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Teaching-Learning Resources and Employability Skills Development of TVET Graduates in Meru County

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Abstract

TVET training requires adequate modern teaching-learning resources in order in the process of preparing graduates who match the industry's needs. Despite equipping TVETs with modern tools and equipment, the employability of TVET graduates remains low in Kenya including in Meru County. It is against this backdrop that the current study was carried out, investigating the influence of teaching-learning resources on development of employability skills of TVET graduates in Meru County. The Knight and Yorke Theory of Employability and Human Capital Theory informed the study. It was anchored on pragmatism philosophy, adopted a mixed-research approach, and used a convergent parallel research design. The target population comprised trainees, trainers, graduates, heads of departments (HoDs), principals, and key informants. The sample size of the study was 6 TVET institutions, 142 trainees, 12 trainers, 72 graduates, 12 HoDs, 6 Principals, and 5 Key Informants. Simple random sampling, census sampling, purposive sampling, stratified sampling, and referral sampling were used to select the participants. Questionnaires were administered to trainees, trainers, and graduates while interview guides were administered to Principals, HoDs, and Key Informants. Pre-testing was conducted to check the reliability and validity of the instruments. The study showed that teaching-learning resources had a moderate influence on development of employability skills. Moreover, it established that TVETs in Meru County lacked modern teaching-learning resources essential for instructional delivery and facilitation of hands-on learning that allow graduates to acquire practical skills relevant to the industries. The study recommends government to equip TVETs with adequate, relevant, and modern teaching-learning resources which are key in developing graduate employability skills aligned to the industry needs. The study further recommends that TVET management emphasize real-world simulations and practical training. The study advocates for enhanced government investment in modern instructional resources to better align graduate skills with industry needs.

Keywords: *Teaching-Learning Resources, Employability Skills, TVET Institutions, TVET Industry, TVET Graduates*

1.0 Introduction

Technical and vocational education plays a significant role in lowering unemployment rates of a nation by preparing quality and qualified workforce that possesses high employability skills that meet the industry's needs. It offers economic and financial freedom, solves the problem of youth unemployment, leads to acquisition of skills, and lifelong learning, and contributes to sustainable development (Muriuki & Dominic, 2022). Employability encompasses graduates' personal qualities and skills essential for securing and thriving in their careers, benefiting themselves, the workforce, and the economy, but persistent youth unemployment in Kenya, attributed to a mismatch between skills and industry requirements, highlights the need to align TVET education with employer expectations and enhance both technical and soft skills (Mabunda & Frick, 2020; Yorke, 2006; Oliver, 2015; Kenayathulla, 2021; Ndile, 2018; CAP-YEI, 2017; Awiti et al., 2019).

To have ready trainees who match the industry needs, TVET institutions require adequate teaching-learning resources. Teaching-learning resources in this study refer to equipment, tools, materials, and the infrastructural capacity that the institutions have that enhance reading, learning, transfer of knowledge, and practical skills of trainees. For quality skills, TVET training requires adequate equipment, tools, material, physical infrastructure, information technological resources (Nathaniel, 2020; Muriuki & Dominic, 2022). Inadequate and insufficient modern teaching-learning resources are a major constraint in quality and quantity development of employability skills of TVET graduates (AfDB, 2022).

Globally, technical knowledge and employability skills are critical for job competition and retention in the industrial market, with youth unemployment being a significant global crisis affecting 41% of the 1.3 billion youths aged 15 to 24 (Ismail, 2018; World Employment Social Outlook, 2018; ILO, 2020). Efforts such as the Sustainable Development Goals (SDGs) emphasize youth employment and decent remuneration, while European policies focus on industry-relevant curriculum development, exemplified by Germany’s Dual System in vocational education that combines school-based and work-based learning (Guàrdia et al., 2021; Cacciolatti et al., 2017; Kenayathulla, 2021).

In Asia, skill development is prioritized for economic growth, with initiatives like Singapore's Skills Future emphasizing skill acquisition over academic qualifications, and extensive industry-based training enhancing employability (Tomlinson, 2017; Barasa & Kwasira, 2019; Mardiana, 2020). Countries like Malaysia have addressed employability through vocational programs, and overall, the Asian TVET system aligns closely with industry needs, employing qualified trainers and continuously developing infrastructure to support skill acquisition (Danial et al., 2014; Tentama & Merdiaty, 2020).

Africa faces severe youth unemployment, with a mismatch between graduate skills and industry requirements exacerbated by inadequate resources and outdated curricula (Mtebe et al., 2020; Ayonmike, 2014; Chigbu & Nekhwevha, 2022). In Kenya, high youth unemployment is linked to a lack of vocational skills, insufficient industry collaboration, and inadequate training facilities, prompting the need for enhanced infrastructure, industry partnerships, and curriculum alignment to improve the employability of TVET graduates (Gachugu & Mattingly, 2019; Muriuki & Dominic, 2022; Ngware et al., 2023).

1.1 Problem Statement

Technical education is crucial for economic and social development, requiring high-standard employable skills supported by modern training tools, materials, and hands-on applications (Nason, 2019; Mesuwini et al., 2020; Yamada & Otchia, 2020; ILO, 2020; Muriuki & Dominic,

2022). While Kenya aims to use TVET as a driver for its Vision 2030 and sustainable development, the inadequacy of teaching-learning resources, despite substantial investments, hampers the production of industry-relevant skills (Muchira et al., 2023; Nyamai, 2022; Kahihu et al., 2021; Chepkoech, 2021; Republic of Kenya, 2018). To address this gap, the study addresses the unclear relationship between teaching-learning resources and the employability of TVET graduates in Meru County.

1.2 Research Objective

Establish the extent to which teaching-learning resources influence development of employability skills of TVET graduates in Meru County.

1.3 Research hypothesis

H_{O1} Teaching-learning resources do not influence development of employability skills of TVET graduates in Meru County.

2.0 Literature Review

Technical and vocational training requires modern teaching-learning resources, including equipment, tools, materials, and both physical and ICT infrastructure, to prepare market-ready graduates who meet industry needs (Muchira et al., 2023; Ngware et al., 2023; Muriuki & Dominic, 2022; Nathaniel, 2020; Anindo et al., 2016). Globally, there is a significant skills mismatch between graduates and industry expectations, prompting countries like the UK to involve industry in providing teaching resources and expertise, while China improves TVET access through technology, and Malaysia and Indonesia leverage ICT for flexible training (British Council, 2022; Nathaniel, 2020; Maruyama, 2020; Muktiarni et al., 2021).

In Africa, inadequate teaching-learning resources result in graduates lacking necessary workplace skills, driving many to seek education abroad (Chigbu & Nekhwevha, 2022; Okolie et al., 2020; Ayonmike, 2014; AfDB, 2020). Studies indicate that modern resources are crucial for effective curriculum implementation and skill development, yet many African TVET institutions, including those in Nigeria and Zambia, suffer from outdated or poorly managed resources (Kibwami, 2021; Kissi et al., 2020; Umar & Ma'aji, 2020; Mulenga & Chileshe, 2020).

In Kenya, the insufficiency of modern teaching-learning resources in TVET institutions detrimentally affects the development of employability skills needed by the industry (Ngware et al., 2023; Kibwami, 2021; Anindo et al., 2016). Studies indicate that adequate resources not only enhance skill acquisition but also influence enrollment decisions and economic empowerment among youths (AfDB, 2022; Musyimi, 2021; Barasa & Kwasira, 2019; Kigwilu & Akala, 2017; Ongulu & Ibrahim, 2021; Mwashighadi et al., 2023). However, current resources remain inadequate, outdated, and incomparable to industry standards, necessitating substantial improvements to align with labor market demands (Muchira et al., 2023; Muriuki & Dominic, 2022; Chepkoech, 2021).

The study employed Knight and Yorke's Theory of Employability and Human Capital Theory, highlighting the importance of investing in education, training, and skills development to enhance graduates' employability. Knight and Yorke's theory emphasizes the role of teaching and learning resources—such as physical infrastructure, practical tools, and ICT infrastructure—in facilitating active learning and skill acquisition aligned with industry needs (Awodiji & Magodidi, 2023). Human Capital Theory suggests that such investments increase productivity and earning potential, thereby improving employability; adequate teaching-learning resources are viewed as essential investments in human capital (Nathaniel, 2020).

3.0 Materials and Methods

The study was based in Meru County covering the 6 Technical Vocational and Education Training institutions. It adopted a mixed research approach and convergent parallel research design under pragmatic research philosophy. Through pragmatism research philosophy several research methodologies and research strategies are combined in one study complementing each other to conclude (Kumar, 2011; Creswell, 2018). Convergent parallel research allows simultaneous collection of both qualitative and quantitative data and permits the mixing of both data (Creswell, 2013). In this study, quantitative data from trainees, trainers, graduates and qualitative data from HoDs, Principals and Key Informants were collected and analyzed. The target population comprised of 841 trainees, 93 trainers, 475 graduates, 12 HoDs from Business Department and Building & Civil Engineering Department, 6 Principals of TVET institutions, and Key Informants. The sample size of the study was 6 TVETs, 142 trainees, 12 trainers, 72 graduates, 12 HoDs, and 6 Principals while the Key Informants saturation reached 5. To select TVET institutions, Principals, and HoDs; census sampling was used. Simple random sampling was used to select trainers while stratified sampling was used to select trainees and graduates. Questionnaires were used to collect data from trainees, trainers, and graduates, and interview guides were administered to HoDs, Principals, and Key Informants. Reliability of the research instruments was tested using Cronbach alpha. The qualitative data was analyzed using themes, while descriptive statistics and inferential analysis was applied to quantitative data, and results were presented using themes categories and tables.

4.0 Results and Discussion

Data was collected using questionnaires that were administered to trainees, trainers, and graduates and interview guides that were administered to HoDs, Principals, and Key Informants. The response rate was; trainees 123(86%), trainers 11(92%), graduates 68(95%), HoDs 11 (92%) and Principals 5(83% while saturation of Key Informants reached at 5. The overall response rate of the study was 89.3%.

4.1 Background Information of Respondents

The respondents in this study were trainees, trainers, graduates, HoDs, Principals from TVET institutions in Meru Count, and Key Informants. The background information of respondents was necessary as it showed the characteristics of respondents to draw conclusions. The findings indicated 64(52%) and 59(48%) of trainees were enrolled in Business Management courses and Building and Civil Engineering courses respectively reflecting low enrollment for technical courses in TVET institutions in Meru County which led to skill gap. Regarding trainers, 5(45.5%) were in Business Management and 6(54.5%) in Building and Civil Engineering indicating TVET institutions were embracing technical courses and more geared to delivering technical skills. Further, in regard to graduates, 15(40.5%) had trained in Business Management courses while 22(59.5%) had trained in Building and Civil Engineering. Majority of the graduates preferred hands-on courses which are deemed more marketable. All the 5 HoDs in Building and Civil Engineering who responded were male while in Business Management 4 were female and 2 male. This can be attributed to the nature of technical courses offered by TVET institutions.

4.2 Teaching-Learning Resources and Employability Skills Development of TVET Graduates in Meru County

The study aimed to determine the influence of teaching-learning resources on development of employability skills of TVET graduates in Meru County Kenya. It focused on adequacy of physical infrastructure, tools, and equipment for practicals, ICT infrastructure both hardware

and software, and technical support staff to assist the trainers during practicals. Quantitative data was collected using questionnaires from trainees, trainers, and graduates. Qualitative data was collected using interview guides administered to HoDs, Principals, and Key Informants from the industry. A five Likert scale questionnaire including; strongly disagree, disagree, moderately agree, agree and strongly agree was used. Table 1 presents the results from trainees.

Table 1: Trainees' Responses in Regard to Teaching-learning Resources

Adequacy of Teaching-Learning Resources N=123	SD	D	MA	A	SA	Mean	STD
My institution has adequate physical infrastructure such as workshops/ classrooms and Computer labs.	13(10.6)	21(17.1)	37(30.1)	27(22)	25(20.3)	3.33	1.245
My institution has adequate tools and equipment for practicals	19(15.4)	21(17.1)	27(22)	34(27.6)	22(17.9)	3.15	1.331
My institution has adequate ICT infrastructure both hardware and software.	13(10.6)	23(18.7)	23(18.7)	32(26)	32(26)	3.38	1.334
My institution has enough technical support staff to assist the trainers during practicals	14(11.4)	18(14.6)	21(17.1)	35(28.5)	35(28.5)	3.48	1.345

Table 1 shows the Likert scale responses of trainees regarding the influence of teaching-learning resources on the development of employability skills among TVET graduates. The study reveals a variation in responses on adequacy of physical infrastructure with 52(42.3%) agreeing, 37(30.1%) moderately agreeing and 34(27.6%) disagreeing. This is an indication that physical infrastructure is available but inadequate in TVET institutions in Meru County. Regarding tools and equipment; 56(45.5%) agreed, 27(22%) moderately agreed and 40(32.5%) disagreed they were adequate. There is a variation in the responses and the same is supported by the standard deviation of 1.331. This equally shows that TVET institutions in Meru County have inadequate tools and equipment for practical which equip trainees with technical skills that prepare them for the world of work (Okolie et al. 2019). A slight majority of 64(52%) agreed the institutions had adequate ICT infrastructure. In the era of globalization, rapid technological changes, and steep competition in the industry, use of technology is critical for accusation of employability skills. Majority, 56.9% agreed the institutions had enough technical support staff. Technical staff ensure technical resources are up-to-date, functional and readily accessible to trainers and trainees (Aboagye and Puoza 2021). Table 2 presents the results from trainers.

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Table 2: Trainers' responses on teaching-learning resources

Adequacy of Teaching-Learning Resources N=11	SD	D	MA	A	SA	Mean	STD
My institution has adequate physical infrastructure such as workshops/ classrooms and Computer labs.	0	0	1(9.1)	5(45.5)	5(45.5)	4.36	0.674
My institution has adequate tools and equipment for practicals	0	0	1(9.1)	7(63.6)	3(27.3)	4.18	0.603
My institution has adequate ICT infrastructure both hardware and software.	0	1(9.1)	0	6(54.5)	4(36.4)	4.18	0.874
My institution has enough technical support staff to assist the trainers during practicals	0	0	2(18.2)	5(45.5)	4(36.4)	4.18	0.751

Table 2 shows Likert scale responses by trainers on the influence of teaching-learning resources development of employability skills of TVET graduates. The study reveals that 10(91%) of the respondents on several parameters indicated; that physical infrastructure such as workshops/ classrooms and Computer labs, adequate tools and equipment for practicals, and adequate ICT infrastructure both hardware and software in the institutions were adequate while 9(81.2%) agreed on enough technical support staff. Inadequate and insufficient infrastructure can be a major constraint in quality and quantity development of employability skills of TVET graduates (AfDB 2022). Training equipment and tools are essential for instructional delivery and skills acquisition and when they are unavailable and inadequate, skills required by the industry cannot be acquired (Ramnund-Mansingh and Reddy 2021). The response on ICT infrastructure 10(91%) is an indication that TVET institutions are embracing use of technology in theory and practically keeping pace with technological changes thus remaining relevant to the industry. Despite this, a study by Muriuki and Dominic (2022) established that the state of training technology in TVET institutions was obsolete and was rarely used in the industry. Table 3 presents the results from graduates.

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Table 3: Graduates' response on teaching-learning resources

Adequacy of Teaching-Learning Resources N = 68	SD	D	MA	A	SA	Mean	STD
My institution had adequate physical infrastructure such as classrooms and Computer labs.	15(22.1)	4(5.9)	11(16.2)	18(26.5)	20(29.4)	4.22	.975
My institution had adequate tools and equipment for practicals	12(17.6)	16(23.5)	11(16.2)	5(7.4)	24(35.3)	4.09	.842
My institution had adequate ICT infrastructure both hardware and software.	15(22.1)	18(26.5)	6(8.8)	9(13.2)	20(29.4)	3.75	1.189
My institution had Computer virtual labs for trainers and students	9(13.2)	20(29.4)	10(14.7)	5(7.4)	24(35.3)	4.09	.973
My institution had enough technical support staff to assist the trainers during practicals	0	14(20.6)	20(29.4)	14(20.6)	20(29.4)	3.46	1.177

Table 3 has the responses of graduates obtained from a Likert scale on influence of teaching-learning resources on development of employability skills of TVET graduates. The findings reveal 38(55.9%) TVET institutions had adequate physical infrastructure such as classrooms and Computer labs. Regarding tools and equipment for practicals, 29(42.7) indicated they were adequate, 28(41.1%) not adequate and 11(16.2) were not sure. The variation in responses indicates tools and equipment for practical were available but inadequate. The findings thus reveal physical infrastructure, tools, and equipment are available but inadequate in TVET institutions in Meru County. This implies trainees are not adequately exposed to practical training. According to Ayonmike and Okeke (2017), employers turned down TVET graduates as they lacked practical experience, making them unable to meet market expectations. Majority 33(48.6%) of the respondents cited ICT infrastructure both hardware and software were inadequate. Use of ICT in the rapid technological advancements, improves the quality of TVET education and training as witnessed in China (Maruyama 2020). There was a variation of responses on TVET institutions having enough technical staff with 14(20.6) disagreeing, 20(29.4) moderately agreeing and 34(50%) agreeing. The standard deviation of 1.177 suggested responses were more dispersed indicating greater variability among respondents. Practical sessions can be effectively delivered when technical support staff are sufficient (Steurer et al. 2022).

4.3 Correlation between Teaching-Learning Resources and Development of Employability Skills of TVET Graduates

To evaluate the null hypothesis, the quantitative findings of the trainees, trainers, and graduates were used. The null hypothesis states that teaching-learning resources do not influence development of employability skills of TVET graduates in Meru County. Pearson's correlation test was used to conduct the hypothesis test as well as assess the linear relationship as shown in Table 4.

Table 4: Correlation Coefficient on Teaching-Learning Resources on the Hypothesis

Responses	Correlation coefficient(r)	P-value	N
Trainees' response	0.467	0.00	123
Trainer response	0.616	0.04	11
Graduates' response	0.402	0.021	68

Table 4 shows the connection between employability skill development and teaching-learning resources performed using Pearson's correlation analysis. The trainee tool has a Pearson correlation coefficient of 0.467 and a p-value of 0.00, trainers' tool 0.616 and a p-value of 0.04, and graduates tool 0.402 with a P-value of 0.021. Pearson correlation coefficients indicate a positive linear link and a strong significant link is implied by the statistical significance of the P-value being < 0.05. The null hypothesis that stated 'teaching-learning resources do not influence on development of employability skills of TVET graduates in Meru County' was rejected. This is an indication that teaching-learning resources and development of employability skills have a positive relationship. Thus, teaching-learning resources are critical in the development of employability skills (Nathaniel, 2020; Muriuki & Dominic, 2022).

4.4 Qualitative Findings on Teaching-Learning Resources and Development of Employability Skills of TVET Graduates

In any learning institution, teaching-learning resources play a significant role in enhancing reading, learning, and transfer of knowledge, and practical skills for trainees. From the open-ended questions, several themes came out; inadequate physical resources, inadequate tools and equipment for practical, availability of computer laboratories, and inadequate technical support staff. The HoDs and the Principals reported that physical resources were available but some indicated the workshops were equipped with old equipment while in two institutions the workshops were adequately equipped with modern equipment. The Key Informants who represented the employers indicated that TVET institutions should acquire adequate modern training equipment that is relevant to the industry. Availability of up-to-date industry relevant teaching-learning resources facilitate hands-on learning allowing graduate to acquire practical skills relevant to the labor market (Ramnund-Mansingh & Reddy, 2021).

4.5 Integration of Quantitative and Qualitative Findings on Influence of Teaching-Learning Resources and Development of Employability Skills of TVET Graduates

Both quantitative and qualitative results were integrated to get the convergent and divergent views. The convergent views indicated that teaching-learning resources in TVET institutions in Meru County were available but inadequate. The qualitative findings indicated the institutions had outdated and insufficient teaching-learning resources. Regarding descriptive statistics, the trainers had divergent views indicating that TVET institutions have adequate teaching-learning resources. However, the p-values from the trainees, trainers, and graduates tools (P-value 0.00, 0.04, and 0.021) respectively indicated a high level of significance (<0.05) thus rejecting the null hypothesis. The quantitative findings agreed with the qualitative findings that teaching-learning resources influence the development of employability skills of TVET graduates.

5.0 Conclusion

The study exposed significant inadequacy of teaching-learning resources; physical infrastructure such as classrooms and Computer labs, tools and equipment for practical, ICT

infrastructure both hardware and software, and Computer virtual labs across TVET institutions in Meru County. This hampers practical training that is needed for the acquisition of skills and competencies required by the labour market. Equally, the study revealed that TVET institutions in Meru County lacked modern up-to-date teaching-learning resources essential for instructional delivery and facilitation of hands-on learning that allow graduates to acquire practical skills aligned with the industry needs.

6.0 Recommendation

According to the study, teaching-learning resources which include physical infrastructure, tools and equipment, and adequate ICT infrastructure play a crucial role in the development of employability skills. Teaching-learning resources must be both available and adequate for TVET institutions in Meru County to develop employability skills of their graduates. The study recommends need for government to equip TVET institutions with adequate, relevant, and modern teaching-learning resources that incorporate technology to develop graduate employability skills that meet the industry demands. The study also recommends that TVET institutions' management prioritize real-world simulations and practical training.

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