ISSN No:-2456-2165

Trainers' and Trainees' Attitude towards Remote Learning in Technical and Vocational Education and Training institutions in Bungoma County, Kenya

Peter Mose, Hoseah Kiplagat and Philemon Kibiwott

Abstract:- TVET programmes involve school-based and workplace-based training. TVET focuses on practical skills and work-readiness making remote learning challenging. Remote learning is a weak substitute for practical exercises as they require equipment or materials not found at home. Most providers are unable to deliver or assess practical skills training remotely. This study aimed to assess the trainers' attitude towards remote training. The research explores trainers' perception, tools and challenges in delivering technical training remotely. The theory of Diffusion of Innovations (DIT) guided the study. The study employed explanatory research design targeting trainers in 8 TVET institutions in Bungoma. The target population was 376 trainees and 242 trainers. Questionnaires were designed and used for data collection. Descriptive statistics (frequency and percentages) were used and data was presented in tabular form. The study found that only 33.4% (n=79) of the trainers' found it easy to train learners remotely while 83% (n=195) agreed that teaching theory courses online was easy. The study established that despite many trainers finding it easy to teach theory remotely there is negative attitude among majority of trainers on training practicals remotely. The study recommended that TVET institutions should blend remote learning with physical sessions to allow practical training to take place. Institutions should look for ways to mitigate challenges associated with remote learning.

Keywords:- *Remote learning, TVET, attitude, challenges.*

I. INTRODUCTION

Technology has become an integral part of everyday life, improving communication, work processes, and overall living standards. Its widespread adoption has had a significant impact on various sectors, including business and education. In the field of education, technology has facilitated learning and training outside the traditional classroom, giving rise to remote learning. Remote learning encompasses online classes, video conferencing, email correspondence, and other digital communication methods (Stever & Janet, 2022).

Remote learning has a long history, dating back to the 1800s when available technologies such as the postal system were utilized for educational purposes. Correspondence education, as it was known, involved designing and mailing educational content and assignments to learners who were unable to attend physical classrooms. This method of remote learning primarily benefited women, professionals, individuals with physical disabilities, and those living in areas without access to schools (Smaldino et al., 2021). Although widely adopted by institutions, some educators considered correspondence learning to be slow and the certificates awarded to be of lesser value (Simonson & Berg, 2019).

In the early 1900s, the invention of radio and television significantly enhanced remote learning. These technologies reduced the paperwork associated with correspondence education, facilitated quicker communication between educators and learners, and enabled the recording and broadcasting of learning sessions (Smaldino et al., 2021). In Britain, the University of the Air was established in 1963, combining radio, television, and correspondence to deliver educational materials and live classroom discussions. The low cost of tuition attracted a large number of learners to this remote learning method. In Kenya, the use of radio for remote learning dates back to 1963 when the School of Broadcasting Unit of the Ministry of Information and Broadcasting, based in Mombasa House in Nairobi, was established. The Ministry of Education later took over the school's broadcast service, which continues to operate today (Oloo, 2022).

In the late 1900s, computers and the internet revolutionized remote learning by integrating previous technologies. The traditional postal mailing service was replaced by electronic mail (email), and the internet facilitated the support of audio, video, text, and immersive teaching methods. In 1984, the University of Toronto pioneered the first fully online course. The widespread availability of the internet led to the development of online courses and distance learning programs. In recent years, the advancement of video conferencing technology has greatly improved remote education, enabling live and interactive online classes. These technological advancements have made it easier for trainers and trainees to interact and share course materials (Stever & Janet, 2022).

Today, remote learning has become even more prevalent, especially after the COVID-19 pandemic, which necessitated the adoption of remote education when physical learning was disrupted. During this period, remote learning became the primary means of continuing education while adhering to social distancing protocols. Educational institutions embraced technologies like Zoom and Google Meet to facilitate learning with safe distances between participants (Bragazzi c., 2022; Saeed et al., 2022; Sumikawa & Yamamoto, 2023). The convenience, flexibility, and ability to reach students with limitations to physical attendance have contributed to the widespread adoption of remote learning. Despite the convenience created by remote learning, remote leaning is faced by barriers like adequate digital infrastructure and trainers' and trainees' attitude (Nyongesa et al., 2022)

Attitudes are a combination of feelings and reactions towards a certain subject of concern. In this aspect, attitudes can be termed as positive or negative when observed at a general scope. In human psychology, the term refers to the belief systems and behaviors projected towards an individual, a subject, or any other existing phenomenon (Zabadi et al., 2016). Attitudes have a strong impact on the turnout of events, anticipation of results, and even the way people relate to each other and towards the subject of concern.

In academic settings, attitudes have influenced the way in which trainers' and trainees' willingness to teach and learn by engaging in various tasks (Nyongesa et al., 2022). The study sought to understand the trainers' and trainees' attitude towards remote learning in technical training institutions in Bungoma county, Kenya

II. RESEARCH QUESTIONS

The study sought answers to address the following questions: -

- What are the trainees' and trainers' perception towards remote learning in technical and vocational education and training (TVET) institutions in Bungoma County, Kenya?
- Which remote learning tools are used in technical and vocational education and training (TVET) institutions in Bungoma County, Kenya?
- What are the challenges faced while adopting remote learning in technical and vocational education and training (TVET) institutions in Bungoma County, Kenya?

III. THEORETICAL FRAMEWORK

This research is founded on the Theory of Diffusion of Innovations (DIT) (Rogers, 1995). Diffusion of Innovations theory seeks to explain how, why, and at what rate new idea and technology spreads through culture. It originated in communication to explain how, over time, an idea or product gains momentum and diffuses through a specific population or social system. The theory is based on the innovation, communication channels, time and social systems incorporated to see to the success of technology and concept adoption. In reality, the theory tries to explain why, how and how fast a new idea is being integrated into the way people lead their lives. The result of this diffusion is that people, as part of a social system, adopt a new idea, behaviour or product. According to Rodgers (1995), diffusion of innovation occurs in five stages: awareness, interest, evaluation, trial and adoption respectively. Awareness exposes the trainers to the innovation i.e., technology and the exposure leads the trainer to become interested in the technology and therefore craves for more information about it. Evaluation of the information follows where individuals try to apply the innovation using the information available. Finally, the individuals adapt the innovation and continue using it. The importance of Diffusion of Innovations Theory in the integration of remote technologies in teaching and learning is that, integration is likely to succeed if focus is based on satisfying the needs of the trainers and trainees.

IV. METHODOLOGY

The researcher employed Interpretivist Paradigm as he seeks to understand the subjective world of human experience (Gumba & Lincoln, 1989). Phenomenology method was used as it describes people's experiences, this method was also suitable as it seeked to understand, describe, and interpret human behavior and meaning as a result of experience (Carpenter, 2013). The study was conducted in TVET institutions in Bungoma County. The study targeted 8 Principals, 653 trainers and 16,129 trainees in the eight Technical and Vocational Colleges. A sample is a small part of large population which is thought to be representative of the larger population (Orodho, 2003). The sample size adopted for the study was therefore 376 trainees and 242 trainers participated (Krejcie and Morgan, 1970).

Questionnaires were used for the study. According to Orodho (2005), questionnaires have the ability to reach a large number of respondents in a short time, give respondents sufficient time to answer the questions, respondents give a sense of security, as an objective method there is no bias due to personal characteristics. Descriptive statistics were calculated and the study results were presented using tables, percentages and interpretations made.

V. RESULTS AND DISCUSSIONS

A. Trainers' and trainees' attitude towards remote learning.

Positive statements relating to the perception towards remote learning were given by trainee respondents and scored using Likert scale running from 1 for Strongly Disagreed (SD) up to 5 for Strongly Agree (SA). The descriptive statistics on responses are presented in Table 1.

Table 1:

Acceptance	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Is remote learning enjoyable	13.9%(n=49)	31.4%(n=111)	11.3%(n=40)	22.1%(n=78)	21.2%(n=75)
Is remote learning effective	19.3%(n=68)	36.8%(n=130)	16.4%(n=58)	13%(n=46)	14.4%(n=51)
Is learning remotely better than physical	5.7%(n=20)	14.2%(n=50)	10.2%(n=36)	32%(n=113)	38%(n=134)
Are assignment difficult online	16.4%(n=58)	27.2%(n=96)	12.5%(n=44)	31.2%(n=110)	12.7%(n=45)
Is it easy to submit assignment to your trainers	13%(n=46)	37.4%(n=132)	9.6%(n=34)	25.8%(n=91)	14.2%(n=50)
Is it easy to interact with other trainees	18.4%(n=65)	36%(n=127)	10.2%(n=36)	15.6%(n=55)	19.8%(n=70)

ISSN No:-2456-2165

Based on the study results, 45.3% (n=160) trainees find remote learning enjoyable; 11.3% (n=40) were neutral, 22.1% (n=78) disagreed and 21.2% (n=75) strongly disagreed. On asked why they did not enjoy remote learning trainees reported that they found the concepts introduced to be strange since sometimes the trainer was too fast, internet connectivity and device setting would render the trainer inaudible. Some of the reasons also included background disruptions from home, where they did not get the chance to fully concentrate.

Trainee respondents reported disagreement on remote learning since they argued that physical learning was better, since they are able to develop eye contact and other communications cues with their trainers. Another challenge reported by trainees was online assignment submission, the challenges such as inability to access a device, and stable internet connectivity had most trainees locked out of the e-learning platforms before they were able to submit their examinations, assignments and CATs to the system.

The study findings on the attitudes of trainers towards teaching remotely are shown in the table shown below. The study showed that 52.5% strongly agreed and 27.1% agreed that remote learning is easy (Table 2). 79.6% (n=187) of the trainer respondents agreed that remote teaching was easy; 52.5% (n=123) strongly agreed and 27.1% (n=64) agreed that remote teaching was easy. The response attributed to a positive attitude to remote teaching by trainers of technical and vocational training institutes in Bungoma County. Studies related remote teaching to the ability of trainers to develop a positive resilience thus allows trainees adopt the pedagogical skills effectively (Liu, Zhao, & Su, 2022).

According to the results in table 4.5 it is evident that despite trainers having a positive attitude towards remote learning, trainers have noted with concern that remote teaching deprives one of teamwork, and assistance from their co-workers. An interview from the principals had the following to say; *"Sometime our trainers face challenges related to mastering the syllabus contents, especially engineering mathematics, where they need to help with fellow mathematical tutor but considering the nature of virtual classroom set-up. It becomes difficult for our trainers to instil the knowledge to trainees, this has contributed to some trainers skipping the topics, and this costs our trainees deeply especially during KNEC examinations*". The study agreed with the questionnaire schedule that found that 36.9% (n=87) disagreed and 21% (n=49) strongly disagreed that co-workers were helpful while working remotely (Table 2). The study finding was in line with who found that remote learning typically cut trainers off from the routine conversations and interactions, and not just meetings that make up regular school life (Hargreaves, 2021).

Table 2: Table showing trainers' attitudes on teaching remotely

Attitudes	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Is remote learning easy?	52.5%(n=123)	27.1%(n=64)	2.4%(n=6)	14.2%(n=33)	3.7%(n=9)
Do you think remote learning is effective?	56.3%(n=132)	22.4%(n=53)	4.1%(n=10)	12.2%(n=29)	5.1%(n=12)
Does your institution provide resources for you while at home?	29.2%(n=69)	26.8%(n=63)	5.1%(n=12)	20.0%(n=47)	19%(n=45)
Is it easy to manage your time well while teaching remotely?	15.6%(n=36)	49.2%(n=116)	11.2%(n=26)	13.9%(n=33)	8.8%(n=21)
Teaching remotely at home is better than physical classes?	9.5%(n=22)	21.4%(n=50)	13.6%(n=32)	34.2%(n=80)	20.7%(n=49)
Are your co-workers helpful while teaching at home?	10.2%(n=24)	16.3%(n=38)	10.8%(n=25)	36.9%(n=87)	21%(n=49)
Do you keep up with your schoolwork remotely as much as physically	9.2%(n=22)	19.3%(n=45)	22.4%(n=53)	38.6%(n=91)	9.8%(n=23)

B. Remote learning tools used in technical training in Bungoma County

This objective was sought by assessing the tools used by both trainers and trainees to access remote learning solutions. The trainee respondents accessed remote learning sessions and platforms using varied devices. The study finding indicated that trainee respondents used the following devices to access remote lectures and related learning materials; 8.8% (n=31) laptops, 1.1 % (n=4) desktops, 1.1% (n=4) tablets and 81.7% (n=288) smartphones (Figure 4.4). Trainer respondents used the following devices to train remotely 37% (n=86) laptops, 2% (n=5) desktops, 1 % (n=3) tablets and 60% (n=140) smartphones (Figure 1). Devices used to access online learning systems are important since it determines the level of interaction between the trainer and the trainee. Few trainees have access to laptops and desktops, and this limits their effectiveness in attending remote lectures and assignments and responding to canvas or class discussion online. Majority of the trainers and trainees use smartphones. Smartphone is a device used to answer and make calls, however, when used as a learning tool reduces its functionality. Smartphones have many disturbances and harms the trainees due to disruptions from calls, WhatsApp, Facebook, Twitter, and short message services from friends during the lesson.

ISSN No:-2456-2165

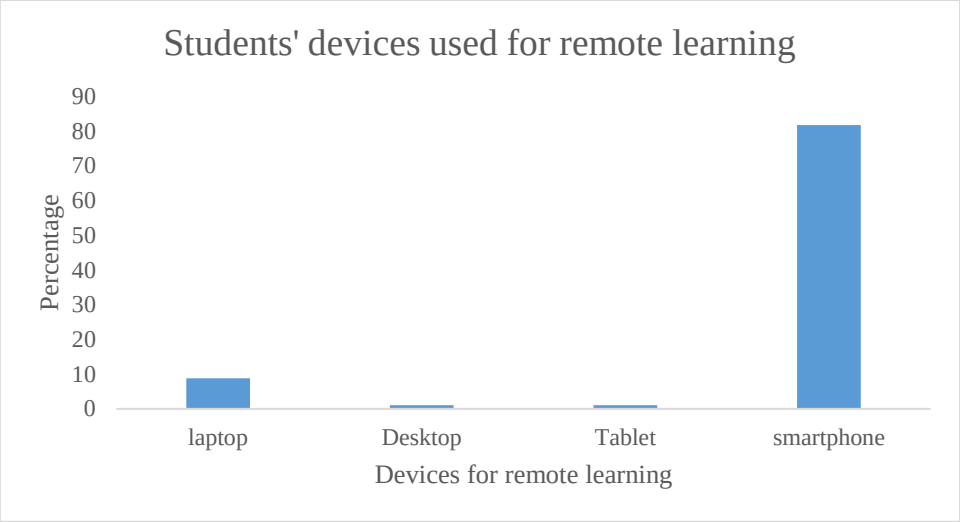

Fig. 1: Figure showing the devices used by trainees for remote learning.

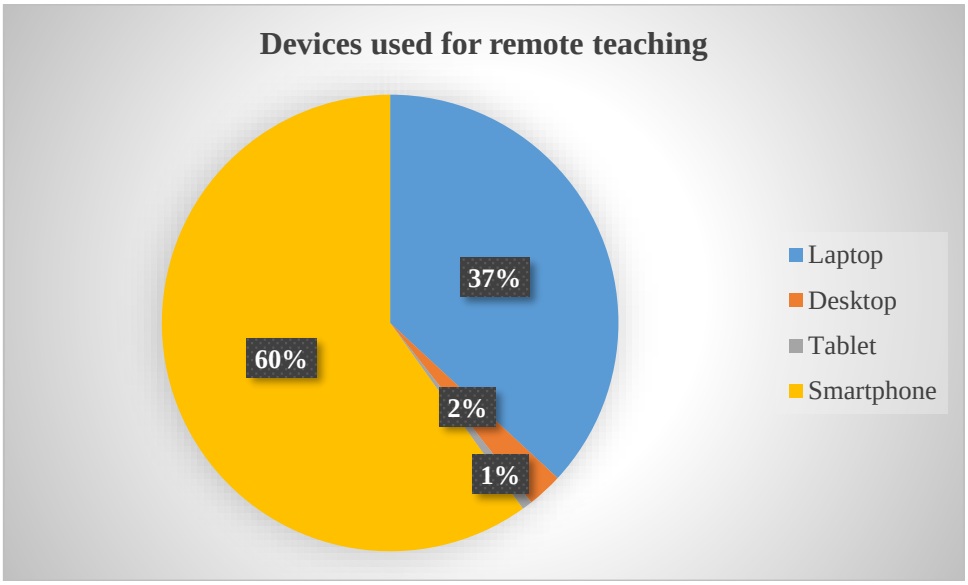

Fig. 2: Figure showing the devices used by trainers for remote teaching.

Table 3 shows the trainees perception on the use of online tools during remote learning. Approximately 94 of trainee respondents had a challenge using emails; based on the study 6.7% (n=24) of the respondents reported email usage to be hard, and 13.1% (n=46) very hard. Emails are digital messages sent and received over a medium, such as Gmail, Yahoo, and Outlook.com among others. Institutions uses emails to communicate effectively and timely to their staff trainees and stakeholders. It is the modern-day postal address.

Online platforms interaction with trainers was a challenge with 22.9% (n=81) found it hard and 14.5% found it very hard. About 43.2%; 23.2% (n=82) found using the e-learning platforms to be hard and 20% (n=71) found it to be very hard. Challenges in using and interacting with trainers on e-learning platforms prevents trainees from understanding the concepts and participating in online sessions. This study was congruent to Fatimah (2020), who in her study noted that teaching staff and the faculty should possess the following online teaching and competencies (a) pedagogical skills, (b) content skills, (c) design skills, (d) technological skills, (e) management and institutional skills, and (f) social and communication skills for an effective online learning session. The study noted that, tutors technological literacy was necessary for an effective online course delivery.

Table 3: Table showing trainees' ease of use on online tools

Tools used	Very easy	Easy	Hard	Very hard
Email	13.9%(n=49)	30.3%(n=107)	6.7%(n=24)	13.1%(n=46)
Smartphone or video chat	34.9%(n=123)	35.6%(n=126)	6.3%(n=22)	6.5%(n=23)
Online platforms e.g zoom, Google meet	12.8%(n=45)	18.7%(n=66)	22,9%(n=81)	14.5%(n=51)
E-learning platform	9.1%(n=32)	12.2%(n=43)	23.2%(n=82)	20%(n=71)

The study sought to find out whether the technical and vocational institutions had tools used in remote learning in place. According to the results, 54.6% (n=128) of the trainers reported using video conferencing tools such as Google meet, Zoom, Skype and discord. 8.8% (n=21) of the trainer respondent reported using institutional generated emails to communicate with their trainees. The communication entailed sharing of course learning materials, assignments, assignment feedbacks, and class attendance links. The trainers argued that emails were efficient means of communication with trainees, however, it had come to their attention that some trainees take too long to respond due to poor internet connectivity and low skills to handle emails. The study was in line with Onyema, Deborah, Alsayed, Noorulhasan, and Sanober, (2019) in their study who found online discussion forums as effective communication tools between trainees and their trainers, however, it had more challenges to the users.

Based on the study, the institution had developed different tools to support remote learning as shown in Figure 4. The results depict a supportive move by institutions to ensure full implementation of remote learning, however, there are challenges which include; inadequate funding to allow the institutions to upgrade their fiber optic and internet bandwidths, poor policies that prevents institutions from provision of ICT related services to their trainees. For example, in Bungoma County, a resource center could be constructed within the communities to allow people on remote learning to use them. However, lack of this subject trainees to missing remote lectures.

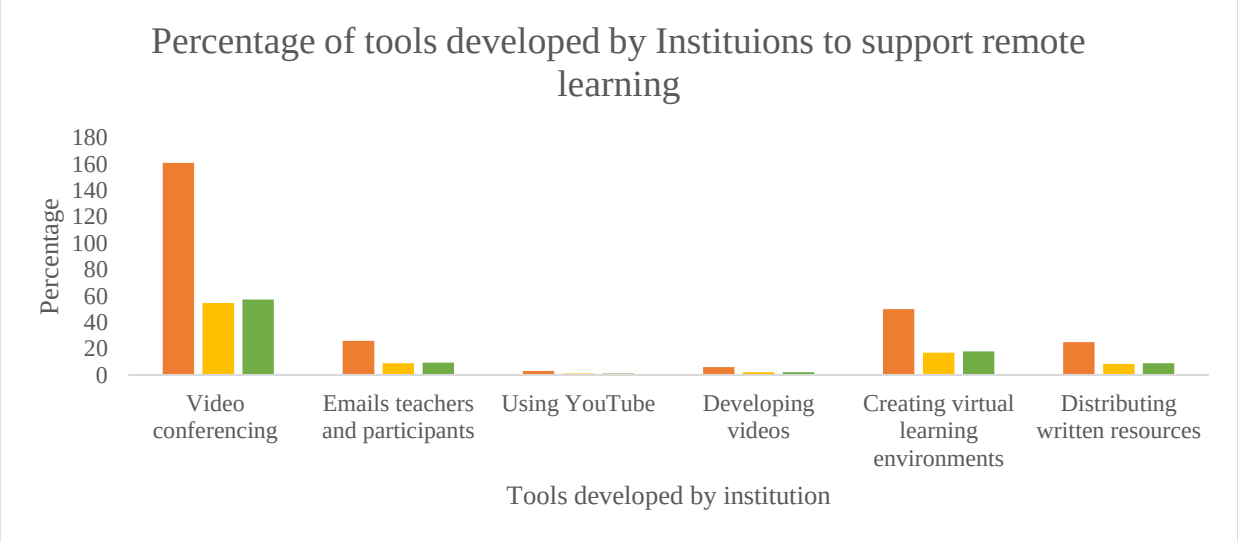

Fig. 4: Figure showing tools developed by institutions to support remote learning

C. Challenges affecting Remote Learning in technical training institutes.

The study finding indicated that 48.6% (n=172) of the trainees had access to the internet, while 28.4% (n=100) had internet access, it didn't work well and 20.8% (n=73) did not have access to internet as shown in figure 4.4 below. Internet access is a prerequisite requirement for one to enroll in a remote learning course, failure of the internet service provider to supply constant internet to its clients, deprives most trainees learning remotely the chance to complete their studies on time. TVET and TVC play a great role in offering technical and handwork courses to people who need self-employable skills. The study was in agreement with Wasike, Ingendi, and Maiyo (2020) who found that ICT infrastructures correlate with trainee enrolments in TVET institutions in Bungoma County.

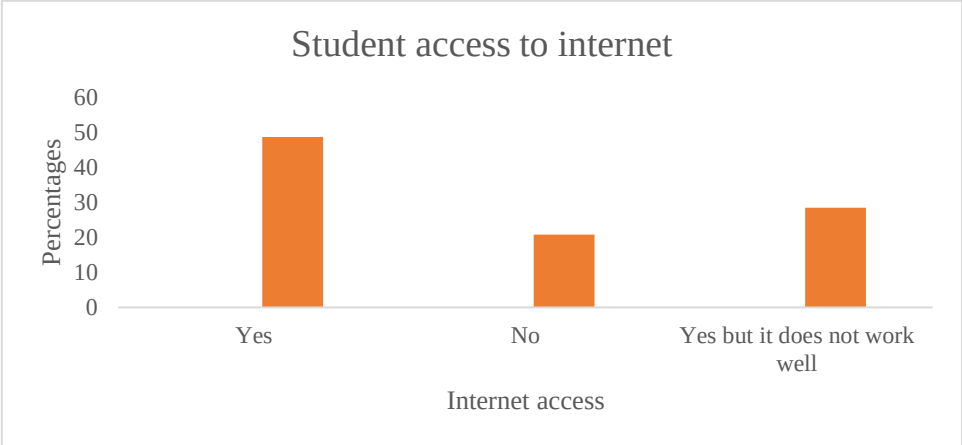

Fig. 5: Figure showing trainee access to internet.

Asking whether the trainees had a device used to access remote learning platforms 34.5%(n=121) of the trainee respondents agreed, 28.2%(n=100) reported having a device but doesn't work well, due to non-functional battery, poor connectivity or wireless networks, device lacking enough memory to have learning apps such as Zoom , and Moodle installed.

The study trainer respondents revealed that 78.6% (n=185) had been trained to teach remotely, and only 64.7% (n=152) reported to be teaching remotely. Despite being, trained most of the trainers were not teaching remotely, due to the challenges emanating from the ability to use and adopt the online pedagogical skills. The study finding revealed that 66.1% (n=155) of the trainer respondents reported to have internet access. 81% (n=190) had access to devices used for online learning; however, 10.8% (n=25) reported having a device used to access online learning, but it doesn't work well.

Remote learning was adopted during the Covid-19 pandemic to ease the burden of education. Despite allowing trainees to access education at their homes, while maintaining social distances and keeping safe. Remote learning has been a norm in most societies. However, the reception of this kind of learning is marred with many disadvantages as compared to advantages. This study findings corresponds to Dubey & Pandey (2020) studies that found the following challenges to affect remote learning.

Majority of trainees' population resides in remote rural areas: It is a known fact that majority of the trainee's population (especially who are enrolled in ODL system) reside in remote areas, the technological facilities in this region is not well defined and managed. Lack of adequate infrastructure: Adequate infrastructure has always been a major problem behind any functional implementation (Leontyeva, 2018). For implementing digital learning, infrastructure at institution and trainees end should be adequate.

Paradigm shift in thinking for adoption of digital learning of trainees would be difficult: This is a situation which calls for paradigm shift in the thinking process of the trainees, to suddenly adopt digital education (Ali, 2020). It may be difficult for them to suddenly change their mindset. Lack of appropriate faculty trainee's ratio: In order to guide the trainees for digitized education the faculty trainee's ratio in the country is inadequate. Permanent faculties and staff members are not available in majority of the higher educational institutions and hence is a problem at large to manage larger population of trainees.

Access to technology: Although we have advanced a lot in technological perspective, there has been questions that how far we have been able to adopt technology for constructivism. Access to technology doesn't means its appropriate use. The presumption of every single trainee having necessary technology, time, motivation and support to participate in distance education is simply not real life. Rural and low-income communities have less access to broadband internet access than the urban counterparts.

Preparedness for delivery: There is also a question to ask for the preparedness of faculties who have to involve themselves for digital learning platform. The varying demography of faculties across the country is also a challenge, since these faculties are the fulcrum for delivering the contents to the trainees' group. Preparedness of faculties can access from three different perspective. Firstly, whether the faculties are prepared in advance with complete learning mechanism to stand before the online platform? Secondly if the trainees are competent enough to handle the existing technology used for digital delivery of course? Thirdly, if the faculties are prepared and able to handle technology, can they address the possible roadblocks quickly and promptly?

VI. CONCLUSION

According to the findings of the study trainers and trainees have some positive attitude towards remote learning and they were ready and motivated to adopt it for theory teaching, however, there is negative attitude among majority of trainers on training practical's remotely, trainers 'and trainees' negative attitude was observed to be as a result of challenges associated by remote training, there is need for more training related to remote learning technology to both the trainers and trainees. The study found out that remote learning tools were available, however, some of them were not working well while some trainees and trainers, despite being trained, did not know how to use the tools fully. This study concluded that a positive attitude towards remote training and learning could be developed if challenges raised by the trainers and trainees are addressed.

VII. RECOMMENDATIONS

The study recommends the following:

- Blended learning should be adopted by TVET institutions due its many advantages such as ability to use more than one venue and more than one variety in terms of content, pedagogy and learning approaches.
- Comprehensive training of trainers and trainees on remote leaning skills and technologies. Training of trainers and trainees on remote leaning skills and technologies will steer a positive attitude towards remote leaning.
- Expansion of ICT and remote leaning infrastructure, internet provision is a must to facilitate access to e-learning by trainees, trainers and other stakeholders through the allocation of more resources towards ICT and remote leaning technologies development.

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