Influence Blended Learning to Student's Productivity at Karatina University

Dr Stephen Macharia Muriu[1], Professor David Gichuhi[2],

Abstract: Traditional face-to-face classes have served as an effective method of learning and teaching for the longest time. This method has produced visible and satisfactory results and hasn't been questioned until the world faced a common enemy, the CoVid-19 pandemic that stopped everyone from attending the traditional in-person classes. Blended learning stepped in to bridge the gap. This is an educational approach that combines traditional face-to-face classroom methods with online and digital learning experiences. Though the concept of learning through correspondence to 1940s; globally, blended learning is currently gaining traction across various educational levels, from primary schools to universities, as well as in corporate training and professional development. Though blended learning offers many benefits, it also comes with challenges that can impact negatively to students' productivity due to lack of reliable access to necessary devices and high-speed internet, lack of skills needed to effectively use digital tools and platforms and balance between online and in-person. The general objective of the study is establishing the influence blended learning to student's productivity at Karatina University, and specific objectives include; to assess the effects of blended learning experience on students' productivity, to investigate the effects of technological tools and resources on student's productivity and to determine the effect of instructional methods to students' productivity. The study is anchored on Walberg's theory of educational productivity. This theory posits that learning outcomes are influenced by a combination of student characteristics, instructional factors, and environmental conditions. Descriptive research design was applied. Population composed of 300 students taking human resource programme at School of Business and simple random sampling method was used to generate a sample of 50 respondents. Data was collected using structured questionnaire sent through goggle platform and analyzed using SPSS software. Findings indicated that blended learning has played a positive role in students' productivity. The study recommends further interaction between students and educators through blended learning.

Key Word: *Blended Learning, Face-to-face learning, instructional Materials, digital learning tools, learning styles*

I. Introduction

The 21st century education calls for personalised, productive and collaborative teaching–learning experiences that are expected to transform the entire education system from traditional face-to-face (F2F) mode to techno-based independent mode where the basic focus will be laid on developing the potentials and creativity of the learners in the best possible ways. However, providing equal access to education, guaranteeing equity and justice, ensuring timely delivery of need-based educational contents, engaging the learners through a carefully planned pedagogical support with the latest online/blended learning technologies. As at January 2021, the world is still suffering from the unprecedented threat of the COVID-19 pandemic even in the prospect of a potent vaccine (Kwok, et al., 2021; Lovelace, 2020; Mahase, 2020). The novel coronavirus, SARS-CoV-2, also known as the COVID-19 was first identified in Wuhan City of China in the latter part of December 2019 (Chen, et al.,

2020). Since it declaration as a global pandemic on March 11, 2020 (WHO, 2020b), the COVID-19 crisis has threatened healthy lives, the world economy, and the education sector (Goyal, Daipuria, & Jain, 2020; Pan & Zhang, 2020).The global disruption in education as a result of the COVID-19 pandemic rendered the traditional face-to- face (F2F) learning not only impractical but also unlawful (Meulenbroeks, 2020).

While referring to the Covid-19 pandemic as the greatest challenge the education systems across the world have currently faced, Daniel (2020) mentioned how several governments have ordered institutions to switch, almost overnight, from F2F to online teaching and virtual education for the learners. Hasan (2020), who conducted a qualitative survey on 408 students to know their perspectives on online teaching–learning during the pandemic-induced lockdown, mentioned that online teaching emerged as a potential tool to support students' learning remotely. To ensure that education at all levels could continue, the educational institutions across India and worldwide switched to online mode of teaching–learning. The practical usage of platforms such as WebEx, Zoom, Google Meet, Say Namaste, as well as learning management systems (LMS) like Moodle, Blackboard, etc. had been encouraged to support students' learning in all possible ways during the lockdown.

In an effort to reduce the spread of the virus and abide by the health protocols from the synchronous F2F learning to synchronous and asynchronous online learning (Aguilera-Hermida, 2020; Azu, Adegboye, &Quadri, 2020). The sudden closure of schools in 188 countries worldwide impacted over 91% of the student population in the world (UNESCO, 2020). The COVID-19 outbreak has therefore triggered the current online learning outbreak (Wotto, 2020). However, learners have expressed distress in their online learning experience across the globe (Aguilera-Hermida, 2020; Bhagat& Kim, 2020). Zhong (2020) mentioned that the COVID-19 pandemic has exposed the digital divide in education confronting most countries.

In Africa, COVID-19's most consequential impacts on education have been identified as the widening of inequalities, increase in marginalisation, and the inability of the most disadvantaged students to pursue their studies and acquire knowledge and skills that support a healthy transition to adulthood (UN, 2020; UNDP, 2020; UNESCO IESALC, 2020). The most affected students include those whose foundational learning was not strong: girls, children and youth with disabilities, and refugee, migrant and displaced children (Education Cannot Wait, 2020; Save the Children, 2020).

The digital divide in Sub-Saharan Africa is a threat to the Sustainable Development Goal Four (SDG 4) and the No Child Left Behind Act (NCLB) (Spanbauer, 2020). Preez& Grange (2020) mentioned that only a third of the population in Africa have access to broadband connectivity. The unique effect of the COVID-19 crisis on the education system in Sub-Saharan Africa is worth writing about (Adarkwah, 2020; Anifowoshe, Aborode, Ayodele, Iretiayo, & David, 2020; Azu, Adegboye, &Quadri, 2020). Over the years, majority of developing countries have become accustomed to F2F mode of learning where students attend lectures in constructed lecture halls (Bans- Akutey, 2020).

Online learning is a challenge and not effective in Sub-Saharan Africa as compared to the West (Kizilcec&Halawa, 2015). This is because online learning thrives on ICT resources (Adarkwah, 2020) which have not significantly evolved in Sub-Saharan Africa (Ilonga, Ashipala, & Tomas, 2020). The absence of ICT resources has affected the growth of low-income countries in the context of education (Yaw Asabere, Agyiri&Nachanja, 2020). Muftahu (2020) asserted that universities in Africa are still faced with unique challenges such as the provision of ICT gadgets/services (laptops and internet access) to learners who lack ICT resources, resistance to online learning by students and academic staff, and lack of ICT literate skills of users. He added that the COVID-19 crisis has stretch higher education institutions beyond their limits. At the same time, the COVID-19 pandemic can be a catalyst for a positive change in the educational system of schools in Sub-Saharan Africa through (WHO, 2020a).

Blended learning is an educational approach that combines traditional face-to-face classroom methods with online and digital learning experiences. This hybrid model leverages the strengths of both in-person instruction and technology to create a more flexible and personalized learning environment. Globally, blended learning is gaining traction across various educational levels, from primary schools to universities, as well as in corporate training and professional development. The approach has gained momentum as it addresses issues such as limited access to quality education, especially in remote or underserved areas, allows students to access a wider range of resources and expertise and break down geographical barriers. Additionally, blended learning supports diverse learning styles and paces, making education more inclusive and adaptive to individual needs.

Technological advancements and the increasing penetration of the internet to many areas have facilitated the widespread adoption of blended learning. Platforms offering Learning Management Systems (LMS), interactive content, and virtual classrooms are becoming more common, providing a rich educational experience that integrates multimedia, real-time feedback, and collaborative tools.

The COVID-19 pandemic significantly accelerated the adoption of blended learning globally due to the necessity of remote learning during lockdowns and educational institutions and organizations have adapted quickly, incorporating online elements to maintain continuity and quality of education

II.   Historical perspective of blended learning

The concept of blended learning is one of the modern concepts in the education field. Blended learning (BL) is a methodology that was introduced over a decade ago that is used in the field of education and combines (or blends) online learning with traditional place-based classroom methods (face-to-face learning). It requires the physical presence of both teacher and student, with some elements of student control over time, place, path or pace and also educational materials and technology for online interaction (Friesen, 2012). Although students must still attend physical schools with a teacher present, face-to-face classroom practices are combined with computer-mediated activities regarding content and delivery (Strauss, 2012) to enhance the teaching–learning experience and to encourage the students to explore more to the given content.There was a consensus to describe blended learning as a mixing or blending between traditional learning and E-learning. Blended learning is not just a one-time event and ends with that, but that learning is a vital process that is continuous and renewed (Sofia, Jose &Leontios, 2014). Saboowala and Manghirmalani-Mishra (2020) defined blended learning as an effective blend of different methods of learning styles, teaching models, and delivery approaches.

Blended learning has evolved over time through various educational and technological advancements. The roots of blended learning can be traced back to the late 19th century with the advent of correspondence courses that allowed students to receive lessons and materials through the mail, study independently, and submit assignments by post. Between 1930s-1940s, there was introduction of educational radio and television broadcasts that marked an early form of blended learning. By 1960s-1970s, the rise of computers in education began with the development of computer-assisted instruction (CAI) programs that provided students with basic interactive lessons and quizzes.

The proliferation of the internet in the 1990s revolutionized educational opportunities as educational institutions started offering online courses through development of LMS platforms that provide a structured way to deliver online content, manage courses, and facilitate student-teacher interaction.By 2000s blended learning became more formalized and widespread as schools and universities began to adopt models that combined in-person classes with online component.

The COVID-19 pandemic in 2020 forced a rapid and widespread shift to online learning. This accelerated the adoption of blended learning models as educational institutions sought to combine the benefits of both online

and in-person instruction to adapt to lockdowns and social distancing measures. Recent advancements in artificial intelligence (AI), virtual reality (VR), and augmented reality (AR) are further transforming blended learning and offer immersive and personalized learning experiences that enhance both online and face-to-face components.

III.   Perspectives of blended learning in different countries

Global Perspective

The U.S. has been a leader in adopting blended learning, particularly in higher education. Many universities offer hybrid courses where online lectures are combined with in-person discussions. The K-12 sector (kindergarten (K) through 12th grade) has also embraced blended learning, with many schools integrating digital tools and resources to enhance learning, Similarly, Canada has a varied implementation of blended learning across its provinces and blended learning is particularly beneficial in remote and rural areas, helping to bridge the gap in educational resources where government policies and funding support for educational technology have bolstered the adoption of blended learning. The UK has widely adopted blended learning in both higher education and secondary schools and a robust educational technology sector supports schools with tools and platforms for blended learning and professional development for teachers is a key focus to ensure effective implementation. In Germanyblended learning is more prevalent in universities and higher education institutions where the institutions are known for innovative approaches in blending traditional and digital learning methods and government initiatives and funding are directed towards digitalization of education. in China, blended learning has seen rapid growth, particularly driven by the private sector and online education companies and there is a significant disparity in the implementation between urban and rural areas though the Chinese government supports digital education initiatives to improve access and quality of education.

Africa Perspective

Several initiatives are driving the adoption of blended learning in African universities such as the Partnership for Enhanced and Blended Learning (PEBL). This has been active in both East and West Africa and has trained over 170 academics and developed quality-assured, open-source modules that have already benefited 11,000 students in East Africa. The program is now expanding into West Africa, focusing on universities in Ghana and Nigeria, to enhance their capacity to design and deliver blended learning courses. In South Africa,blended learning adoption varies widely, with more urban schools implementing it compared to rural areas though limited access to the internet and technology in rural areas poses significant challenges though efforts by the government and NGOs to improve infrastructure and provide resources for blended learning. University leaders from South Africa, Uganda, and Egypt have highlighted that blended learning will likely become the norm, driven by the need for flexibility and the ability to maintain educational continuity during disruptions. This shift has prompted institutions to invest in the necessary infrastructure and training to support this hybrid model.

Kenya Perspective

Kenya has seen several innovative blended learning programs from colonial and post-colonial eras especially in higher education and vocational training. With high mobile phone penetration, mobile learning is a significant component of blended learning. This has also been possible due to collaborations with international organizations and tech companies help drive the adoption of blended learning.

At the professional bodies level in Kenya, blended learning is also gaining traction, influenced significantly by the needs highlighted during the COVID-19 pandemic and the implementation of the Competency-Based Curriculum (CBC). The approach is seen as promising for enhancing learner engagement, motivation, and autonomy. In the realm of teacher professional development, studies indicate that both online and blended learning formats are effective. A study found that Kenyan teachers who participated in blended or online professional development programs showed significant gains in their knowledge and teaching skills. Nonetheless, teachers expressed a preference for blended learning over purely online or in-person formats due to the balanced nature of interaction and flexibility it offers

Professional bodies like the Engineers Board of Kenya, the Council for Legal Education, and the Chartered Institute of Arbitrators have been instrumental in adopting blended learning to enhance the quality and reach of their training programs. These organizations focus on maintaining high standards of education and professional practice through a mix of online and face-to-face interactions. The government, through bodies like the Kenya National Qualifications Authority (KNQA) and the Technical and Vocational Education and Training Authority (TVETA), also plays a crucial role in ensuring that institutions offering blended learning are accredited and meet national standards.

Educational Sector

Blended learning has significantly transformed Kenya's education system by integrating traditional face-to-face instruction with digital learning resources. This approach has revolutionized education in ways such as making education more accessible to a broader range of students, including those in remote and underserved areas, combining traditional classroom teaching with online resources, have enabled students access to a richer and more diverse array of learning materials. Interactive content, such as videos, quizzes, and simulations, helps to engage students more effectively and caters to different learning styles leading to better understanding and retention of information

The interactive nature of digital tools and resources can make learning more engaging for students. Gamification, multimedia content, and interactive exercises can motivate students and make learning more enjoyable. This increased engagement can lead to higher attendance rates and better academic performance. It has also allowed for a more personalized learning experience. Digital platforms have also enabled track students' progress and provide data-driven insights into their strengths and weaknesses. It has also been observed blended learning can be more cost-effective than traditional education methods on physical materials, travel, and facilities can be significant. Additionally, online resources can often be reused and updated more easily than printed textbooks.

The COVID-19 pandemic highlighted the importance of blended learning. With schools closed, many educational institutions in Kenya turned to online learning to continue education. This experience underscored the need for a robust digital infrastructure and has accelerated the adoption of blended learning models. Blended learning facilitates collaboration among students and teachers. Online forums, group projects, and social media platforms enable students to work together and share ideas, fostering a sense of community and enhancing the learning experience.

Blended learning and Students Productivity

Blended learning can significantly enhance students' productivity since students can access learning materials anytime and anywhere, allowing them to learn at their own pace and according to their schedules. This flexibility in education set-up helps students to; manage their time more effectively, use adaptive learning technologies that tailor the educational experience to individual student needs, helping them focus on areas where they need the most improvement and thus learn more efficiently.

Interactive online components, such as videos, quizzes, and discussion forums, has been noted to make learning more engaging leading to higher motivation and better retention of information. On the other hand, online platforms facilitate collaboration among students through forums, chat rooms, and group projects, enhancing their teamwork and communication skills, which are essential for productivity. On assessment, online modeprovide instant feedback, enabling students to quickly understand their mistakes and correct them, leading to faster and more effective learning. It also provide a wealth of resources, including multimedia content, which can cater to different learning styles and help students grasp complex concepts more readily. By combining the

strengths of traditional and digital learning methods, blended learning can create a more dynamic, efficient, and productive learning experience for students

Statement of the Problem

Implementation of blended learning was abruptly implemented due to lock down following Covid19 pandemic without formal planning. Though it acted as a mitigating factor, even after the easement of Covid 19, educational institutionshave continued to formalize the method. A study by Utami (2018 observed that not all students and educators have reliable access to necessary devices and high-speed internet. Further Bouilheres, Ha Le & McDonald (2020) reckon frequent technical issues to both students and educators may lack the skills needed to effectively use digital tools and platforms. Alajmi (2021) argue that designing effective blended learning courses requires significant time and balance between online and in-person elements to ensure they complement each other, relevant challenges still exist. The study also noted that blended learning often requires students to be more self-motivated and disciplined in time management learning styles which can be challenging for some. Schools and universities at time lack clear policies and guidelines and necessary technological infrastructure to support blended learning. Students might feel isolated when learning online, which can affect their emotional well-being and academic performanceand engagement.It is against this background that this study was found necessary and timely.

General Objective

The general objective is to establish the influence blended learning to student's productivity at Karatina University

Specific Objectives;

i.   To assess the effects of blended learning experience onstudents' productivity.
ii.   To investigate the effects of technological tools and resources on student's productivity.
iii. To determine the effect of instructional methods to students' productivity.

IV.   Theoretical Framework

Walberg's Theory

This study is anchored on Walberg's Theory (1981) of educational productivity, a comprehensive framework that seeks to understand and enhance student learning by identifying key factors that influence educational outcomes. Developed by educational psychologist Herbert J. Walberg, this theory integrates various elements from psychology, sociology, and education to provide a model for maximizing educational productivity. The theory posits that learning outcomes are influenced by a combination of student characteristics, instructional factors, and environmental conditions. Key components of Walberg's theory include: student characteristics such as cognitive abilities and prior knowledge that students bring to the learning process, level of interest, effort, and engagement a student has towards learning and age and developmental stage of the student, which affect how they learn and process information.
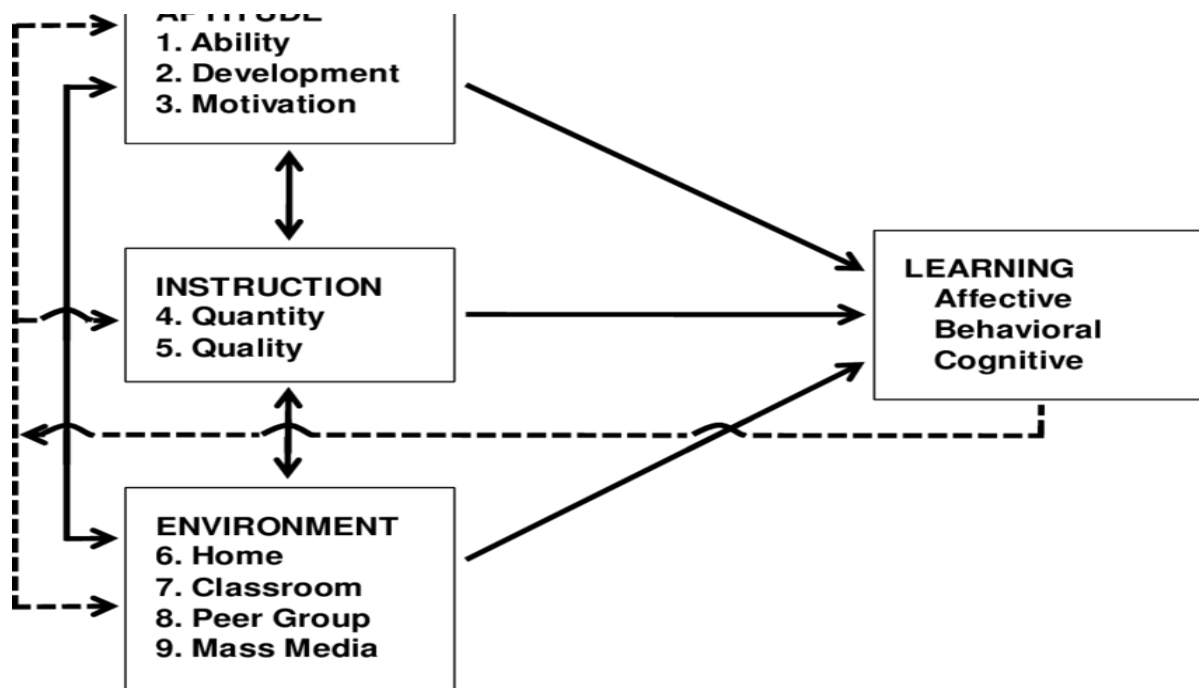
It also considered instructional factors the effectiveness of teaching methods, clarity of explanations, and the ability of the teacher to engage students, amount of time spent on learning tasks, including both classroom instruction and homework and content and structure of what is being taught, ensuring it is relevant and appropriate for the student's level. Environmental Conditions such as support and resources available to the student at home, including parental involvement and socio-economic status, the overall learning environment at the school, including class size, school resources, and the school's culture and climate and impact of classmates and friends on the student's attitudes and behaviors towards learning. The theory has significant implications for educators, policymakers, and researchers. By understanding the various factors that contribute to educational productivity, stakeholders can develop strategies to enhance learning outcomes.

Conceptual frame work
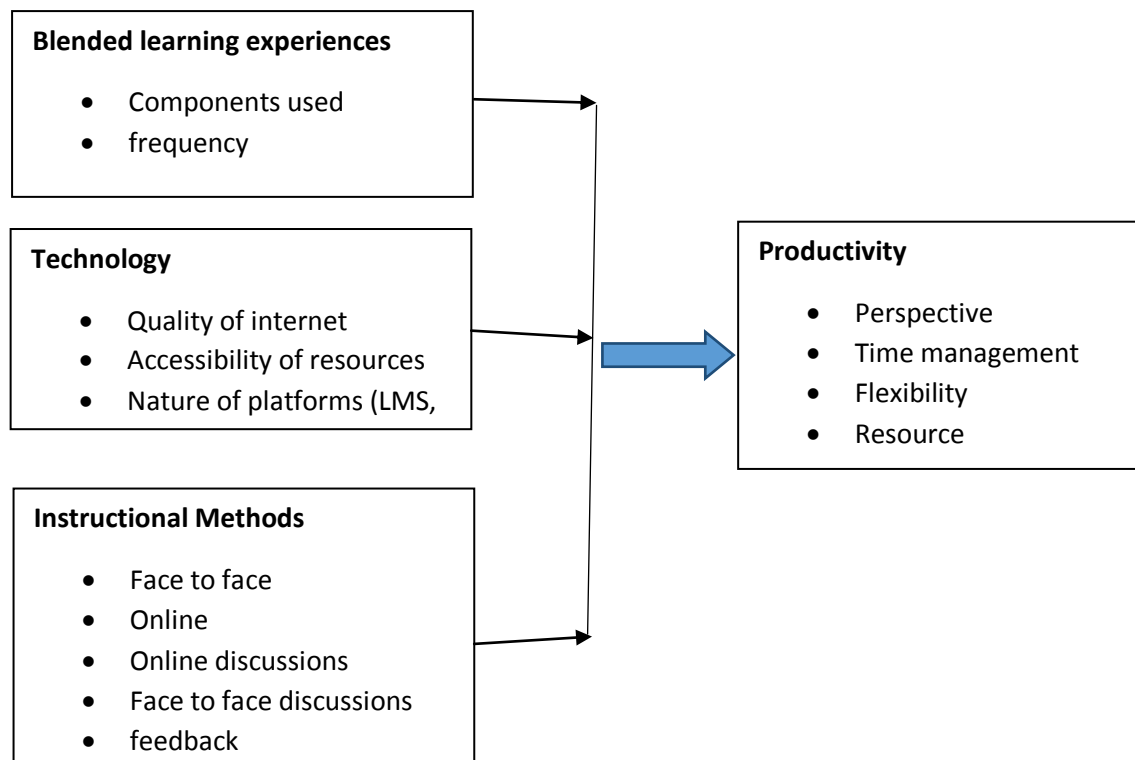
V.   Methodology

This study is an action research and applied pragmatist philosophy which holds that human actions can never be separated from the past experiences and from the beliefs that have originated from those experiences. Human thoughts are thus intrinsically linked to action. People take actions based on the possible consequences of their action, and they use the results of their actions to predict the consequences of similar actions in the future. Pragmatists believe that reality is not static but changes at every turn of events. Similarly, the world is also not static but in a constant state of becoming. Since education serves a contemporary society which is constantly changing, and blended learning caused a great shift from the traditional face to face, this theory was found to be most applicable.

Research Design: this was cross-sectional and applied descriptive research design and leaned heavily on qualitative than quantitative.Targeted population wasKaratina University 1100 students in the School of Business. Data was collected using google form where 360 students translating to 40% responded. Response rate of 50% and above is considered excellent while above 30% is considered acceptable. Data collection period corresponded with end of semester exams where students were engaged with revision and examinations.

Empirical Review

Educators assert that learning process is not limited to transferring knowledge to the learner, but rather is broader and more comprehensive, as it is a process whose focus most important and the basis is to meet the personal and social needs of the learner (Bakalar, 2018). Most of the homes have these modern technological techniques, which led to wasting their usefulness by using them as a technology for entertainment (König, Biela

&Glutsch, 2020). The pursuit of investing these modern technologies in education contributes to the development of the educational process, so blended learning came to accomplish this, as it blends traditional learning and e-learning according to an active and flexible educational environment that benefits the learner and teacher (Halverson & Graham, 2019).

Rao (2019) added that blended learning came to serve as a link between traditional learning and E-learning, thus having many advantages that outweigh the advantages of both traditional learning and E-learning if they are taken separately, as is not limited to the boundaries of the classroom, but it remains in contact with its learners even after the end of the classroom lessons to achieve continuous effectiveness even with the presence of a large number of learners. One of the greatest advantages of blended learning is that it deals with a uniqueness aspect from each aspect of learning methods; there is no a method or strategy for education as each educational situation has specific characteristics in light of the many variables that impose itself on it, so the real challenge is the possibility of differentiation between these methods and strategies, to choose the most appropriate and most compatible with the objectives of each educational situation separately. Blended learning may have technical drawbacks if it is not designed and implemented properly since it relies on technical resources or equipment. Kaur (2013) mentioned that the necessity for all students to be online at the same time, lack of needs of students and teachers of sophisticated workstations and link at high-speed, lack of technical skills, and resources necessary for interact are the disadvantages of blended learning.

Martinsen (2017) conducted a study aimed at identifying the potential and barriers of blended learning and to find out the perceptions of both the teacher and the learner for blended learning in two secondary science classes in Australia. A mixed approach strategy was used to collect and analyze quantitative and qualitative data. A pre and post-test was conducted, student surveys, group interviews of students, and observations in the classroom. The results showed that blended learning had a positive effect on student achievement, while qualitative data indicated the importance of the role of blended learning in forming positive attitudes among learners towards their achievements. It is interesting to note in this study that the majority of learners indicated that they learned more through blended learning and indicated that they enjoyed more enjoyment to learn with a blended learning strategy.

Saboowala and Manghirmalani-Mishra (2020) studied the interaction impact of both gender and teachers who used online learning practices or have not to attitude towards blended learning under the COVID-19 pandemic. Online learning, the flexibility of learning, the management of study, classroom learning, and online interaction were all studied during the pandemic of COVID-19. Also, the interaction between the effects of the highest educational qualification of teachers who used one of the practices of online learning or have not to attitude towards blended learning was considered under the COVID-19 pandemic. The data were collected through a questionnaire from teachers teaching in various educational institutes in India through circulating Google forms due to the COVID-19 pandemic. The results of this study revealed apparent interaction between both teachers and their gender in employing the practices of online learning. The results also showed the effect of interaction varies across the teachers' qualifications, study management, and classroom environment.

Challenges of Online Learning in Sub-Saharan Africa during COVID-19

Schools in Sub-Saharan Africa are more vulnerable as a result of the COVID-19 pandemic (Muftahu, 2020). Most educational institutions are comfortable with the traditional onsite instruction and are not accustomed to the online modality of instruction (Bans-Akutey, 2020). Some higher education and colleges are also now in the process of transforming and improving and the COVID-19 crisis has threatened this vision (Muftahu, 2020). The emergence of online learning seemed to be the only solution for schools but its emergent adoption has resulted in myriads of challenges (Abdullahi, Sirajo, Saidu, & Bello, 2020; Mukute, Francis, Burt, & Ben, 2020). For example, in Ghana the National Union of Ghana Students (NUGS) referred to the online instruction as a "challenge-ridden online learning" (Adarkwah, 2020). The exceptional challenges emanating from the COVID-19 pandemic involves all stakeholders in education (administrators, teachers, students, parents) who are required to do unexpected things relating to online instruction if education will continue (Agormedah, Henaku, Ayite, &Ansah, 2020). According to the authors, educators are not adequately prepared to teach with technology, let alone to use technology for remote teaching. Some of the recurring challenges pertinent to all Sub-Saharan African countries and identified in literature during the COVID-19 pandemic are discussed below;

ICT infrastructure/tools
In his qualitative study, Adarkwah (2020) revealed that one of the main barriers to tertiary students engaged in online learning in Ghana was limited ICT resources/facilities. Nigeria also experienced the challenge of procuring ICT hardware to power online instruction in the country (Oyediran et al., 2020). The authors mentioned that ICT facilities in schools are ill-equipped to foster e-learning. There was no supply of ICT tools such as computers or phones for schools to foster online learning in Kenya (Ngari&Ndung'u, 2020).Mabeya (2020) added that the lack of supportive structure in Kenya served as a hindrance to children in the access of online content. Students in poor homes also lacked digital tools for accessing study materials and the online instruction in Ethiopia (Mengistie, 2020).

Lack of Funding
The negative impact of the COVID-19 on the economy of most African countries affected the supply of funds to many institutions (Muftahu, 2020). Limited funding can hinder institutions from hosting online instruction since money would be needed to purchase and maintain ICT gadgets (Adarkwah, 2020). Some institutions were forced to seek for alternative funding because of limited financial support from the government in Ethiopia (Tamrat, 2020). The lack of financial capacity of some schools has hindered their successful transition from traditional onsite instruction to online instruction (Azu, Adegboye, &Quadri, 2020).

Internet Access
In Ghana, teachers and students lacked access to digital devices and high-speed broadband (Agormedah, Henaku, Ayite, &Ansah, 2020). Students in Nigeria also complained about insufficient data bundle to access their online classes (Abdullahi, Sirajo, Saidu, & Bello, 2020). The implementation of online learning in Ethiopia became a hurdle because of the high cost of internet (Mengistie, 2020). Belay (2020) reported large inequalities in the access of radio and TV services meant for digital instruction and also internet for web based learning.

Electricity Supply
Rural students are often faced with power outages and limited supply of electricity (Adarkwah, 2020). Students who use mobile devices and computers often experience a flat battery, and hence, are not able to complete the online instruction (Abdullahi, Sirajo, Saidu, & Bello, 2020). It was found in Zambia that electricity load shading had a negative impact on the academic outcomes of students (Sintema&Singogo, 2021). In the case of Zambia, the authors revealed that every household do not get access to electricity for at least eight hours daily which means that students sometimes are unable to access instruction delivered on national televisions described the supply of power in Nigeria as barbaric, worrisome, erratic, and embarrassing serving as a hindrance to the e-learning implementation.

Acceptance and Adoption

The unfamiliarity of the online instruction to some faculty staff and students makes them develop a negative attitudes towards the acceptance and adoption of the online learning (Adarkwah, 2020). Some of these academics and students perceive the online delivery as too difficult and are therefore not ready to embrace this drastic change (Muftahu, 2020).

Supervision

Muftahu (2020) reports that some higher education institutions are faced with some managerial issues such as supervision of the online learning. According to Oyediran et al. (2020), there are less ICT experts to supervise e-learning platforms and instruction in Nigeria. Also, less training support are provided for users. In Kenya, there was minimal supervision for learners by teachers (Ngari&Ndung'u, 2020). Parents were not able to properly supervised their children on the online instruction (Mabeya, 2020).

Table 1:Overview of studies Gaps on the challenges of online learning in some selected Sub-Saharan African countries

| Articles	Country	Challenges
(Belay, 2020) (Mengistie, 2020) (Tamrat, 2020)	Ethiopia	Expensive and limited internet, Lack of ICT gadgets and facilities, Students' parents lack ICT literacy, Inadequate access to reading materials, lack of concentration of female students engaged in house chores, poor school-parent relation, little preparation of students and teachers, negative attitudes towards the adoption of e-learning, lack of funding for institution, especially private higher education.
(Aboagye,2020) (Adarkwah,2020) (Agormedah, Henaku, Ayite, &Ansah, 2020) (Owusu-Fordjour, Koomson, & Hanson, 2020)	Ghana	High cost of delivery, glitches in with e-learning platform, lack of study materials and ICT tools, less prior knowledge of users, low access to electricity and internet, anxiety over academic outcomes.
(Ngeywo, Maizs, &Egesa, 2020) (Mabeya, 2020) (Ngari&Ndung'u, 2020)	Kenya	Lack of preparedness, inconsistency in syllabus coverage, less supervision by teachers, limited access of online instruction by students, disparity of content offered from one program to another, lack of learner assessment, and lack of support for parents/guardians and teachers of students, limited access to internet and technological resources, low parental supervision, perception that online instruction is time-consuming
(Abdullahi, Sirajo, Saidu, & Bello, 2020) (Ifijeh& Yusuf, 2020) (Oyediran, Omoare, Owoyemi, Adejobi, &Fasasi, 2020)	Nigeria	Problems with teacher delivery method, poor teacher-student communication, electricity shortage, insufficient data bundle, lack of understanding, difficulty in solving math-related questions, difficulty in submitting assignment, poor technological infrastructure, ICT illiteracy, lack of funding, high cost of ICT accessories, inadequate resource personnel, difficulty in conceptualizing e-learning.
(Sintema & Singogo, 2021) (Sintema E. J., 2020)	Zambia	Inadequate preparation of parents to respond to children's academic needs, problems with electricity, difficulty in procuring curriculum materials, limited access to e-learning facilities.

VI.   Findings and Discussions

This item was to establish the components of blended learning commonly used

Table 1: Components of blended learning commonly used

Item	Respondents	%	
Online lecturers	248	68.6	
Face-to-face learning	75	21.6	
Online discussions/Forums	14	3.9	
Face-to-face groups work	14	3.9	
Online assignment	7	2	

Finding indicated that online lectures take 68.6% of allocated time while face-to-face had 21.6%. online and face-to-face discussion takes 3.9% each of the allocated time while online assignment take 2%
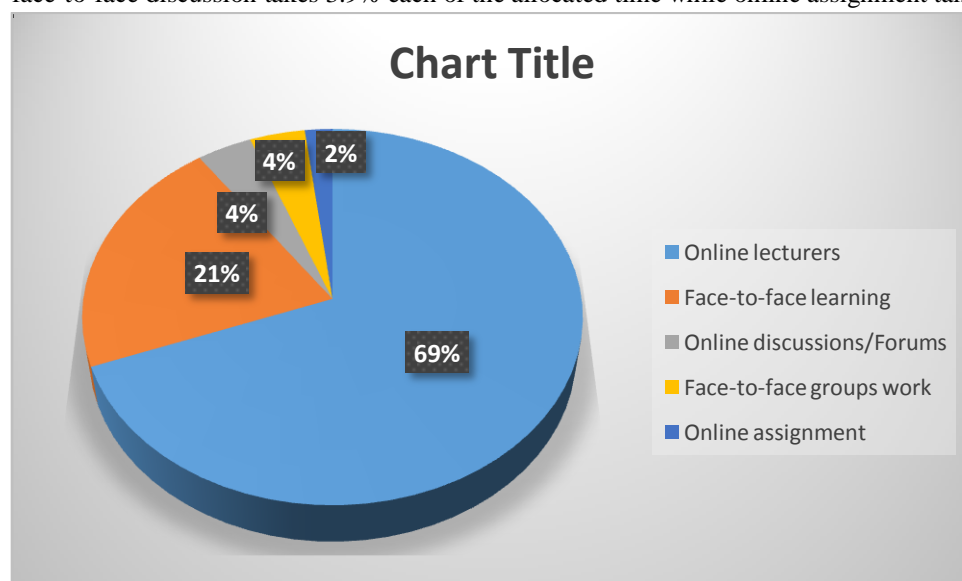

Preferred Instructional Method

This question was followed by another requiring the student to indicate the preferred method of instructional method. Majority of the respondents 39.2% and 45.6% indicated they prefer online preferred face-to-face method. A small group of respondents indicated they also like online discuss for it offers flexibility

Accessing Devices

On the devices primarily used for accessing online classes and materials, 82.4% of respondents indicated that they use smartphones, 35.3% use laptops awhile 3.9% use tablets.

Statement	Respondents
Laptop	51
tablets	14
Smart phone	295

The above table could be presented by the figure below

Primary Devices Used
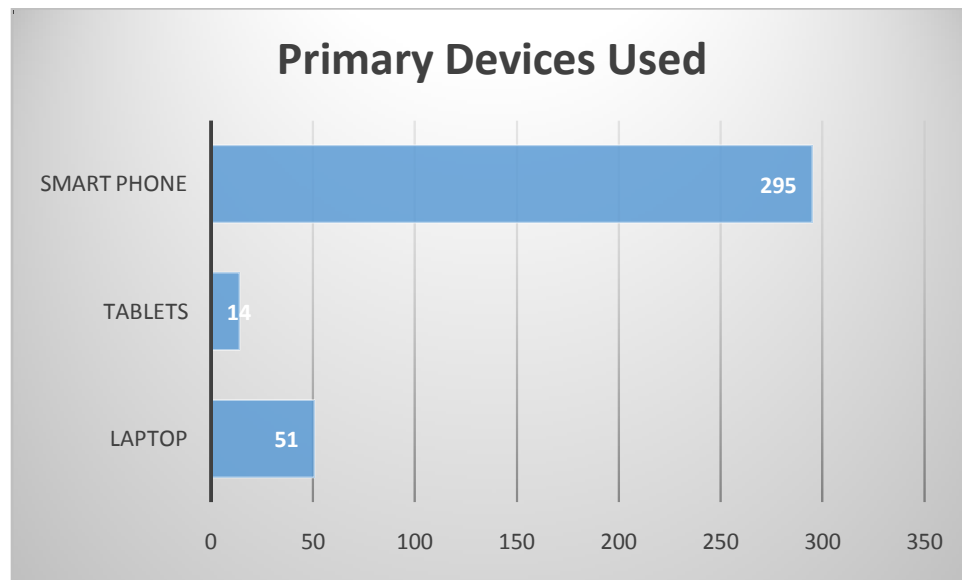
Provision of Internet

Respondent argued that it's the responsibility of training institution to provide infrastructure for learning including classes for physical classes and internet for online learning. On the question on the quality of internet provided by the university, 5.9% of the respondents indicated that the internet was excellent, 36.3% said it was good, 41.2% indicated that it was average while the rest (17%) indicated that it was poor. The information is presented by the table below.

Statement	Respondents
Excellent	22
Good	129
Average	147
Poor	43
Very poor	22

The same information is further presented by the figures below


**Quality of Provided Internet**
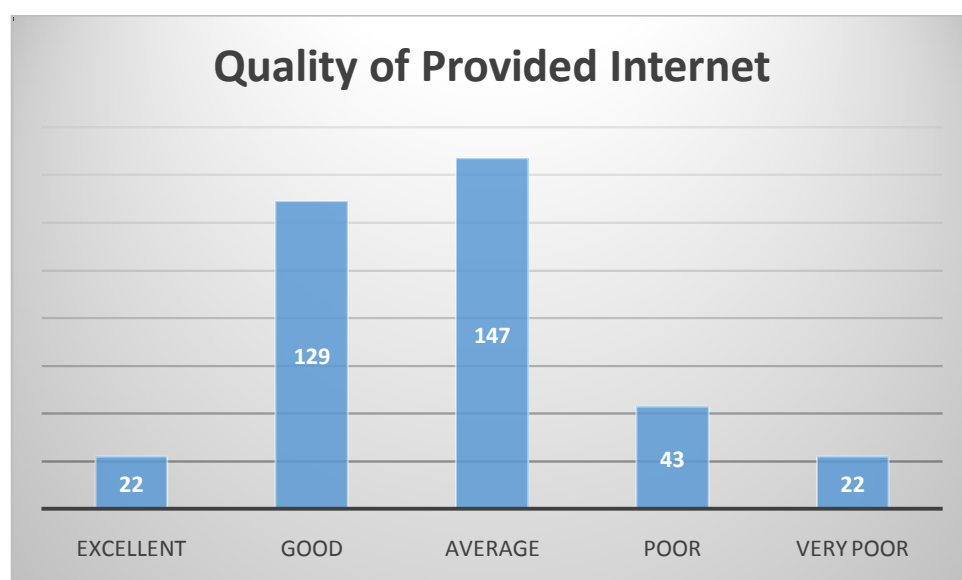
Productivity

Respondents were required to assess on how blended learning has impacted on their studies the following table indicate the number respondents per item

| Statement	Respondents
Significantly decreases	9
Decreases	0
No impact	35
Increases	227
Significantly increased	91

The above table is presented in the figure below
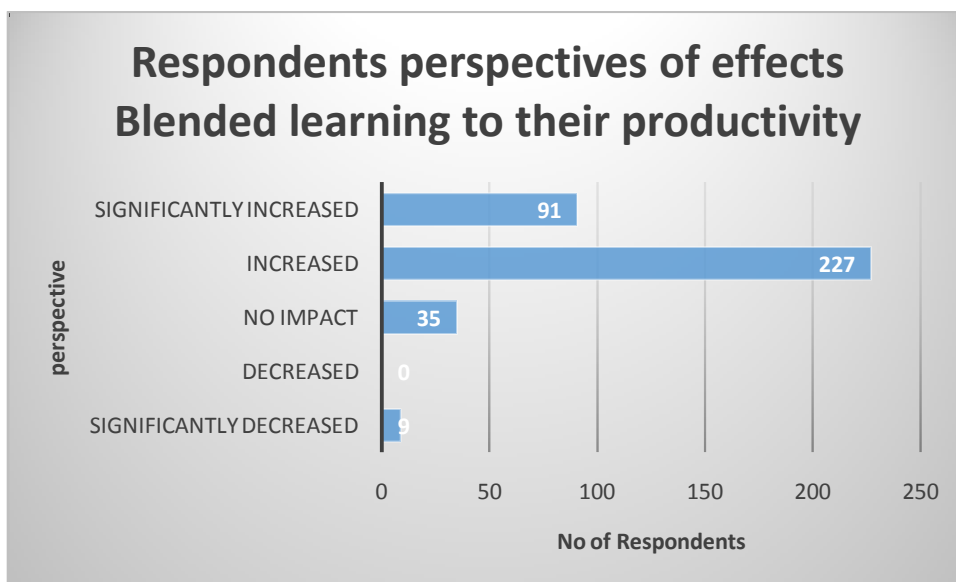
Majority of the respondents' perspectives on the effects of blended learning to productivity indicated significant increase of increase. However, some respondents indicated a decrease. To get the details, respondents were required to explain methods through which blended learning had increased their productivity. The following figure highlights the reasons given
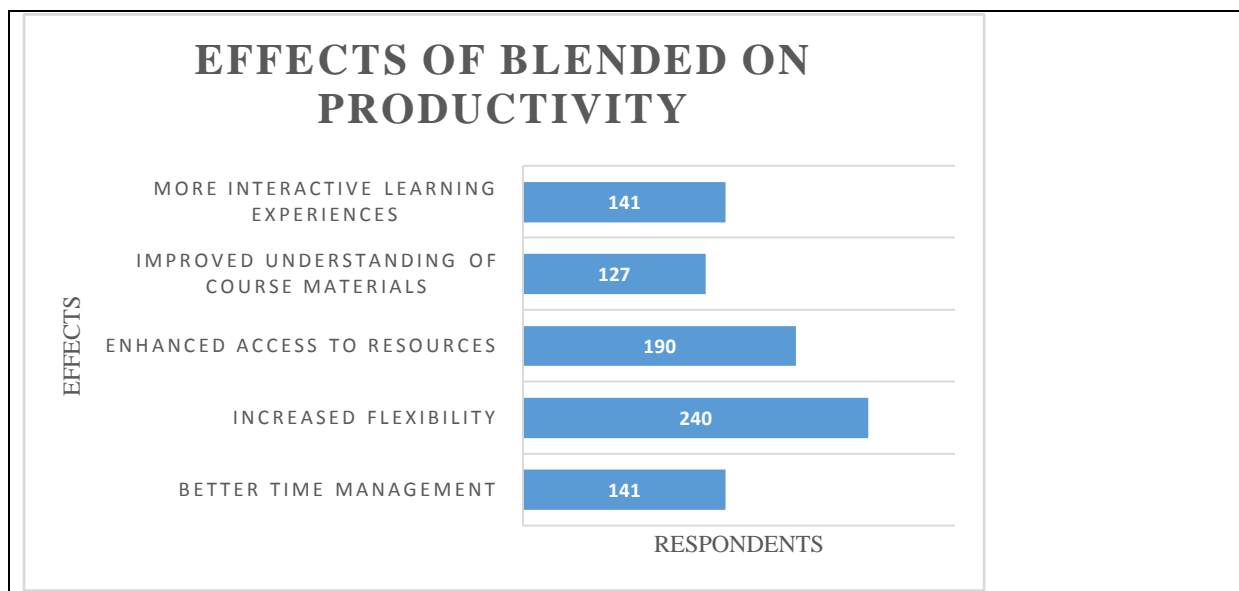
Respondents were also required to explain factors that hinder productivity in the blended learning model. Factors such as technical issues, reduction of face-to-face, difficult in staying motivated, overload of uploaded materials and poor integration of online and face to face
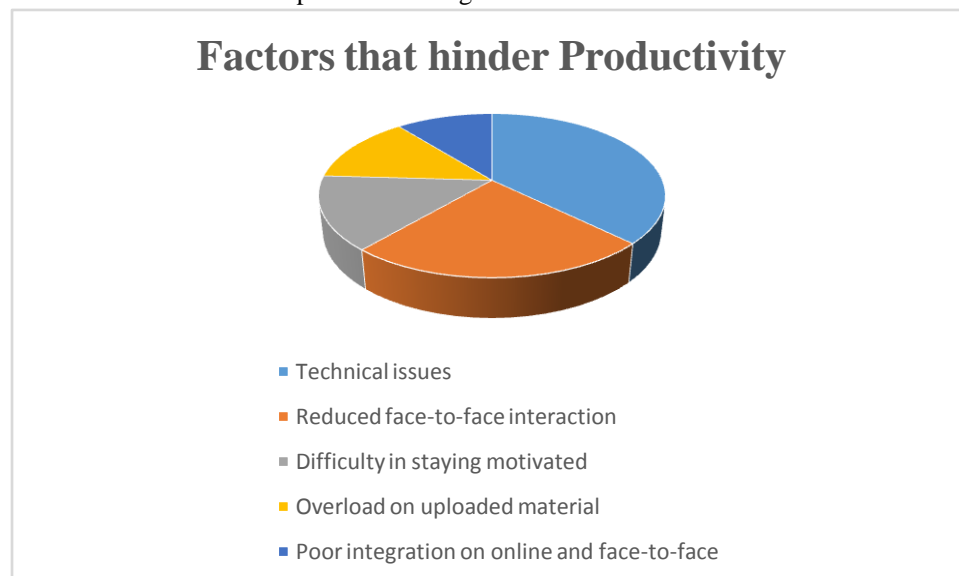
Respondents were also required to comment on general satisfaction of the blended learning approach. Majority of the respondents indicated very satisfied or satisfied while a few respondent were neutral. Very few indicated that they were very dissatisfied. The following figure indicate the findings
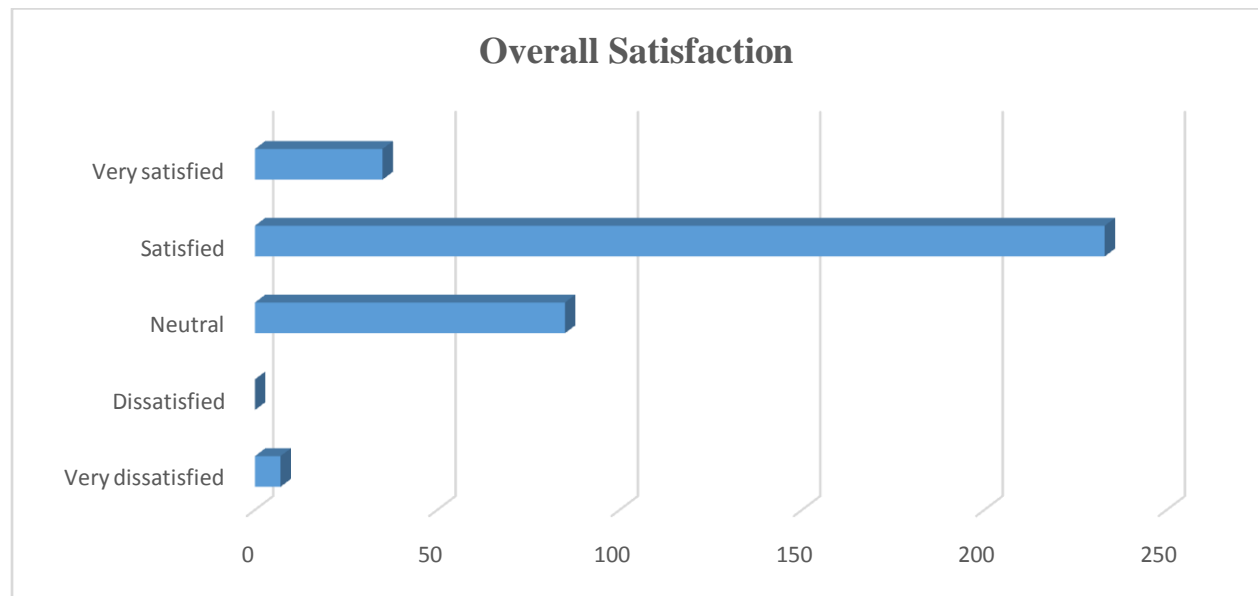
VII. Conclusion

Teaching in an online environment in normal contexts is completely different from teaching remotely in emergency situations and situations of crises, especially when the transition comes suddenly. The COVID-19 pandemic affected all aspects of lives but can be an impetus for digitalization of education in Sub-Saharan Africa. The review suggests that the COVID-19 crisis has served as a stimulus for most educators in the region to embrace online learning as the mode of instruction. In the pre-pandemic period, only a few universities had online learning platforms and distance education centers. However, the COVID-19 crisis spurred even pre-tertiary institutions to adopt digital technologies and/or online learning to ensure the educational careers of learners are not jeopardized.

Despite the fact that online learning is growing at a high speed in post pandemic era, the huge disparities in the access of internet and technological tools has negatively impacted the online instruction. However, the following have been achieved;

- ► blended learning experiences have increased students productivity, due to flexibility

- ► Technical tools and resources have a significance in enhancing productivity and therefore quality and accessible internet need to be enhanced

- ► On instructional methods both methods contribute to productivity. Online method has advantage of resources that are accessible anytime, while face to face help those whose intrinsic motivation to learning is low

- ► Productivity: better time management, increased flexibility in learning, enhanced access time and flexibility to learning materials

Recommendations

Improvement of internet connectivity and accessibility. Be informed in advance when the class will be physical or online to avoid inconveniences. Use of a learning platform that accommodate more students to avoid some being locked out such as zoom.

The ministry of education can also partner with others like the post office which might also revive the one of posters, while lesson and homework can be photocopied or printed then delivered to students who stay in the remote areas without access to networks then delivered to a certain point agreed to by the schools.

Since online learning thrives on ICT tools and reliable internet access, it is recommended that policymakers and educators ensure equitable distribution of ICT gadgets and resources to all schools. Partnering with other donor/international bodies can help schools get adequate funds to sustain the e-learning in Africa. ICT integration can be a way of increasing the self-efficacy and digital literacy of staff and students for e-learning acceptance and adoption. Findings from the review also suggest that there are opportunities for schools to come up with novel inventions and innovations to massif online learning in Sub-Saharan Africa. A clear example is the shift from traditional libraries to electronic libraries and the development of reliable and affordable elearning platforms in Ghana and Kenya. Since many countries across the world with Sub-Saharan African countries, online learning may be the "new normal" and "legally" accepted way of instruction.

Capacity building of lecturers regarding the use of online/blended learning
It is seen that during the pandemic, teachers in higher education are already utilising facilities like Facebook Live classes, Google classroom, Skype tutorial, audio-visual classes through WhatsApp, personal blogs and meeting apps like Zoom, Google Meet, etc., which have given much respite to the learners.

Uniformity in the course contents
As found during the research, syllabi not being at par with the course contents has been one of the major hurdles for which the learners are not motivated. For example, for a professional teachers' training programme like Bachelor of Education (BEd), there is a standard national curriculum designed by the National Curriculum Framework, which needs to be followed by all institutions across Kenyan offering (BEd). However, for general courses, though there are some model curriculums as well as guidelines provided by the CUE. Therefore, the Kenyan policy makers must try to implement a uniform curriculum, which will greatly reduce the problems of inclusion and access in the field of higher education. It would certainly help the Kenyan learners in credit transfer across different Kenyan educational institutions.

Creating an open educational resources repository
In the 21st century online/blended learning have significantly altered the ways of teaching–learning transactions. So, a new type of social constructivism has evolved to help a learner directly interact with the people in the community, share their ideas and thoughts among their peers as well as their teachers and collectively undertake the new researches, which could genuinely transform the society. This kind of constructivism may prove to be very useful in the pandemic situation.

Adoption of learning management system (LMS)
The latest developments in the adoption of choice-based credit system (CBCS) starting from school education to higher is going to transform the entire education systems across Kenyan. This will also provide opportunity to the learners from different parts of the country to reap the benefits of a global form of learning. Even in the pandemic situation, the LMS can be the most effective way to offer education at the door step of every learner located in different corners of the country. In fact, through the use of LMS, both the conventional institutions can share their educational contents among their own learners. This can be a major change that might transform the field of education of the whole country and provide collaborative learning opportunities to the intended learners in the real sense. Therefore, it is the right time to formulate a national policy to introduce an LMS-based

learning from school education to higher or to create own institutional LMS to reach out to the learners. In nutshell following are needed;

► Online learning is the blended mode of learning for the 21st Century due to advance in technology. We can therefore only improve but can't afford to look back

► Improvement of internet connectivity and accessibility

► Learners be informed in advance when the class will be physical or online to avoid inconveniences

► Trainers in mathematical courses to come up with better instructional methods to enable the courses join others in blended learning

► Use of a learning platform that accommodate more students to avoid some being locked out such as zoom.

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