



Availability of Competence-Based Teaching/Learning Materials, Tools, and Equipment at Kenya's Coastal Region TVET Institutions

*Mwashighadi P. Mwangunga and Kisilu Kitainge
Department of Technology Education, School of Education,
University of Eldoret, P.O box 1125 Eldoret, Kenya

*Corresponding author's email address: pmwashighadi1@gmail.com

Abstract

Competence-based programs aim to equip learners with skills, knowledge and attitudes necessary for actual workplaces, so the development of these skills knowledge and attitudes takes into account the needs of businesses and industries. Despite the fact that competency-based curriculum has been introduced in Kenya for over ten years, data from TVET Authority indicate that the acceptance of Competence Based Education and Training (CBET) programmes in TVET institutions has been extremely slow (TVETA, 2021). Therefore, this study evaluated the availability of competence-based teaching/learning materials, tools, and equipment in TVET institutions in the coastal region in Kenya. The study was conducted in technical institutions in Coast region of Kenya which involved National Polytechnic, Technical Training Institutes and Institutes of Technology. This study adopted a descriptive survey research design. The study target population was 870 which includes Principals, Heads of Departments (HOD's), Industrial Liaison Officers (ILO's), trainers and trainees from the Kenyan Coast National Polytechnic, Godoma Technical Training Institute and Coast Institute of Technology. Stratified random sampling technique was used to select trainers (22) and trainees (94) and census technique was used to select Principals (3), ILO's (3), and HOD's (18). Data collection was carried out using questionnaires, interviews and observations. The questionnaire was tested for reliability using Cronbach's Coefficient Alpha to determine the internal consistency of the items. The Statistical Package for Social Sciences (SPSS) version 23.0 was used to analyze the quantitative data descriptively. The study revealed competence-based teaching/learning materials, tools and equipment is inadequate in our TVET institutions and this impedes the successful implementation of competency-based curriculum. In order to effectively equip training institutions, stakeholders, parents, industries, the government, and donors must contribute to the acquisition of competence-based teaching/learning materials tools and equipment.

Keywords: Competence-Based Curriculum, Technical and Vocational Education and Training, Competence-Based Teaching/Learning Materials, tools and equipment.

INTRODUCTION

The primary objective of Competence Based Education and Training (CBET) is to enable trainees to acquire relevant and effective knowledge, practical skills and attitudes for gainful employment in a particular trade or occupational area (Mbarushimana et al., 2017; Okoye & Okwelle, 2014; Odewumi & Dekom, 2020; Joseph & Tranos, 2020; Kipngetich et al., 2021; Geleto, 2017). The sessional document No. 14 of 2012 and the strategy plan for 2013-2017 marked a major paradigm shift in recent years that prioritises the quality and applicability of TVET. This is the result of a task force report on the realignment of the education system with the Kenyan

Constitution of 2010, Vision 2030, and global standards (MOE, 2012). According to the sessional paper and the strategy plan, TVET must respond to the competency requirements of the labour market and produce a competent, motivated, and employable workforce capable of fostering economic growth and development (MOE, 2012; MoEST, 2013). Technical and Vocational Education and Training (TVET) has to provide the necessary, relevant and demand- driven education and training that corresponds to the needs of economic and social sectors for employment and self employment. Accordingly, there must be an effort to raise the quality of Kenyan workforce to an international standard (Glennester et al., 2011).

Results from Southern Africa Consortium of Monitoring Educational Quality (SACMEQ-III) show that Kenya's basic education system is failing to produce graduates with skills and competencies that satisfy the needs of a participatory society and the knowledge economy (MOE, 2015). This is why the change in TVET training was required from the traditional approach to a competency-based training approach. Based on this approach, the competency based TVET program should create a competent, motivated, adaptable and innovative workforce in Kenya thereby contributing to poverty reduction and improving social and economic development (Watindi & Rono, 2012). Competency based TVET should increase the number of citizens who find gainful employment and self-employment in different economic sector of the country (Murgor, 2018). CBET requires human resources, such as trainers, and teaching and learning facilities, such as laboratories, workshops, libraries, and classrooms with essential equipment (Nyamtema et al., 2022; Labani et al., 2019; Msuya, 2016). It involves a lot of teaching and learning resources since it emphasises practical and immediate assessment (Noel & Nancy, 2013; Labani et al., 2019). As technology evolves, CBET needs current teaching and learning aids (Labani et al., 2019). For CBET to succeed, materials must evolve quickly with technology so that technical college graduates can have industry-relevant skills. Despite the fact that competency-based curriculum has been introduced in Kenya for over ten years, data from the TVET Authority indicate that the acceptance of CBET programmes in TVET institutions has been extremely slow (TVETA, 2021). Therefore, this study evaluated the availability of competence-based teaching/learning materials, tools, and equipment in TVET institutions in the coastal region in Kenya.

METHODOLOGY

This study adopted a descriptive research design. The study area was the Coast Region of Kenya, which contains six (6) public technical training institutions. The study targeted 870 respondents from The Kenyan Coast National Polytechnic, Godoma Technical Training Institute and Coast Institute of Technology. Stratified random sampling technique was employed to select samples of trainers and trainees while Census technique was used to select Principals, Industrial Liaison Officers, and Head of Departments. A sample size of 140 including Trainers of technical institutions (22), Trainees (94), Principals (3), Head of Departments (18) and Industrial Liaison Officers (3) were selected to participate in the study. A pretest was carried out to evaluate the validity, clarity of test items, suitability of language used and the feasibility of the study. The questionnaire was tested for reliability using Cronbach's Coefficient Alpha to determine the internal consistency of the test items. Prior to data collection, ethical approval was obtained from the relevant authorities i.e. from school of education in the Department of Technology Education of University of Eldoret and from County Education Offices of Taita Taveta, Mombasa and Kilifi Counties. Informed consent was obtained from the participants before they filled in the questionnaires. The Statistical Package for Statistical Sciences (SPSS) version 23.0 was used to analyze

data. Quantitative data was sorted, coded, cleaned, analyzed, and presented in the form of frequency tables, bar graphs and pie chart. Qualitative data was categorized into themes and patterns in relation to the objective of the study.

RESULTS AND DISCUSSION

Demographic information of the Respondents

Trainees' demographic characteristics

The trainees' demographic characteristics were enquired and table 1 summarises their responses.

Table 1: Trainees' demographic characteristics

Demographic Factors		Frequency	Percentage (%)
Age	20 or Under	2	2.1
	21 – 30	89	94.7
	31 – 40	3	3.2
	Total (N=94)	94	
Gender	Male	89	94.7
	Female	5	5.3
	Total (N=94)	94	
Education level	Certificate	15	16.0
	Diploma	79	84.0
	Total (N=94)	94	
Department	Automotive/mechanical	42	44.7
	Electrical/electronics	43	45.7
	Building and civil	8	8.5
	Hospitality	1	1.1
	Total (N=94)	94	

Results presented in table 1 indicated that 94.7% of the trainees were of males while 5.3% were females. This could be attributed to lack of interest from female trainees to undertake technical courses. Findings above further shows that majority (94.7%) of the students in the study were aged between 21-30 years. This shows that the bulk of enrolled students for TVET were young and at an age that they can make independent decisions concerning their career path. Minimum qualification of trainees was a Certificate accounting to 16.0 %, while the highest qualification was diploma accounting to 84.0 %. Majority of the trainees were enrolled in electrical/ electronic engineering (45.7%) while only (1.1%) are enrolled in hospitality course. It should be noted that, 100% of the trainees' respondents are from the technical departments where training materials, tools and equipment is key in teaching/learning.

Trainers' demographic characteristics

Table 2 below presents the trainer's demographic characteristics.

According to the table 2, 70% of the trainers in this sample were male, whereas just 30% were female. The education distribution reveals that the majority of trainers (70%) held a bachelor's degree or higher. Most of these instructors are at least 31 years old, indicating they have sufficient experience to further their careers. About 10% of the lecturers in the sample were specialised in Automotive/Mechanical, 20% in Electrical/Electronics, 15% in Building and construction, 15% in Hospitality, 25% in Business, and 15% in other areas, according to the distribution of lecturers' areas of expertise.

Table 2: Trainers' demographic characteristics

Demographic factors		Frequency	Percentage (%)
Age	21 – 30	5	25.0
	31 – 40	10	50.0
	41 and Above	5	25.0
	Total (N=20)	20	
Gender	Male	14	70.0
	Female	6	30.0
	Total (N=20)	20	
Education level	Diploma	2	10.0
	Higher Diploma	4	20.0
	First Degree	9	45.0
	Second Degree	5	25.0
	Total (N=20)	20	
Department	Automotive/mechanical	2	10.0
	Electrical/electronics	4	20.0
	Building and civil	3	15.0
	Hospitality	3	15.0
	Business	5	25.0
	Others (ICT)	3	15.0
	Total (N=20)	20	

HOD's demographic characteristics

The study sought to establish the HOD's demographic characteristics. Table 3 below presents the results.

Table 3: HOD's demographic characteristics

Demographic factor		Frequency	Percentage (%)
Age	21 – 30	2	12.5
	31 – 40	3	18.8
	41 and Above		11
	Total (N=16)	16	68.8
Gender	Male	10	62.5
	Female	6	37.5
	Total (N=16)	16	
Education level	Higher Diploma	4	25.0
	First Degree	7	43.8
	Second Degree	5	31.3
	Total (N=16)	16	
Department	Automotive/mechanical	2	12.5
	Electrical/electronics	3	18.8
	Building and civil	2	12.5
	Hospitality	2	12.5
	Applied science	1	6.3
	Business	3	18.8
	Others (ICT)	3	18.8
	Total (N=16)	16	

According to the results presented in table 3 above, majority of the HOD' (68.8%) had an age bracket of 41 years and above. Also, majority of them were males (62.5%), whereas just (37.5%) were female. The education distribution reveals that the majority of HOD's (75.1%) held a bachelor's degree or higher. Finally, majority (81.4%) of

them specialised in Technical courses whereas, only a few (18.8%) specialized in business courses.

ILO's demographic characteristics

The study sought to establish the ILO's demographic characteristics and Table 4 below presents the findings.

Table 4: ILO's demographic characteristics

Demographic factor (%)	Frequency	Percentage	
Age	21 – 30	1	33.3
	31 – 40	1	33.3
	41 and Above	1	33.3
	Total (N=3)	3	
Gender	Male	1	33.3
	Female	2	66.7
	Total (N=3)	3	
Education level	First Degree	2	66.7
	Second Degree	1	33.3
	Total (N=3)	3	

The ages of ILO's staff were evenly spread between the ages of 21 to 30 years, 31 to 40 years, and 41 years and older, as shown in table 4. Most of them have a first degree as their highest level of education, and the majority of them are male (66.7%).

Availability of Competence-Based Teaching and Learning Materials, Tools and Equipment.

The most important condition for successful implementation of competency-based curriculum in TVET institution is the availability of competence-based teaching/learning materials, tools and equipment. The researcher examined the questionnaire responses pertaining to this subject in the study area and presented the findings in tables 5, 6 and 7.

Trainee's Response

Table 5 presents the findings from the responses obtained from the trainees regarding availability of teaching/learning materials, tools and equipment. Majority of the items presented to the respondents were rated below the mean.

From the 11 items presented, 8 items were viewed negatively while 3 items were viewed positively. The items viewed positively include, 'teaching/learning materials are relevant to the world of work' (3.17), 'equipment and machines available are relevant to program offered' (3.13), and relevant workshops and laboratories are fully equipped' (3.14). Students' opinion (rating) on 'availability of teaching/learning materials' was 2.82, whereas, opinion (rating) on 'availability of teaching/learning tools and equipment' was 2.78. This clearly shows that the item, 'teaching/learning materials, tools and equipment', is unavailable in our technical institutions. On the other hand, Students' opinion (rating) on 'adequacy of teaching/learning materials' was 2.44, whereas, opinion (rating) on 'adequacy of teaching/learning tools and equipment' was 2.77. This further indicates that for the learning areas where teaching/learning materials, tools and equipment were available, they were not adequate.

Table 5: Teaching/learning resources N= 94

Items	Mean	Standard deviation
(a) Competence based teaching/learning materials		
-Teaching/learning materials are available	2.82	1.24
-Teaching/learning materials are adequate	2.44	1.18
-Teaching/learning materials are available for every task	2.23	1.01
-Teaching/learning materials are relevant to the occupation in the world of work	3.17	1.29
-For all practical instructions teaching/learning materials, tools and equipment are always present	2.43	1.23
(b) Competence based teaching/learning tools and equipment		
-Tools and equipment are available	2.78	1.24
-Tools and equipment are adequate	2.77	4.33
-Appropriate tools and equipment are available for every task	2.28	1.02
-Tools and equipment are relevant to the occupation in the world of work	2.31	1.17
-Equipment and machines available is relevant to program offered	3.13	1.35
-Relevant workshops and laboratories are fully equipped	3.14	1.22
Grand mean	2.68	

These findings can be corroborated with personal observation made by the researcher and from interviews done with the Principals which shows that in a given institution one department is equipped more than other departments. In another situation, it was observed that in one institution, one department was supplied with modern equipment fully occupying four large workshops, but out of the equipment supplied, only about 10% of it was relevant to the programs offered while the rest about 90% is irrelevant. These findings concur with those of Nyerere (2012), who revealed that the majority of TVET institutions operate with insufficient training equipment.

Trainers' Response

Table 6 presents the findings from the responses obtained from the HOD's regarding teaching/learning materials, tool and equipment. Majority of the items as in the case of trainees presented in table 5, were rated below the mean.

Table 6: Teaching/learning Resources. N= 20

Items	Mean	Standard deviation
(a) Competency based Teaching/learning materials		
-Teaching/learning materials are available	3.60	1.14
-Teaching/learning materials are adequate	2.95	1.15
-Teaching/learning materials are available for every task	2.85	1.18
-Teaching/learning materials are relevant to the occupation in the world of work	3.65	0.93
-For all practical instructions teaching/learning materials, tools and equipment are always present	2.90	1.33
(b) Competency based Teaching/learning tools and equipment		
-Tools and equipment are available	2.95	1.10
-Tools and equipment are adequate	2.65	1.27
-Appropriate tools and equipment are available for every task	2.85	1.09
-Tools and equipment are relevant to the occupation in the world of work	3.20	1.11
-Equipment and machines available is not relevant to program offered	2.95	0.95
-Relevant workshops and laboratories are fully equipped	2.70	1.10
Grand mean		3.02

Findings (table 6) from the responses given by trainers show that out of the 11 items presented, 8 items were viewed negatively while 3 items were viewed positively. The items viewed positively include, 'teaching/learning materials are available' (3.60), 'teaching/learning materials are relevant to the world of work' (3.65), and 'tools and equipment are relevant to the occupation in the world of work' (3.20). Just like for the trainees, the positively rated items by trainers can be attributed to the recent government efforts to expand and equip technical institutions with modern training equipment (PSCU, 2019). The ratings on, 'equipment and machines available is not relevant to program offered' (2.95) and on the one on 'tools and equipment are relevant to the occupation in the world of work' (3.20), it gave an indication that according to trainers our technical institutes are equipped with relevant tools, equipment and machines.

Trainers' opinion (rating) on 'availability of teaching/learning materials' (3.60) contradicts trainees' opinion on the same item (rated 2.82); however, both trainers' and trainees' have the same view on the item, 'teaching/learning materials were adequate'. Trainees' rating was 2.44 and the trainers rating was 2.95. This gives an indication that indeed the competence-based teaching/learning materials are available in our institutions though they are not adequate. This is a clarification from views of the trainees on the same items. This can be further be attributed to the recent efforts by the government to equip technical institutes with modern equipment (PSCU, 2019). The grand mean is 3.02 which gives an indication that competence-based materials, tools and equipment are available in our institutions. The inadequacy of teaching/learning resources can hinder effective implementation of competency-based curriculum (Anindo, 2016).

The qualitative data obtained from the interviews with principals agrees with the findings in table 6 above. Regarding the shortage of teaching learning materials, one interviewee responded that:

"Inadequacy of training equipment was one of the main challenges facing public TVET institutions and hence the implementation of CBC".

HOD's Response

Table 7 presents the findings from HOD's questionnaire items regarding teaching and learning resources. As seen from the table, majority of the items were rated below the mean.

Table 7: Teaching/learning Resources N= 16

Items	Mean	Standard deviation
Teaching/learning resources		
-Trainers are sufficient for all your training needs	2.38	1.20
-Trainers are competent to handle all the competency needs of your trainees	3.25	1.13
-Teaching/learning materials, tools and equipment available meet the latest standards of the industry and other business sectors	2.75	0.93
-Teaching/learning materials, tools and equipment is fully utilized	3.81	1.05
-There is enough support staff in workshops and lab to support trainers in implementation of Competency Based Curriculum	2.38	1.20
Grand mean		2.81

Findings (table 7) from the responses given by HOD's show that out of the 6 items presented, 4 items were viewed negatively while 2 items were viewed positively. The items viewed positively include, 'trainers are competent to handle all the competency needs of your trainees' (3.25) and 'teaching/learning materials, tools and equipment is fully utilized' (3.81). These findings can be attributed to the fact that the government through ADB (African development bank) has in the recent past been upgrading (full sponsorship) qualifications of all trainers voluntarily up to first degree (African Development Bank, 2015). Those that have not benefited are those who either willingly decided not to participate in the upgrading program or because of lack of basic requirements for admission to the next level.

These findings on competency of trainers agree with demographic findings in table 4.3 above that reveal that 90% of the trainees have at least the Higher Diploma qualification, while 75% have their first degree. This therefore shows that trainers have the necessary competency to handle the various competency needs of their trainees. In addition, trainers are able to fully utilize teaching/learning materials, tools and equipment in developing the various competencies needed by their trainees.

The four (4) items negatively perceived by HOD's include, 'Trainers are sufficient for all your training needs', (2.38), 'There is adequate teaching/learning materials, tools and equipment to meet the competency needs of trainees', (2.31), 'Teaching/learning materials, tools and equipment available meet the latest standards of the industry and other business sectors', (2.75) and 'There is enough support staff in workshops and laboratories to support trainers' (2.38). This indicates that our TVET institutions operate with inadequate teaching staff, inadequate support staff and that teaching/learning materials, tools and equipment are inadequate. This is in concurrence with findings from trainers and trainees on the similar items. The grand mean is 2.81, which indicates that our technical institutions have inadequate teaching/learning resources.

These findings agree with that of Nyerere (2012) who indicated that most TVET institutions operate with inadequate training equipment and that of Sang et al (2012) where it is noted that most TVET institutions operate with inadequate teaching staff. The result of the inadequacy of teachers is that most students end up having more theoretical knowledge with limited acquisition of practical skills and interpersonal skills (Anindo, 2016).

To establish the relationship between mean responses between trainers' and trainees' on availability of teaching/learning materials, tools and equipment, the Mann-Whitney U Test was used to see whether there are statistically significant differences in mean responses between trainers and trainees regarding the availability of teaching/learning materials, tools and equipment in TVET institutions. Mann-Whitney U test was used to test the differences of responses between two independent groups on a continuous measure. This test is the non-parametric alternative to the t-test for the independent samples. The main values that are needed to look at in the Mann-Whitney U test are the Z value and the significance level (Pallant, 2007). The results of this test are presented in table 8(a) and 8(b)

Table 8: (a) Ranks

	Respondents	N	Mean Rank	Sum of Ranks
Mean response	Trainees	11	8.73	96.00
	Trainers	11	14.27	157.00
	Total	22		

Table 8: (b) Test Statistics

	Mean response
Mann-Whitney U	30.000
Wilcoxon W	96.000
Z	-2.006
Asymp. Sig. (2-tailed)	0.045

As can be seen from Table 9(b), the z value of the test indicates – 2.006 with a p= 0.045. The probability value (p) is less than 0.05, consequently, the result is statistically significant. This implies that there is a significant difference in mean responses of trainers and trainees on the availability of teaching/learning materials, tools and equipment in our TVET institutions.

CONCLUSION AND RECOMMENDATION

This study sought to evaluate the availability of competence-based teaching/learning materials, tools, and equipment in TVET institutions in the coastal region in Kenya and the findings revealed that competence-based teaching/learning materials, tools and equipment is lacking in some institutions and it remains inadequate for the cases where it is available. Demographic findings reveal that trainers have the necessary competencies to handle the various competency needs of their trainees. Further, findings reveal that our TVET institutions operate with inadequate teaching staff and inadequate support staff. In cases where the materials and equipment are available, there was low utilization as reflected in low involvement of trainees in practical lessons. The study recommends in order to effectively equip the training workshops, stakeholders, parents, industries, the government, and donors must contribute to the acquisition of technologically advanced training equipment.

REFERENCES

- African Development Bank. (2015). *Support to technical vocational education and training for relevant skills development-phase-II*. Abidjan: ADB.
- Anindo, J., Mugambi, M. M., & Matula, P. D. (2016). Training Equipment and Acquisition of Employable Skills by Trainees in Public TVET and Training Institutions in Nairobi County, Kenya. *International Journal of Advanced Research in Education and Technology, IJARET.*, Vol 3(4).
- Geleto, L. (2017). Technical vocational education training institute curriculum development in Ethiopia. *Journal of Education and Vocational Research*, 8(3), 16-28.
- Glennerster, R., Kremer, M., Mbiti, I., & Takavarasha, K. (2011, June 3). *Education Innovations*. Retrieved from Education Innovation. Org: <http://educationinnovations.org/.../access-and-quality-kenyan-education-system-revie...>
- Joseph, Z. U. V. A., & Tranos, Z. U. V. A. (2020). Enhancing Sustainable Lifelong Learning Through Competency Based Education and Training in Zimbabwe PolytechnicS. *International Journal of Business and Management Studies*, 12(1), 133-146.
- Labani, K., Noah, M., & Heike, W. (2019). Implementation of competence-based curriculum in technical colleges: The case of Arusha City, Tanzania. *International Journal of Vocational and Technical Education*, 11(1), 1-20.
- Labani, K., Noah, M., & Heike, W. (2019). Implementation of competence-based curriculum in technical colleges: The case of Arusha City, Tanzania. *International Journal of Vocational and Technical Education*, 11(1), 1-20.
- Mbarushimana, N., Role, E., & Allida, V. (2017). Competency-based curriculum in tourism and hospitality: A practical model for Rwanda. *Journal of Research Innovation and Implications in Education*, 1(3), 96-109.

- MOE. (2015). *National Curriculum Policy*. Nairobi: Government Printers.
- MOE. (2016, July 3). *Ministry of Education*. Retrieved from www.education.go.ke: http://www.education.go.ke/index.php/downloads/file/110-the-technical-and-vocational-education-and-training-act-2013
- MoEST. (2013). *Strategic Plan: Towards a Globally Competitive and Prosperous Kenya*. Nairobi: Government Printers.
- Msuya, A. A. (2016). *Facilitators and learners' perceptions on the implementation of competence-based curriculum in adult education programmes in Tanzania* (Doctoral dissertation, The Open University of Tanzania).
- Murgor, T. (2018). *Labour Market Dynamism: Implications For Training Diploma In Engineering Graduates For Self-Employment In Kenya* (Doctoral dissertation, University of Eldoret).
- Noel, K., & Nancy, C. (2013). Competency based education and training in technical education problems and perspectives. *International Journal of Vocational and Technical Education*, 5(3), 37-41.
- Nyamtema, A., Karuguru, G. M., Mwangomale, A. S., Monyo, A. F., Malongoza, E., & Kinemo, P. (2022). Factors affecting production of competent health workforce in Tanzanian health training institutions: a cross sectional study. *BMC Medical Education*, 22(1), 1-9.
- Nyerere, J. (2012). *Technical & vocational education and training (TVET) sector mapping in Kenya for the Learn4Work Schokland program on TVET*. Nairobi: Initiative Consultants.
- Odewumi, A. S., & Dekom, H. B. (2020). Competency Based Education and Technical Vocational Education and Training: Implication for Sustainable Industries and Development in Nigeria. *Vocational and Technical Education Journal*, 2(1).
- Okoye, K. R. E., & Okwelle, P. C. (2014). Technical Vocational Education and Training (TVET) as intervention mechanism for global competitiveness: Perspectives from Nigeria. *Developing Country Studies*, 4(4), 85-91.
- Pallant, J. (2007). *SPSS Survival Manual. A Step by Step Guide to Data Analysis Using SPSS for Widows*. Sydney: Ligare book printer.
- PSCU. (2019, July 18). *standardmedia.com*. Retrieved from Standard Digital: <https://www.standardmedia.co.ke/article/2001248250/uhuru-launches-sh16-7b-equipment-for-technical-training-institutes>
- Sang, A. K., Muthaa, G. M., & Mbugua, Z. K. (2012). Challenges Facing Technical Training in Kenya. *Scientific Research vol 3(1)*, 109-113. Retrieved from https://file.scirp.org/pdf/CE20120100016_70192643.pdf
- TVETA. (2021). *Status of Implementation of Competency Based Education and Training Programs in Kenya TVET institutions*. Nairobi: TVETA.
- Watindi, R., & Rono, A. (2012). Towards achievement of sustainable development through technical and vocational education and training (TVET): a case of middle level colleges-Kenya. *Journal of Emerging Trends in Educational Research and Policy Studies*, 3(5), 686-690.
- Wilson Kipngetch, K., Kapkiai, M., & Sammy, C. (2021). Assessing the Extent of Application of Competency Based Education and Training Approach in Classroom Instruction in Technical and Vocational Education Training Institutions in Kenya.