objects, 4*(1), 113-135.

Cavus, N., & Zabadi, T. (2014). A comparison of open source learning management systems. *Procedia-Social and Behavioral Sciences, 143*, 521-526.

Connolly, T., & Stansfield, M. (2007). Developing constructivist learning environments to enhance elearning.

Dharmendra, C. D., Kumar, C., Abhishek, B., & Soni, C. A. (2011). Effective E-Learning through Moodle.

Downes, S. (2005). E-learning 2.0. *ELearn, 2005*(10), 1.

Ennouamani, S., Mahani, Z., & Akharraz, L. (2020). A context-aware mobile learning system for adapting learning content and format of presentation: design, validation and evaluation. *Education and Information Technologies*, 1-37.

Gambari, A. I., Shittu, A. T., Ogunlade, O. O., & Osunlade, O. R. (2018). Effectiveness of blended learning and elearning modes of instruction on the performance of undergraduates in Kwara State, Nigeria. *MOJES: Malaysian Online Journal of Educational Sciences, 5*(1), 25-36.

Gubiani, D., Matjaž, Mozetič, & Koroušić, B. (2020). E-learning experiment: web conference activities in teaching at a traditional university. *International Journal of Innovation and Learning, 27*(1), 37-57.

Kenya, C. A. o. (2018). National ICT Survey Report. from www.ca.go.ke

Mudassir Khan, M. A. (2016). The scope of E-learning in the computer science & technologies. *International Journal of Computer Science Engineering and Information Technology Research (IJCSEITR), 6*(6), 93-98.

Nedeva, V., Dineva, S., & Atanasov, S. (2014). Effective e-learning course with web conferencing. *feedback, 4*, 6.

Nortvig, A.-M., Petersen, A. K., & Balle, S. H. (2018). A Literature Review of the Factors Influencing E-Learning and Blended Learning in Relation to Learning Outcome, Student Satisfaction and Engagement. *Electronic Journal of e-Learning, 16*(1), 46-55.

Tayebinik, M., & Puteh, M. (2013). Blended Learning or E-learning? *Tayebinik, M., & Puteh, M.(2012). Blended Learning or E-learning*, 103-110.

Yilmaz, O. (2016). E-Learning: Students Input for Using Mobile Devices in Science Instructional Settings. *Journal of Education and Learning, 5*(3), 182-192.