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E-Learning Readiness and Perceptions of Trainers towards Teaching Skills-Based Courses among TVET Institutions in North Imenti Constituency, Meru County, Kenya

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Abstract

With the emergence of COVID-19 coupled with the advent of the digital era, face-to-face learning has been challenged in addressing the learning and teaching needs of both trainees and trainers. Online learning has been adopted to address this unique challenge, however, teaching skills-based courses online has not been explored. Therefore, the current study investigated eLearning readiness and perceptions of TVET trainers to teach skills-based courses in North Imenti Constituency, Meru County. The study adopted a cross-sectional descriptive design to conduct the investigation among 177 TVET trainers who were selected using proportionate sampling from two TVET institutions and a simple random sampling was done within each institution. A semi-structured consolidated, Likert-scale, digital questionnaire was sent by online platforms, that is, email and WhatsApp to solicit data on elearning readiness and perceptions and the competency of teaching skills-based courses online. Data was downloaded from google drive, exported to SPSS, coded, cleaned and transformed. The five-Likert scale was compressed into dichotomous variables. Descriptive statistics such as means, standard deviations, percentages and inferential statistics, that is, logistic regression was performed to get associations. Most of the respondents were young (65%), employed by PSC (61.0%), and were not ready to teach online (75.1%), however, a few of them (33.9%) were enthusiastic. The enthusiastic respondents were 2.6 times (OR=2.573, p = 0.006) more likely to be competent in teaching skills-based courses online as compared with those whose perception was neutral. One in three trainers had a positive perception and one in two trainers was competent in teaching skills-based courses online, however, three in four trainers were not ready for the same. The Ministry of Education should develop training and sensitization packages for TVET trainers on ICT integration in education, e-learning and effective change management.

Key words: ***Online learning, TVET trainers, COVID-19, pedagogy, e-learning***

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Introduction

The global outbreak of Coronavirus created a new normal, especially in the education sector globally (Mohalik & Sahoo, 2020). Physical learning was brought to an unexpected halt. Most of the institutions including Technical and Vocational Education and Training (TVET) were forced to shift to online to sustain their existence (Alam & Tiwari, 2020). The paradigm shift in the mode of learning attracted unprecedented challenges. Some of these challenges entailed whether the TVET trainers were well prepared to take up the new role. Capacity building programs were conducted by both the individual TVET institutions and the regional and national TVET bodies. However, it is not clear whether the trainers were enthusiastic, had the right attitude, and ready to undertake the new role of integrating Information and Communications Technology (ICT) in training students online. Studies have shown that theory-based courses can be taught online adequately, however, teaching skills-based courses is another presenting challenge in TVET institutions. Thus, the current study sets to demystify whether TVET trainers are ready for online teaching of skills-based courses as well as their perceptions on the same.

Literature Review

Learning Readiness among TVET Trainers

TVET providers from most countries such as India, the Republic of Korea, Morocco, and Canada reported a lack of readiness among TVET trainers and trainees to integrate e-learning modalities (ILO/WORLD BANK, 2021). There is little investment in teachers' training that concentrates on enhancing their ability to man online learning platforms in such an effective way to enhance e-learning. Furthermore, the teachers are not adequately trained to design pedagogical resources that can be used entirely remotely for the training and learning of students (ILO, 2018; Explorateurs, Nigon, & le Conseil de, 2014).

A remarkable familiarity of social media platforms in comparison to online learning tools among trainers and trainees has been noted (Ngampornchai & Adams, 2016). The acceptance of e-learning among students was positive because it is flexible, offered a variety of courses, and time-efficient (Smith, Hoderi, & Mcdermott, 2019). The e-learning experience that the learner gets has been reported to have a significant impact on the learning process, effectiveness, and achievement of indirect learning outcomes (Azis et al., 2019). Mohalik (2020) reported that one in every two trainers are unfamiliar with learning management system, podcasts, virtual worlds, and web design application. He maintains that most of the trainers use WhatsApp and group email for academics and only one in every five trainers utilizes digital devices to provide feedback to students, create digital learning resources, and present using PPT.

The beliefs and attitudes demonstrating the trainers' readiness to teach online include respect for learners, sharing with peers, presence, confidence, subject interest, patience, and time (Graff, 2008). The aforementioned author reports that the motivation of trainers to train online included students' needs, success, money, flexibility, and working with peers. To mark preparedness, the trainers must demonstrate having an appropriate combination of various factors. These factors include a digital device, financial strength, round-the-clock connection to electricity, and with good internet connection as well as ample study place at home (Lerner, 2016; ILO, 2018).

Two studies reported that students strongly believed that their professors had little computer knowledge (Elstad & Christophersen, 2017; Hatlevik, Scherer, & Christophersen, 2017). A study investigating the relationship between trainer's skills and ICT use established a strong correlation between the trainer's skills and their ICT use (Alazam Bakar, Hamzah, & Asmiran, 2012). Age is a confirmed important predictor of the trainers' beliefs and ICT practices and skills (Ramadan et al., 2018). According to Tsai and Chai (2012), trainers' beliefs is one of the factors that hinders the use of ICT in teaching alongside the years of performance and experience (Boyd et al., 2008; Elstad & Christophersen, 2017). Scarce information is available to demonstrate the preparedness of trainers in TVET for online classes. Therefore, the current study sets to find how well the TVET trainers are prepared to train online.

Perception of TVET Trainers towards Training Skills-Based Courses Online Studies have reported an improvement in learning and teaching in TVET, however, its incorporation into online learning mode has witnessed complex and sophisticated roadblocks (Belaya, 2018). Some of these roadblocks include trainer attitude and behavior towards online learning as well as updated technological infrastructure (Brolpito et al., 2016). Other obstacles to include the educational cultural and traditional predispositions as well as the diverse competence levels of trainers and teachers (Heuel & Feldmann, 2014).

A non-peer-reviewed article reported that most of the teachers did not believe that both practicum and theoretical subjects can be taught online (Mohalik & Sahoo, 2020). The aforementioned resource maintains that most teachers felt isolated and stressed while preparing and delivering online classes as well as difficulties talking online. Trainers are reported to be congruent with the assertion that online mode of learning promoted student-centred learning and leads to high and deeper learning. Proper time management, effective communication, continuous trainers' support, address of concerns, and easy access to learning management system fosters proper online learning (ILO/WORLD BANK, 2021). Tsai and Chai (2012) report that teachers' beliefs concerning instruction vision and ICT led to their successful integration in learning. However, as far as these studies are concerned, the present study is the first to assess the TVET trainers' perceptions on teaching practical-based courses online.

Online Training of Practical-based courses in TVET Institutions

TVET institutions encounter a particular problem of guarantying a continuity of skills-based training over e-learning modality (ILO/WORLD BANK, 2021). Most of TVET program entails practical training as a critical dimension that cannot be easily offered via remote training for most occupations. These skills-based training courses require laboratory and workshop practical that are difficult to deliver via online platforms. Most countries have reported a lack of coordinated practical training over the internet. An Australian TVET provider report that there was no well-coordinated integration of work-based learning in e-learning (ILO/WORLD BANK, 2021). Ministry of Education Representatives and TVET providers from Uganda, Italy, Bosnia, Herzegovina, and Ukraine report that a total suspension to placement activities during the COVID-19 crisis (ILO/WORLD BANK, 2021; Explorateurs, Nigon & le Conseil, 2014). TVET providers in Congo and the Ministry of Education in Cote d'Ivoire report a disruption that has entirely put on hold any skills-based courses training and subsequently their assessment (ILO/WORLD BANK, 2021). Subsequently, TVET providers report that resumption of business activities is awaited in the Democratic Republic of the Congo for training to continue. According to a report by International Labour

Organization (ILO), teachers can use augmented realities to enable learning apply theory to practice (ILO, 2018). The current study sets to find out whether skills-based courses are trained online among TVET institutions in North Imenti, Meru County.

Methodology

A cross-sectional analytical design was used to carry out the study among 177 TVET trainersin North Imenti Constituency in Meru County. The study population entailed 225 TVET trainers from Meru National Polytechnic (MNP) and 100 trainers from Nkabune Technical Training Institute (NTTI). Fisher's formula (1992) was used to calculate the sample size of 384. Since the population of TVET trainers was less than 10,000, the sample size was adjusted to get a desired sample size of 177. Then, a proportionate sample was calculated for the two institutions by multiplying the number of trainers in each institution with the total sample size (177) and dividing by the total number of trainers in both institutions (325). A list of trainers with their details was requested from both institutions. These lists constituted the sampling frame that was subjected to a simple random sampling to select 62 participants from 100 NTTI trainers as well as 115 participants from 225 MNP trainers.

The independent variables were the TVET trainers' readiness and perceptions whereas the competency of teaching skills-based courses online was the dependent variable. A questionnaire was used to collect information on e-learning readiness and perception of TVET trainers towards teaching skills-based courses online. The tool collected data on trainer's socio-demographic information, e-learning readiness and perception among TVET trainers, and status of online teaching of practicum-based courses. A self-administered questionnaire was converted to online format that was shared (as a google form link) with the 177 sampled participants delivered to them via email. Follow up was done on weekly basis to ensure over 90% response rate.

The data was downloaded from google drive folder as a .csv file. Then, imported to Statistical Package for Social Sciences (SPSS) version 22 (Illinois, Chicago) for data analysis. Descriptive statistics such as mean, standard deviation and percentages were conducted to describe the key variables. Scores were calculated to assess how well the trainers prepared for e-learning and their perception to deliver practicum-based courses online. The outcome variable was converted to dichotomous categorical variables. Binomial regression was done to analyse the association between the e-learning preparedness and perceptions on teaching of skills-based courses online. Findings of the study was presented in statistical tables.

Findings

Socio-demographic Characteristics of Respondents

The results of socio-demographic characteristics is presented in Table 1. Over half (51.4%) of the trainers were males. Nearly two-third of the respondents were aged 20-29 years (34.5%) and 30-39 years (30.5%). The respondents were mostly employed by PSC (61.0%) and taught at Meru National Polytechnic (65.0%). The study respondents belonged to eight departments. Most of them came from electrical and automotive (32.2%), hospitality (22.0%), and business (19.8%).

Table 1
Socio-Demographic Characteristics of the Respondents

Characteristics	n=177 n (%)
Sex of the trainer	
Female	86 (48.6%)
Male	91 (51.4%)
Age category	
20-29	61 (34.5%)
30-39	54 (30.5%)
40-49	27 (15.3%)
50-59	35 (19.8%)
Term of service	
PSC	108 (61.0%)
BOG/BOM	62 (35.0%)
Internship	7 (4.0%)
Institution training in	
Meru National Polytechnic	115 (65.0%)
Nkabune Technical Training Institute	62 (35.0%)
Department	
Electrical and automotive	57 (32.2%)
Hospitality	39 (22.0%)
Business	35 (19.8%)
Building and civil engineering	20 (11.3%)
Others*	26 (14.7%)

*Others include clothing technology, ICT, mechanical engineering, nutrition & dietetics and liberal department

E-Learning Readiness of Trainers among TVET Institutions

The study investigated the e-learning readiness of trainers among TVET institutions and the results are presented in Table 2. The results show that most of the respondents could send and receive emails with attachment (94.4%), perform file management on their computers (93.2%), use internet browsers (87.6%), use Microsoft office tools (81.4%), know how to use at least one of the videoconferencing tools (74.6%), and have access to a reliable computer equipped with Microsoft office or open office (70.6%).

Table 2

E-Learning Readiness of Trainers among TVET Institutions

Characteristics	n=177	
	Yes n (%)	No n (%)
Use Ms. Office tools	144 (81.4%)	33 (18.6%)
Perform file management on my computer i.e., copying, moving, renaming, creating folder and deleting	165 (93.2%)	12 (6.8%)
Send and receive emails and attachment	167 (94.4%)	10 (5.6%)
Use internet browser i.e. chrome	155 (87.6%)	22 (12.4%)
Comfortable using Moodle's assessment tools to evaluate students' performance	98 (55.4%)	98 (55.4%)
Use at least one of the videoconferencing tools	132 (74.6%)	45 (25.4%)
Comfortable providing Moodle technical assistance and support	100 (56.5%)	77 (43.5%)
Comfortably use LMS	94 (53.1%)	83 (46.9%)
Access to reliable and consistent Internet access.	107 (60.5%)	70 (39.5%)
Have access to a reliable computer equipped with Microsoft Office or Open Office.	125 (70.6%)	52 (29.4%)

Most of the respondents were willing to provide timely and contractive feedback on learner performance (85.3%), comfortable promoting an inviting and mutually respectful learning environment (79.1%), flexible with their time online and work outside of their regular work schedule (75.1%), have access to electricity supply and/or back up (72.3%), and comfortable with the unique needs of adult learners (71.8%).

Table 3

E-Learning Readiness of Trainers among TVET Institutions

Characteristics	n=177	
	Yes n (%)	No n (%)
Provides timely and constructive feedback on learning performance.	151 (85.3%)	26 (14.7%)
Comfortable promoting an inviting and mutually respectful learning environment	140 (79.1%)	37 (20.9%)
Prepared to be flexible with my time online and work outside of my regular work schedule.	133 (75.1%)	44 (24.9%)
Have access to a reliable electricity supply and/or back up	128 (72.3%)	49 (27.7%)
Comfortable with the unique learning needs of adult learners.	127 (71.8%)	50 (28.2%)
Understands the copyright law and Fair Use guidelines when using copyrighted materials.	101 (57.1%)	76 (42.9%)
Comfortable with the unique challenges of asynchronous communication.	96 (54.2%)	81 (45.6%)
Comfortable with choosing a synchronous or asynchronous tool or a combination of both	100 (56.5%)	77 (43.5%)

Over three-quarter (75.1%) of the respondents were not ready to conduct online teaching among the TVET institutions (Table 4). The perception of trainers concerning teaching skills-based courses was found to be mainly neutral (66.1%) whereas a third of them (33.9%) were enthusiastic about training competent-based courses online. Also, over half of the study respondents (57.1%) were classified as competent to training skills-based courses online.

Table 4

E-learning readiness and perceptions of TVET trainers on teaching skills-based courses online

Characteristic	**n=177** **n (%)**
e-learning readiness among the TVET trainers	
Mean [SD]	80.21 [14.389]
Ready	44 (24.9%)
Not ready	133 (75.1%)
Perception	
Mean [SD]	30.60 [5.815]
Neutral	117 (66.1%)
Positive	60 (33.9%)
Teaching skills-based courses online	
Mean [SD]	14.893 [5.313]
Competent	101 (57.1%)
Not competent	76 (42.9%)

Perceptions of Trainers towards Training Skills-based Courses Online among TVET Institutions

The trainers believed that digital skills were necessary for proper integration of ICT in education. However, majority of them face to face learning was better than online mode of learning (80.2%), they were not interested to teach online when physical learning was practical (71.8%), they were not prepared to spend as much or more time facilitating online class than a face-to-face setting (77.4%), they perceived that Kenyan TVET institutions were not ready for online learning (87.6%), only theoretical modules can be taught online (50.8%), skilled based courses cannot be effectively delivered via online platforms (74.6%), a proper design of elearning process did not promote skills-based teaching (53.2%) as in Table 5.

Table 5
Perceptions of trainers towards training skills-based courses online among TVET institutions

Characteristics	n=177	
	Yes n (%)	**No n (%)**
Online mode of teaching and learning is better than face to face mode of learning	35 (19.8%)	142 (80.2%)
You are interested in teaching online even when physical learning is practical?	50 (28.2%)	127 (71.8%)
I am prepared to spend as much or more time facilitating online than in a face-to-face setting.	40 (22.6%)	137 (77.4%)
Kenyan TVET institutions are ready for online learning	22 (12.4%)	155 (87.6%)
Skills based courses can effectively be delivered via online platforms	45 (25.4%)	132 (74.6%)
Digital skills are necessary for proper integration of ICT in education?	153 (86.4%	24 (13.6%)
Only theoretical modules can be taught online	87 (49.2%)	90 (50.8%)
e-learning promotes student-centred learning	74 (41.8%)	103 (58.2%)
A proper design of e-learning process promotes skills-based teaching online	82 (46.2%)	95 (53.2%)

Online Training of Skills-based Courses among TVET Institutions

The results on trainers' teaching of skills-based courses online are presented in Table 5. About a third of the respondents recorded tutorials (31.6%) and captured demo sessions (36.2%) for the learners to follow and practice asynchronously. Most of the respondents have never conducted a live demo session via online platforms (77.4%), neither had their students recording practical sessions and shared for assessment via online platforms (87.6%), nor uploaded their recorded demo sessions via online platforms such as YouTube, LMS, or WhatsApp for their trainees to observe (57.6%) in Table 6.

Table 6
Online training of skills-based courses among TVET institutions

Characteristics	n=177	
	Yes n (%)	**No n (%)**
I have recorded my tutorials for my students	56 (31.6%)	121 (68.4%)
I have ever captured in video and/or audio the demo sessions for my students to practice wherever they are	64 (36.2%)	113 (63.8%)
I have ever uploaded my recorded demo sessions via online platforms i.e., YouTube, LMS, WhatsApp, other websites for my students to access.	75 (42.4%)	102 (57.6%)
My students have ever recorded their practical for my assessment	22 (12.4%)	155 (87.6%)
I have ever conducted a live demo session via online platforms	40 (22.6%)	137 (77.4%)

Association between E-learning readiness and perceptions and teaching of skills-based courses among the study Respondents

The respondents who were enthusiastic were 2.5 times (OR= 2.573, p = 0.006) more likely to be competent in teaching skills-based courses online as compared with those whose perception was neutral (Table 6).

Table 7
Association between E-learning readiness and perceptions and teaching online learning of skills-based courses among the study Respondents

Characteristics	n=177 COR [CI]*	*p***
Perception (ref: neutral)	**2.573 [1.319-5.020]8]**	**0.006**
e-learning readiness (ref: ready)	**1.295 [0.653-2.56]8]**	**0.460**

*COR stands for crude odds ratio while CI is the confidence interval
**p* stands for p-value at significance level of less than 0.5

Summary

The study established that most of the respondents were young (65%) (20-39 years old), employed by PSC (61.0%). Most of the respondents (75%) were not ready to conduct online teaching among the TVET institutions and only a third (33.9%) of them were enthusiastic about training competency-based courses online. Over half of the study respondents (57.1%) were classified as competent to training skills-based courses online. It showed that those respondents who were enthusiastic were 2.5 times (OR= 2.573, p = 0.006) more likely to be competent in teaching skills-based courses online as compared with those whose perception was neutral.

Socio-demographic Characteristics of the Respondents

First the study established that most of the respondents were young (20-39 years old) and employed mainly by PSC. TVET institutions have witnessed rapid growth and support from the government recently. The employment of trainers has also witnessed an upward surge and therefore more young people have been brought on board to train in TVET institutions. PSC took over from TSC in employing and deploying TVET trainers and thus supporting the fact that the trainers are mainly young and employed by PSC.

E-learning Readiness among TVET Trainers

Although majority of the study respondents had basic computer skills, they were not ready to teach online. The aforementioned finding is in congruence with those established in India, the republic of Korea, Morocco, and Canada (ILO/WORLD BANK, 2021). According to the forestated report, there is recorded lack of readiness among TVET trainers and trainees to integrate e-learning modalities. The reasons why TVET trainers may not be confident to conduct online teaching could be attributed to lack of digital skills (Elstad & Christophersen, 2017; Hatlevik, Scherer, & Christophersen, 2017; Mohalik & Sahoo, 2020), little investment in

trainer's refresher courses on ICT integration in learning, and inadequate training in design pedagogical resources that makes it possible for remote training and learning (Explorateurs, Nigon, & le Conseil, 2014; ILO, 2018; ILO/WORLD BANK, 2021). Digital skills proficiency is very necessary if the trainers needed to deliver class online (Alazam, Bakar, Hamzah, & Asmiranet, 2012). A study reported a remarkable familiarity of social media platforms in comparison with online teaching tools among trainers (Ngampornchai & Adams, 2016). Similarly, Mohalik (2020) found that most of the trainers were unfamiliar with LMS, podcasts, virtual worlds, and web design application.

TVET Trainers' Perception

It established that the perception of trainers concerning teaching skills-based courses was mainly neutral (66.1%) and only a third of them (33.9%) were enthusiastic about training competent based courses online. Most studies support the findings of the current study (ILO, 2018; ILO/WORLD BANK, 2021; Mohalik & Sahoo, 2020; Tsai & Chai, 2012). The aforementioned studies report that trainers believed that practicum subjects cannot be taught online, preferred face-to-face classes, felt isolated and stress on online learning platforms.

Online Training of Skills-based Courses

The study found out that over half (57.1%) of the respondents were competent to offer online learning of skills-based courses. This could be explained by the attitude of the trainers. Those who were enthusiastic were 2.5 times more likely to be competent in teaching skills-based courses online as compared with those whose perception unsupportive. Therefore, trainers' attitude towards training online was significant to determine their competency in teaching skills based courses via virtual platforms.

Conclusion

The TVET trainers in North Imenti Constituency are young and employed by PSC. However, three in four trainers are not ready for online teaching of skills-based courses whereas one in every three trainers were enthusiastic to train online. One in two TVET trainers is competent to teach skills-based courses online. The trainers that were enthusiastic were 2.5 times more likely to be competent in teaching skills-based courses online.

Recommendations

Based on the study's findings, it is recommended that TVET trainers should develop a positive attitude towards teaching skills-based courses online. They should acquire the necessary digital skills, ICT devices and infrastructure in liaison with the TVET institutions in preparation for online teaching of skills-based courses. The Ministry of Education (MoE) should strengthen the implementation of open and distance learning through developing training and sensitization packages to be rolled out in all TVET institutions on skills-based courses teaching. Further study should be conducted to investigate challenges facing the TVET trainers and trainees while implementing and using online platforms for learning and teaching among the TVET institutions.

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