

TEACHER ORIENTED FACTORS AFFECTING EFFECTIVENESS OF ONLINE LEARNING IN THE COVID-19 PANDEMIC ENVIRONMENT IN KENYA

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Introduction

The Covid-19 virus has taken the whole world by storm and it does not seem like it will stop any time soon with all the new variants coming up. Fortunately vaccinations, although not a 100% way to eradicate the spread or chance of catching it, have now come up to assist in fighting it. The pandemic lead to the shift to classes being held online. Universities in Kenya decided to teach the material online using software such as Zoom, Google Meets and Microsoft Teams with no concrete time frame regarding how long they will be teaching online.

University students found it difficult dealing with moving classes online. Some moved back to their hometown for safety but suffered a lot with poor internet connection as well as electricity cuts that disrupted their learning. That put a lot of pressure on the teachers to find ways to successfully teach students what they needed to learn despite the weak internet connection and electricity cuts.

The pandemic also affected economy really badly because prices of commodities rose while salaries and profits of businessmen reduced. This led to high inflation rates and low disposable incomes especially for teachers who had to incur additional expenditure in order to teach online. The overall Consumer Price Indices and Inflation Rates as per the Kenya National Bureau of Statistics are as below:

Base Feb 2019=100

Month	Overall New CPI	Inflation Rate
August 2020	108.573	4.36
September 2020	108.571	4.20
October 2020	109.604	4.84
November 2020	110.779	5.33
December 2020	111.866	5.62
January 2021	112.576	5.69
February 2021	113.365	5.78
March 2021	113.814	5.90
April 2021	114.746	5.76
May 2021	114.977	5.87
June 2021	115.110	6.32
July 2021	115.446	6.55
August 2021	115.710	6.57

(Kenya National Bureau of Statistics, 2021)

As shown above, there has been a significant increase in the inflation rate in August 2021 compared to August 2020. Costs have increased with many lecturers either having to take salary cuts so that they can maintain a job or being laid off since they are no longer affordable. This tends to put a lot of strain on them and affects their teaching.

Table 2: One and Twelve Months' Changes in the Consumer Price Indices

	Weight %	% Change on last month August 2021/July 2021	% Change on same month of the previous year August 2021 /August 2020
13 COICOP Divisions			
Food and Non-Alcoholic Beverages	32.91	0.46	10.67
Alcoholic Beverages, Tobacco and Narcotics	3.33	0.21	2.69
Clothing and Footwear	2.99	0.14	2.72
Housing, Water, Electricity, Gas and Other Fuels	14.61	0.32	5.07
Furnishings, Household Equipment and Routine Household Maintenance	3.74	0.10	4.82
Health	2.91	0.02	3.28
Transport	9.65	-0.32	7.93
Information and Communication	7.78	0.04	2.35
Recreation, Sport and Culture	1.72	0.26	1.19
Education Services	5.56	0.35	2.11
Restaurants and Accommodation Services	8.10	0.02	2.95
Insurance and Financial Services	2.24	0.03	2.07
Personal Care, Social Protection and Miscellaneous Goods and Services	4.45	0.08	3.17
Total	100.00	0.23	6.57

(Kenya National Bureau of Statistics, 2021)

As you can see in the above table, Food and Non-Alcoholic Beverages, Housing, Water, Electricity, Gas and Other Fuels, and Transport have the largest changes (>5%) compared to the same month in the previous year (2020). This means that over the year these particular components have seen prices rise exponentially. An important thing to consider is the fact that these are bare necessities such as Electricity is required for individuals to survive and properly conduct online teaching. Would lecturers still be able to successfully teach well with such costs constantly rising?

Key words: Pandemic, Covid-19, online learning, Kenya, teachers

Abstract

Majority of published articles have talked about the challenges faced by students in learning online however, little has been talked about what the teachers have gone through especially during these times of the pandemic. This paper discusses the factors university teachers face when teaching online. These factors include accessibility to the internet, level of interaction between teachers and students, costs incurred, availability of training and academic policies kept in place to enhance effectiveness of teaching online. These are further divided into personal, social and economic factors where the teachers' age, gender, remuneration, availability of resources, location and the economic status of the country is discussed in relation to the effectiveness of online learning.

Upon carrying out a literature review on articles written on the effectiveness of online learning with the main focus being teachers, it was noted that the main factors affecting the effectiveness of online learning was the availability of internet connection and training provided to teachers. In Kenya, majority of the rural areas lack access to the internet and devices to learn online which makes it difficult for a teacher to teach effectively given the pandemic constraints.

This study sheds light on the need for institutions and governments to take input from their teachers and train them on how to make online learning more effective. It also shows the status of universities in Kenya which had to shift to learning online due to the pandemic. Majority of them took time to adapt to this new change due to the discussed factors. Therefore it is recommended that the Government should train teachers and address the issue of lack of internet and electricity in Kenya.

1.0 Limited internet access or poor internet connection:

1.1 Personal Factors

Another factor that affects the internet connection is poor electrical supply. As it is, even urban areas face difficulties when it comes to electricity supply since many households deal with blackouts. It is worse when it comes to rural areas since the facilities there seem to be in shambles. One might argue that having a generator or inverter would be a good option. However, many individuals living in urban areas are unable to afford either of the two so expecting someone living in a rural area to own either of the two is out of question.

1.2 Economic Factors

High costs and low incomes has affected many people's standard of living. The increase in cost and decrease in income has substantially increased the cost of living in urban areas such as Nairobi, Kenya. In other cases, even if income remains the same, an increase in costs has many Nairobians worried whether they will be able to continue living in Nairobi even if their standard of living drops. Many individuals have even opted to move to rural areas so that they can still live happily whilst telecommuting. One such case is Mr. Eric Oduor who had to relocate with his family to his village of Sigomre. His major clients had closed shop and so he was stuck with no income. He is married with two children and so he has many costs to take care of. His wife was employed but surely it is no easy way to continue living on one person's salary with no guarantee that she would keep her job. One evening he had to talk to his wife about how they would have to move to Sigomre since sustaining a lifestyle in the city now would be extremely difficult (Kahura, 2020).

This is one of many such cases. Migrating to rural areas would mean a lack of internet connection as mentioned in the Kenya Digital Economy Blueprint and this would lead to poor quality teaching that affects the children adversely. This could lead to poor performance of the children and thus eventually lead to the cancellation of tenure or even laying off of the teachers making it more difficult for the teacher and their family to survive which would lead to the familiar cases of suicide of the teacher or familial suicide.

Although Africa has now made leaps in terms of technological advancement compared to the early 2010s, it is still not well developed. The pandemic really proved this fact to us. E-learning requires many things to work well, including; not only electricity but a data connection as well as devices to use the necessary learning materials. A lot of countries have suffered due to the lack of this,

especially teachers who live in rural areas or urban areas where there is poor infrastructure and low quality data connections. Therefore, in certain cases, teachers have to make the decision of relocating to the city even if it is more expensive in order to be able to teach well. Due to this they also have to stay away from their family. Now that they are no longer in direct contact with their family it tends to take a bigger toll on their mental health which renders them unable to teach the students well. Miriam of Ghana, an ICT specialist has spoken about how the government really needs to develop the infrastructure in order to help adapt to the situation. She adds on with the fact that this will help in the future but the current transitions will be extremely difficult to do (eLearning Africa, 2020). Internet connectivity is something we used to rely on, on a day-to-day basis. With the pandemic going on and the transition to online teaching, it is of utmost importance.

The Kenya Digital Economy Blueprint, 2019 reported that a whopping 580 sub-locations have below 50% GSM (Global System for Mobile communication) coverage and 160 sub-locations have no coverage at all. 2000 sub-locations have less than 50% 3G network coverage with half of them are out-of-range of 3G coverage completely. In both, broadband network and fibre optic cables, they cater to approximately 17% of the landmass, leaving 83% out of coverage (Rachael Njeri Kibuku, 2020).

However, many teachers in rural areas find it difficult to teach due to the lack of service available to them. In certain cases, it may be even more costly for them to be able to use these services, if at all provided. Gabriel, a teacher from Tanzania, mentioned about how internet is no longer a luxury good, but rather, a necessity (eLearning Africa, 2020). With the pandemic in question it is fair to say that Gabriel isn't wrong and without proper internet services teachers are doomed to fail in their duty.

Kenya has taken up big steps in order to provide internet access all over Kenya. Telkom (Telecommunication Company in Kenya) is working with Loon (a subsidiary of Alphabet Inc.) as a pilot program. On July 8, 2020 they launched a fleet of 35 high altitude balloons that hover 20 kilometres into the stratosphere and work with central ground stations to provide 4G service to Telkom users that are within a distance of 50,000 square kilometres. Although, it is a pilot program, it shows the existence of cheaper technology that could help to provide internet access in a non-traditional manner to rural areas (eLearning Africa, 2020). Although, there is development going on, teachers in the rural still don't have stable internet access.

1.3 Social Factors

Many teachers are married and with children. This means there are multiple devices connected to the wireless router in order to have an internet connection. How this works is that each device sends a signal to the access point and this uses bandwidth on the Wireless network. One device would not use much bandwidth, however as the number of devices connected increases they take up more bandwidth which makes it difficult for the operations to perform smoothly. At some point in time, delivery of bandwidth is based on a “first come first serve” basis. This means that in order for one device to partake in the communication, the other device must complete it or stop the communication process first. Therefore, it slows down operations through the internet (Snead, 2021). Pairing this with the fact that a significant percentage of urban areas also have poor internet structures or cellular networks making them have an already weak source of internet simply makes it worse.

Due to poor internet connections when using the Wi-Fi, the teachers may have to switch to data bundles. They reconnect to the meeting using a hotspot which provides their device (if not using their mobile phone) an internet connection. However, the interruptions can cause a break in chain of thought which disrupts the understanding process of the students. This could cause the teacher to worry since the necessary learning outcomes would become far more difficult to achieve.

Another issue is that even amongst teachers, some would have access to a good internet service whilst others don't. This could lead to a gap between the teachers since the one with the good internet connection would be preferred. This leads to self-doubt on the teacher with a poor internet connection and so they wouldn't think highly of themselves. This would make them dislike the other teacher and cause a rift between them.

2.0 Lack of IT support and orientation program to train teachers:

Although many universities use online platforms through which they share study materials and teach online, not all teachers are trained or have the technical “know-how” when it comes to online teaching. Many universities also don't have a big enough IT department to successfully solve all problems that come into play when learning or teaching online becomes the norm for a period of time.

2.1 Personal Factors

Online learning is significantly new in Kenya. Yes, it has been introduced before, however it was prioritized towards Masters Students and thus was low-scale in nature. During our Literature Review, we saw a lot of mention of introducing online learning in Kenya since the early 2000s. But we know that it wasn't implemented and thus this is a brand new concept for many institutions of education in Kenya. Due to this, it is difficult to find trained individuals in Kenya who can help support teachers when teaching online.

Every individual is different. That said, teachers are distinct individuals and so they behave and see things differently, they process things differently. When it comes to teaching online, it is a method that different individuals process differently. The same thing applies to different types of teachers. Some teachers may take more time to learn how to teach online whilst others may be quick. This brings up a gap between quick learners and slow learners disrupting the whole teaching process. Slow-learning teachers get frustrated when they take time figuring things out and this stresses them out. This stress really shows not only in their teaching styles but in their personal lives too. This leads to a butterfly effect whereby adversely affecting every single process in the teacher's life.

2.2 Economic Factors

Historically, teachers have been ill-equipped when it comes to being trained in the use of technology. This means that they are unable to successfully transition into an online method of teaching (eLearning Africa, 2020). Kenya as a whole has been pretty backward when it comes to technology. Accepting and adapting to technological change has been something Kenya has been working on for years. Many of the systems that have finally been adopted are redundant systems in many countries. Systems in education fall under the same category. One of the most important things in today's day and age is technology and many teachers have failed to accept it and hence they have failed to rise when circumstances fall apart. Covid-19 was one such thing that showed the failure of the Government in successfully providing sufficient training programs as well as sufficient equipment to public universities.

Few teachers actually have technical skills due to the lack of training as well as facilities such as computers as is the case in many public universities in Kenya. Although things have definitely improved since the early 2010s, there is still a huge gap in technological advancement and

understanding that has stunted the growth of education in Kenya, forcing lecturers to stick to using orthodox methods of teaching pushing them far behind teachers in private universities in Kenya. Many public universities also have a small IT support staff that do not have proper training or understanding of IT since these universities have small budgets and cannot afford to hire highly trained individuals. This further weakens the teachers' teaching abilities as they have no technical support when issues arise. However, if teachers were properly taught how to use the various digital tools that are now available to them, they could teach more effectively. Training could include how to properly operate Zoom i.e. screen-sharing a video. In this case they need to be taught how to ensure that the audio is on to share as well.

Dr. Richard Bosire, the chairman of the Universities Academic Staff Union's University of Nairobi chapter stated that many teachers aren't trained in e-teaching and even the ones that were trained looked for instructions on how to proceed (Gilbert Nganga, 2020). This leads to a concept known as time lag. The Merriam Webster dictionary defines time lag as, "An interval of time between two related phenomena". (Merriam-Webster, n.d.) This means that there is a lot of time that passes by before any action regarding how to teach online is undertaken. This wastes time and affects the completion of the syllabus.

Many teachers do not have sufficient money to actually pay for their own training. If we consider basic business transactions, it is more expensive for an individual to purchase goods from a supermarket than it is from a wholesaler. The same concept applies here. Individuals, on their own, find it extremely expensive to pay for their own training. This is a demotivating factor for them and thus aren't motivated to even teach with their basic knowledge.

2.3 Social Factors

A key factor here is the difference in the level of education of different teachers. Teachers that studied abroad or in private universities in Kenya are at an advantageous position compared to teachers who studied in public universities in Kenya. This is due to the fact that universities abroad as well as private universities in Kenya have a strong technological background and thus they expect their students to be well-versed with the software by the time they graduate unlike in public universities in Kenya where technology plays a minute role. Due to this, teachers that studied abroad and in private universities in Kenya find it easier to adapt to and are deemed to be more flexible. Many teachers lack the knowledge or are uneducated on how to use online platforms such

as Zoom to teach. The unfamiliarity to such software makes them ill-equipped to successfully respond to the change in teaching environment (eLearning Africa, 2020). In a study carried out in Zagazig University, Egypt, there were many barriers to the university medical staff with one of the main (24.3%) being limited technology skills of the staff (Marwa Mohamed Zalat, 2021).

Quite a few professors are quite old. Being old, even though they are academics they distrust technology and hence are not tech literate. Also, since they are old they do not use technological devices often and even if they do they tend to be a bit slow when it comes to using a device or learning how to use the device. Since they are untrained it is even more difficult for them to teach online. The old teachers also tend to be forgetful when it comes to using digital devices. During the times before Covid-19, some teachers would find it difficult to use technological devices since in his time they didn't exist and when they did come into existence he barely had to use them. Compared to when they came into existence and now, there has been a lot of progress and they've changed. Now this is simply when classes were held in the university, classes being online has made it even more difficult for teachers like him to successfully and efficiently use technology to teach the students, especially without proper training.

3.0 Costs associated with online learning

People perceive online learning to be cheaper than physical learning, however, according to the Changing Landscape of Online Education by Quality matters and Eduventures, a survey done on 182 officers in charge of digital learning said that nearly 74% of online programs charged the same fees for online and campus programs (Newton, 2018). This clearly shows that despite the fact that some costs are not incurred in online learning, online learning is still quite expensive because of the extra costs incurred in added costs of designing online courses and program development. Thus it is not a surprise that some universities even charge extra for online programs. Teaching and learning online both incur costs that have to be borne by the user. These costs include purchase of bundles, laptops and subscriptions to online learning platforms. Given the different levels of income and geographic location, the burden of these costs differ.

3.1 Personal factors

Despite the flexibility of teaching from anywhere, 33% of staff had financial difficulties according to a survey done by 554 staff from different universities in Spain, Colombia, Chile and Nicaragua (Jojoa et al., 2021). This clarifies that online learning affects the budget of teachers because a variety of tools have to be used to ensure the teaching process is effective. These tools are not free of charge and usage of electronic devices also increases the cost of electricity which is borne by the user.

The education and income levels of the teacher will determine the impact of these additional costs associated with learning online. For example, teacher who has a PhD is likely to be paid higher than a teacher who has a bachelor's degree only because of the extra skills a PhD teacher brings. Thus the teacher with higher education can afford to pay for internet costs while a less educated teacher may not have the budget to pay for the sudden expenses. Moreover, a private university teacher is paid higher than a public university teacher thus those in the private school can afford to pay for the extra costs incurred but it is very difficult for a public university teacher to do so. This is because a private university's fee is higher thus the teachers are paid well but a public university is funded by the state thus they may not be charging high fees or paying teachers a high salary.

In addition, teachers have the pressure of being terminated as a result of poor performance should they lack the necessary resources. Institutions have the pressure of retaining students even when they are being taught online. Thus they pressurize teachers to enhance their skills by being up to date with technology to ensure online learning goes on smoothly. Failure to do so can lead to termination of the teacher, this pressure can cause the teacher's performance to deteriorate instead of improving.

3.2 Economic factors

According to Pay scale, the median annual salary of a high school teacher in Kenya is Ksh 485,000 (USD490) (Payscale, 2021). This leaves little disposable income to purchase the required devices such as laptops. Comparing this with the salary of public school teachers in America, teachers in American earn an average of \$63,645 which is relatively much (Perino et al., 2021), American teachers have higher disposable income to spend on costs related to online learning. For example, to use Zoom, Microsoft teams and other platforms, the teacher is required to have stable internet and a functioning computer. However, not all teachers have ready access to these facilities since

their income is low and cannot afford some facilities. Thus for universities that don't provide these, the teacher incurs the cost of purchase because of the pressure to match the institution's expectations. In addition, teachers that need to communicate to the student urgently need to make a telephone call which is billed per minute, this is a cost that wouldn't be incurred if the teacher could meet the student within the school.

A study done on mobile data plans in 230 countries showed that Tanzania has the cheapest data plans in East Africa while Kenya ranks as one of the most expensive (Position 118 in the world) in comparison to its peers in East Africa where Kenyans pay USD 1.56 for one GB of Internet (Obura, 2021) Teachers have to pay for such costs which otherwise would not be incurred if they were teaching in a physical environment. Furthermore, just buying bundles isn't enough, teachers need stable internet thus they need to opt for a high quality internet provider which costs a high amount of money.

Matthias Kronke's Afrobarometer survey deducted two main reasons that improved readiness in engaging in remote learning is determined by the access to electricity and the level of education. Upon sampling 34 countries, he found that 43% of the population had access to a mobile phone that does not have internet access. This means that only 57% of the population had a mobile with internet access, thus for the rest to learn or teach online, they would have to spend on buying a smart phone which has access to the internet and a computer to be able to do assignments. In Kenya, only about 17% of the population owns a smartphone and a computer while 26% own either of them (Krönke, 2020).

However, with time, the percentage of Kenyans who own a smartphone has been rising. For students to effectively learn and teachers to teach online, they had to buy devices through which can teach students. These devices are expensive and are not usually sponsored by the learning institutions thus teachers have to incur the cost of buying bundles and purchasing laptops in order to be able to teach. A second hand functioning laptop could cost about Ksh 25,000 to Ksh 30,000 which might be slightly slower and have less functions than a brand new one. This may cause a slight challenge to the teacher during the teaching process.

3.3 Social factors

Teachers within the same institution may have different education levels and experience with technology thus some teachers adapt to technology quickly while some fear technology or avoid

it due to lack of skills. This can cause a teacher to feel inferior and unworthy of themselves. Moreover, students tend to compare their teachers with one another and this could lead to a teacher being treated unequally. This pressure forces them to spend money on learning how to use the online tools to teach effectively which is paid for from the personal savings. In addition, teachers who are not able to match the skills required for teaching online and working with technology are looked down on. They may feel left out and unworthy in comparison to other teachers, they would also feel ashamed of asking for help from their peers. Thus they end up spending large amounts of money on courses to learn how to use technology. During the start of the pandemic, Zoom was a very new concept to Kenya, teachers had to be trained on how to use its features, some learnt really quickly while some took time to adjust to these changes.

Teachers who are married and have children are likely to have a huge impact on their budget because of the higher costs associated with online learning. Due to the pandemic majority of the children had to switch to online learning. Thus teachers who had children learning from home incurred more costs in terms of buying devices for their use and upgrading their internet connection.

Generally, teachers who are young are able to afford purchasing these devices because they may not have many dependents thus their disposable income is higher than that of the elder teachers. Elder teachers may have children who are also learning online thus they incur extra expenditure in purchasing devices and bundles for smooth learning.

Despite the encouragement of equal pay for both men and women, we haven't yet reached to this point, some countries are even behind in encouraging women to enter the workforce. In Africa, female teachers are still paid less than their male peers due to which they are left with less disposable income to purchase devices necessary for teaching online. Therefore they incur the costs of purchasing new laptops and buying bundles to teach online.

4.0 Lack of interaction between students and teachers

Findings state that students were more likely to receive lower grades in online classes in comparison to face to face classes (Francis et al., 2019). Thus teachers need to match up with physical class to ensure that students pass well. They have to look at various factors to make online learning interactive which includes making the lesson interesting, easier and fun to motivate students (Tarus et al., 2015). According to Grabe, the use of ICT in learning and teaching offers

better access to relevant material which students can use to practice and analyze. This in turn develops their decision making, problem solving and thinking ability(Grabe & Grabe, 2006). However to achieve this, teachers also have to change their role and use different teaching strategies. Moreover, most of the online exams consist of multiple choice questions and short answer questions which fail to assess the student's analytical and writing skills.

4.1 Personal factors

The use of ICT in education depends on the teachers because they are in control of the teaching and learning process (Mooij & Smeets, 2000). But the lack of technical support can be a barrier to effective learning. Despite the advancement in technology, some universities in Kenya still lack the technical support to be able to train teachers in making online classes interactive and effective. For example some teachers wouldn't know how to use some tools such as video sharing to conceptualize the theory. Students are likely to stop paying attention if the lesson is not interactive and monotonous, use of such tools makes the class interactive and reduces the burden on the teacher to continuously speak.

In total, 554 people belonging to the staff of different universities participated in a Survey where 91% of them were female staff and 50% of them stated that online teaching is possible but in person it is better (Jojoa et al., 2021). Which means that even teachers had challenges while teaching online and they would prefer teaching face to face. Teachers were forced to teach online when the Pandemic hit Kenya in 2020, these teachers had no experience thus it was very difficult for them to adapt and make the online class interactive. About 45% of the surveyed teachers also said they experienced more stress after 5 weeks of remote teaching post lockdown, while 51% expressed feelings of depression and anxiety(Krönke, 2020). Being isolated for long caused them to be in physiological and emotional distress which makes it difficult for teachers to make the class interactive. In addition, students don't show effort in trying to cope with online learning by engaging in class, thus teachers can get worried about the students results.

Moreover, students faced technical challenges such as lack of internet access, connection problems and lost data due to which they were not able to attend classes or participate in classes. This is a very common issue in Kenya where students face poor network or power outages, this disrupts their learning process. In this case, the teachers are in a dilemma on whether to arrange for prerecorded classes or teach students live. They both had drawbacks, pre-recorded classes

discourage students to pay attention during the live class while live classes disadvantage those who are having technical challenges. Either way students are not interactive as compared to physical classes.

Out of 381 students, 209 students of surveyed students stated that they had no motivation to learn due to which they did not interact much in online classes (Nurunnabi et al., 2020). For a teacher, it is very difficult for them to motivate the student when they are not learning face to face. Some of the factors leading to inactivity of students include having a sick family member, fatigue from continuous use of technology and financial issues at home. It is very difficult for a young student to concentrate in a class when a family member is sick or at hospital. This problem is also faced by teachers, they can have a sick family member and face the same challenges in teaching thus the teacher has to find a solution so that the students can learn well and teachers can teach effectively. Students have different characteristics, skills and attitudes towards online learning thus they learn at their own pace (Jolliffe et al., 2001). Balancing between the different types of learners can be difficult because there are drawbacks of certain teaching techniques. Moreover, online learning requires more effort and self-discipline in comparison to physical learning, therefore teaching them self-discipline takes a while because of the lack of one to one communication. Some students give more importance to getting high scores compared to learning a concept thus they find different ways to pass their exams and assignment rather than understanding the concept. This conflicts with the teachers' intentions which are to ensure that the student grasps the concept well. To make online learning effective, teachers have to consider improving their method of presenting content, gaining more power to be able to make the teachers' administration more efficient (Tarus et al., 2015).

Students living in remote areas experienced more internet interruptions due to which they were not able to actively participate in online classes. This makes it very difficult for a teacher to assess the understandability of the student. In addition, students are not able to ask questions on the spot thus there is a lag between the time it takes to understand a concept and ask questions. During a physical class, this process is really quick and interactive. Online learning misses the personal touch since students are unable to collaborate and interact with other students to develop their soft skills, this makes it difficult for teachers to meet the learning outcome of team work. Students are affected by their surroundings and external factors due to which they can't concentrate in class.

4.2 Economic factors

Only 17% of West African respondents reported being at institutions with e-learning options, compared to 43% of East African respondents and 41% of respondents in Southern Africa. A survey done on university teachers in South Africa revealed that every teacher interviewed was frustrated from teaching online (Tanga et al., 2020). They had to follow the university guidelines and deliver their lectures through Blackboard but this was new and challenging to them because they did not know how to use this application effectively. They were unaware of how they will deliver exams and assess the students' understanding which made them frustrated. Moreover, simply uploading course materials was not enough, teachers observed that students were not able to access the materials due to lack of internet connection, laptops and data bundles to access Blackboard. Teachers therefore worry and to look for means to ensure that all students continue learning rather than just a section of them learning and those from poor socio economic backgrounds being left out.

Another economic factor that contributes to this lack of interaction is the low disposable income to buy devices for effective online learning. In Kenya majority of the population belong to the middle class who do not have enough funds to buy gadgets for learning online, due to this students are unable to continue learning smoothly and face challenges in completing assignments which require the use of technology. In this case, teachers have to find alternative ways to ensure that the students continue learning, for example, allowing them to submit their assignments via written paper rather than typed assignments. However the disadvantage of this is that students may not be up to date with IT skills that are required for students to have once they leave university.

However a study by Dana shows that students have benefited from learning online by connecting with students to openly express ideas, to communicate and support their point of view (Crăciun, 2019). This applies to students who enjoy learning online, they are more active in the classes and have low chances of getting depression from learning online. However students that do not enjoy learning online have become demotivated and less interactive in class.

Students from remote or low income areas often have little or no access to internet and infrastructure thus they are unable to participate in learning online especially when it is being conducted live. Also, the frequent power outage and interruption can demotivate the student and force them to discontinue learning due to lack of attention. In this case, the teachers have to pay

special attention to the student to ensure that they can learn effectively. Students also face other issues at home which might not be communicated to teacher because of the lack of a physical presence. For example, the rate of child abuse is 5 times higher in families with low socioeconomic status than in families with high socioeconomic status (Lakhani, 2020) thus students are likely to be distracted and not attentive in class. In this case teachers find it difficult to teach students and ensure that the student is understanding the concept. When students don't ask questions or interact it is difficult for the teacher to assess the effectiveness of their teaching technique.

4.3 Social factors

The lack of a social element in online instruction can lead to inactive participation by students. Students have different personalities, some have a strong commitment to learning while some require some social aspect to be able to commit to learning and participate in class (Cronje et al., 2006). Adult students do well in online classes however some studies show that students are more likely to choose to drop out of courses being offered online (Park & Yun, 2017), this affects their academic continuity, a gap year could make students forget important concepts that they learnt in their previous years thus the teacher has to make the student re-learn them. Researchers have found that social interaction is an important incentive to encourage students to participate and end a course (Cronje et al., 2006). Social interaction will promote the students problem solving ability and interpersonal skills. Hence there has to be means to bring the social element in an online platform.

A study done on higher education in Africa noted that about 90% of women in their twenties reported to have disruptions to their learning while only 81% of men agreed to have interruption to their learning, while 70% men in their forties reported disruptions in comparison to 90% of women of the same group (Krönke, 2020). This shows that women are experiencing more challenges in online learning compared to men. This data varies in different parts of Africa, In Kenya majority of the primary school teachers are women however it is not the same for tertiary level education. Despite a rise in gender equality, women still have other challenges along with working from home, they have to take care of their families and perform other duties. There is a gap in online learning which needs to be filled by providing interactive means of teaching online while keeping in mind the costs and gender of teachers at a regional basis.

Older teachers experience more difficulty in promoting interactive classes because of the lack of technical knowledge and training to use tools that will engage students in the class especially when they have been forced to switch to online learning due to the pandemic. Younger teachers may not experience as much difficulty because they are able to use the basic technology and can easily adapt to the changes to ensure students learn effectively. For example, they can use Zoom applications tools such as breakout rooms that assist in students getting to know each other without the supervision of the teacher, this ensures that students are able to work in teams and help each other understand concepts. Younger teachers tend to be strict which leads to students actively participating in class thus they may be able to overcome the barrier of lack of participation but elder teachers tend to be lenient due to which students are not serious in class. Generally, adult students receive low grades in comparison to younger students due to other duties that they perform while studying (Francis et al., 2019).

Conclusion

It is fair to say that the pandemic has significantly impacted the modernization/change in teaching methods in Kenya. It is no longer possible to simply adhere to the standard way of teaching, creativity has become extremely important in order to achieve effective results. Even after the end of the pandemic, some of the lessons learnt from online learning shall still be of use.

One of the most important things the pandemic has taught the education sector is that technology is no longer classified as a luxury good and that it is highly important for day-to-day functions. In addition, this pandemic distinctly highlights the income inequality together with the technological gap in Kenya building up further on the complications. In Kenya, not only rural areas but urban areas also have challenges in accessing the resources required for online learning. Several teachers have had difficulties in accessing the internet due to their locational constraints and this has affected their performance.

Kenya is a slow economically developing country but it can no longer afford to sit back and watch itself burst in flames. The government needs to review its budget and the economic status as well as social standpoint before apportioning its funds since it has somehow managed to waste a lot of funds available to it. These funds include the loans they took prior to the pandemic as well as the loans and the aid they've received after the pandemic came into play. There needs to be training programs held by the Government of Kenya to train teachers in public universities on how to use digital platforms to successfully communicate and teach their lectures to the students. They also need to subsidize some of the things required for communication on digital platforms, not just for teachers but for students too, such as laptops, internet bundles.

The Government of Kenya needs to collaborate with cellular service and internet providers in order to avail better connections to both urban and rural areas by building infrastructure that increases coverage. They also need to improve their power lighting firm to reduce the occurrence of power outages by building more infrastructure in the rural areas and find more efficient ways to produce electricity as well as make it available all over the country. If they are still unable to produce sufficient they need to find ways to improve their infrastructure whereby consumption of electricity isn't too high. They should also communicate with other countries and try purchasing their surplus electricity.

References

- Crăciun, D. (2019). Training future language teachers to educate the digital generation. *Journal of Educational Sciences*, XX, 39, 1. <https://doi.org/10.35923/JES.2019.1.08>
- Cronje, J. C., Adendorff, D. E., Meyer, S. M., & Van Ryneveld, L. (2006). Surviving the shipwreck : what makes online students stay online and learn? *Educational Technology & Society*, 9(4). <https://repository.up.ac.za/handle/2263/2245>
- eLearning Africa. (2020, September). *The Effect of Covid-19 on Education in Africa and its Implications for the Use of Technology*. Retrieved from eLearning Africa: https://www.elearning-africa.com/conference2022/ressources/pdfs/surveys/The_effect_of_Covid-19_on_Education_in_Africa.pdf
- Francis, M. K., Wormington, S. V., & Hulleman, C. (2019). The Costs of Online Learning: Examining Differences in Motivation and Academic Outcomes in Online and Face-to-Face Community College Developmental Mathematics Courses. *Frontiers in Psychology*, 0, 2054. <https://doi.org/10.3389/FPSYG.2019.02054>
- Grabe, M., & Grabe, C. (2006). *Integrating technology for meaningful learning* (5th ed.). Cengage Learning.
- Gilbert Nganga, M. W. (2020, April 7). *Universities face multiple challenges in wake of COVID-19 closures*. Retrieved from University World News: <https://www.universityworldnews.com/post.php?story=20200407162549396>
- Jojoa, M., Lazaro, E., Garcia-Zapirain, B., Gonzalez, M. J., & Urizar, E. (2021). The impact of covid 19 on university staff and students from iberoamerica: Online learning and teaching experience. *International Journal of Environmental Research and Public Health*, 18(11). <https://doi.org/10.3390/ijerph18115820>
- Jolliffe, A., Ritter, J., & Stevens, D. (2001). The online learning handbook : developing and using web-based learning. *The Online Learning Handbook*, 43(7), 328.

- Kahura, D. (2020, September 3). *The Exodus: Corona-Induced Urban-To-Rural Migration*. Retrieved from The Elephant: <https://www.theelephant.info/culture/2020/09/03/the-exodus-corona-induced-urban-to-rural-migration/>
- Kenya National Bureau of Statistics. (2021, August 31). *CONSUMER PRICE INDICES AND INFLATION RATES FOR AUGUST 2021*. Retrieved from Kenya National Bureau of Statistics: <file:///C:/Users/Tilak%20Shah/Desktop/Tilak/August%202021%20-%20CPI%20.pdf>
- Krönke, M. (2020). Africa's digital divide and the promise of e-learning. *AFRO Barometer*, 66, 1–20. http://afrobarometer.org/sites/default/files/publications/Policy_papers/pp66-africas_digital_divide_and_the_promise_of_e-learning-afrobarometer_policy_paper-14june20.pdf
- Marwa Mohamed Zalat, M. S. (2021, March 26). *The experiences, challenges, and acceptance of e-learning as a tool for teaching during the COVID-19 pandemic among university medical staff*. Retrieved from Plos One: <https://journals.plos.org/plosone/article/authors?id=10.1371/journal.pone.0248758>
- Merriam-Webster. (n.d.). *time lag*. Retrieved from Merriam-Webster: <https://www.merriam-webster.com/dictionary/time%20lag>
- Lakhani, R. (2020). *How Remote Learning Impacts Low-Income Students During COVID-19 | RTI*. RTI International. <https://www.rti.org/insights/how-remote-learning-impacts-low-income-students-covid-19>
- Mooij, T., & Smeets, E. (2000). Modelling and supporting ICT implementation in secondary schools. *Computers & Education*, 36(3), 265–281. https://www.academia.edu/596013/Mooij_T_and_Smeets_E_2001_Modelling_and_supporting_ICT_implementation_in_secondary_schools_Computers_and_Education_36_3_265_281
- Newton, D. (2018, June 25). *Why College Tuition Is Actually Higher For Online Programs*. Forbes. <https://www.forbes.com/sites/dereknewton/2018/06/25/why-college-tuition-is-actually-higher-for-online-programs/?sh=71aa7b50f11a>
- Nurunnabi, M., Hossain, S. F. A. H., Chinna, K., Sundarasan, S., Khoshaim, H. B., Kamaludin,

- K., Baloch, G. M., Sukayt, A., & Shan, X. (2020). Coping strategies of students for anxiety during the COVID-19 pandemic in China: A cross-sectional study. *F1000Research*, 9. <https://doi.org/10.12688/F1000RESEARCH.25557.1>
- Obura, F. (2021). *Study: Kenya has most expensive Internet in East Africa - The Standard*. The Standard. <https://www.standardmedia.co.ke/business/sci-tech/article/2001411292/study-kenya-has-most-expensive-internet-in-east-africa>
- Park, S., & Yun, H. (2017). The Influence of Motivational Regulation Strategies on Online Students' Behavioral, Emotional, and Cognitive Engagement. *Https://Doi.Org/10.1080/08923647.2018.1412738*, 32(1), 43–56. <https://doi.org/10.1080/08923647.2018.1412738>
- Payscale. (2021). *High School Teacher Salary in Kenya | PayScale*. Payscale. https://www.payscale.com/research/KE/Job=High_School_Teacher/Salary
- Perino, M., Kiersz, A., & Hoff, M. (2021, May 7). *RANKING: How Much Money Teachers Make in Every US State*. Business Insider. <https://www.businessinsider.com/teacher-salary-in-every-state-2018-4?r=US&IR=T>
- Rachael Njeri Kibuku, P. D. (2020, March 20). *e-Learning Challenges Faced by Universities in Kenya: A Literature Review*. Retrieved from issuu: <https://issuu.com/academic-conferences.org/docs/ejel-volume18-issue2-article701>
- Snead, A. (2021, April 15). *Can Too Many Devices Slow Down Or Crash Your Wi-Fi Router?* Retrieved from Smarter Home Guide: <https://smarterhomeguide.com/too-many-devices-slow-down-or-crash-wifi-router/>
- Tanga, P., Ndhlovu, G. N., & Tanga, M. (2020). Emergency remote teaching and learning during COVID-19: A recipe for disaster for social work education in the Eastern Cape of South Africa? *African Journal of Social Work*, 10(3), 17–24.
- Tarus, J. K., Gichoya, D., & Muumbo, A. (2015). Challenges of Implementing E-Learning in Kenya: A Case of Kenyan Public Universities. *International Review of Research in Open and Distributed Learning*. *International Review of Research in Open and Distributed Learning*,

16(1), 120–141. <http://www.irrodl.org/index.php/irrodl/article/view/1816/3196>