Application of E-Learning Platform to Improve Learner Support Intvets: A Case Study of Meru National Polytechnic, Kenya

Wallace Albert Kahiro[1], Kinuthia Mugi[2], George Njeru[2], Amos Chege Kirongo[2]

[1](Meru National Polytechnic, Kenya)
[2](Meru University of Science and Technology, Kenya)

Abstract:
Background: Due to rapid advancement in Information and Communication Technology, e-learning has become a critical technology that is used in all educational sectors in Kenya particular in Technical and Vocational Education and Training (TVET). For instance, mobile devices such as mobile phones, tablets, laptops and iPhones have contributed immensely in the education sector where learners use such devices to access learning materials in the form of modules, graphics as well as browsing for the critical content, during and after the COVID-19 pandemic. E-learning technology has contributed enormously to virtual learning in most tertiary learning institutions as a result of the availability of the Google Meet, Zoom, Microsoft Teams, Big Blue Button among others. The objectives of this study were: to determine whether social media enhances e-learning, to establish whether voice calls enhances e-learning, to find out whether short messages services enhances e-learning, and to investigate whether the use of emails enhances e-learning at Meru National Polytechnic, in Kenya.
Materials and Methods: The target population of the study was 1000 Meru National Polytechnic students drawn from the eight departments which included; Business, Electrical, Mechanical, Applied Sciences, Hospitality and Tourism, ICT, and Agriculture. The sample size of the study was286 students that was arrived using Slovin's formula. The study used descriptive research survey design which took the state of affairs as they were. Both quantitative and qualitative data was collected using structured questionnaires, administered to the respondents to solicit for information in relation to the study objectives. The collected data was analyzed using Microsoft Excel and was presented in form of tables and figures which include pie charts and bar graphs.
Results and conclusion: The study found out that most of the learners owned mobile phones and preferred use of Google Meet, Big Blue Button web conference platform customized by the Kenya Education Network (KENET) and WhatsApp platforms to access e-learning content. Text messages and voice calls were largely used for communication with learners and tutors and for communication of exam results.
Key Word: E-Learning, TVET, ICT, COVID-19, Situation Learning

I.   Introduction

The outbreak of COVID-19 pandemic (Abbad, 2021)posed a new challenge for training and instruction delivery in most tertiary education(Ali, 2020) Institutions in Kenya. This was unusual environment for learning and working hence trainers and trainees were forced to embrace online working and learning(Alghamdi et al., 2022). The need for the acceptance and use of e-learning platform (Raza et al., 2021)for delivery of content and evaluation of students was necessitated by the prevailing protocols of COVID-19 pandemic which exposed the opportunity of using e-learning platforms in enhancing learner support services. There exist gaps on the most preferred mode of e-learning that enhances learner experience in obtaining learning materials, communication with lecturers, and receiving feedback on the e-learning process in TVET institutions. A major challenge experienced in TVETs is the ever increasing number of learners with limited e-learning infrastructure.

This study considered the fact that most of the e-learning content can be accessed via mobile devices such as laptops tablets and mobile phones, owned by majority of the students in TVETs, and instructors in the delivery of leaning materials, administration of exams and communication to students and their peers and other instructors and tutors. This research did seek to establish the most preferable platform for students to enhance the reception of learning material, communication and receiving feedback on modules exams in TVETs with specific reference to Meru National Polytechnic in Kenya.

Conceptual Framework
Dependent variable: Enhanced learner support service provided by the independent variable forms the dependent variable.
Independent variables: These are the variables that directly affect the dependent variable and are listed below:Social Media Platforms, b) Voice Calls, c) Short Message Services, and d) Emails
Intervening variable: provided by the access of learning material through e-learning platform and the internet access points.
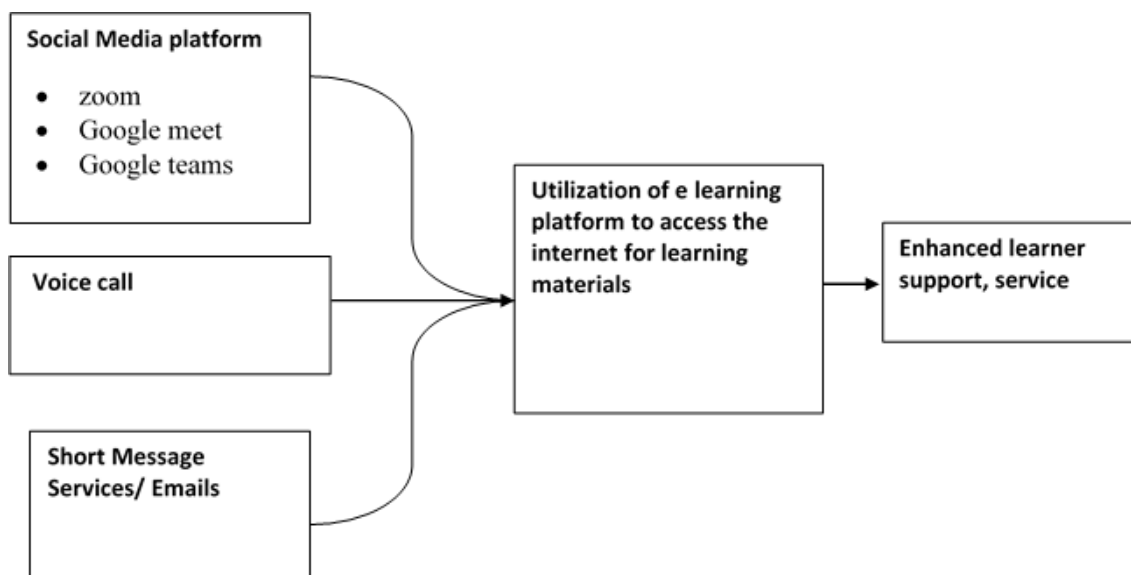

Figure 1: Conceptual Framework of e-learning platforms to improve Learner support in TVETS

II. Related Literature
Online platform (Abuhassna et al., 2020)has become a new normal in content delivery for open distance-learning (Stern, 2019). Presently, e-learning is ubiquitous and accessible through mobile devices and so quite appropriate for content delivery to learners. Online-learning underscores on the internet-based courses synchronously and asynchronously (Wilkins, 2021).The utilization of e-learning technologies for the purpose of open distance and e-learning has immense potential in education in all its forms that is face to face, blended or distance. In the recent past, the world has experienced a high ownership rate of hand held devices including laptops, tablets and mobile phones. According to (Padmo et al., 2019; Tao et al., 2021)mobile devices are tools to access information resources, which affords the freedom for the learner to choose learning channels, set goals and milestones and perform progressive evaluation. Mobile device platforms foster situated learning (Triacca et al., 2019)with real life content searching and validation, however the devices have been extensively utilized for communication and leisure leaving out the e-learning (Kumar Basak et al., 2018)component in most of the youths in TVETs such as Meru National Polytechnic and Technical colleges in Kenya.This study was to investigated the exploitation of e-learning platform services in open distance and e-learning environment to enhance learner support services from the students' viewpoint.

III. Research Method
The study employed the survey research design. Structured questionnaires were used to collect data regarding students' preference in the use of online e-learning platforms using their mobile devices in TVET institutions with specific reference to Meru National Polytechnic. Purposive sampling technique was applied to the target population of the study which was 1000 Meru National Polytechnic students drawn from the eight departments which include; Business, Electrical, Mechanical, Applied Sciences, Hospitality and Tourism, ICT and Agriculture. The sample size of the study was 286 students which was arrived using the Slovin's Formula.

$$n = \frac{N}{1 + Ne^2}$$

where: n = sample size
N= target population
e = error margin (0.05)
for N = 1000
n = 286

The data received from the sampled respondents was collected and coded. The questionnaire was used to gather information on e-learning support to enhance e-learning, determine platform that was most preferred by the students on selection, access and evaluation of content on e-learning platform and challenges encountered by learners utilizing mobile platform to enhance e-learning experiences. Finally, the study soughtthe opinion of the respondents on proposed strategies that can be utilized to enhance e-learning using e-learning platforms.

IV. Findings and Results

The response rate of the questionnaires was 79.02% as shown in Table 1. There was 79.02% participant response as indicated by the population of 226 respondents.

Table 1: Response rate

Participants	Population	Percentage
Response	226	79.02%
Non response	60	20.98%
Total	286	100%

The response based on gender was approximately 59% male and 41% female as shown in Table 2 showing a higher response rate among the male gender as opposed to the female gender.

Table 2: Gender representation of the respondents

Gender	Frequency	Percentage
Male	134	59.29%
Female	92	40.71%
Total	226	100%

Table 3 shows the participants as per the age bracket, where it was deduced that the majority of the responded fell within the age bracket of 22 to 25 years representing 61% of the respondents, a reflection of the age bracket of students in the TVETs. It was also noted that there were 2% respondents in the bracket of above 30 years.

Table 3: Age bracket of Participants

Participants	Frequency	Percentage
18-21 Years	62	27%
22-25 Years	138	61%
26-29 Years	21	9%
Above 30 Years	5	2%
Total	226	100%

The study further sought to establish the respondents who received learning materials through various media. Table 4 shows the results of respondents who received learning materials through Short Message Service (SMS). This is an indication that SMS was not a preferred media, although it was suggested to be a preferred method that the students could receive materials promptly as per Figure 2.

Table 4: Respondents who received learning materials through SMS

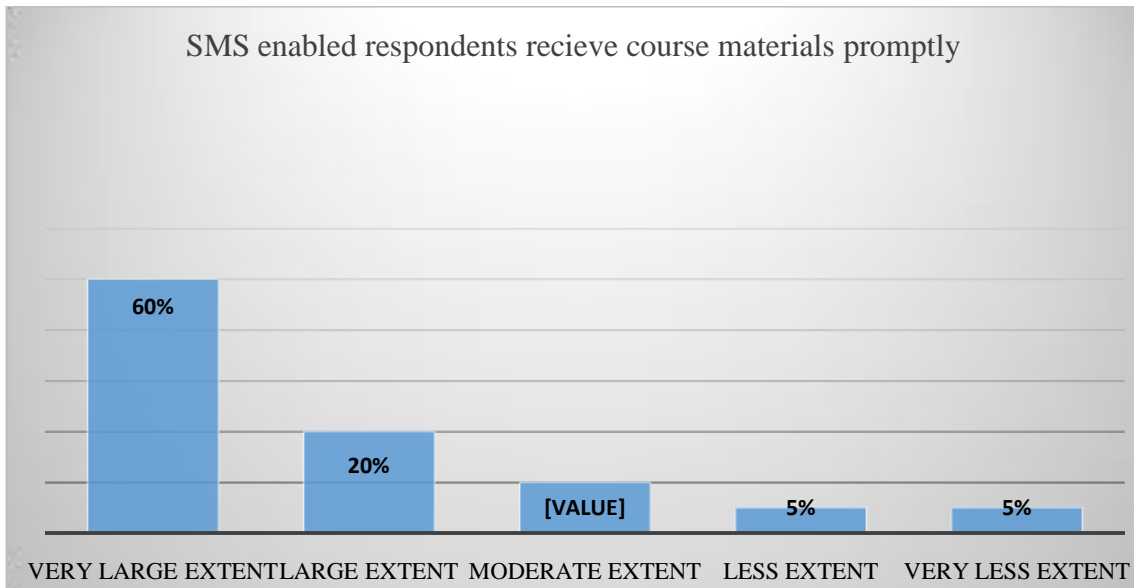| Respondents'	Frequency	Percentage
No	149	66%
Yes	77	34%
Total	226	100%

Figure 2: SMS enabled respondents to receive course materials promptly

Utilization of email service to receive course outlines and modules content promptly

The study also did seek to establish the course contents using email service and 34% percent of the respondents used email service as opposed to 66% who did not use as shown in Figure 3.Most learners agreed that utilization if e-mail service was the most preferred method of receiving feedback from the course instructor. Only less than 5% of the respondents felt that the receipt of the instructor's feedback through e-mail was of no importance but the rest had varied acceptance that this was good method as shown in table 5. Equally 84% of the respondents indicated to have received instructional materials through voice calls against 16% percent who did not.
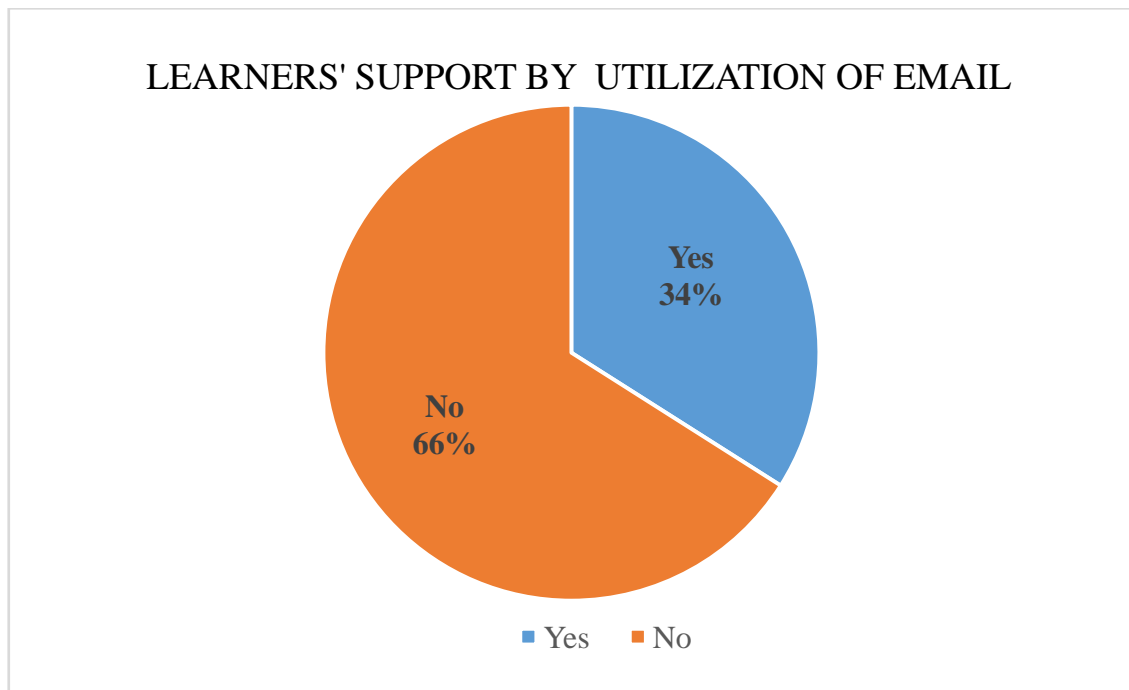

Figure 3: Utilization of email service to receive course content

Table 5: Learners Utilization of email service to receive feedback on education performance from course instructor

Extent of agreement to feedback reception by respondents	Frequency	Percentages (%)
A very large extent	26	11.5
A large extent	28	12.39
Moderate extent	159	70.35
A less extent	3	1.33
A very less extent	10	4.42
Total	226	100

Table 6: Learners Utilization of Mobile phone calls for arranging meetings with

Extent of agreement to feedback reception by respondents	Frequency	Percentages(%)
A very large extent	113	50.00
A large extent	86	38.05
Moderate extent	27	11.94
A less extent	0	0
A very less extent	0	0
Total	226	100

Most of the respondent agreed that this was a good method of reaching out to them since it is individualized as shown in Table 6. 50% of the respondents agreed to a very large extent that learners use voice calls to arrange to meet with project supervisors. 38% and 12% agreed that to a large extent and moderate extent that voice calls are utilized for arranging meetings with course supervisors. The study also sought to establish the extent of utilization of social media platforms for e-learning, connecting to other learners and obtaining feedback from the trainers. Table 7 shows the agreement by the respondents on utilization of social media to connect to other learners for discussions.

Table 7: utilization of social media as a means to connect to other learners

Extent of agreement to connection of learners by respondents	Frequency	Percentage (%)
A very large extent	131	58
A large extent	72	32
Moderate extent	23	10
A less extent	0	0
A very less extent	0	0
Total	226	100

To a large extent the respondents agreed that the social media was largely used to receive feedback from the trainers as shown in figure 4. Also social media and meeting platforms were used in training of students. This included Microsoft Teams, Google Meet, Zoom, KENET web conference, WhatsApp among others as shown in Figure 5.
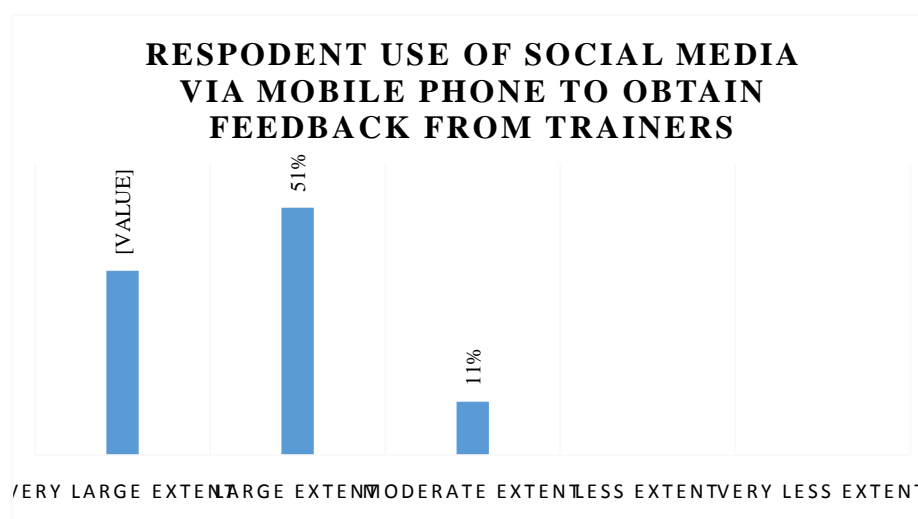

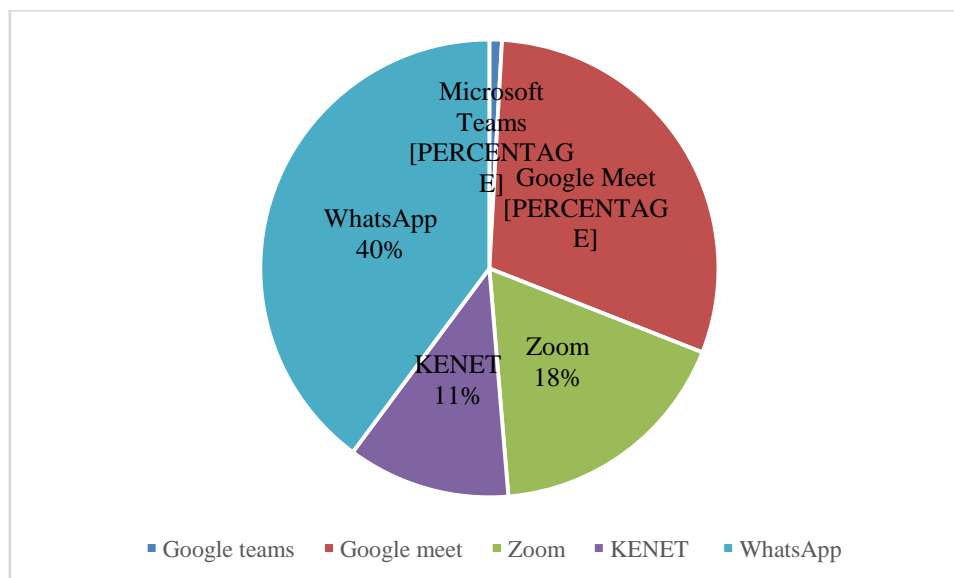**Figure 4: Usage of social media via mobile phone to obtain feedback from trainers**

Figure 5: Utilization of social media and meeting platforms in e-learning

V. Discussions and conclusion

Social Media in e-learning

Based on results Google Meet and WhatsAppwas highly used at 40% and 30% respectively followed by Zoom and KENET and lastly Microsoft Teams. Although KENET is recommended by the Kenyan government especially to public institutions it attracted only 11% however Microsoft Teams was not attractive to the students. Hence the two platforms may be used for content delivery to learners effectively.Social media provided a means for feedback from trainers on e-learning to a large extent. Hence social media WhatsApp and Google platforms were the most popular e-learning platforms for the sampled students, providing learner support for feedback and content delivery.

Voice calls in e-learning

Telephone voice calls were used to a large extent to coordinate for meetings with research supervisors for the sampled students, however calls were not largely used for delivery of content except for the social media interactive calls as it is the case for WhatsApp and Google Meet platforms.

Emails in e-learning

Learners agreed to a moderate extent that emails were used to provide feedback for exams done by students. Emails were largely used for communication and not for examinations and provision of feedback on exam results.

Short text messages in e-learning

Short messages for learning and queries was found in this study, however most of the students interviewed preferred portable document file response to queries and feedback of examination and study progress either on email or face to face via other social media for instance google meet or what app.

Conclusion

The use of e-learning platform may be enhanced by use of social media particularly WhatsApp and Google Meet which has incorporated short messages and voice interaction to enhance learner support in e-learning.

Recommendation

More research could be conducted on how learners using eLearningplatforms may minimize disruption that occur while on the platform form other interactive applications such as Facebook and Twitter and how to minimize such disruptions and enhance e-learning.The learner support infrastructure should be enhanced via hotspots in TVETS to provide access to the internet via the mobile devices hence substitute for the limited available infrastructure and large populations in the TVETS.

References

[1].   Abbad, M. M. M. (2021). Using the UTAUT model to understand students' usage of e-learning systems in developing countries. *Education and Information Technologies*, *26*(6), 7205–7224. https://doi.org/10.1007/S10639-021-10573-5

[2].   Abuhassna, H., Al-Rahmi, W. M., Yahya, N., Zakaria, M. A. Z. M., Kosnin, A. B. M., & Darwish, M. (2020). Development of a new model on utilizing online learning platforms to improve students' academic achievements and satisfaction. *International Journal of Educational Technology in Higher Education*, *17*(1). https://doi.org/10.1186/s41239-020-00216-z

[3].   Alghamdi, A. M., Alsuhaymi, D. S., Alghamdi, F. A., Farhan, A. M., Shehata, S. M., & Sakoury, M. M. (2022). University students' behavioral intention and gender differences toward the acceptance of shifting regular field training courses to e-training courses. *Education and Information Technologies*, *27*(1), 451–468. https://doi.org/10.1007/S10639-021-10701-1

[4].   Ali, W. (2020). Online and Remote Learning in Higher Education Institutes: A Necessity in light of COVID-19 Pandemic. *Higher Education Studies*, *10*(3), 16. https://doi.org/10.5539/hes.v10n3p16

[5].   Kumar Basak, S., Wotto, M., & Bélanger, P. (2018). E-learning, M-learning and D-learning: Conceptual definition and comparative analysis. *E-Learning and Digital Media*, *15*(4), 191–216. https://doi.org/10.1177/2042753018785180

[6].   Padmo, D., Idrus, O., & Ardiasih, L. S. (2019). The utilization of mobile devices for improving access to online learning for distance Education's Students. *Turkish Online Journal of Distance Education*, *20*(2), 147–161. https://doi.org/10.17718/tojde.557858

[7].   Raza, S. A., Qazi, W., Khan, K. A., & Salam, J. (2021). Social Isolation and Acceptance of the Learning Management System (LMS) in the time of COVID-19 Pandemic: An Expansion of the UTAUT Model. *Journal of Educational Computing Research*, *59*(2), 183–208. https://doi.org/10.1177/0735633120960421

[8].   Tao, O., Chen, X., Zhou, Z., Li, L., & Tan, X. (2021). Adaptive User-managed Service Placement for Mobile Edge Computing via Contextual Multi-armed Bandit Learning. *IEEE Transactions on Mobile Computing*, 1468–1476. https://doi.org/10.1109/TMC.2021.3106746

[9].   Triacca, S., Petti, L., & Rivoltella, P. C. (2019). Designing and re-designing the e-learning course «Teaching with Episodes of Situated Learning». *Research on Education and Media*, *11*(2), 95–100. https://doi.org/10.2478/rem-2019-0024

[10].   Wilkins, B. (2021). Harnessing Learner Interest: Integrating Interactive Online Learning in the Foreign Language Classroom. *The Journal of Language Teaching and Learning*, *2*(2), 138–147. www.jltl.org/Submitonline