

## **Adoption of Electronic Learning Tools in the COVID-19 Period: A Case of Selected Institutions of Higher Learning in Kisii County**

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### **Abstract**

The study sought to find out the e-learning tools adopted by selected institutions of higher learning in Kisii County. To achieve this, the study used a descriptive survey research design that was qualitative. The target population comprised institutions of higher learning in Kisii County from which an accessible population of two institutions was drawn; one was a public University and the other was a TVET institution. The target population for the study was 400. A sample size of 80 respondents was arrived at using the Yamane's formula of 1967. Simple random sampling method was utilized to select 80 respondents with a representative of 40 respondents from each institution. The sample consisted of 20 teachers and 20 students from each institution. The participants completed questionnaires from which the e-learning tools employed by each of the institutions were determined. The questionnaires comprised of both closed-ended and open-ended items. These e-learning tools included the asynchronous tools and the synchronous tools. The asynchronous tools consist of Google classroom, YouTube videos, WhatsApp and e-mail whereas the synchronous ones include all forms of video and audio conferencing, Moodle, Zoom, Web Conferencing, Big Blue Button, Lockdown Browser, Respondus, Chat Rooms and Telephone conversations. To achieve the study objective, the Instructional Core Framework was employed. Two institutions that did not participate in the study group, was selected randomly for a pretest. The split halves technique was used to ascertain the reliability of research instruments. From the study, it was evident that institutions of higher learning did make use of several e-learning tools in teaching and in the COVID-19 period. Based on the findings, the study concluded that public Universities were much ahead in adopting online teaching and learning in comparison to TVET institutions. Therefore, the government of Kenya should revamp Information Communication Technologies in TVET institutions so that they are able to establish their own Learning Management Systems and equip trainers and trainees with skills sufficient enough to enable them transition to online teaching and learning. The study recommends a nationwide study in all tertiary institutions with the aim of assessing the success or failures of e learning during the COVID-19 period.

**Key words:** COVID-19, e-learning, e-learning tool, pandemic, TVET institution, technology.

## **Introduction**

The COVID-19 pandemic has demanded sudden and radical transformation in the many sectors of the international community, disrupting normalcy. Many sectors have been impacted: healthcare systems (Holshue, DeBolt, & Lindquist, 2020), agriculture (Redif, 2020), manufacturing (Knieps, 2020) and other socio-economic systems (Nicola et al., 2020). Impey (2020) in his study observes that the education sector; the world over has experienced unexpected changes since the advent of COVID-19. As the number of COVID-19 cases continues to increase every day in spite of stern measures adopted by numerous countries, institutions of learning, right from pre-school to university, have been suspended to minimize face to face contact (Alsafi, Abbas, Hassan, & Ali, 2020). Approximately, 900 million students globally are not in school (UNESCO, 2020).

Consequently, many learning institutions have had to transition to electronic learning. In Kenyan institutions and elsewhere in the developing world, e-learning is a novel experience which presents many challenges, particularly lack of good internet connectivity and the necessary high quality learning devices that can support e-learning (Langford & Damsa, 2020). To this end, there has been a lot of uncertainty on the future of education, the quality, and responsiveness to the requirements of students throughout the country. For that reason, the educators/lecturers/trainers need to evaluate instructional practices, leadership, and support systems in place to support them in the delivery of content. Thus, this is the time to seriously rethink, refurbish, redesign and create a robust system in support teaching and learning during the difficult period of the corona pandemic.

Although it is assumed that there is no teaching approach that can replace face-to-face teaching, the aftermath of COVID -19 has led to this sudden pedagogical shift from traditional face-to- face method to modern online approaches of teaching. Therefore, there is a need for lecturers and trainers to adjust from their familiar instructional approach to new methods of teaching and learning that support disease containment protocols (Myung et al., 2020). Previously, e-learning, distance learning, correspondence, and online learning courses were considered as non-formal education, but currently, these forms of learning have become formal and will gradually replace the traditional face-to-face learning if the COVID -19 circumstances persist over time (Mishra, 2020).

E-learning does not have a standardized and universally accepted definition (Dublin, 2003&Marinara 2006). However, some scholars have defined e-learning as “the use of information and communication technology to enhance and/or support learning” (Organization for economic co-operation Development, 2005, pg 21), “learning during which students get their study material through electronic media” (Sulcic & Lesjak, 2009, p 42). It is worth noting that, integrating e-learning in pedagogical training is a contemporary way of

imparting knowledge and skills where educators become trainers and guides to facilitate learning through technology. E-learning is transforming teaching and learning by enabling convenience and flexibility to learners by reducing physical boundaries of time, cost, travel, individual and economic constraints (Goi & Ng, 2009).

Ellis (2001) has stated that collaborative e-learning has several benefits over traditional learning such as attainment of higher outcome, higher and greater social skills and improved enthusiasm. In addition to that, e-learning platforms promote peer-to-peer consciousness, interchange of information and engagement (Koschmann, Hall & Miyake, 2002). Laderman (2020) fairly states that due to the COVID-19 pandemic teachers and students are compelled to not only accept but also embrace e-learning to enhance syllabus coverage and hence prepare accordingly for summative evaluations.

In addition, online teaching and learning offers the feeling of psychological wellbeing to the students and teachers in this COVID-19 period. Institutions of learning do not have an option but appreciate this changing process from face-to-face to online teaching and learning. They are left to either embrace new online methods of teaching and learning in place or innovate their own. Change is a dynamic process, and for any result-oriented change, there is a need to have a time-suited outlook and mindset (Bridges, 2010) for online learning, at individual and institutional level. This calls for resilience which must be built into educational systems (Tam and El-Azar, 2020).

To this end, for effective online teaching and learning to take place, teachers need to identify the most appropriate e-learning tools to utilize in order to deliver their online content. Some of the popular e-learning tools that can change the purpose and direction of the whole education system globally even in the post-COVID-19 circumstances could be classified as synchronous and asynchronous (Chugh 2010). Synchronous tools empower students to take part in learning activities together simultaneously, from any geographical location in the world. Further, such tools allow students and lecturers to participate in instant question answer sessions and also communicate with the other participants (Persaud 2018). Real time synchronous tools often involve Moodle, Zoom, online chats, Microsoft teams, and the Big Blue button.

Subsequently, online learning can be achieved through the utilization of e-learning asynchronous tools. These particular tools allow students to study independently at different locations and times from each other, without communicating in real time. Chugh (2010) points out that these tools are more student-centered than the synchronous ones. Tools for

asynchronous learning include; Blogs, Wikis Discussion Board, Google classroom, E-mail, Videos, Digital Library and WhatsApp.

### **Statement of the Problem**

The World Health Organization (WHO) declared COVID-19 as a pandemic on 30<sup>th</sup> January 2020 (Sohrabi et al., 2020). Subsequently, the outbreak of this pandemic has had tremendous effects on the education sector globally. Normally, in learning institutions, students would be in class receiving instruction from their teachers in the traditional way of teaching and learning i.e. face-to-face. Unfortunately, that scenario has been changed because of the emergence of COVID-19. It is worth noting that, all stages of global education, from pre-school to university level have been impacted negatively leading to complete closure of institutions and total suspension of face-to-face classes (Impey et al., 2020). Furthermore, this suspension of face-to-face classes has led to a transition to e-learning. Educators have been compelled to embrace this pedagogical shift so that learners do not miss out a lot on their education. Subsequently, there has to be adequate syllabus coverage that will lead to good preparedness for summative evaluation. Moreover from the literature reviewed there seems to be limited studies on adoption of e-learning tools by learning institutions during times of uncertainties like COVID-19. Therefore, using the Instructional Core Framework, this study sought to establish how e-learning was adopted and the e-learning tools utilized by institutions of higher learning during the Corona Pandemic period.

### **Literature Review**

The review of literature has two sections namely: Empirical literature review and theoretical literature review. The theoretical literature review was based on the Instructional Core Framework which is drawn from (City et al., 2011). This is a model that helps identify and analyze the relationship between the teacher and the student in the presence of content (Means et al., 2013). The empirical literature focused on e-learning and the tools that were adopted by the selected institutions of higher learning to support it during the COVID-19 pandemic period.

### **Methodology**

The study applied mixed methods research design. The qualitative aspects involve drawing inferences from the research data whereas the quantitative aspects mainly involve use of

descriptive statistics in the presentation of research findings. According to Orodho (2002, 2005 and 2008), the use descriptive survey design is key in gathering information, summarizing, presenting and interpreting data for classification purposes.

The study was carried out in Kisii County in the South Nyanza region. The county was ideal for carrying out the study as the county is home to a number of public institutions of higher learning which were affected by the closure of all learning institutions as a measure to curb the spread of COVID-19. The study targeted two institutions of higher learning: one Public University and one Public TVET institution. This was due to the fact that the researcher also wished to assess further on the level of preparedness in institutions of higher learning to offer online teaching and learning in cases of uncertainties like the COVID-19.

All students and teachers from both institutions were the population of this study. However, the target population from the two institutions was 400. Therefore, to select an appropriate sample for the study; simple random sampling technique was used. A total number of 80 respondents was sampled from both institutions; 40 from the Public University and 40 from the TVET institution. The sample from each institution consisted of 20 teachers and 20 students. The respondents participated in a descriptive survey to establish the tools which had been employed in e-learning for both institutions during the COVID-19 period. Subsequently, an assessment on their perception towards e-learning was also established. The study used a questionnaire designed using both close and open-ended questions.

To test the effectiveness of the instrument designed for this study, a pilot study was done on the sampled population. This assisted in removal of unnecessary, difficult, or ambiguous questions and helped in assessing whether the question gave satisfactory range of responses. Split halves method was useful in measurement of the reliability of the research instruments. According to Orodho (2005), reliability of research instruments is their consistency in yielding the same results. Data from the questionnaires was analyzed both qualitatively and quantitatively; the quantitative research data was analyzed using inferential statistics with some of the opinions and responses being reported verbatim. Percentages were also used to show the number of times a response occurred.

## **Findings**

### **Adoption of e-learning tools by selected tertiary institutions during the COVID-19 Period.**

#### **1. Public University**

### (i) Synchronous tools

**Table 4.1(a)**

<b>Tool</b>	<b>% of teachers using the e-learning tool</b>	<b>% of students using the e-learning tool</b>
Moodle	100	85
Zoom	75	60
Online chats (WhatsApp, Messenger)	80	90
Microsoft teams	50	45
Bigbluebutton	90	85
Lockdown browser	90	85
Respondus	90	85
Canvas	0	0
Telephone conversation	40	20

### (ii) Asynchronous Tools

**Table 4.1(b)**

<b>Tool</b>	<b>% of teachers using the e-learning tool</b>	<b>% of students using the e-learning tool</b>
Discussion Board	0	0
E-mails	40	60
Blogs	20	10
Videos (YouTube)	50	35
Digital Library	80	65

Table 4.1 above shows the details of the varied e-learning tools adopted by the institution during the COVID-19 period. The University has adopted Moodle as a Learning Management system after cancellation of face-face teaching and learning after the government of Kenya imposed lockdown. A learning Management system is software program designed to create, distribute and manage the delivery of educational content (Dublin, 2003; Marinara, 2006). From the study Moodle is the most popular tool used in the institution by the teachers, however the percentage of students using Moodle drops slightly to 85%, this could be attributed to lack of a stable internet connection and appropriate gadgets to support e-learning. BigBlueButton also is being utilized together with Moodle as a tool for e-learning and rates at 90% for teachers and 85% for students. Lockdown browser and Respondus were other approaches which rated at 90% and 85% respectively, these are platforms that are used for administering and invigilating examinations. They are embedded with Moodle and offer a wide range of features that enable them to offer hosting services to Moodle (Chugh 2010). The features include: document upload, whiteboard, breakout rooms,

video options, chat, shared notes, screen share, hand raise, emojis and video share. Subsequently, Zoom which is a cloud based video and audio conferencing tool gained popularity among the teachers and students during the pandemic, it lets one host a virtual one-on-one or team meetings; it was explored by 75% of teachers from the institution whereas 60% of the students.

Moreover, 80% of teachers from the institution were using online chats like WhatsApp and Messenger for educational interactions; they also posted assignments to the students, recorded their lectures as videos, and uploaded them to WhatsApp groups for those who had missed the classes due to unavoidable circumstances. 90% of students also agreed to have used WhatsApp and Messenger to seek clarifications from the teachers and for social interactions among themselves.

Furthermore, 40% of teachers gave instructions to their students through telephone conversations, though students were a bit hesitant to call their teachers for any consultations and thus scored 20%. In addition, 40% of teachers agreed to using e-mail to send soft copy course materials to the students whereas 60% of students agreed to submitting assignments via email. The public university had also set up a digital library whereby teachers and students could access a set of resources like videos and e-books, the use of blogs was not very popular among the teachers and learners.

## 2. TVET Institution

### (i) Synchronous Tools

**Table 4.2 (a)**

<b>Tool</b>	<b>% of teachers using the e-learning tool</b>	<b>%of students using the e-learning tool</b>
Moodle	0	0
Zoom	75	50
Online chats (WhatsApp,Messenger)	75	60
Microsoft office	35	20
Bigbluebutton	0	0
Lockdown Browser	0	0
Respondus	0	0

Canvas	0	0
Telephone conversation	60	35

**(ii) Asynchronous tools**

**Table 4.2(b)**

<b>Tool</b>	<b>%of teachers using the e-learning tool</b>	<b>% of students using the e-learning tool</b>
Discussion Board	0	0
E-mails	60	55
Blogs	0	0
Videos(YouTube)	0	0
Digital Library	0	0

It is clear from the findings of this study that the TVET institution has not been able to adopt Moodle as a Learning Management System; utilization by both teachers and students has been rated at 0%. Surprisingly, Zoom; which was the most popular approach utilized by the teachers in this institution, 75% of teachers agreed to using Zoom while 50% of the students were able to utilize it as a learning tool. This could be attributed to the fact that the institution having not adopted Moodle as a Learning Management System had opted to utilize Zoom as a platform for teaching and learning.

Subsequently, 35% of teachers utilized Microsoft teams for holding staff meetings amongst themselves. Bigbluebutton, Lockdown Browser, Respondus, Canvas scored 0% from teachers the receiving students. Clearly, these were unheard of tools on the part of the teachers and students. Moreover, 75% of teachers agreed to have used WhatsApp as an online chat to send assignments to students as 60% percentage of students reported to have used WhatsApp to make inquiries from teachers. 60% of teachers made calls to their students whereas 35% of students called their teachers to seek clarification on various issues. Another tool that was popular with both the teachers and the students was the use of E-mail, where 60% of teachers agreed to using E-mail to send notes to students as attachments and 55%of students agreed to have sent their assignments to the teachers via E-mail. Other tools like blogs, videos and the Digital Library were not utilized at all in the TVET institution.

**Conclusion**



The sudden change to online teaching and learning because of COVID-19 has led to some inequalities and challenges and yielded benefits. It should be noted however that, one of the most obvious changes in the educational environment in the recent years is the use of Information Communication Technologies to facilitate teaching and learning. Therefore, the emergence of COVID-19 has just accelerated this pedagogical shift which should have been in place for a long time now. Institutions of higher learning have tried to utilize various e-learning tools, however; it is evident that most learners are not able to utilize these tools because of various challenges. Economic and social inequalities could be some of the reasons why some students are not able to have stable internet connection in order to login to online learning. Alone, internet connectivity cannot support e-learning, there is also a need for teachers to upgrade their information technology skills besides accessing gadgets that support e learning like smart phones, tablets and laptops.

### **Recommendations**

The Kenyan government must therefore guarantee the availability of robust communication tools, top of quality digital academic experience, countrywide internet connectivity, and technology-enabled learning for students.

That said, we may not know for how long COVID-19 will persist, therefore e-learning should be made the norm in all tertiary institutions. The government should facilitate the institutions, especially TVET institutions to develop their own Learning Management Systems so that every stakeholder in the process of teaching and learning is brought on board.

However, everyone needs to learn to live and endure the present crisis as this could be just the beginning of future uncertainties. In this regard therefore, Institutions need to revamp their ICT skills, develop multimodal methods to attain course content for better learning outcomes.

### **References**

Alsafi,Z., Abbas, A. R.,Hassan,A.,& Ali, M. A (2020). The coronavirus (COVID-19) pandemic: Adaptations in medical education. *International journal of Surgery*,78, 64-65.

Bridges, W. (1991) *Managing transitions: Making the most of change*. Addison- Wesley Publishing Company Inc.

Chugh, A. & Lee, M. J.W (2005). An MP3 a day keeps the worries away: Exploring the use of podcasting to alleviate class anxiety among undergraduate Information Technology students. In Dirk HR& Leslie B. (Eds) *Good Practice in Practice*.

Desai, M., Hart, J., & Richards, T. (2008). E-learning: paradigm shift in education. *Education, 129(2)*, 327-33

Dublin, L. (2003). If You Only Look Under The Street Lamps....Or Nine e-Learning Myths. *The eLearning Developers Journal*

Ellis, A. (2001). Student centered collaborative Learning via Face -to-Face and Asynchronous Online Communication: What's the difference? *Meeting At The Crossroads*. Melbourne, Australia, December 2001, 169-177.

Goi, C.L& Ng, P. Y. (2009). E-learning in Malaysia: Success factors in Implementing E-learning program. *International Journal of Teaching and Learning in Higher Education*, 20(2), 237-246.

Impey, G. (2020) Coronavirus: Social distancing is delaying vital scientific research. *The conversation*

Knieps, S. (2020). Will COVID-19 turn Germany's export-oriented economy into a weakness? [http://the conversation.com](http://theconversation.com)

Koshmann, T., Hall, R.& Miyake, N. (2002). *CSCCL 2: Carrying forward the conversation*. Mahwah, NJ: Lawrence Erlbaum Associates.

Lederman, D. (2020) Will shift to remote teaching be boon or bane for online learning? Inside Higher Ed. Retrieved from file.

Marinara, B. (2006). Is e-learning for you? *Journal of the quality Assurance Institute*, 20(3), 39-39.

Mishira, L. (2020) Online teaching –learning in higher education during lock-down period of COVID-19 pandemic. *International Journal of Educational Research Open* vol 1,2020, 100012.

Myung, J. (2020) Supporting Learning in the COVID-19 Context: Research to Guide Distance and Blended Instruction. PACE. *Policy Analysis for Carlifornia Education*

Musgrove, A., & Musgrove, G. (2004). Online learning and the younger student-Theoretical and practical applications. *Information Technology in Childhood education Annual*. (1), 213-225.

Orodho, J. (2005). *Techniques of Writing Research Proposals and Reports in education And Social Sciences*. Masola Publishers: Nairobi.

Rediff (2020). Prices of agricultural commodities drop 20% post COVID-19 outbreak. *Reddif Realtime News*.<https://realtime.rediff.co/news/india>.

Sohrabi, C., Alsafi, Z., O'Neil, N., Kerwan, A., & Al-Jabir, A (2020). World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19) *International Journal of Surgery*, 76, 71-76.

Sulcic, V. &Lesjak, D. (2009). E- Learning and study effectiveness. *Journal of Computer Information Systems*, 49(3), 40-47.

Tam &El-Azar, (2020) 3 ways the coronavirus pandemic could reshape education. *World Economic Forum:Global Agenda* (2020).

UNESCO. (2020). COVID-19: Educational Disruption and Response. <https://en.unesco.org/covid19/education> response.