TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING AUTHORITY

Baseline Survey on Implementation of Online Training in TVET Institutions

April, 2021

ACKNOWLEDGEMENT

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ABSTRACT

The outbreak of Covid-19 pandemic affected the health of several millions and led to the death of several thousands of people all over the world. In order to control the spread of the highly infectious viral disease, several countries ordered the closure of their education and training institutions and other sectors of the economy. This study investigated the extent to which the TVET institutions have integrated online training systems in their programmes to mitigate against the effects of the pandemic. The survey also identified challenges faced in the implementation of online training systems. Both qualitative and quantitative research designs were used. The target population was administrators and trainers in 1929 registered TVET institutions. From the population of 1929 institutions 283 representing a sample size of 14.68% were sampled. An online questionnaire was administered to the administrators and two trainers from different departments. The responses from the survey were analyzed using descriptive statistics mainly frequencies and percentages. Findings from the study revealed that most of the TVET institutions had not embraced ODEL as an important mode of training delivery. It was recommended that the government should support the TVET institutions to enhance their online training capacity by providing funds for construction and equipping ICT laboratories as well as establishment of online training infrastructure.

ABBREVIATIONS AND ACRONYMS

CAPYEI	CAP Youth Empowerment Institute
COL	Commonwealth of Learning
COVID	Coronavirus Disease
ICT	Information Communication Technology
ILO	International Labour Organization
KMLTTB	Kenya Medical Laboratory Technicians and Technologists Board
KTTC	Kenya Technical Trainers College
LMS	Learning Management System
MOOCs	Massive Open Online Courses
NPs	National Polytechnics
ODeL	Open Distance and Electronic Learning
SARs	Severe Acute Respiratory Syndromes
SMS	Short message services
TVCs	Technical and Vocational Colleges
TVET	Technical and Vocational Education and Training
TVETA	Technical and Vocational Education and Training Authority
UNESCO	United Nations Education Scientific Cultural Organization
VTCs	Vocational Training Centres

CHAPTER ONE
INTRODUCTION

1.1 Background Information

In Kenya, the TVET sub-sector has been undergoing a lot of changes as the country gears towards production of manpower for the realization of Vision 2030. Among these changes has been the adoption of information communication technologies (ICT) in all modes of its operations and especially in enhancing the learning environment. The integration of ICTs in education is a global concern. Information and Communication Technologies (ICTs) have a great impact in education especially in this era of knowledge economy and information society. The use of computers in education in particular promises better and improved methods of content delivery, as well as expanding the available teaching and learning resources. (https://www.grin.com/document/184127)

The onset of the first human cases of COVID-19, the disease caused by the novel coronavirus causing COVID-19, subsequently named SARS-CoV-2 were first reported by officials in Wuhan City, China, in December 2019. Subsequently, the novel coronavirus spread within a very short duration becoming a pandemic globally. The first half of 2020 witnessed nations all over the world struggling to deal with the effects of the pandemic on all sectors including health, economic and education. The pandemic created global emergency, which resulted in indefinite closure of educational and training institutions. The forced closure of institutions stimulated discussion on the need to integrate online learning at all levels of education.

However, the few institutions that had integrated digital technology continued to offer training through their online training portals. Additionally, effective implementation of digital interface in training can be used by trainers to upgrade their skills, ensure training does not stop during similar crises and prepare trainees for the future work requirement (UNESCO 2020).

Out of the total population of students enrolled in institutions of learning globally, UNESCO estimated that over 90% were not in school due to closures occasioned by COVID-19. This represented more than 1.5 billion children and youth in 191 countries. In order to address the challenges, education and training institutions all over the world have been seeking innovative solutions to move towards or integrate online/distance learning with the traditional face-face model. UNESCO-UNEVOC has developed a COVID-19 peer support page that provides an extensive list of resources to facilitate this transition. The resources are expected to assist TVET institutions, policy makers, social partners and other stakeholders to develop innovative strategies to tackle unprecedented challenges, manage learning and training processes effectively and increase resilience of training institutions to cope with challenges caused by various crises (UNESCO 2020).

In addition to overcoming the adverse effects of unforeseen crisis on education and training, online/distance learning models are expected to provide flexibility and hence improve access, quality of training and life-long learning since the trainees can use the training materials at their own convenience. Better access to TVET due to flexibility of online learning can also increase productivity, potential for employment and improved income for Kenyan citizens. This is because it ensures

acquisition of essential skills for trainees regardless of their location either in urban or rural areas. Although the Kenyan Government had established radio and television learning programs for the primary and secondary schools prior to the onset of the Covid-19 pandemic, a significant number of students were not able to access the learning programmes at their homes due to a variety of reasons. On the same note, no similar programmes had been established for the TVET sector resulting to a complete shutdown of all training programmes in the institutions. The Kenyan Government has endeavored to develop online training materials in all sectors of education and training through various knowledge sharing platforms. The integration of technology to promote skills development is envisaged to address new challenges and ensure that no one is excluded from new forms of learning and training.

Effective implementation of online/blended training delivery needs appropriate investigation of various issues such as technical capacity to support the training system, and how quickly digital education and training could be organized and teachers and trainers mobilized to maintain services to learners. The measures taken by each training institution to achieve an acceptable level of online training delivery depends on the availability of training materials fulfilling the minimal educational goals for each study program including TVET. Distance/e-learning programs are very convenient for learners who cannot present themselves physically at the respective training institutions. Currently, most of the e-Learning types of education are mainly employed in the non-formal mode. It is however important to note that trainers cannot be replaced by e-learning. However, since digital technology is becoming increasingly integrated in the world of work, the implementation of online training materials can free trainers from routine and repetitive tasks so that they can improve their interaction with trainees, either through face to face or online channels.

The implementation of online and/or blended training can greatly improve training delivery in TVET institutions and provide graduates with requisite knowledge and skills for decent work which is responsive to the needs of the labor market. The successful implementation of online training can be achieved through establishment of national online training material development programs. The purpose of the study was to determine the availability of online resources and the extent to which the TVET institutions were employing technology to reach their trainees before and during the pandemic so that appropriate measures could be put in place.

1.2 TVET Institutions in Kenya

The Technical and Vocational Education and Training Act, 2013 establishes three categories of TVET institutions namely; the National Polytechnics (NP), Technical and Vocational Colleges(TVCs) and Vocational Training Centres(VTCs). Whereas the management of National Polytechnics and Technical and Vocational Colleges is the responsibility of the National government, Vocational Training Centres are managed by the respective county governments (Constitution of Kenya, 2010). National Polytechnics have been given powers to provide training up to diploma level, are empowered to examine and issue certificates using their own curricular and can collaborate with a University to offer degree programmes. Technical and Vocational Colleges have been empowered to train up to diploma

using curricular from recognized curriculum developing bodies. On other hand, Vocational Training Centres have been limited to train up to artisan level using curriculum from recognized curriculum development bodies. According to data available at TVET Authority, there are currently 2007 TVET institutions in the country. Of the 2007 TVET institutions, 12 are National Polytechnics, 1098 Technical and Vocational Colleges and 919 Vocational Training Centres.

1.2 Problem Statement

The outbreak of Covid-19 pandemic has affected the health of several millions and led to the death of several thousands of people all over the world. In order to control the spread of the highly infectious viral disease, several countries ordered the closure of their borders, most economic activities, education and training institutions. The shutdown of education and training institutions resulted in disruption of the normal programmes all over the world. The extensive impact of the pandemic in the education sector has been worsened by the fact that most institutions relied on the regular face to face system without any integrated online learning systems in their programmes. In order to effectively integrate an online and/or blended training system a sound evidence on the current status which clearly identifies the gaps that need to be filled should be identified. This study will investigate the extent to which the TVET institutions have integrated online training systems in their programmes. The survey will also identify any challenges faced in the implementation of online training systems so that appropriate measures of mitigating the challenges can be proposed.

1.3 Objectives of the Study

The main objective of the study was to determine the status of online training in the Kenyan TVET institutions.

1.4 Specific Objectives

The specific objectives of the study were to:

1. Determine the proportion of institutions that have integrated online training delivery in their programmes
2. Identify the ICT Infrastructure available in TVET institutions for ODeL
3. Determine the Compliance status of ODeL programmes being offered
4. Establish capacity building needs for trainers for effective implementation of ODeL
5. Identify the main challenges faced in the implementation of ODeL
6. Identify partners supporting ODeL in TVET

1.5 Justification of the Study

Before the onset of Covid-19 pandemic, nearly all learning institutions in Kenya relied on face to face as the main mode of training delivery. The abrupt disruption of education and training by the highly infectious Covid-19 pandemic made stakeholders in the education and training sectors all over the world to come up with new strategies of establishing new innovative ways of education and training delivery. Strengthening and integration of online training delivery has been identified as one of the best ways of mitigating the disruption that can be caused by similar crises in the education and training sector. Before the onset of the pandemic, no widespread national online training delivery had been

established. In order to ensure that all training institutions in the country integrate online training delivery, there is an urgent need to identify the current status and challenges faced so that appropriate interventions can be put in place.

1.6 Scope of the Study

The study was restricted to determining the status of online training in the accredited TVET institutions in Kenyan. The data on accredited TVET available at TVETA showed that there were 2007 accredited institutions. The responses for both the institutional administrators and trainers were sought in this study.

1.7 Limitations of the Study

Due to financial limitations, the data collection instrument was administered online. It was therefore not possible for researchers to clarify issues in case respondents needed assistance. On the other hand, some institutions hardly access the internet and this may have contributed to a moderately low response rate.

CHAPTER TWO
LITERATURE REVIEW

2.1 Online Training Programmes

Advocacy for inclusive education and training is demonstrated by UNESCO (2017) which pointed out that in addition to preparing people for the world of work, TVET is expected to be an instrument for social cohesion and integration. It stated that member states needed to make their TVET programmes comprehensive and inclusive by: (1) Promoting special initiatives and efforts to ensure equal access for and participation by girls and women; (2) Making programmes available to the unemployed and marginalized and excluded groups; (3) Promoting flexible access to lifelong learning and training and enabling vocational guidance and counselling to reach all members of society; and (4) Introducing and applying ICTs in teaching and learning.

According to the Kenya TVET Standard on Open, Distance and e-learning (ODeL), distance education is the delivery of training to those who are separated mostly by time and space from those who are training. The training is done with a variety of mediating processes used to transmit content, to provide tuition and to conduct assessment or measure outcomes. The standard further says that the delivery modes may include traditional distance education by correspondence courses, e-learning and blended learning to open learning Centres and face-to-face provision where a significant element of flexibility, self-study and learning support is an integral part (TVETA, 2019). Distance and e-Learning has revolutionized the training process by overcoming the boundaries of time and space. Current technology has made it possible to deliver good quality training experiences to remote areas where access to training opportunities had previously been limited.

The increased access to the internet and advances in Information and Communication Technologies (ICTs) over the past two decades have provided a tremendous boost to distance and eLearning. With education and training being no longer dependent on physical infrastructure and co-location, e-learning allows a large and varied number of learners, including people who for various circumstances do not have access to traditional learning and training, to access new knowledge and skills. The key aspect of e-learning is computer-based or internet-aided learning activities. Some of the common examples of ICTs applications in TVET include virtual training content using simulators and virtual or augmented reality software, podcasts, Massive Open Online Courses (MOOCs), blogs, YouTube videos, tablets, mobile phones and radio (ILO).

Prior to the onset of Covid-19, most of the education and training institutions were mainly offering courses through face to face training delivery. However, the onset of the covid-19 pandemic which led to the closure of nearly all institutions necessitated the integration of online training by many institutions since it was found to be as effective as the traditional system. The development of online training resources, especially multimedia and interactive methods are generally more expensive and time-consuming than preparation of traditional classroom resources. The delivery costs for online training are however much lower than those of traditional face to face training in terms of instructor's time, trainees time for traveling and job time lost to attend classroom sessions. Online training sessions can reach a much larger target audience in different geographical regions. Additionally, online training

programmes can offer effective instructional training methods that include feedback systems, combine collaboration activities with self-paced learning activities, personalize learning programme based on the needs of each trainee, and use simulation and games (Ghirardini, 2011).

Accreditation and inspection of programmes and courses is one of the functions assigned to TVETA by the TVET Act 2013. Other functions include assuring quality and relevance in programmes of training; undertaking, or causing to be undertaken, regular monitoring, evaluation and inspection of training and institutions to ensure compliance with set standards and guidelines; ensuring the maintenance of standards, quality and relevance in all aspects of training, including training by or through open, distance and electronic learning; and approving the process of introduction of new training programmes and reviewing existing programmes in TVET institutions (TVET Act 2013).

2.2 The Covid-19 Pandemic

The highly infectious Covid-19 pandemic affected the health of more than five million people, claimed lives in all parts of the world, disrupted learning and training and negatively affected the economies of several countries due to total or partial closure of most economic activities. The adverse impacts of the pandemic have forced many organizations and governments to think of innovative solutions to mitigate the effects of the current pandemic and any similar future crises that may cause similar disruptions (Majumdar & Araiztegui, 2020). On 15th March 2020, the President of the Republic of Kenya H.E. Uhuru Kenyatta issued directives which included *inter alia* suspension of learning in all education and training institutions with immediate effect (https://www.president.go.ke/2020/03/15). The directive made by the Kenyan President was similar to those that were made by most governments all over the world to help in mitigating the spread of the highly contagious pandemic.

2.3 Response of TVET to the Covid-19 Pandemic

Despite the closure of most institutions, TVET graduates and trainees from various colleges have continued to contribute their skills and innovations in production of essential items such as hospital beds, ventilators soap dispensers and masks to address mitigate the effects of Covid-19 (Majumdar & Araiztegui, 2020). The United Nations Secretary-General called on governments and donors to prioritize education for all children, including the most marginalized.

Although TVET's focus on practical skills has created certain challenges for distance learning both during the Covid-19 crisis and the gradual re-opening of training institutions, there are also some opportunities to acquire relevant skills via work-based learning during the pandemic. However, since most educational institutions closed down due to COVID-19 measures, teaching and learning moved from classrooms to remote means, facilitated by the internet, television, radio, or print materials. The degree to which learning could still take place outside the classroom was constrained by factors which could be most binding in low-income contexts and for vulnerable students. The focus of TVET on practical skills and work-readiness made remote learning particularly challenging, particularly for courses where remote learning was a weak substitute for hands-on experience. However, in some contexts, work-based learning continued, either on-site or offline (World Bank, 2020)

CHAPTER THREE
METHODOLOGY

This chapter presents the methodology that was used for the study. It specifically outlines the research design, target population, sample size and sampling technique, data collection instruments, pilot testing as well data analysis.

3.1 Research Design

The survey used quantitative and descriptive research design. Two questionnaires, one for the Administrator and the other for the trainer, composed of both structured and open-ended questions were used to collect data from trainers in NPs, TVCs and VTCs. The data collection tools were sent to TVET institutions using an online form. 283 institutions were sampled to participate in the study. The respondents were required to respond to the questionnaire through the provided link.

3.2 Target Population

The target population for the study was Administrators and Trainers from registered TVET institutions. By the time of the study, there were 1929 registered TVET institutions by TVETA of which 12 were National Polytechnics (NPs), 209 Public TVCs, 789 Private TVCs and 919 were VTCs.

3.3 Sample Size and Sampling Technique

Stratified random sampling was employed to obtain a sample of respondents where institutions were classified into category, type and county. A sample of two hundred and eighty-three institutions was picked to participate in the study. This represented 14.68 per cent of all registered TVET institutions in the Country. A maximum of three respondents were selected per institution of which one was an administrator and two were trainers randomly picked from different academic departments.

3.4 Data Collection Instruments

The study used questionnaires in the collection of data. The questionnaires consisted of both structured and open-ended questions and were administered through an online platform.

3.5 Pilot Testing

Before the instruments were administered, they were pre-tested on a sample of respondents not included in the study to ensure their reliability. This enhanced the usability and clarity of items. The instruments were then reviewed to ensure alignment of data collected to the objectives of the study. This in turn enhanced the validity of the instruments and ensured that all errors were eliminated.

3.6 Data Analysis

Quantitative data was coded, cleaned, analyzed and presented in the form of frequency tables, bar graphs and pie charts. The data obtained from the institutions was analyzed to determine the status of distance training delivery, available resources and challenges that needed to be addressed for effective delivery of ODeL programmes. Descriptive statistics mainly frequencies and percentages were used in data analysis. The analyzed data was then presented using bar graphs and pie charts.Content and narrative analysis were used to classify, summarize, and tabulate qualitative data. The analyzed data was then presented in narratives.

CHAPTER FOUR
RESULTS AND DISCUSSION

4.1 Response Rate

The total number of institutions sampled through stratified random sampling for this study were 283. The number of institutions that responded to the questionnaire from 46 out of 47 counties were 217. This represented a response rate of 76.7%. The high response rate and the coverage of nearly all the counties in Kenya implied that the results from this study were representative and could therefore be generalized for all the TVET institutions in Kenya. Table 1 shows a summary of the response rate from the three categories of the TVET institutions.

Table 1: Response Rate from TVET Institutions

No./%	National Polytechnic	Technical and Vocational Colleges			Vocational Training Centres			Total
	Public	Public	Private	Total	Public	Private	Total	
Number Sampled	12	76	79	155	91	25	116	283
Number Responded	11	58	26	84	115	7	122	217
% Response	91.67	76.32	32.91	53.85	126.37	28	105.17	76.68

4.2 Demographic Characteristics of the Respondents

The age groups of the administrators ranged from 21years to above 51 years. The modal age group for the administrators was 41-50 years. There were generally more male than female administrators. The modal age group was consistent with the age group when the trainers had acquired appropriate experience to take up leadership positions in the institutions. Figure 1 shows the age distribution of the respondents.

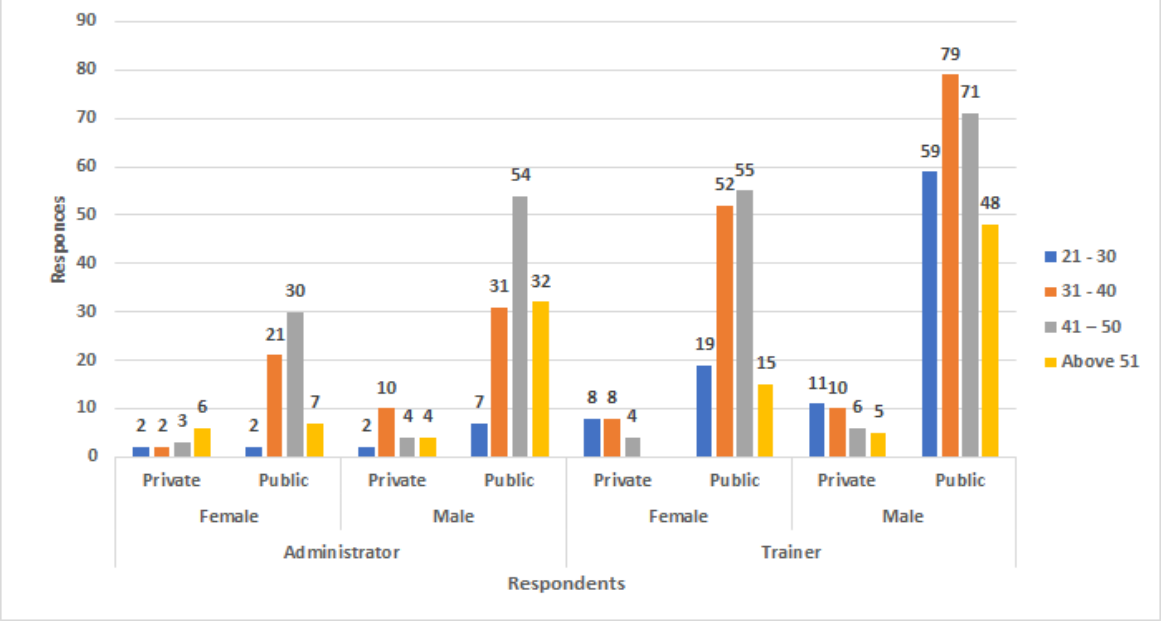

Figure 1:Age distribution of Respondents in TVET institutions

4.3 Proportion of Institutions that have Integrated Online Training Delivery in their Programmes

4.3.1 Proportion of Courses Offered in TVET Institutions through ODeL

The respondents were asked to indicate both the total number of courses offered in their institutions and those delivered through ODeL. The proportion courses offered through ODeL was calculated as a percentage of the total courses offered in the Institutions. The summary of results was as shown in Figure 2.

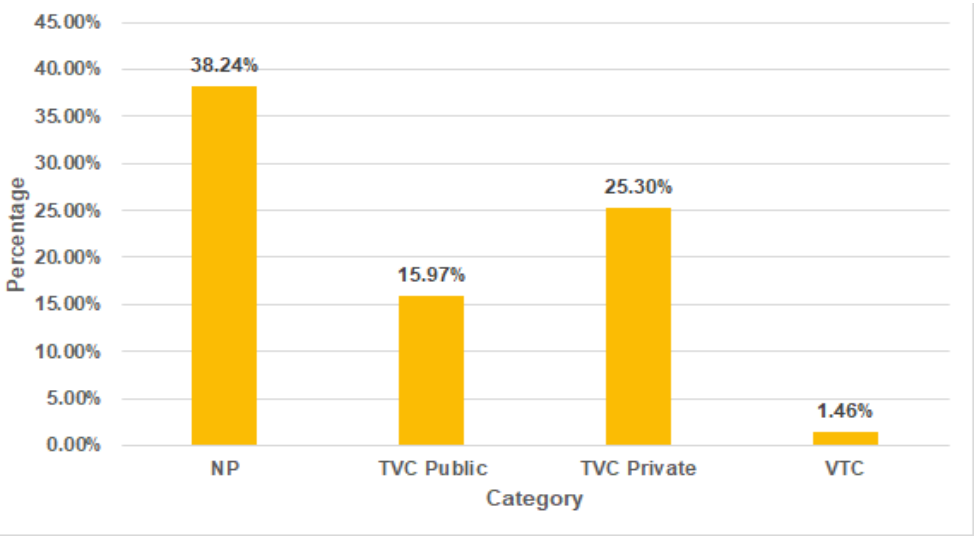

Figure 2: Proportion of courses offered through ODeL in TVET institutions

Most of the institutions were yet to fully adopt online curriculum delivery as the main mode of training delivery. The proportion of courses that were offered through online mode ranged from 1.46% to 38.24%. The national polytechnics had the highest proportion of courses offered through online mode at 38.24% followed by the TVCs at 25.3% and VTCs at 1.46% respectively. The private TVCs had placed more investment in online training delivery (25.3%) compared to the public TVCs which had 15.97% offering ODeL. The Vocational Training Centres had however done very little in implementation of online training.

4.3.2 Institutional Awareness on ODeL Standard

The Technical and Vocational Education and Training Authority developed ODeL standards to guide TVET providers on the implementation of ODeL in training of various programs. The ODeL standards have been shared on the TVETA website and information communicated to the TVET institutions. The proportion of administrators who stated that they were aware of the existence of ODeL standards ranged from 56.41% to 82.93%. The highest percentage of awareness was recorded at the TVCs (82.93%) followed by the NPs (80%) and VTCs (56.41%) respectively. However, a significant number of the administrators, especially those of VTCs were not aware of the existence of the ODeL standards.

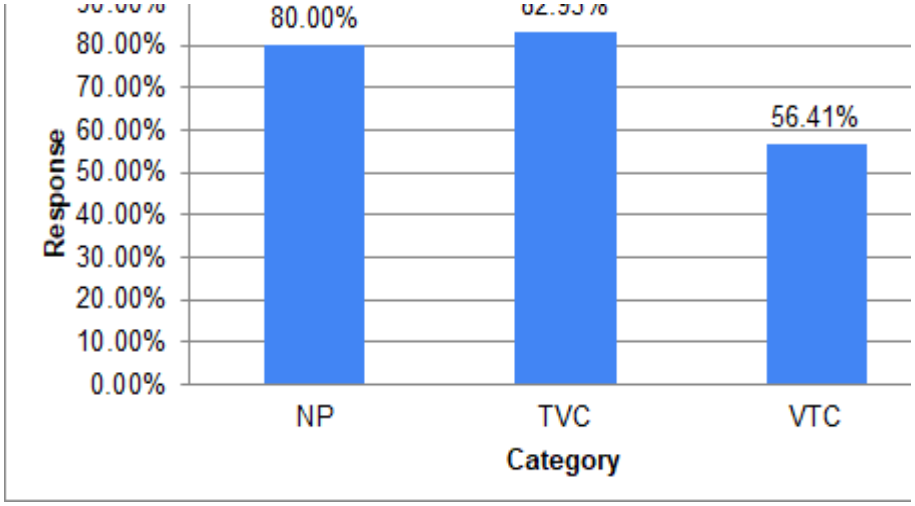

Figure 3: Awareness on the Existence of ODeL Standard in TVET

4.3.3 Commonly Used Modes of Training in TVET

Before the onset of Covid-19, the VTCs and TVCs mainly used face to face as the main mode of training delivery as shown by the readings of 95.83% and 55.56% respectively. However, the National Polytechnics had incorporated blended (face to face and online) which accounted for 72.73%. The lower implementation of online training delivery by the VTCs could be attributed to the availability of equipment and competence of personnel in offering online programs.

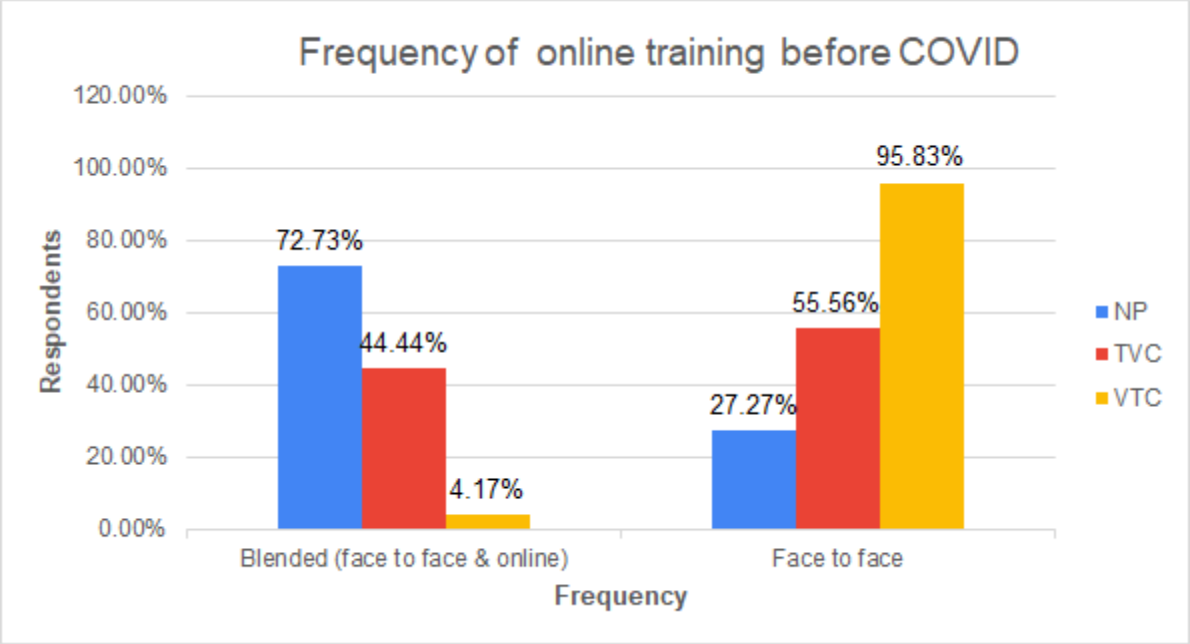

Figure 4: Frequency of online training in TVET Institutions before COVID

4.3.5 Use of Online Training Before Outbreak of COVID-19

Most of the institutional administrators stated that they had never or rarely used online training before the outbreak of Covid-19. Only 1.03% of VTCs, 9.76% of TVCs and 20% of NPs had employed online training very often before Covid-19. Apparently, Covid-19 ignited innovativeness in content delivery by learning institutions.

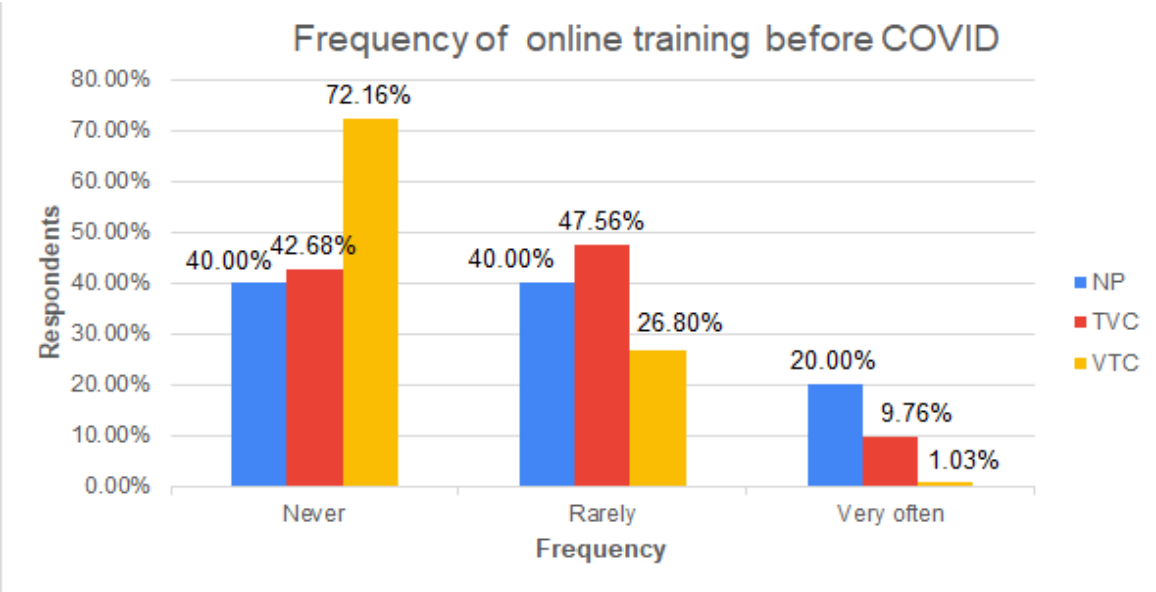

Figure 5: Awareness on the existence of ODeL standard in TVET

4.4 ICT Infrastructure for ODeL Implementation

4.4.1 Infrastructure Available in TVET Institutions for Mounting ODeL

The infrastructure that was available for mounting ODeL in TVET institutions included computer labs, internet connectivity, learning management system, system backup and power backup. Whereas 81.5% of institutions had computer labs, only 57.4% of them had internet connectivity. On the same note, only 35.4% had power backup. This painted a picture of unreliable infrastructure to support mounting of ODeL programs in most TVET institutions. There was no sustainability in the ODeL programs as demonstrated by availability of system backup in only 18.5% of institutions.

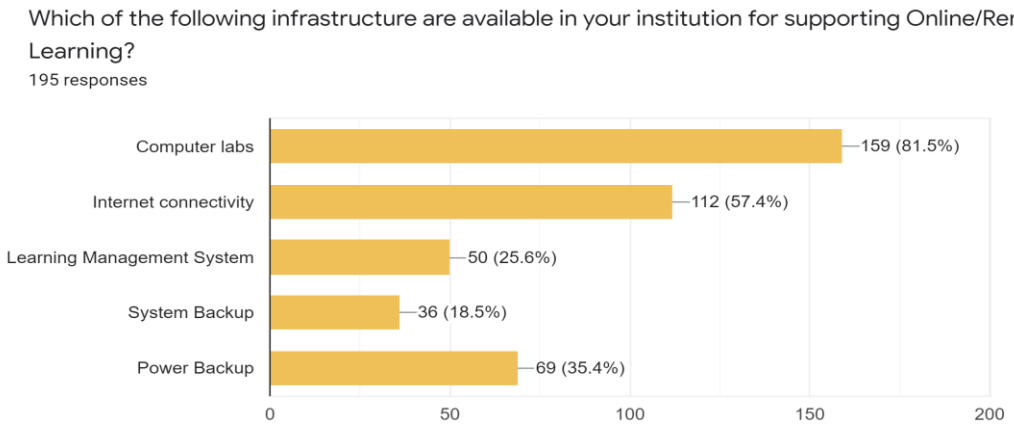

Figure 6:Available Infrastructure for Supporting Online/ Remote Learning

4.4.2 Training Resources Commonly Used in TVET Institutions

Besides the infrastructure, institutions reported use of other resources including writing surfaces, projectors/ screens, computers, simulators, models and videos. Others mentioned were practicals, demonstrations, trips and excursions, learning management system, books and manuals. However, the prevalence of resources most suitable for ODeL such as smart boards, simulators and videos was low. Interoperability of such resources with transmission infrastructure is more probable.

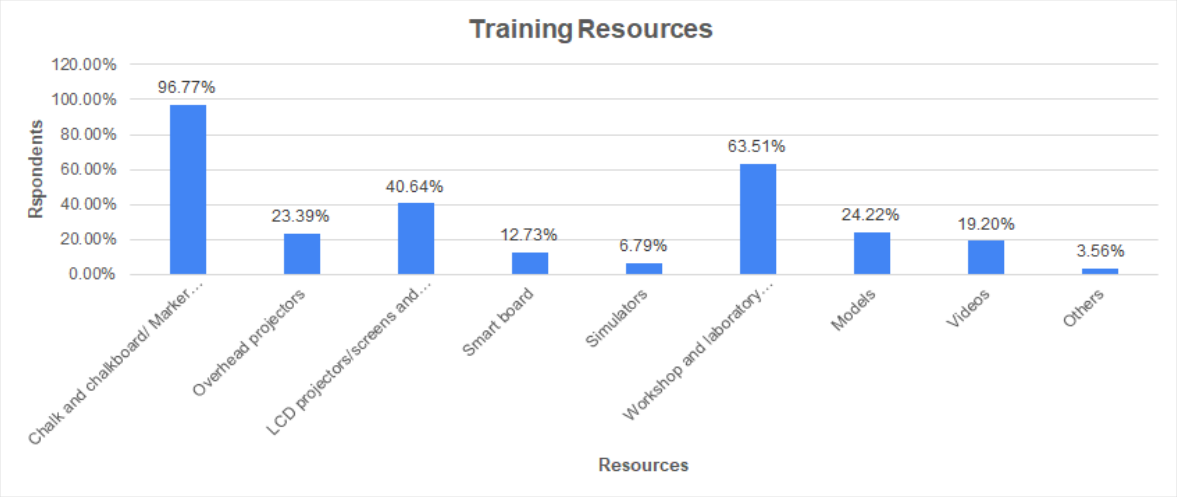

Figure 7:Commonly Used Training Resources

4.5 Compliance Status of ODeL Programmes Being Offered

4.5.1 Accreditation of Institutions to Offer Programs Through ODeL

Although a significant number of institutions indicated that they were accredited to offer ODeL programs, records at the Authority had shown that no institution had been accredited to do so. The non-compliance was more prevalent in VTCs at 60% while TVCs and NPs were at 36.32% and 3.68% levels of non-compliance. According to the TVET Act of 2013, TVETA is mandated to license all programs in TVET institutions including ODeL programs. It was therefore observed that some administrators were not aware of their obligations in regard to mounting ODeL programs.

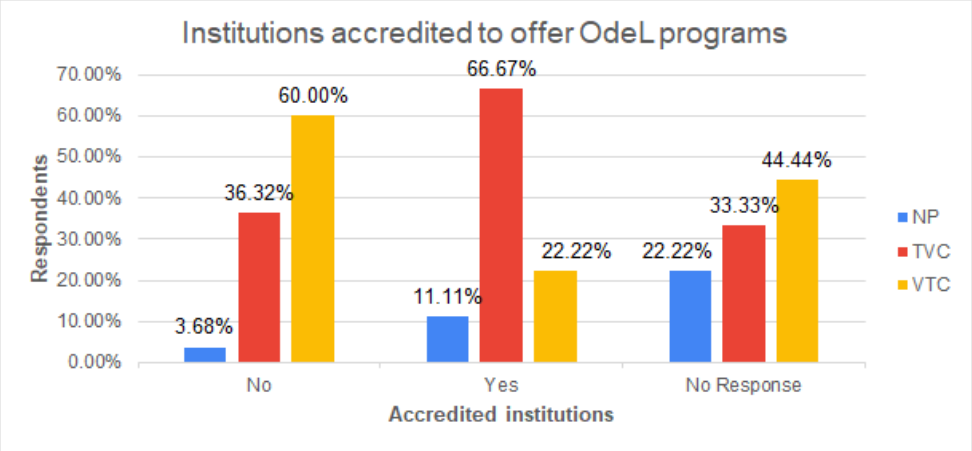

Figure 8: Institutions accredited to offer ODeL Programs

4.5.2 Establishment of ODeL Policy by TVET Institutions

Figure 9 shows the proportion of TVET institutions that had developed internal ODeL policy

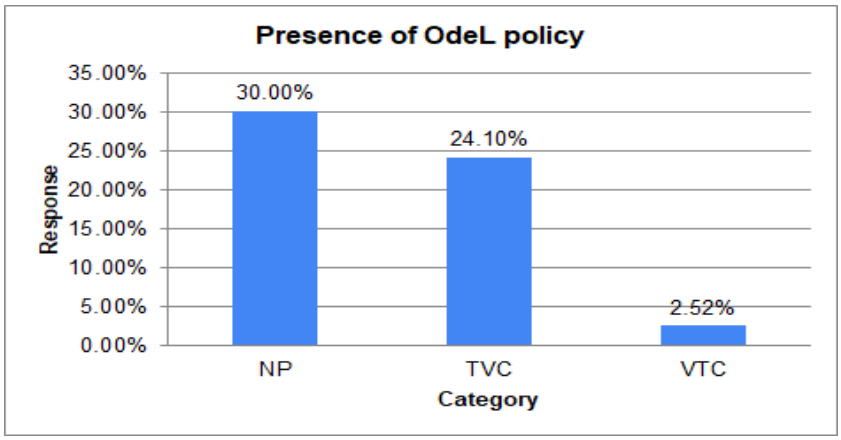

Figure 9: Proportion of TVET institutions with ODeL Policy

The study sought to establish the proportion of institutions that developed an internal ODeL policy. The NPs had the highest proportion of institutions with an ODeL policy at 30%, followed by TVCs at 24% and the least was VTCs with a paltry 2.5%. For effective implementation of ODeL in institutions, the National standard on ODeL required that an institution developed an internal policy to guide on implementation of ODeL. However, the results above indicated that a majority of the TVET institutions were yet to develop an internal ODeL policy.

4.5.3 Competency of Technical Staff to Administer ODeL

The study sought to establish whether institutions had competent technical staff to administer ODeL. The percentage of technical staff with competencies to administer ODeL in the TVET institutions ranged from 42.98% to 90.91%. The National Polytechnics had the highest proportion of technical staff with competence to administer ODeL, followed by private TVC, Public TVC and VTC respectively. The results from this study showed that the private TVCs had placed more investment for online training than the public TVCs. Figure 10 shows the proportion of technical staff with appropriate qualifications to administer ODeL. It was therefore observed that more than 50% of VTCs felt they had no staff with technical competence to administer ODeL and this partly explained why the majority had not attempted to offer programs through ODeL when the institutions were closed due to COVID.

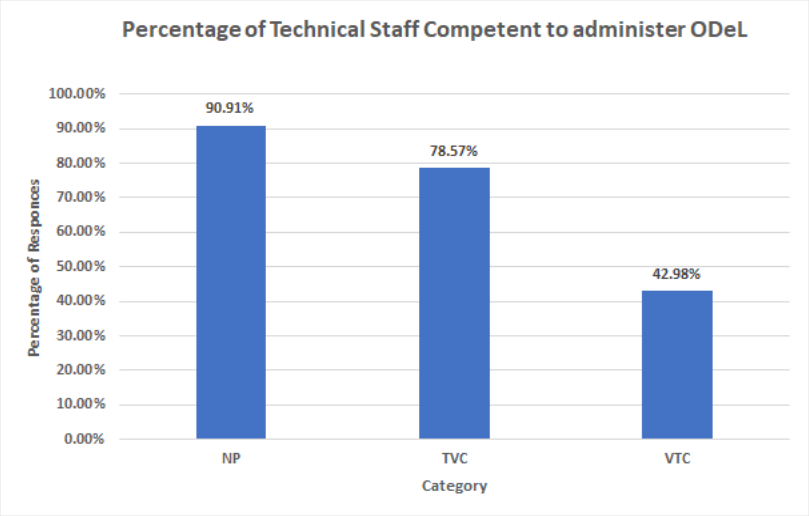

Figure 10: Proportion of competent staff to administer ODeL Training

4.5.4 Availability of ODeL Implementation Committee

The study sought to establish whether the TVET institutions had ODeL implementation committees in place. All the National Polytechnics stated that they had established ODeL implementation committees. 78% of TVCs and 43% of TVCs indicated had implementation committees in place. As a best practice the policies needed to constitute an implementation committee to support effective delivery of ODeL.

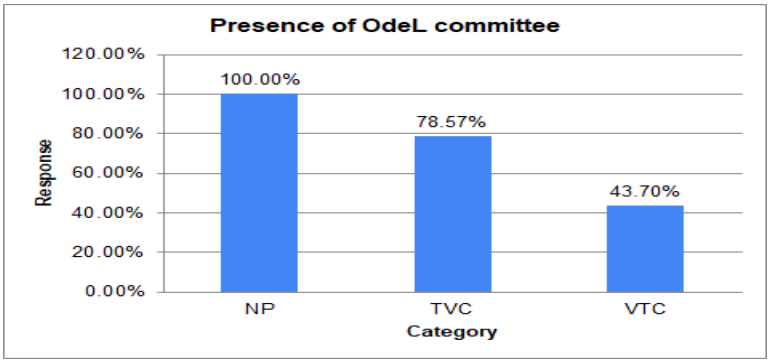

Figure 11: Awareness on the existence of ODeL standard in TVET

4.5.5 Online Training Methods Used in your Institution

The respondents indicated that the common online training methods were lecture, Demonstration, practical, focused group discussions, project work and simulation respectively. The ODeL standard requires that the quality of training offered through ODeL and those offered through face to face should be comparable. The results from this study showed that the trainers had incorporated all the major training delivery methods in their online training.

Most trainers (29%)indicated that they preferred lecture method followed by (19.9%) trainers who preferred demonstration method. The preference of only lecture methods may have allowed the mounting of less practical courses on ODeL as compared to STEM courses which requires a more practical approach. that the

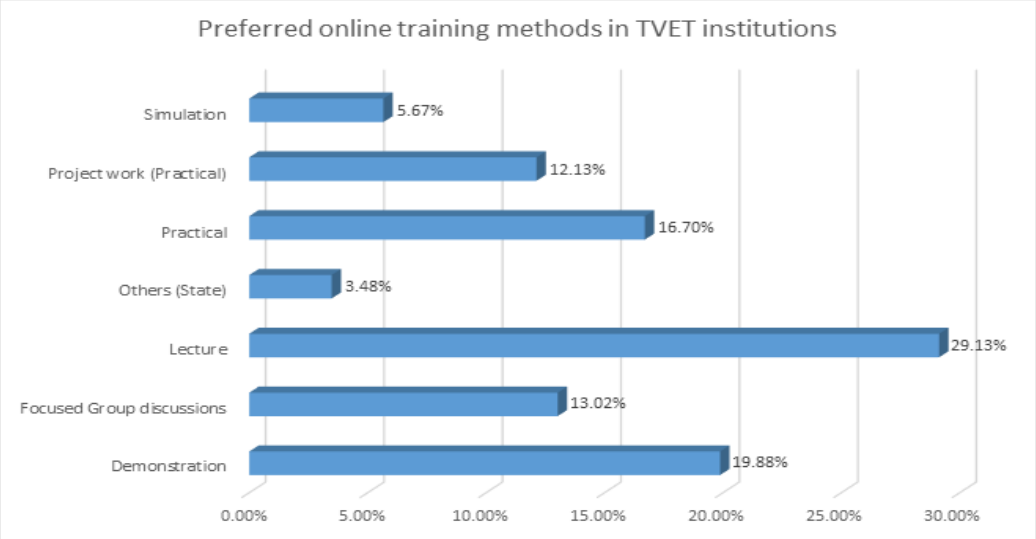

Figure 12: Preferred online training methods in TVET

4.3.6 Support Mechanisms Available to Trainees Studying through ODeL in TVET Institutions

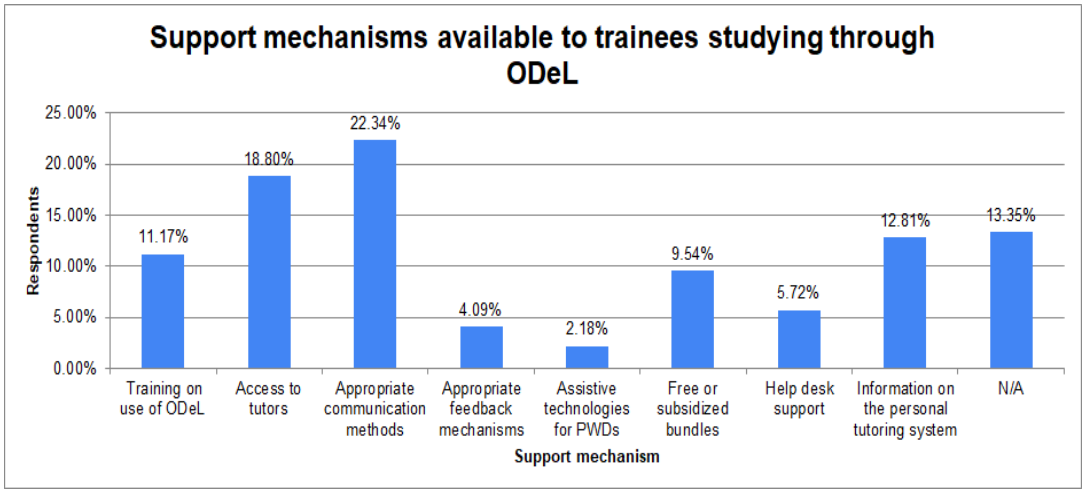

Figure 13: Support Mechanisms Available to Trainees Studying through ODeL

4.6 Capacity Building Needs in ODeL

4.6.1 Support Received on Delivery of Online Courses

The respondents were asked to indicate whether they had received any support in the delivery of online courses. The support received by the respondents included the following: data bundles, free or subsidized internet rates, provision of ICT devices. Others indicated that they had received training on the use of training and learning software, android platforms and ICT devices like Computers, tablets and smartphones.

4.6.2 Extent to Which Support Mechanisms Help in Implementation of Online Training

Figure 14 shows the extent to which the various support mechanisms would help in implementation of online training in TVET institutions.

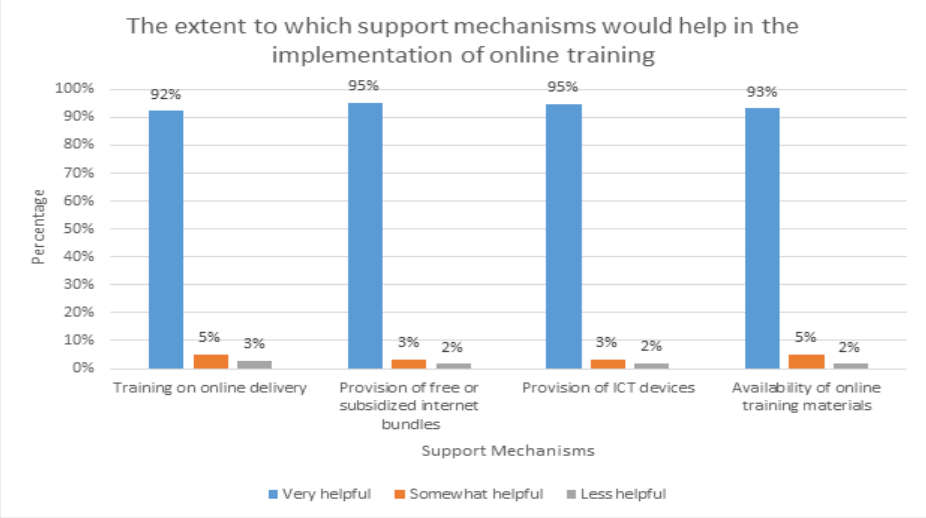

Figure 14: Effect of support mechanisms on implementation of online training

Majority of the respondents reported that training on online delivery, provision of free or subsidized internet bundles, provision of ICT devices and availability of online training materials were very helpful in conducting online training.

4.6.3 Commonly Used Online Training Media

The study sought to establish the commonly used online training media. It was revealed that Email, Facebook, Google classroom, Instagram, Line, Microsoft teams, skype, SMS, Social Network Services (WhatsApp), Video conferences (Zoom WebEx), WeChat and Online audio programmes were the commonly used online training media. It was noted that most of the mentioned media did not meet the characteristics of LMS as per TVET Standard- Open Distance and e Learning (ODeL)- Requirements and Guidelines. This standard requires institutions to put in place an interactive LMS that supports trainee to trainee interactions, trainee to trainer interactions and mechanisms for evaluating interactions. This was a pointer to institutions noncompliance to standards in online training provision.

4.6.4 Proportion of Staff who had Undergone Training on Development and Delivery of Online Courses

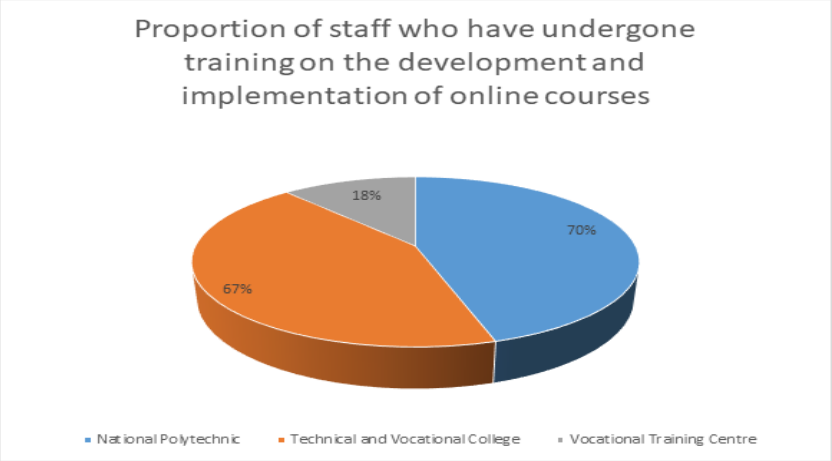

Figure 15: Proportion of staff who had undergone training on development and delivery of online courses

Figure 15 shows the proportion of staff who had undergone training on the development and implementation of online training. National Polytechnics had the highest number 70%, TVCs had 67% while VTCs had 18% of all their staff trained in development and implementation of online training. There was need for institutions, especially the VTC to build capacity in online training delivery.

4.6.5 Aspect of ODeL Trainers Needed to be Trained on

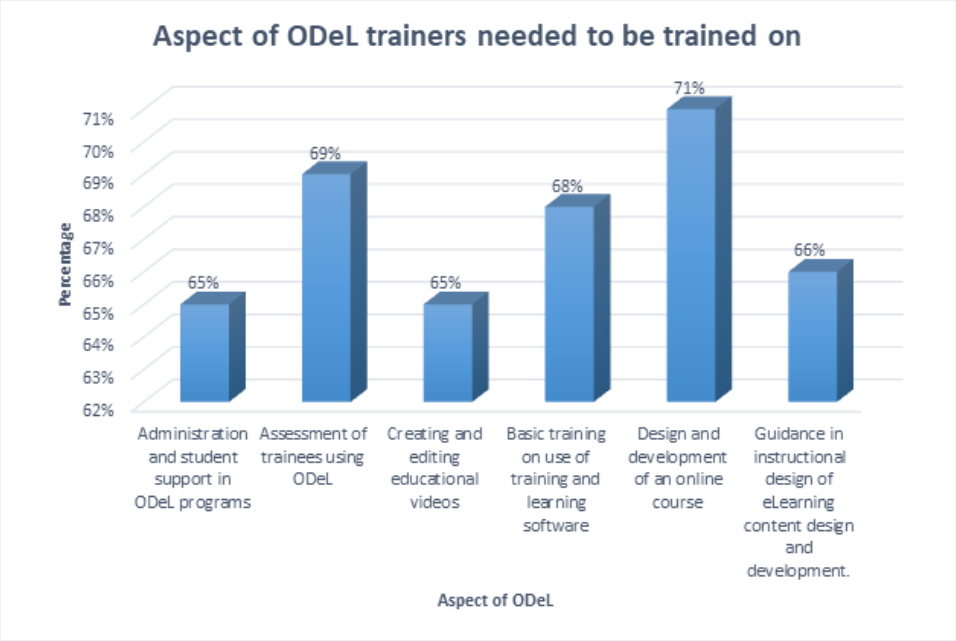

Figure 16: Aspects of ODeL where trainers needed training

The TVETA ODeL training standard requires trainers to undergo regular training to understand their roles and strategies on effective delivery of online training. Training needs to be continuous to enable

the staff to be updated on new trends to make training effective. The study sought to establish from the trainers which aspect of ODeL they needed to be trained on. 71 % of trainers indicated that they needed more training on Design and development of an online course, followed by Assessment of trainees using ODeL and of training and learning software at 69% and 68% respectively. However, the trainers indicated that they also needed training in administration and student support, creation and editing educational videos and instructional design of eLearning content design and development. The results resonate well with an article on Advocacy for inclusive education and training by UNESCO (2017) that recommended to member states Promote flexible access to lifelong learning and training.

4.7 Challenges in Implementation of ODeL

4.7.1 Closure of Institutions due to COVID-19 and how it affected Training

The outbreak of COVID-19 affected all sectors of the economy. This was confirmed by the data which showed that all categories of TVET institutions were completely affected. This indeed corroborates the Presidential directive of 15th March 2020 to suspend learning in all education and training institutions. However, a small number of institutions claimed not to have been affected by the closure. The institutions that had online programs prior to the onset of the Covid-19 pandemic were only partially affected by the closure. Figure 17 shows the effects of closures of institutions due to Covid-19.

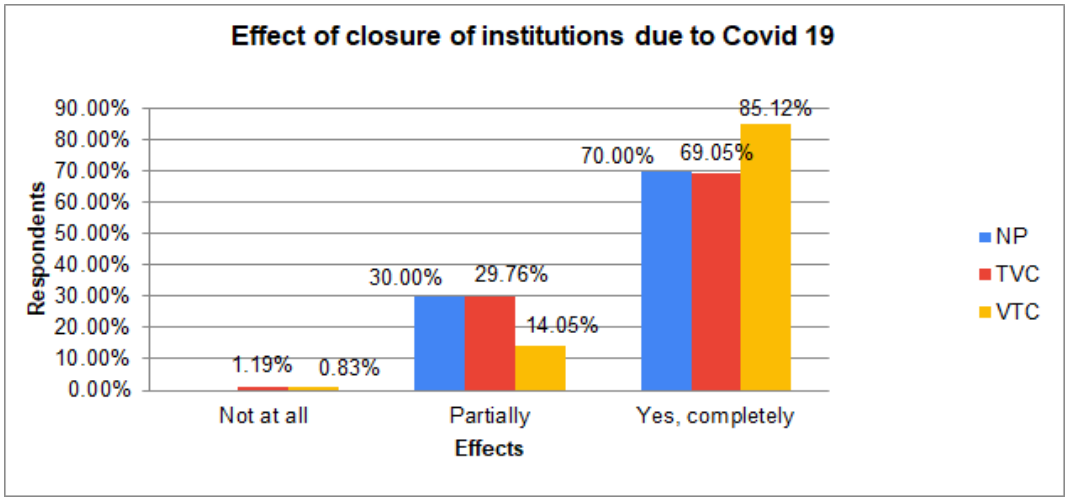

Figure 17: Effects of closure of institutions on training due to COVID-19

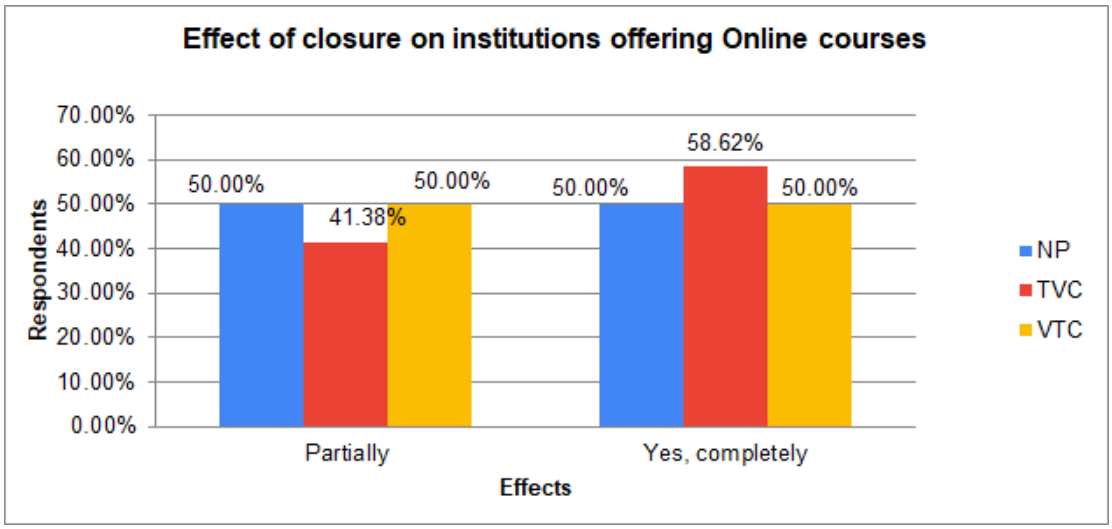

Figure 18: Effects of closure of institutions on training due to COVID-19

4.7.2 Aspects of Training that were Affected by Closure of the Institution Due to Covid-19

The study sought to establish the aspects of training that were affected by the closure of institutions due to COVID-19. The responses are shown in the figure 19:

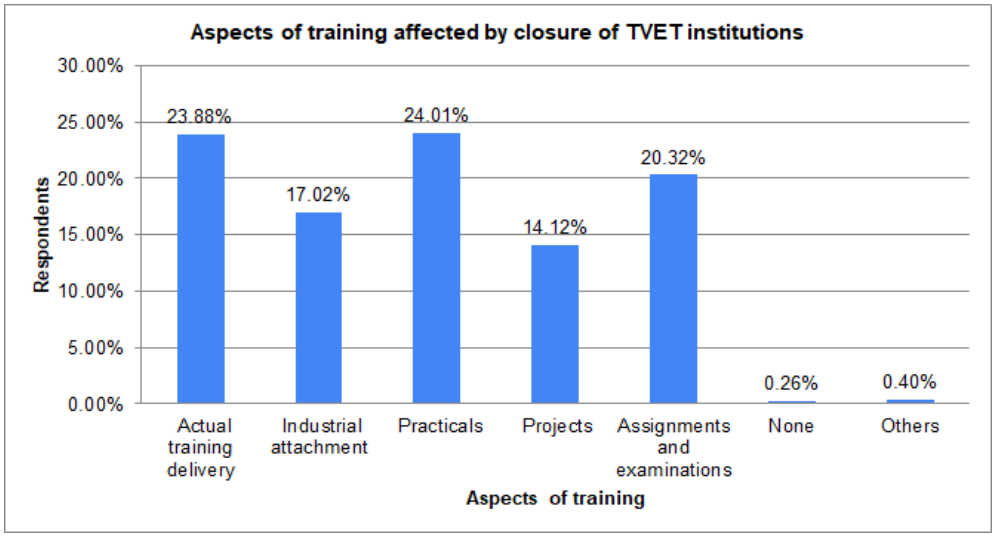

Figure 19 Aspects of training affected by closure of TVET institutions due to Covid-19

The respondents indicated that the aspects of training that were affected included actual training (23.88%), practicals (24.01%), industrial attachments (17.02%), assignments and exams (20.32%) and projects (14.12%). Other aspects of training that were mentioned as having been affected were trainee admissions/ Trainee retention rates and the institution having been forced to totally close which led to education wastage and drop outs.

4.7.3 Tools or Resources Being Developed or Improved to Enhance ODeL in TVET

Respondents were asked to identify tools or resources being developed to enhance ODEL in their institutions. The summary of responses is shown in Figure 20.

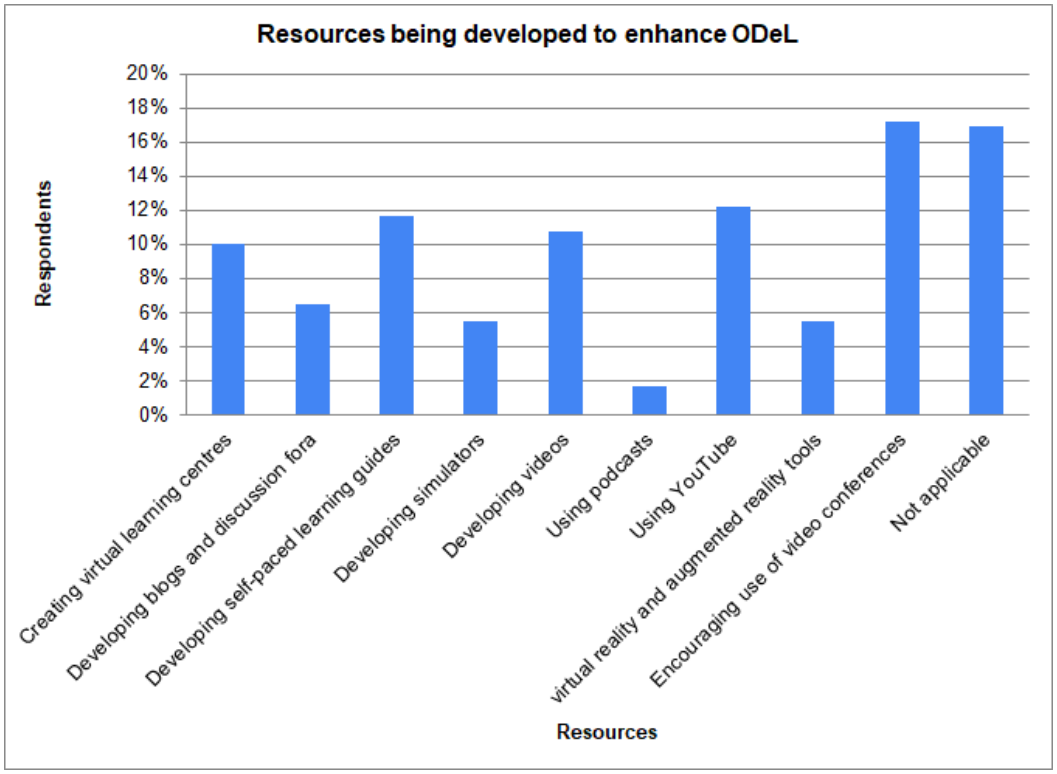

Figure 20: Resources being developed to enhance ODeL

In an attempt to enhance ODeL in the TVET institutions, the administrators were encouraging use of videos conferences, From Figure 20, about 10% of the respondents indicated that ODEL was being embraced by creation of virtual learning Centres, 12% indicated development of self-paced learning guides, 11% indicated developing videos, 12% indicated use of YouTube while about 17% indicated use of video conferences. Other least developed resources included blogs and discussion fora (6%), simulators (5%) and podcasts (1%). It can therefore be concluded that video conferencing was the most popular resource that is currently being developed to support ODEL in TVET institutions.

4.7.4 Challenges Faced by Institutions in Developing and Implementing ODeL

This study sought to establish challenges faced by both administrators and trainers in developing and implementing ODeL. The following were cited to be the main challenges affecting the development and implementation of ODeL in institutions; cost of acquisition of ICT related software and hardware for online training, information security, lack of appropriate technical support, lack of electricity, lack of partners to support digital learning, lack of support from institutions management, low accessibility of online training by trainees, low capacity of trainers to develop and deliver online training materials, poor or lack internet connectivity, trainers with poor digital skills, low acceptability of online training, low capacity of trainers to develop and deliver online training materials

Low capacity on use of online training especially in Vocational Training Centres with trainees who have not completed primary education.

4.7.5 Measures put in Place to Mitigate Challenges Faced in Implementation of ODeL

The institutions had placed a number of measures in place to mitigate the challenges that they were encountering in implementation of ODeL. Some of the measures that the institutions were putting in place included awareness campaigns on the need to adopt online training, capacity building on digital literacy, development and delivery of online training materials, development and implementation of the ICT Security policies, development of technical skills through training of the support team.

Improving internet bandwidth, mobilizing and/or allocating funds for procurement of ICT equipment and provision of improved internet bandwidth connectivity, encouraging trainers and learners to acquire ICT devices, connection of electricity to the institution and developing ICT infrastructure, implementing ODeL and to seeking approval by TVETA, establishing partnership/collaboration with development partners and other institutions to support ICT implementation, recruitment of trainers with capability to undertake online training, establishing ODeL policies and implementation committees.

4.8 Partners Supporting ODeL in TVET

Partnership and collaboration are an integral part in TVET as they provide opportunities for resources, skills transfer and industrial attachment. Some institutions indicated that they had collaboration with other TVET institutions and universities including Bumbe TTI, Kenya Technical Teachers College, KMLTTB, Meru university, Mt. Kenya University, Purdue University, Rongo university, RVTTI and Mkwajuni VTC. Some respondents also indicated that they had collaboration and partnership with county governments, international agencies and non-governmental organizations which included Commonwealth of learning, Generation Kenya, Concern Worldwide, I Love Africa, CAPYEI and Zizi Afrique Foundation, Ability Africa Foundation, GiZ,Cap empowerment. Other respondents mentioned government agencies like KENET and TVETA under the auspices of the National Government. Business enterprises were also cited including Safaricom, Google for Education, Microsoft Education, Cisco, ICDL, COL, EASTRIP and Local Internet service providers.

4.8.1 Partnerships and/or Collaborations with Other Institutions to Administer ODeL

Some of the institutions that the TVET institutions were collaborating with in the administration of ODeL included KMLTTB, KTTC, Meru University, CAPYEI, K-YES and COL.

The nature of partnership or collaboration included delivery of online learning, development of Learning Management System (LMS), development of online training content, e-learning, registration database, zoom meetings and online learning, blended and Flexible training

CHAPTER FIVE
CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

The results from this study showed that most of the TVET institutions had not embraced ODeL as an important mode of training delivery. This could be attributed to inadequate ICT infrastructure and low capacity of trainers and staff to implement ODeL in the TVET institutions. The administrators and trainers noted that the development and implementation of ODeL in TVET institutions was experiencing major challenges. Some of the main challenges included inadequate funding for procurement of appropriate hardware and software, lack of technical expertise in online delivery, poor or lack of internet connectivity, high internet costs and lack of reliable power supply.

Although a significant number of institutions indicated that they were accredited to offer online programs, records at TVET Authority showed that no institution had been accredited to offer ODeL programs. This showed that there was lapse in information available to the institutional administrators on the requirements for accreditation of online training. This could be attributed to ignorance of the standards that had been developed by TVETA. This was supported by the fact that most of the VTC administrators were not aware of the existence of ODeL standards that had been developed by TVETA.

Only a few of the TVET institutions had established collaboration and partnership with a small number of organizations that included Government Agencies, Non-Governmental Organizations, Corporates and other TVET institutions.

The online training media that had been adopted by some of the TVET institutions included Emails, Social media networks such as Facebook, Instagram, Line and Whatsapp, Google classroom, Microsoft teams, Skype, SMS, Zoom WebEx, WeChat and Online audio programmes. Most of these online training media had limitations as online training delivery media since they did not support learner to learner or learner to trainer interactions as required by TVET ODeL standard.

The closure of TVET institutions due to COVID-19 pandemic had adverse effects on training in most TVET institutions. Most of the institutions had not established effective online training that could provide alternative avenues for continuing with the training programs.

Both the administrators and trainers noted that regular training and sensitization were important aspects of effective delivery of programs through ODeL. Due to fast changing technological advancements the trainers and support staff required regular training to remain abreast with new developments in ODeL.

Before the onset of Covid-19, the main mode of training delivery in the VTCs and TVCs was face to face. However, the NPs had incorporated blended learning systems. The emergence of Covid-19 ignited innovativeness in content delivery by learning institutions. The institutions were jolted into considering business continuity in case of unforeseen circumstances.

Majority of the institutions implementing ODEL had adopted video conferencing, YouTube, self-paced learning guides and virtual learning Centres. On the other hand, blogs, discussion fora, simulators and podcasts were the least developed methods.

5.2 RECOMMENDATIONS

The TVET institutions should mobilize funds from development partners, county and national governments for construction and equipping of ICT laboratories, mobile workshops and establishment of online training infrastructure. The enhancement of online training and provision of mobile workshops can greatly improve access to engineering and other technical programs involving acquisition of hands-on practical skills.

The TVET Authority should continuously sensitize trainers and administrators on the advantages of implementing online training and encourage institutions to establish ODeL implementation committees, and close collaborations and partnerships with various organizations to ensure that training does not stop during pandemics such as Covid-19 and the standards of training are continually improved.

The Authority should create awareness among the TVET institutional administrators on the availability of ODeL and other training standards that have been developed so that they can read the documents and make informed decisions on various aspects of training.

The KTTC should develop training programs for capacity building of trainers on development of online training materials, digital literacy, there should be put in place mitigation measures including introduction of ODeL to ensure continuity of training where the physical presence in an institution is not tenable.

There was need for institutions, especially the VTC to build capacity in online training delivery.

TVET institutions should embrace a variety of ODeL training methods in order to enhance ODEL delivery. These may include but not limited to virtual learning Centres, self-paced learning guides, videos, YouTube, video conferences, blogs, discussion fora, simulators and podcasts.

REFERENCES

1. Ghirardinin, B (2011). E-Learning Methodologies. A guide for designing and developing e-learning courses.
2. https://en.unesco.org/covid19/educationresponse
3. Majumdar, S. & Araiztegui, I. (2020). Technical Vocational Education and Training Reflections on issues facing TVET and its potential in the time of Covid-19.
4. https://en.unesco.org/covid19/educationresponse
5. TVETA (2019): TVET Standard - Open, Distance and e-learning (ODel) - Requirements and Guidelines
6. https://www.president.go.ke/2020/03/15
7. (https://www.grin.com/document/184127)
8. CUE (2014): Universities Standards and Guidelines
9. UNESCO and Commonwealth of Learning (2017): Using ICTs and Blended Learning in Transforming TVET
10. GOK (2013) Technical and Vocational Education and Training Act no. 19

Appendix 1: Baseline survey questionnaire on status of distance training programs in TVET institutions

The establishment of appropriate distance training systems can be used to mitigate the negative impacts of crises such as COVID-19 on education and training. This questionnaire seeks to determine the extent of implementation of distance training in Kenyan TVET institutions and measures that should be put in place to strengthen online training delivery.

1. Gender
   - ☐ Male
   - ☐ Female
2. Age (years)
   - ☐ 21 - 30
   - ☐ 31 - 40
   - ☐ 41 - 50
   - ☐ 51 - 60
   - ☐ Above 61
3. Training experience
   - ☐ 1 to 5 years
   - ☐ 5 to 10 years
   - ☐ 10 to 15 years
   - ☐ 15 to 20 years
   - ☐ Over 20 years
4. Classification of institution
   - ☐ Vocational Training Centre
   - ☐ Technical and Vocational College
   - ☐ National Polytechnic
5. County (Please select)
   Mombasa
6. What support have you received on delivery of online course:
   - ☐ Training on methods of online delivery
   - ☐ Free or subsidized internet rates
   - ☐ Training on use of ICT devices (Computers, tablets and smartphones)
7. State the extent to which the following support mechanisms would help you to conduct online training

8. Which training facilities do you commonly use in your institution?
   - ☐ Chalk and chalkboard/ Marker and white board
   - ☐ Overhead projectors

☐ LCD projectors/screens and laptop/computer

☐ Smart board

☐ Simulation

☐ Workshop and laboratory equipment and/or tools

☐ Models

☐ Videos

☐ Others, State ……...

9. Which mode of training do you commonly use?

☐ Face to face

☐ Blended (face to face & online)

☐ Online

10. How often did you use online training before the outbreak of COVID-19?

☐ Very often

☐ Rarely

☐ Never

11. State the online training techniques that you commonly use?

☐ None

☐ Online audio programmes

☐ email

☐ Video conferences

☐ sms

☐ WhattsApp

12. Did the COVID-19 pandemic cause stoppage of training activities in your institution?

☐ Yes, completely

☐ Partially

☐ Not at all

13. Did the trainees do their assignment and examinations as planned?

☐ Yes

☐ No

14. Explain how training delivery was affected; ……....
……..…
……..

15. If your answer to No. 12 is No/Partially, explain how you continued to offer training during the pandemic; ……..
……..…
……..

16. If your answer to No. 12 is Yes, state the strategies that you are putting in place to mitigate any future disruption of training; …….
    ……..…
    ……..
17. Has your institution established strategies to respond to crises before COVID-19 pandemic?
    ☐ Yes
    ☐ No
18. Which tools or resources are you developing or improving to enhance online or distance learning?
    ☐ Encouraging use of video conferences
    ☐ Developing simulators, virtual reality and augmented reality tools
    ☐ Creating virtual learning centres
    ☐ Developing blogs and discussion fora
    ☐ Using podcasts
    ☐ Developing videos
    ☐ Using U-tube
    ☐ Developing self-paced learning guides
    ☐ Others, State
19. What challenges are you facing in developing and implementing online or distance learning?
    ☐ Low acceptability of online technology
    ☐ Lack of online training facilities
    ☐ Trainers with low digital skills
20.
21. Explain how practical skills such as those developed in workshops and laboratories would be imparted through online training delivery; ……..
    ...…….……
    ……....