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## CURRICULUM & TEACHING STUDIES | RESEARCH ARTICLE

# Beyond “carrots” and “sticks” of on-line learning during the COVID-19 pandemic: A Case of Uganda Martyrs University

Richard Ouma<sup>1\*</sup>

**Abstract:** Listening and appreciating the views of the academic staff and students is critical in a learning period characterised by abrupt changes in the mode of classroom delivery where the traditional classroom teaching and learning is replaced by virtual classes. This study explored the “carrots” and “sticks” of on-line learning experienced by both academic staff and students at Uganda Martyrs University in Uganda. The study used a qualitative research approach involving in-depth interviews for academic staff and focus groups with selected university students from three academic Faculties. The study results showed that both students and academic staff found on-line learning beneficial in terms of incurring reduced transport expenses and chances of getting infected with Covid-19 due to reduced physical mobility. Due to increased use of technologies, the participants became more innovative and conscious in time use during the teaching-learning process. However, the effectiveness of on-line learning was limited by the challenges of limited data, unreliable internet connection, failure to record lectures, few zoom links at Faculty level, limited class control, and unstable attendance by students. Results further revealed the challenges of time constraint for computational subjects, assessment challenge, limited skills and knowledge in using , limited



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### ABOUT THE AUTHOR

Richard Ouma is a Director, Quality Assurance and Lecturer in the Faculty of Education, Uganda Martyrs University, Kampala, Uganda. He holds a doctorate degree in Educational Leadership & Management from the University of York, UK, and a master's degree in International Educational Management from the University of Leeds, UK. He also holds a PGD in Management of Uganda Management Institute, a PGD in Teaching & Learning in Higher Education of Uganda Martyrs University, and a B.A. with Education of Makerere University.

Richard's research experience and interests include Educational Management & Leadership, Quality Assurance in Higher Education, Teacher Education and Professional Development, School Improvement, Curriculum Development and Reviews, Participatory Approaches, pedagogy and pedagogical innovations, Distance Learning, Research Methods & Child-focused Research. This particular study focused on quality assurance in higher education.

### PUBLIC INTEREST STATEMENT

This study explored the benefits and challenges of online learning experienced by both staff and students at Uganda Martyrs University in Uganda. For improved learning during the Covid-19 period, we need to listen and appreciate the views of the staff and students involved in teaching and learning. Both students and staff found online learning beneficial in terms of incurring reduced transport expenses and chances of getting infected with Covid-19 due to reduced physical mobility. Due to increased use of technologies, the participants became more innovative and conscious in time use during the teaching-learning process. However, the effectiveness of online learning was limited by the challenges of limited data, unreliable internet connection, failure to record lectures and unstable attendance by students. There is need for university management, staff and students to work together to acquire and use ICT Infrastructure to fit in the “new normal”.

consultations, and speedy lecturers. The results provide valuable information on the progress in adjusting to the demands of the “new normal” in higher education teaching and learning. Concerted efforts of institutional leadership, academic staff and students should be the norm especially in acquiring and using ICT Infrastructure to enable academic staff and students’ transit to the “new normal”.

**Subjects: Education - Social Sciences; Educational Research; Education Studies; Higher Education; School Leadership, Management & Administration; Study Skills; Sustainability Education, Training & Leadership; Classroom Practice**

**Keywords: Carrots and sticks; on-line learning; Covid-19 pandemic; physical mobility; teaching-learning process; new normal**

### 1. Introduction

Over 1.5 billion students in 195 countries have been affected by the worldwide closure of educational institutions due to covid-19 pandemic (UNESCO, 2020a). On-line learning is becoming a common form of teaching and learning to mitigate the effect of Covid-19 pandemic on educational institutions. On-line learning refers to the learning experience involving the use of different technology devices (like computers and phones) and the internet in synchronous and/or asynchronous environments (Hoq, 2020; Singh & Thurman, 2019). Synchronous learning involves real-time interactions between the teacher and students while asynchronous learning is structured in such a way that learning is not in form of real-time classes. In on-line learning, the students are physically distant from the teacher and use web-based software to facilitate learning (Mukhtar et al., 2020; Wilde & Hsu, 2019).

Like any new practice or change in what was considered the normal practice especially in developing countries in general and Uganda in particular, on-line learning has brought in several benefits in higher education. However, the same on-line learning now considered the “new normal” has posed several challenges in the delivery and access to learning in the contemporary world (Hoq, 2020; Ouma & Cunha de Araújo, 2020; Sadeghi, 2017). Indeed, Universities in the developing world (Uganda inclusive) are benefitting less than those from developed World from the many opportunities that information and communication Technologies (ICTs) have created (Gauci & Nwuke, 2001; Sanga, 2012; Sokal et al., 2020). This is because unlike universities from the Western countries, those in Africa experience complex economic, political and social challenges that seem to take precedence over higher education.

Research indicates that if universities in the global south and North are to share favourably the benefits of on-line learning, they should both embrace technological advancement (Fry, 2001; Sadeghi, 2017; Tadesse & Muluye, 2020). Whereas over 90% of the educational institutions in high-income countries are delivering on-line learning, less than 25% of their counterparts in the developing countries are doing the same with an estimated 23% for sub-Saharan Africa (Thomas, 2020). It has been further observed that even where on-line learning is conducted in the developing world; learning does not reach many students (Winthrop, 2020). It can be argued that technology is a strategic instrument that can be used to transform education and have a positive impact on livelihoods especially during this covid-19 pandemic period.

Although the role of on-line learning cannot be underestimated during the covid-19 pandemic, it is not free of challenges (Sun et al., 2020). Developing countries suffer from the lack of network infrastructures, computers, and internet access with adverse effect on on-line learning (Tadesse & Muluye, 2020; Zhang, 2020). The challenge of limited funding for on-line learning cuts across public and private educational institutions in the developing countries (Basilaia & Kvakadze, 2020; Niranjana, 2020). The governments are as well constrained financially as efforts are made to strengthen and sustain the healthcare sector to protect the communities in this time of the

covid-19 scourge. Although external funding support could be sought by the universities, there is need for a strategic planning focus to deliberately devote more resources to on-line learning infrastructure development and skills development for academic staff to effectively use the acquired infrastructure for desired returns from on-line learning.

### **1.1. Benefits of on-line learning**

As a means to social inclusion, Warschauer (2003) argue for technological improvements in Africa especially the computer-mediated communication which promotes participation and emboldens social presence. Studies from Kenya and Zimbabwe (Kashoda & Waema, 2014; Mapolisa, 2012) indicate the readiness of their universities to embrace e-learning by devoting a sizeable amount of resources (0.5 of their recurrent expenditures) on expanding internet bandwidth to support e-learning. Like their counterparts in Zimbabwe and Kenya, some universities in Uganda have shown their readiness to take on the mantle of on-line learning in terms of teaching, assessment and even graduation. Several universities (including Uganda Martyrs University) have been permitted to conduct on-line and blended classes by the National Council for Higher Education. Similarly, in a period of the first 4 months of 2021, universities like Uganda Martyrs, Bugema, Nkumba, Clarke International and Uganda Christian University have held their graduation ceremonies virtually.

Imparting and acquiring of knowledge and development of skills for both academic staff and students is a critical benefit of the on-line learning environment. In their episodes (Lelliott et al., 2000; Ludwig-Hardman and Dunlap, 2003) posit that for effective e-learning, both the student and the teacher must be computer literate. In order to improve their ability and capability to actively participate in e-learning, both the teacher and learner should be equipped with the skills and knowledge to manage and use information technology. In Saudi Arabia, Pakistan, India and Canada, the onset of covid-19 necessitated academic staff and students training in higher education institutions to be able to migrate and adapt to the new learning mode (Dhawan, 2020; Hoq, 2020; Mukhtar et al., 2020; Sokal, 2020). In Uganda and at Uganda Martyrs University in particular, academic staff and students have been trained in on-line learning platforms such as Zoom for Synchronous learning and Moodle for asynchronous learning. Additionally, the use of Google meet, Google classrooms and even social media in teaching and learning are becoming a common practice in the study context.

On-line learning offers opportunity for teachers and students to train and acquire knowledge about different on-line learning platforms. Such digital learning platforms include use of Zoom, Blackboard, Google meet, Google classroom, Moodle, TronClass, and Wechat group platforms (UNESCO, 2020b). In a study conducted in six largest universities in Sweden, Ödalen et al. (2019) found that on-line short training enhanced teachers' self-confidence and pedagogical skills and facilitated positive changes toward student-centred learning. The acquired knowledge and skills enhances learning and other social activities, such as collaborations, communication and networking among academic staff and students. This does not mean that such digital platforms have not been in existence but increased use of on-line learning has amplified their usage.

On-line learning is enabling the academic staff and students to learn while at home hence able to practice physical distancing and maintain home hygiene to safeguard themselves against the Covid-19 infections (Tadesse & Muluye, 2020). Learning is enhanced by the available digital learning management systems and self-directed learning materials (UNESCO, 2020b). This on-line mode of learning is easily accessible, flexible and relatively cheap in terms of reduced transportation and accommodation expenses (Dhawan, 2020; Hoq, 2020). The argument is that even with the closure of schools during the covid-19 pandemic, on-line learning is providing other avenues for schooling hence sustained learning. With reference to India, Pujari underscores the central role of on-line teaching and learning as a feasible and appropriate option for learning during the lockdown of educational institutions.

### **1.2. Challenges faced by lecturers and students in on-line teaching and learning**

Rigid university structure is a critical challenge to effective incorporation of technological advancements for improved e-learning (Teare & O'Hern, 2000). The rationale is that on-line learning will have limited impact if the support from the top management is decimal. Similarly, Marshall (2012); and Sadeghi (2017) highlight the need for clear university structure and support from management for e-learning manifested in form of maintaining clear leadership, allowing time for experience and systems to develop, instituting effective risk management strategies, managing the opportunities and threats emanating from actions of other actors, and maintain clear goals and mechanisms to monitor and support on-line learning environment. Although limited resources has been a common problem affecting timely e-learning interventions in several developing countries, the issue of having clear management structure that is flexible and responsive to technological changes and demands remains critical for quality on-line support and learning environment.

Limited infrastructure to support and sustain on-line learning is a critical challenge in many universities in the developing world (Berhanu, 2010; Tadesse & Muluye, 2020; Zhang, 2020). Without appreciating the need for a paradigm shift and acquiring the necessary ICT infrastructure, on-line learning will always achieve less than expected on the African continent. Bagarukayo and Kalema (2015) highlight the challenge of limited ICT infrastructure which does not allow application of web 2.0 technologies in many African countries. Although universities are urged to get financial support from the government to strengthen their ICT infrastructure, this may not be possible for the private universities that are not entitled to financial support from the government. Acquiring, adopting and adapting the necessary ICT infrastructure for on-line learning remains a costly exercise (Pujari, 2020). This implies that institutions in the developing economies have to take strategic decisions to invest in ICT infrastructure to provide a supportive environment for enhanced e-learning.

Several studies indicate that with already existing budget constraints, universities in Africa will continue finding it problematic to provide a sound system and environment for e-learning which is often evidenced by insufficient bandwidth and poorly equipped computer laboratories and classrooms (Arabasz & Bake, 2003; Basaza et al., 2010). This challenge is even more pronounced on the side of the students who lack adequate access to computer facilities. In his discourse, Damoense (2003) demonstrates that internet network is extremely unstable in several parts of Africa to the extent that the students repeatedly log-on and go-off the learning platforms. Indeed the challenge of power failures and unreliable internet has been noted by several commentators in Africa (Mayende et al., 2014; Mutonyi & Norton, 2007; Ouma, 2019). Nevertheless, Damoense's (2003) assertion that since Africa still uses candlelight, then e-learning is practically impossible seems to have been by-passed by events. Research demonstrates increasing use of ICTs in learning and increasing provision of electric power on the African continent which cannot be underestimated (Busulwa & Bbuye, 2018; Douce, 2018; Nankanja & Bisaso, 2011).

Inadequate skills and technical support is a key challenge to the provision of on-line learning services in many universities especially in the developing world. In the study conducted in Indonesia, Marwan found out that even where technologies were used in teaching and learning, the lack of sufficient knowledge and skills to effectively integrate technologies is still lacking among teachers. Vegas found limited training of teachers in on-line teaching in Sub-Saharan Africa during the covid-19 pandemic closure of educational institutions. Several studies in the Ugandan context reveal the limited ICT skills among students and academic staff that impede effective on-line learning in higher education (Mayende et al., 2014; Mutonyi & Norton, 2007; Ouma, 2019). Though many teachers use technologies in basic teaching activities such power point and emails, there is limited technical support in using ICTs. Marwan (2008) argues that for effective on-line learning delivery, the technical support should be availed before, during and after on-line class sessions.

The discriminatory nature of many on-line learning platforms especially for the disabled academic staff and students is a crucial challenge faced in promoting on-line learning in the

developing world. Di Pietro et al. (2020) posit that many disadvantaged students like the disabled are frustrated by unfriendly user platforms and limited ICT infrastructure. The reasoning is that for the general success of on-line learning, the learning platform developers and users should appreciate the value of disabled learners and ensure that like their “normal” counterparts, they are enabled to easily access and use on-line learning platform and quench their learning needs.

On-line learning poses a psychological challenge to both the teacher and the student especially when the guidelines are inadequate (Aguilera-Hermida, 2020; Hoq, 2020). They both feel stressed with high levels of anxiety and depression disorders hence the need for clear on-line learning guidelines (Hoq, 2020). Issues of stress with on-line learning especially during the covid-19 pandemic period have been observed even in the developed countries (Sokal et al., 2020). The argument is that carefully planned on-line learning guides the academic staff and the students to appreciate on-line learning and guard against any form of disappointment.

Many students and a few academic staff are unable to access and use the institutional learning management systems due to lack of computers and reliable internet connections in most developing countries (Di Pietro et al., 2020; Sahu (2020)). The challenge of access is more pronounced among rural-based students and those stricken by poverty. It is challenging for the students and teachers and even some governments to fully shift from face-to-face to on-line learning due the limited financial resources (Basilala & Kvakadze, 2020; Hoq, 2020). Besides, Sahu (2020) notes that it is problematic to teach subjects like nursing, sport and music on-line as the practical aspect and hands-on session could not easily be achieved. In Uganda, I have observed the challenge of teaching subjects like engineering, fashion and textiles and science laboratory-based subjects on-line.

Research indicates the challenge of organising on-line assessment of the learning relating to selecting of the assessment type, difficult to monitor students and guarding against cheating during on-line assessment (Basilala & Kvakadze, 2020; Mukhtar et al., 2020). In addition to difficulties in conducting practical and laboratory-based tests, the challenge of internet access during assessment distracts many students in developing countries (Osman, 2020; Sahu, 2020). Studies indicate that the challenge of on-line assessment of learning has been experienced in countries with reliable internet and ICT infrastructure as well (UNESCO, 2020a). The implication is that shifting to on-line learning and assessment is quite challenging and the onus is on institutions of higher learning to effectively plan and face the contemporary realities.

## **2. Research questions**

The current study explores the following questions: i. What are the benefits (carrots) of On-line learning to academic staff and students during the Covid-19 Pandemic in Ugandan Universities? ii. What challenges (sticks) are faced by Lecturers and Students in On-line teaching and learning during the national lock-down of educational institutions and Covid-19 Pandemic in Uganda?

## **3. Methodology**

The study used a qualitative research approach involving In-depth interviews and Focus Group Discussions (FGDs) to collect data from the academic staff and students involved in On-line Learning during the Covid-19 Pandemic in Uganda Martyrs University. Given its qualitative nature, the study considered 4 on-line for in-depth interviews and 40 students for focus group discussions drawn from different academic units. They comprised of first-year bachelors students from the faculties of Education, Science and Business Administration and Management (BAM) and one group of masters students from the faculty of education engaged in on-line learning at Uganda Martyrs University.

Using students’ course representatives, 40 volunteers to participate in group discussions were identified and selected. The identification of the four faculty academic staff was purposive (based on their involvement in On-line teaching and learning during the Covid-19 Pandemic) to obtain responses from the right respondents. The four academic staff sampled for interviews were consulted and accepted to participate.

The study had Four FGDs of 10 students in each group (Morgan, 2013). English was used as a medium of discussion as the members had to post their views on the on-line forum since all the participants could speak and write using English as a medium of communication. Individual participants consented prior to the start of the focus group discussions. The FGD method allowed probing by the researcher (Morgan, 2013).

FGDs involved designing focus group guide. Concise, clear and reasonable questions were developed (Krueger & Casey, 2015). The FGD guide was piloted on a group of five students outside the main study that informed further revision. Similarly, the interview guide for the academic staff was piloted and refined using simple and clear language. Permission and consent of participants was obtained before conducting actual data collection.

#### **4. Data analysis**

The study used thematic analytic model based on data reduction, data display, and data verification and drawing conclusions in data analysis (Miles & Huberman, 1994). The field notes and audio recordings were transcribed. The reviewed transcripts were then imported in Nvivo 11 data organisation computer software for data organisation, coding by creating nodes and parent nodes based on the study sub-themes and themes respectively (Edlund & McDougall, 2016). The 4 on-line were coded academic staff 1, academic staff 2, academic staff 3 and academic staff 4. The numbers were given randomly and do not indicate academic staff position or seniority in their respective academic units. The four focus groups of students were identified by numbers and each of the group participants was allocated a different number from those of other group members. These include; FGD 1, FGD 2, FGD 3 and FGD 4. The organised data were exported to word processor, ready for interpretation (Miles et al., 2014). The results were displayed in form of text.

#### **5. Results and discussions**

##### **5.1. “Carrots”/benefits of on-line learning**

###### *5.1.1. Acquisition of ICT knowledge and skills*

Seventy-five percent of the academic staff and 60% of the students appreciated the contribution of on-line learning which enabled them to be trained in the use of some ICTs in learning. Results indicate that both academic staff and students had two independent training sessions in October 2020 and in March 2021 to prepare them for teaching and learning on-line. The training focused on the use of on-line learning platforms such as Zoom for Synchronous learning and Moodle for asynchronous learning (official university learning management system). Academic staff and students were also exposed to knowledge about using Google classrooms, Google meet, Padlet, IdeaFlip, ActivePresenter and social media in teaching and learning. However, the percentages of 75% and 60% for academic staff and students training participation, respectively, indicate that the trainings have not benefitted all the academic staff and students yet hence the need for further scaling-up to include all the academic staff and students. The fewer untrained academic staff and students withstanding, the results indicate the importance of on-line learning to students and academic staff. This finding is consistent with other studies conducted both in high-income and low-income countries that reveal immense knowledge and skills acquisition in using on-line learning platforms and building of self-confidence and pedagogical skills among students and academic staff (Ödalen et al., 2019; UNESCO, 2020b; Zhu & Liu, 2020).

###### *5.1.2. Reduction of costs*

The majority of the academic staff (75%) and the students (85.5%) observed that the merging of students from all campuses under one class/course to be facilitated by one lecturer on-line reduced the burden of hiring consultants/part-time lecturers

*This mode of teaching came with some advantages to the University such as merging all students at all campuses under one class to be facilitated by one person hence reducing the burden of hiring consultants/part-time lecturers to teach at the different campuses as the practice has been before (Academic staff 1).*

The implication is that with proper organisation and planning for teaching and learning, on-line learning saves human resources specifically on-line. This is because many students from the different university campuses who were taught separately during physical classroom meetings are now combined and taught by one lecturer as long as they are doing the same course. Although on-line learning could reduce expenditure on teaching academic staff as related classes can be taught by a particular academic staff on-line (Dhawan, 2020; Hoq, 2020; Pujari, 2020), expenditure on ICT infrastructure and technical support academic staff increases (Arabasz & Bake, 2003; Basaza et al., 2010, Sanga, 2020). This is because effective utilisation of the on-line in on-line learning heavily leans on availability and access to modern ICTs by both the academic staff and students.

In line with studies elsewhere (Dhawan, 2020; Hoq, 2020), all the academic staff revealed that on-line teaching reduced on transport costs incurred by the university and individual academic staff members as the majority of the academic staff were teaching remotely from their homes:

*Transport costs have been reduced/eliminated. Most of us no longer move to the university to deliver our lectures. I now operate from my sitting room and teach all my students in the different parts of the country and even other neighbouring countries (academic staff 2).*

The results insinuate that transport expenses for academic staff that would have been incurred by the university and on-line are reduced. The majority of the students (75%) noted that though the general expenses that would have been incurred to move to and from the university for face-to-face sessions were reduced, they continued having daily transport costs due to lack of internet facilities and power connection in several rural areas:

*We lack reliable power and internet connection at my home. I have to move to the nearby trading centre and have to pay for the 'boda-boda' (local transport involving use of the motorcycle). This can be expensive and also risky as many 'boda-boda' guys get accidents on the way (FGD 2).*

The implication is that several students had to spend more on transport to attend Zoom live sessions or access the Moodle asynchronous sessions. They not only incurred an extra cost but were also exposed to health risks as the means of transport used (motorcycles) were prone to accidents.

### 5.1.3. Health benefits

Besides, 75% academic staff and 80% students indicated that on-line teaching has a health benefit. It helps in reducing the chances of catching corona and associated complications. This is because academic staff and students attend classes from their homes with limited mobility:

*The on-line teaching helps in reducing chances of catching corona. We are teaching in our homes and do not mix up with many people as it has been the case when using public transport to go to the main campus to conduct classes. This means that we reduce on the corona virus cases (academic staff 4).*

*On-line learning is safe in terms of curbing the spread of the corona virus. This has reduced chances of catching COVID-19 as many of us study at home. It is geographically convenient since we are able to connect on-line and attend lectures as long as you have the required gadgets like computer or phone. However, some of us still move to the nearby trading centres to access good internet connection (FGD 4).*



The results were consistent with those of earlier studies that highlight the role of on-line learning in promoting physical distancing and safeguarding academic staff and students against the COVID-19 (Tadesse & Muluye, 2020; UNESCO, 2020b). However, the universities should influence the government and internet providers to extend the internet services to most parts of the country to reduce the burden of some students who move distances to access internet facilities.

#### 5.1.4. Innovativeness

The majority of the academic staff (75%) and a few students (25%) claimed to have become more innovative with a shift to on-line learning. Additionally, it was noted that by using technologies, a lot of information can now be accessed and quickly shared with the students:

*This method is encouraging us to be innovative. We are now thinking outside the box and thinking of many ways to involve the students in learning. A lot of information can be accessed and shared easily and quickly using the technologies which was not the practice before (Academic staff 1).*

It is making us to think in order to use computers and the internet in learning. We can think of doing things differently from what we used to do in face-to-face sessions when we had to wait and receive knowledge from the teacher (FGD 4).

Becoming more innovative in teaching and learning is consistent with earlier studies that underscore on-line learning on the grounds that it facilitates skills development, hence improving on the creativity of the teacher and the student (Lelliott et al., 2000; Zhu & Liu, 2020).

Seventy-eight per cent of the students appreciated that the on-line learning mode was less costly and considered it enjoyable. Though demanding in order to access internet, on-line saved the students' expenses on accommodation and meals that would have been incurred if they were to board at the university. Some students stated that they have gained a good exposure on the use of modern technology and felt that the knowledge acquired in ICT use is an additional course:

*It's a very good exposure on the use of modern technology. We feel we are running additional course that is, ICT knowledge and skills. Possibly this could not have been the case if it was not this on-line learning (FGD 2).*

In line with Ödalen et al. (2019) and UNESCO (2020b), the results suggest that on-line learning is a critical source of ICTs knowledge and skills in enhancing learning even during the national closure of schools due to the pandemic. This is because teachers and students are able to train and gain knowledge about different on-line learning platforms (Zhu & Liu, 2020).

#### 5.1.5. Improved time management

Although the majority of the students (82%) and the academic staff (75%) claimed that there is no time-wasting on on-line studying both at the side of the students and the academic staff and that everyone is motivated to be time conscious, the students noted that some lecturers were actually not keeping time especially for synchronous lessons:

*Some lecturers are always late for the on-line classes which waste our data as we wait for them. So the communication between the students and the lecturers needs to be improved so that we are aware of exactly when the lecturer will log in instead of wasting data as we wait in the virtual classrooms (FGD 2).*

Results imply that the failure of some lecturers to keep time for on-line classes posed a financial burden to the students who had to spend more on buying data to access the internet and attend on-line sessions. This could be a wake-up call to the faculty to style-up their approach to on-line lessons and appropriately manage time for the pleasure of the self, the students and the learning process.

## 5.2. “Sticks”/challenges faced by lecturers and students in on-line learning

### 5.2.1. Limited ICT devices

Although all the academic staff participants had personal laptops, only 40% of the students had laptops and 60% used smartphones in their on-line learning. The academic staff noted that some of their laptops had limited storage space at low speeds that affected their on-line teaching delivery. While the students who had laptops found it less challenging to access learning sessions and to contribute in their learning, those that relied on telephones found it challenging to cope with the learning needs. Students could not easily access and complete the work on the Moodle learning platform on their phones due to lack of clarity, limited storage and low speed. The challenge is that both academic staff and students lacked appropriate ICT equipment to access and participate in on-line learning. The results are consistent with those from other studies conducted in several developing countries, which highlight the challenge of limited ICT infrastructure and its adverse effect on academic staff and student participation in e-learning (Bagarukayo & Kalema, 2015; Tadesse & Muluye, 2020; Zhang, 2020).

### 5.2.2. Unreliable internet connectivity

Results indicate the challenge of limited internet data faced by the academic staff and students in on-line learning. All the academic staff posited that it has not been easy for the lecturers to get data from university to engage the students on-line. While some lecturers are yet to receive any form of data support, those who got something claim that it could hardly take them even 2 weeks of engaging their students and searching for relevant information:

*Data availability and Network connection is a serious challenge. Sometimes it's not easy to get data to engage the students on-line. The data that was promised to the lecturers has up to now not been given. Additionally the network connectivity at times is not favourable depending on the location of the facilitator since we are now working remotely from our homes (Academic staff 3).*

*Complaints of data availability and network connections are often raised by our students. Some of our students are in locations that have poor connectivity, so attending the zoom classes at times becomes a problem (Academic staff 1).*

Like earlier studies in Uganda (Basaza et al., 2010, Mayende et al., 2014; Ouma, 2019) the results from academic staff and students consistently highlighted the challenge of poor internet connectivity and the hardship of getting daily data to attend both synchronous and asynchronous learning sessions:

*On-line learning is expensive in terms of buying data. Network challenges, this is very serious in terms of different geographical locations where we are based. What happens if somebody fails to submit his/her work on time because of network especially on Moodle? (FGD 2).*

*Some of us are in locations that have poor connectivity, so attending the zoom classes at times becomes a problem. We are finding it difficult to afford data for daily zoom lessons, research and access the Moodle. Some of us do not have computers, and are using phones with poor reception during the zoom (FGD 3).*

In line with the literature, the challenges of internet connectivity and data and limited bandwidth seem to be a common feature in Uganda, Africa and other developing economies (Arabasz & Bake, 2003; Basaza et al., 2010; Ouma, 2019; Sanga, 2020). In Uganda, the onus is on the government and individual universities to partner with internet service providers to obtain favourable terms for the students and academic staff to access the internet to enhance on-line learning.

### 5.2.3. Unrecorded synchronous learning sessions

The failure to record lectures was consistently noted by 75% of the academic staff and 82% of the students. Results indicate that several lecturers were not recording the synchronous class sessions for uploading on the Moodle learning platform for further reference by the students. The to be given hosting rights during the zoom synchronous sessions remained a reserve of the ICT Department, and lecturers had to request for permission to be allowed to record their lectures (host status).

*Some lecturers are not recording the class sessions for uploading onto Moodle for further reference by the students. Given the challenges of internet bundles and network connectivity, some students fail to attend some on-line classes. When the sessions are not recorded, then it's to the disadvantage of the students (Academic staff 1).*

*Recording lectures needs permission from ICT. Sometimes it becomes difficult to get the host rights. At times the faculty administrator has such rights and it is difficult to get her all the times to transfer the host rights to the lecturer (Academic staff 4).*

*Some lecturers are unable to record the lectures they are conducting. This means that if you go offline due to poor internet or power outage, you miss the lesson if no recording is done by the lecturer which is not good (FGD 1).*

Results revealed the critical importance of having synchronous learning sessions recorded and uploaded on the university learning management system (Moodle) for students, especially those who miss such lectures due to internet challenge, to be able to access the lessons afterwards. The challenge of the host rights ought to be sorted so that the lecturers can at any time be able to record all the lectures for future reference by both the students and the academic staff.

Coupled with the challenge of lack of host rights by some lecturers during live on-line sessions, is the challenge of limited class control. Seventy-five per cent of the academic staff noted the lack of right (host) to mute the students and only unmute those that are making a contribution to the class to have effective class control. This has led to unnecessary noise and class distraction caused by some students knowingly or unknowingly. This finding is consistent with Marwan's (2008) study in Indonesia, which found a lack of technical academic staff during on-line sessions, which affected the quality of learning.

### 5.2.4. A few zoom links

Furthermore, all the academic staff revealed that a few zoom links were allocated to the different faculties for synchronous learning sessions. Academic staff claimed that the few zoom links allocated to their faculties are limiting the time allowed for the different subjects to fully engage the students for effective learning. For example, the Faculty of Education has only one zoom link but even the Faculty of BAM, which got three zoom links, noted that they were not adequate to efficiently run the faculty programmes.

*Few zoom links allocated to the different faculties. As the Faculty of BAM, we have only 3 zoom links that were allocated. Since the programmes and courses running are many, it calls for sharing of the time for the zoom classes. This limits the time allowed for the different subjects to fully engage the students for effective learning (Academic staff 2).*

### 5.2.5. Negative attitude against on-line learning

The study consistently found low attendance and bias of students towards on-line learning across faculties. Lecturers across faculties observed that though continuously improving, the attendance of students has been low and inconsistent. This has been attributed to the challenges relating to the timing of some lectures, data and network connectivity.

*Some students disappear and never reappear in class. Students are biased on the on-line teaching, they think it is hard to learn mathematics without seeing the teacher physically.*

*Such a biased attitude is limiting our efforts to support the learning of our students on-line (Academic staff 3).*

Though the academic staff considered the irregular attendance of the students to be bias against on-line learning, some of the students were finding it difficult to access internet especially in the rural areas. A similar remark has been made in the literature showing that in the low-income countries, many disadvantaged students are frustrated by unfriendly user platforms and limited internet connectivity (Di Pietro et al., 2020).

The study found out that the time for computational subjects was not adequate. Fifty per cent of the academic staff and 75% of students were of the view that the time allocated for the on-line teaching is not sufficient especially for the computational subjects like Maths, Statistics and Accounting. The participants with this view were specifically from the faculties of Science and Business Administration and Management with several computational subjects. Academic staff claimed that some students at times find it challenging to do personal reading in those computational subjects without the guidance of the lecturer.

*The allocated time for the on-line teaching is not sufficient especially for the computational subjects like Maths, Statistics and Accounting. You find that for some of these subjects, the content that could be covered in 2 hours of a physical class takes 4 hours or more to cover on-line. Teaching subjects like Accounting and Maths or Statistics that have a lot of calculations is not as easy as someone would imagine (Academic staff 1).*

*Explaining while writing using the mouse is another hectic thing. Especially with mathematics where we almost write everything for better explanation. Where the estimated time for face to face task is 10 minutes, the same task on-line could need 20 or more minutes (Academic staff 2).*

Results imply that on-line teaching and learning, especially for mathematical courses, require much more time compared to having similar courses offline. The results point to the need for proper time allocation to enable facilitators to effectively transmit the desired learning to use on-line mode. In the focus group discussion, students posited:

*Some courses that have mathematical calculations tend to be difficult to understand on-line. Sometimes you fail to type a mathematical formula on the computer even when you know it. Such courses (mathematics and accounting) need physical attendance at campus in the real classroom (FGD 1).*

The challenge of limited on-line learning time for computational subjects withstanding, the difficulty of some academic staff and students to type mathematical formulas, use the mouse and do calculations using on-line platforms could be attributed to the limited training and lack of sufficient knowledge and skills in on-line learning (Lelliott et al., 2000; Zhu & Liu, 2020).

#### 5.2.6. Challenge of on-line assessment

The challenge of assessing on-line learning was expressed by all the interviewees (lecturers). Although the challenge of assessing students using on-line modes was generally raised by the academic staff, those facilitating practical and computational subjects noted that the challenge was more significant in their subjects. Academic staff also observed that responding to all the queries during the on-line sessions is problematic given the limited time. Some lecturers highlighted the challenge of having limited knowledge in using the grade-book and showed the need for refresher courses. This finding is consistent with those of several commentators (Basilaia & Kvavadze, 2020; Mukhtar et al., 2020; Osman, 2020; Sahu, 2020) who highlight the challenge of on-line assessment relating to the selection of the assessment type, difficulty of monitoring students against cheating and even internet access during on-line assessment. In this case, the university should deliberately plan and invest in academic staff training to cope with the demands of on-line learning assessment.

### 5.2.7. Limited knowledge and skills in using on-line learning platforms

Many students (65%) and a few lecturers (25%) had limited knowledge and skills in using the Moodle learning platform, which is the official learning management system of the study university. Some lecturers were not trained on how to use Moodle, so they were resorting to using emails and WhatsApp groups for dissemination of course materials. This limits the effective engagement of the students during asynchronous sessions. Results further indicate that several lecturers lacked the knowledge on how to download the list of students attending the zoom classes as evidence of attendance and participation in the class.

*Not all lecturers were trained on how to use Moodle and Zoom, so they are resorting to using emails, WhatsApp groups for dissemination of course materials. These may not reach all the students (Academic staff 4).*

This challenge of limited knowledge in accessing and using Moodle learning platform by the students was noted across all faculties. The challenge is that students have been joining the university and lectures at different times and many found their colleagues already on board. Results further indicate that some courses were not uploaded and delivered on Moodle and some students had not enrolled on some courses in the Moodle platform, which was limiting their participation in learning.

*Consultation with lecturers is not very easy after the zoom classes have ended. You get discouraged when you try contacting the lecturer and you do not get any response using their emails or WhatsApp (FGD 1).*

*Some of our lecturers have not been able to put their courses on Moodle as yet. Even among us the students, some are still failing to access Moodle. At least zoom lessons but Moodle is difficult to access even when you are enrolled (FGD 3).*

The challenge of limited knowledge in e-learning is not only a Uganda or East African issue (Ouma, 2019; Vegas, 2020) but also observed in other developing countries like Indonesia (Marwan, 2008).

The majority of the students in all the focus groups (88%) indicated that there was a communication gap between the university and the students. There is poor communication between the students and the faculties and the University departments like Registry and Finance for guidance in regard to registration and making payments. There was equally a communication challenge among the students:

*We have different groups and the members are 'invisible', this has made it very challenging for group leaders to coordinate group work, some members are not easy to get and so the few accessible sacrifice for the group (FGD 4).*

The inability for the students to physically meet and have academic discussions is what the students described as having "invisible" members. This implies that technologies should not only be used to enhance individual learning but they should be harnessed to promote collaboration and networking in the learning efforts of the students (Sanga, 2012; Sokal et al., 2020).

### 5.2.8. Competition from work and home chores

The study found out that 49% of the students experienced the challenge of balancing work, home chores and academic life. Students are finding it challenging to balance house chores or home responsibilities with studying on-line since you find that lessons run throughout the entire day, including weekends for some students. The undergraduate students were allocated some home chores that encroached on their time for studies, while the postgraduate students had work schedules and family responsibilities that took some of their vital time hence affecting their attendance and concentration in their studies.

*Attendance of the students is still low as a result of a number of factors like the timing of some lectures, data and network connectivity. So, to resolve this recording of the sessions is very vital for those students who would have missed the live sessions (Academic staff 3).*

*The truth is that at home, I don't really concentrate, my mind is always thinking of preparing what we are going to eat, whether the house is clean and many other things and not my books unlike at school where I have one thing to care about (FGD 3).*

Whereas the academic staff attributed the poor attendance of the students to the challenges of data and internet connectivity, the students added the home chores and work among the key distractors in their learning. Some students noted that their classes started too early (as early as 7.30am), some of their lecturers reported late for synchronous lessons and others did not follow the faculty teaching timetable that posed a challenge to their lesson attendance.

*Some of us have distractions at home which affect our attendance of on-line lessons. Some lecturers are moving too fast and yet some of us are slow learners and on-line doesn't favour us. In high school we were used to attending classes physically but it is not easy with these on-line classes where the lecturer and other students are not seen physically (FGD 2).*

Adequate orientation programme for both the students and academic staff is necessary to prepare them especially at the initial stage of their studies for the students and the beginning of the semester for academic staff. The argument is that inadequate preparation and training of both academic staff and students for on-line learning suffocates the success of the programme and should be a key focus of the university's efforts and resources.

## **6. Conclusion and recommendations**

The progress in adjusting to the demands of the “new normal” during and after the period in the core university business largely demands university stakeholders’ concerted efforts right from the top management to the lowest cadre in the institution. Academic staff and students should continuously collaborate and learn from one another especially in using modern technologies to facilitate teaching and learning. The role of the institutional leadership in providing reliable ICT infrastructure and facilitating the teaching academic staff to transit to the “new normal” remains critical.

On-line learning is associated with several benefits (carrots) in enhancing higher education. Both academic staff and students are enabled to participate in teaching and learning from whenever and wherever they reside without hassling with mobility. It allows learning to take place synchronously or asynchronously and, hence, is a flexible mode of learning catering to the interests and needs of different learners and teachers. Such benefits of on-line learning should be consolidated and maintained through practices that promote active participation of the students and teachers in the learning process. The students should be nurtured to take the centre stage in their learning as the teacher becomes an active guide.

The future of sustainable on-line learning demands a barrier-free environment for both students and academic staff to access and actively participate in learning activities. Both the academic staff and students, including the disadvantaged, should be facilitated to access and use the on-line learning platforms. Universities should provide a loan facility to enable the lecturers to acquire suitable laptops that can support on-line teaching and learning. For instance, the university could look for companies that can provide hire purchase arrangements to enable academic staff and students to acquire the requisite ICTs for on-line learning.

Development of on-line learning is impeded by the slow change in attitude by academic staff and students in the study context. There is a need for academic staff and students in higher learning institutions to have a change in attitude towards the use of technologies to enhance on-line learning. Sensitisation and training workshops should be continuously organised to equip

academic staff with the necessary ICT skills to be able to guide the students effectively using the on-line learning mode. The argument is that once academic staff and students develop a positive attitude for on-line learning, learning is likely to be strengthened and learning goals achieved in higher education.

The challenges of on-line learning are diverse and real and have direct impact on learning. The said challenges, especially the limited ICT infrastructure and internet connectivity, limited on-line teaching and learning skills, and the expense of purchasing data for daily synchronous and asynchronous learning sessions, have had an adverse impact on the study. For improvement, the study recommends that the university should ensure prompt release and payment of data monies to the teaching academic staff, schedule some on-line workshops on selected key ICT issues, provide electronic materials such eBooks, record all the zoom lectures and upload them on the Moodle platform. Additionally, the university should develop a system of nurturing and encouraging creativity and innovativeness among academic staff and students involved in on-line learning, and maintain continuous data collection on the use of e-learning platforms.

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