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Effects of the Relevance of Workshop Facilities to Syllabi on the Utilization of Workshop Facilities in Teaching in Public TVET Institutions in Nairobi County, Kenya.

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Abstract

One of the objectives of Technical and Vocational Education and Training (TVET) is to impart adequate and appropriate skills to trainees, consistent with the emerging technologies at all levels of the economy. However, despite the government's effort to equip TVET institutions with workshops the quality of training is still low with inadequate and some outdated facilities coupled with undue emphasis on theory and certification, which is attributed to poor utilization of workshop facilities. The study was guided by the objective; to determine the degree to which syllabus relevance affected the utilization of workshop facilities for skills acquisition in public TVET Institutions in Kenya. To achieve the objective a sample of 298 respondents was selected consisting of students, technicians and teachers from three TVET institutions within Nairobi County, Kenya. Stratified, purposeful and simple random sampling methods were applied in choosing the participants. The observation schedule and the respondents' interview through questionnaires were the data collection instruments. Through ANOVA test findings, the variable influenced the workshop facility utilization significantly at $\alpha = 0.05$. *There was a positive and significant relationship between the relevance of the facility and equipment to its utilization level with Pearson Correlation value of 0.366 and p-value 0.000.*

Keywords: *relevance, utilization, workshop facilities, syllabi, teaching, public TVET Institutions*

INTRODUCTION

The attainment of industrial transformation and a significant pursuit of Kenya's Vision 2030 are contingent upon possessing technical skills. Technical proficiency is also a prerequisite for members of the community to participate actively in society. at developing nations, where trainers at TVET schools often lack teaching abilities, have little industry experience, and infrequently engage in ongoing professional development, vocational and technical education has not sufficiently addressed the demands of the labor market (Salah, 2014). Training for high-quality skills requires standards on the appropriate training equipment and tools, relevant training materials, operation manuals, Competency-Based Education and Training (CBET) curriculum and trainers (TVETA, 2018).

The Kenyan government has made significant investments in the provision of workshop machinery and equipment. This is meant to guarantee that students at TVET colleges study as much as possible. If the government of Kenya does not improve the use of these workshop facilities, it would suffer financial losses from the enormous sums of money spent in public TVET institutions. Workshops give students the chance to gain hands-on experience in their technical trade areas and acquire skills that will be useful for the future growth of the major

economic sectors (Aduda, 2003). While student practical projects play a significant role in TVET curricula, the successful implementation of curricula requires a supportive institutional environment (Bybee & Loucks-Horsely, 2000). Only in environments with sufficient and pertinent workshop facilities, tools, equipment, and machinery can this curriculum component be put into practice.

According to Mbugua et al. (2012), the majority of TVET institutions in Kenya run with subpar workshop facilities and minimal training supplies. The applicability of taught skills to market skill demands in industries and commercial organizations is compromised by a shortage of training facilities. According to Aduda (2003), the majority of the training equipment at TVET colleges is not technologically compatible with that of businesses and industries. It is very important to upgrade equipment and provide appropriate facilities in order to ensure that graduates from TVET institutions gain skills relevant to the labor market skill demands in industries and commercial organizations (Okwori, 2012). According to the TVET policy in Kenya, outdated training equipment poses a barrier for TVET institutions in implementing their curricula, resulting in subpar training and skill development that mismatches graduates' competencies (GoK, 2019).

The desire to produce competent graduates of technical colleges can be achieved when the facilities in the workshops are relevant and adequate for the programs as demanded by the curriculum (Ibrahim *et al*, 2010). Bennedy, and Oteng (2018), opined that in many cases the lack and inadequacy of instructional materials seriously hampers the effectiveness of non-formal training. Above all, the viability and sustainability of programs has frequently proved difficult. Little empirical evidence exists on this phenomenon to determine the level at which the relevance of the workshop facilities to the syllabi affected the utilization of workshop facilities in teaching in public TVET Institutions in Nairobi County, Kenya. This study therefore set out to establish this relationship.

MATERIALS AND METHODS

Research design

The study considered descriptive research design to be appropriate since it is suitable where a study seeks to describe and portray characteristics of an event, situation, and a group of people, community or population as stated by (Mugenda & Mugenda 1999).

Sampling

When research is being conducted and the information is sourced from a group of people, it's rarely possible to collect data from every person in that group. Instead, a subgroup is selected from the target population. The selected subgroup is the sample, which consists of the individuals who actually participate in the research (Shona, 2019)

The target population was students and staff in the mechanical department of the 3 institutes within the Nairobi County. Factors such as expense, time and accessibility frequently prevent researchers from gaining information from the whole population (Cohen, 2005). Both basic random sample and stratified sampling were employed to guarantee objectivity and maximal representation. Wherein every academic level was seen as a strata. Every stratum had a 10% sample of its population, chosen as respondents from among the ten students listed in the class registration.

Sample size

Sample size is a frequently-used term in statistics and market research, and one that inevitably comes up whenever you're surveying a large population of respondents (Howell, 1982). Among the elements determining the sample size are the population size, the level of precision, the level of confidence and the degree of variability in the attributes being measured (Miaoulis & Michener, 1976). There are many ways of determining samples; among them is Yamane (1967) who provided a simplified formula to calculate sample sizes.

$$n = \frac{N}{1 + N(e)^2} \tag{3.1}$$

Where *n* is the sample size, *N* is the population size, and *e* is the level of precision.

Cochran's sample size formula (1977) for categorical data for a given alpha level with a finite population was applied in determining the study's sample size. The formula is given as:

$$n_0 = \frac{Z^2 pq}{e^2} \tag{3.2}$$

Where, n_0 is the desired sample size, *Z* is the critical value of the desired confidence level for given test statistics, *p* is the estimated proportion of an attribute that is present in the population, $q = 1 - p$ and *e* is the chosen precision level.

Either of the above approaches to determining sample size assumes that a simple random sample is the sampling design. The sample size of the study targeted population whose degree of variability was not known and hence a maximum variability, which is equal to 50% (p =0.5) was chosen and a 95% confidence level was taken with ±5% precision, the calculation for the desired sample size was:

$$n_0 = \frac{Z^2 pq}{e^2} = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = 384.16 \approx 385 \tag{3.3}$$

Cochran went ahead and proposed a correction formula to calculate the final sample size, which is given as n_1 in equation 3.4:

$$n_1 = \frac{n_0}{1 + \frac{n_0 - 1}{N}} \tag{3.4}$$

Where n_0, the sample size, is derived from equation (3.2) and *N* is the population size. Given that by the time of this study, the total target population was 1326 as shown in table 3.1. Therefore, based on Cochran's final sample size formula, the sample size was as given in equation (3.4).

$$n_1 = \frac{n_0}{1+\frac{n_0-1}{N}} = \frac{384.16}{1+\frac{384.16}{1326}} = 297.86 \approx 298 \quad (3.5)$$

This data was obtained from the admission office of each of the colleges and from the onset, it was made clear to the respondents that participation was voluntary and free. However, due to the small population and expertise of trainers using the workshop facilities, the census approach was used for that particular category of respondents.

Table 3.1 Sample frame

Institution	Respondents	Population	Sampled
PC Kinyanjui Technical Training Institute	Students	340	76
	Teachers	7	7
	Technicians	2	1
Nairobi Technical Training Institute	Students	434	97
	Teachers	9	9
	Technicians	3	1
Kabete National Polytechnic	Students	517	116
	Teachers	12	12
	Technicians	2	1
Total		**1336**	**320**

Data collection tools

The primary method for gathering data for the study was an organized questionnaire. According to Kothari (2008), structured questionnaires are easy to use and reasonably priced to analyze. A questionnaire ensures anonymity and collects replies in a regular manner, according to Kothari (2008). Another technique for gathering data was observation. For the three primary respondent groups—teachers, technologists, and students—three sets of questionnaires were created. The questionnaire used both closed-ended and open-ended questions.

Validity and Reliability of Research Instruments

A preliminary test of the data collection instrument was done to test the effectiveness of the research instrument. Validity and reliability test was carried out in Machakos University Mechanical Department TVET Section with a pre-test sample, which was a tenth of the total sample (Mugenda & Mugenda, 1999). The questionnaires were administered to each group of respondents; trainers, technical staff and students. Cronbach's alpha was employed to test

scale reliability. Since α coefficient between 0.65 and 0.8 is recommended, the research instrument was considered effective since it gave a Cronbach's alpha value of 0.71.

RESULTS AND DISCUSSION

There was a mixed response on the extent of the facilities' relevance to the course and how often they were used for teaching across the board. At least one third of the respondents from each category indicated that the facilities and the equipment were not only irrelevant to the course they were purchased for but also not adequately used for teaching.

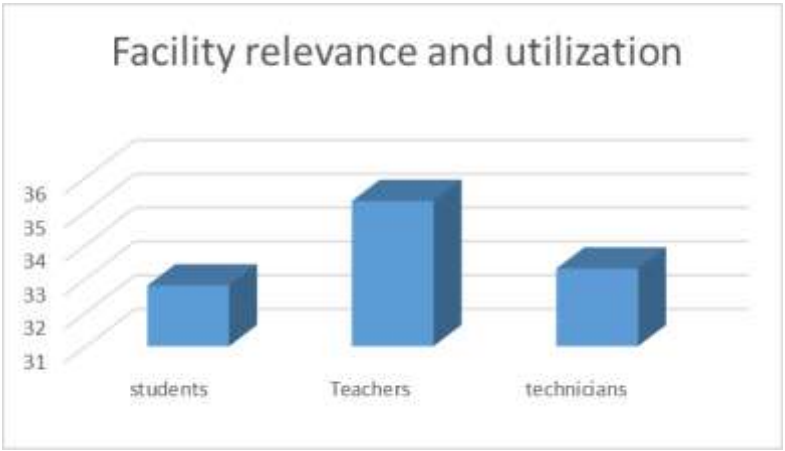

Figure 4.1: Facility relevance and utilization correlation

This was according to 63(32.8%) of the students, 6(35.3%) of the teachers and 1(33.3%) of the technicians sampled. This agrees with Mbugua et.al. (2012) in their study on Challenges facing Technical Training in Kenya, who found out that most TVET institutions operate with irrelevant workshop facilities. There was a positive correlation between the facility utilization and the perceived relevance by the respondents, as summarized in table 4.7

Table 4.1 Facility relevance and utilization correlation

	Utilization	Relevance
Pearson Correlation	1	0.366
Sig-(2-tailed)	-	0.000
N	212	212

Based on the Pearson Correlation value of 0.366, it implied that, there was a positive relationship between the relevance of the facility and equipment to its utilization. Secondly the p-value (2-tailed) 0.000 being less than 0.05 it meant that the null hypothesis was rejected at $\alpha = 0.05$. These findings were in agreement with Ogbu, (2016) in his paper on

"availability and utilization of instructional facilities for the teaching of basic electricity in Ebonyi State Technical Colleges". The findings, conclusion and recommendations were that the consumption of education and training given to the youth depended greatly on the ability of the institutions to adjust their educational content to the changing skill requirements of the nation and the demands of the job market.

The research findings confirmed Ngure, (2013) that TVET in Kenya has two main challenges: *relevance* (relating to the poor quality of skills produced by the training institutions and the mismatch of those skills with those demanded by the industry), and *accessibility* (relating to low funding levels and the location of training institutions). The findings of Okwori (2012) who recommended that the availability of appropriate workshop facilities enhances student learning by allowing them to be involved in demonstrations, and practice which will help them to continue to build their skills were also in agreement with the study's findings

CONCLUSION AND RECOMMENDATIONS

Conclusion

Based on the study findings at least one third of the respondents from each category indicated that the workshop facilities were not only irrelevant to the course they were purchased for but also inadequately used for teaching. This was according to 63(32.8%) of the students, 6(35.3%) of the teachers and 1(33.3%) of the technicians sampled. There was a positive and significant relationship between the relevance of the workshop facility and its utilization as evidenced by Pearson Correlation value of 0.366 and the p-value 0.000.

In terms of relevance of the workshop facilities for skills acquisition in public technical and vocational education and training institutions to the syllabus, it can be concluded that such workshop facilities were not only irrelevant to the course they were acquired for but also inadequately used for teaching, hence this affected workshop facility utilization significantly.

Recommendation

It was noted that most of the workshop facilities were underutilized, irrelevant to the course they were made to aid in teaching. It was therefore recommended that the TVET institutions must have a standard procurement policy and procedure manuals that should outline the principles and standards used when purchasing any workshop facility equipment or machine.

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REFERENCES

Aduda, D. (2003). Technical training reeling under neglect. Daily Nation, 2 June 2003, 11.

Bennedy, A., & Oteng, A. (2018). *Empowering Youth with Technical and Vocational Education and Training Skills through Master Craft Practicum*. Africa Journal of Technical and Vocational Education and Training, 3(1), 68-77. Retrieved from https://www.afritvetjournal.org/index.php/Afritvet/article/view/61.

Bybee, R. & Horsely, S. (2000). Standard as Catalyst for Change in Technology Education. The Technology Teacher, 59 (5), 14-17.

Bybee, R. & Loucks-Horsley, S. (2000). *Advancing technology education: The role of professional development*. The Technology Teacher, 60(2), 31-36.

Cohen L, Et al (2005*), Research Methods in Education* 5th edition, RoutledgeFalmer, London

Howell DC. (1982) Statistical Methods for Psychology. Boston, MA: Duxbury Press.

Ibrahim, O., Shaiganfar, R., Sinreich, R., Stein, T., Platt, U., & Wagner, T. (2010). Auto MAX-DOAS measurements around entire cities: quantification of NO x emissions from the cities of Mannheim and Ludwigshafen (Germany). Atmospheric Measurement Techniques Discussions, 3(1), 469-499.

ILO (2010), *A Skilled Workforce for Strong, Sustainable and Balanced Growth.* Retrieved 23 November 2022, https://www.oecd.org/g20/summits/toronto/G20-Skills-Strategy.pdf

Kothari C. R (2nd) (2008). *Research Methods and Techniques,* New Delhi; New Age International,

Mbugua, K. Z.; Muthaa, M. G. & Sang, K.A. (2012). Challenges facing Technical Training in Kenya, Scientific Research Journal, 1(3), 109-113.

Miaoulis, G, & Michener R. D. (1976). *An Introduction to Sampling*. Dubuque, Iowa: Kendall/Hunt Publishing Company.

Ministry of Education Science and Technology (2013). *Report on Status of Projects Undertaken by Directorate of Technical Education,*

Mugenda, O. M., & Mugenda, A. G. (1999). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: Acts Press

Ngure, S. W. (2013). Where to Vocational Education in Kenya? Is Analysing Training and Development Needs the Answer to the Challenges in this Sector?. Journal of Education and Vocational Research, 4(6), 193-204.

Ogbu J E (2016) *Availability And Utilization Of Instructional Facilities For The Teaching Of Basic Electricity In Ebonyi State* Technical Colleges International Journal of Vocational and Technical Education Research Vol.2, No.4, pp.32-40, December 2016. http://www.eajournals.org/wp-content/uploads/Availability-and-Utilization-of-nstructional-Facilities-for-the-Teaching-of-Basic-Electricity-in-Ebonyi-State-Technical-Colleges.pdf

Okwori A. & Ede S. (2012). *Management Issues in Education Makurd*: Aboki Publishers

Republic of Kenya (2006*) National Youth Policy for the Youth Polytechnics and vocational centers,* Government Printers, Nairobi.

Republic of Kenya (2019) sessional paper no. 1 of 2019 on *A Policy Framework for Reforming Education, Training and Research for Sustainable Development,* Government Printers, Nairobi

Republic of Kenya (2015).*National Education Sector Plan (NESP), Volume Three: Programme Rationale and Approach for TVET, University and Science, Technology and Innovation 2015/2016- 2019/2020.* Nairobi, Ministry of Education.

Republic of Kenya (2013). *sessional paper no. 2 of 2013 on national industrial training and attachment policy,* Government Printers, Nairobi

Salah, A. A., Raja Abdullah, R. S. A., Ismail, A., Hashim, F., & Abdul Aziz, N. H. (2014). Experimental study of LTE signals as illuminators of opportunity for passive bistatic radar applications. Electronics Letters, 50(7), 545-547.

Sang, A. K. *et al* (2012) *Challenges Facing Technical Training in Kenya, Creative Education. Vol.3, No.1, 109-113*

Shona M. (2019) *Sampling Methods|Types, Techniques & Examples.* https://www.scribbr.com/methodology/sampling-methods/

TVETA, (2018). *TVET Istitutions.* Available at: http:// http://www.tveta.go.ke/acredited-institutions-2/ (Date accessed 5, February, 2019).

UNDP/Ministry of Youth Affairs and Sports, (2010): *Entwise Association Limited report,* Nairobi -Kenya.

UNECA. (1961-05). Final report: conference of African states on the development of education in Africa Addis Ababa, 15-25 may 1961. Addis Ababa:. © UN. ECA,. https://hdl.handle.net/10855/34775

UNESCO (2004) Synthesis report: *Improving access, equity and relevance in technical vocational education and training (TVET).* Bangkok, Thailand: UNESCO

UNESCO (2022) *Global Review of Training Funds Country Briefs*. Retrieved November 22, 2022, from https://unevoc.unesco.org/countryprofiles/docs/UNESCO_Funding-of-Training_Kenya.pdf

UNESCO-UNEVOC, (2013). *Revisiting Global Trends in TVET: Reflection of Theory and Practice.* UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training UN Campus Platz der Vereinten Nationen 1 53113 Bonn Germany. Retrieved May 7, 2023 from chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://unevoc.unesco.org/fileadmin/up/2013_epub_revisiting_global_trends_in_tvet_book.pdf

Usen, S. M. & Offiong, A. A. (2016). *Partnerships for Knowledge Production: A Panacea for Skills Acquisition for Sustainable Development Through Vocational Education in Nigeria. International Journal of Vocational and Technical Education Research Vol.2, No.3, pp.19-24*

Yamane, T. (1967). *Statistics, An Introductory Analysis*, 2nd Ed., New York: Harper and Row.