
Instructional Methods Used in Competency-Based Education and Training in National Polytechnics in Kenya's Nyanza region

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Abstract

The purpose of the study was to examine which instructional methods are used in Competency-Based Education and Training in National Polytechnics in Kenya's Nyanza region. The study adopted descriptive research design. The study targeted 58 Administrators and Management, 450 Trainers, and 15150 Students from Kisumu and Kisii National Polytechnics. Stratified random sampling technique was used to select the respondents. Questionnaires and Interview was used to collect data. Quantitative data was analyzed through descriptive statistics and inferential statistics while qualitative data were analysed thematically. The findings was packaged and presented to the institution's management, the stakeholders in education, and the Ministry of Education to help them bridge the gaps and formulate policies that will improve the quality of tertiary learning and teaching, hence equipping learners with relevant skills. The study found out that instructional methods used had great influence on the effective implementation of the Competency Based Education and Training. The study recommends that there was need for the management and the officers in charge of the curriculum implementation to ensure that they improve on the areas that respondents had issues with that could hinder the effective implementation of the Competency Based Education and Training in the institution.

Keywords:

Instructional methods;
Competency-Based Education;
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1. Introduction

Education develops the productivity of skilled labor. Besides, it increases the economic productivity and competitiveness of various economies (World Bank, 2017). The Government of Kenya views a strong Technical and Vocational Education and Training (TVET) system as an enabler to the Big 4 Agenda, Vision 2030, and the realization of the Sustainable Development Goals. The world of work is currently experiencing very rapid and drastic changes following the advancement of technology. The drastic changes in technology and innovation have created the need to prepare both workers and trainees for dual and life-long learning. In addition to technical skills, trainees also need to learn and develop transversal and sustainable development skills that include employability, adaptability, entrepreneurship, learning to learn, environmental protection, and soft skills to prepare them for future jobs and enable them to cope with technological changes.

While Kenya is experiencing high unemployment rates among the youth, the present TVET system is so fragmented, resulting in ill-prepared graduates who cannot respond to employers' expectations. Most learners in Kenya gain their skills through apprenticeship programs. Currently, such programs do not lead to certification, causing the lack of formal recognition of the competencies of the apprentice. This will be intervened through the Competency-Based Education and Training (CBET) approach, which is outcome-based, industry-centered, and flexible and considers the concept of Prior Learning Assessment and Recognition (PLAR).

A competency-based training program is an exciting qualification that is outcome-based and can be developed by creating partnerships with leading employers (McCullough 2018). This delivery is efficient since it produces workers that the industry demands and prepares learners to be self-employed in the future.

Introducing CBT in tertiary institutions will equip the youth with the needed skills and workplace experience to help them grab the available employment opportunities and attain the needed skills (McCullough 2018).

Most of the nations recognize that in order to remain economically competitive and attractive to investors and developers, they must equip the citizens with the necessary skills and certifications. The policies for skills development must meet the needs and expectations of learners, local employers and wider society (Landesmann&Stollinger, 2019). Boahin and Hofman (2012) observed that internship programs in training institutions are poorly structured, resulting in poor monitoring and supervision, and also that students' internships do not often correlate to their study programs

National polytechnics tasked to impact trainees with the skills required in the labor market had to embrace technology to ensure continuity in learning. Competency-based TVET programs are intended to transfer knowledge and order higher thinking accompanying the level of competency gained. Inadequate training is considered a form of poverty (Dadi, 2014). A well-structured TVET teaching and training will provide relevant skills that can be used to start a business or earn someone a job. With online learning, will the TVET institutions implement competency-based education and training? Therefore, this research is out to ascertain the effectiveness of implementation of Competency-Based Education and Training in the National Polytechnics of Nyanza Region. The research was based in the Nyanza region because it has two National Polytechnics, unlike other regions.

1.1 Statement of the Problem

A large population of youth that forms the compact majority of Kenyans are not employed. The unemployment rate among the youth in Kenya is at 65%, being one of the highest in the world. Among the unemployed people in Kenya, three among five are between 15 to 35 years (Kenya Bureau of Statistics, 2019). Due to the high levels of poverty in Kenya, temporary opportunities can help young Kenyans be equipped with the marketable jobs required to secure somewhat decent jobs. However, this may not be a permanent solution, since these are low-paying jobs that may keep people poor, making crime the only way out of poverty.

In a study done by the Kenya Bureau of Statistics in 2020, around 17.4 million Kenyans are employed, down from the 18.1 million in 2019. Most of these employed people are in the informal sector. Around 14.5 million were employed in the informal sector, while 2.9 million work in the formal sector. The informal sector entails a major part of the economy of Kenya since it is linked to the creation of job opportunities, income generation, and production. In the current world exposed to unlimited natural phenomena and rapidly changing and improvement of technology, learning must also evolve to enhance relevance and applicability. One of the effective and relevant options is integrating online learning in curriculum delivery. CBET approach can respond, not only to the needs of different types of industries, but also to the different training needs of learners from different socio-economic and academic backgrounds, and prepare them for gainful employment and sustainable livelihoods (Adebambo, 2007)

National polytechnics having the mandate to train thousands of learners have no option but to embrace online learning. The National Polytechnics started offering a competency-based curriculum for over six years, and therefore it appears that several challenges have been experienced in implementing it. This can be attributed to limited local scholarly literature materials available. Therefore, from the above, it is necessary to conduct research on the instructional methods that are used in Competency-Based Education and Training in National Polytechnics in Kenya's Nyanza region.

2. Research Method

This research adopted a pragmatism research philosophy. Pragmatism was chosen because it will facilitate the possibility and the potential to work to and fro between quantitative and qualitative data, provide an action-oriented and experience-based framework whereby the research purpose is to assist us in addressing the issues of dealing with how we come to know and experience the world practically (Hothersall 2019), permits the combination of interpretivism and positivism.

2.1 Review of Theories

The job skilling theory by Dreyfus and Dreyfus (1986) was adopted in this research. This theory was also cited by Kitainge (2017). The ladder participation theory by Engstrom (1999) complements it. Job skilling theory explains the skills formation process which one must go through before reaching the level of expertise. The novice phase is the first stage in which the trainee depends on the instructions only; the amateur stage is where he is guided to do something in a clear-cut way. The competent stage is where the trainee is able to perform the tasks assigned and the final stage is proficient level where trainees are able to see the important benefits of the skills, which can be demonstrated better while expert trainees are no longer, restricted as they are able to perform those tasks on their own.

Ngure (2013) also discussed the ladder of participation theory based on learning to grow by Engstrom (1987). In the early stages, trainees imitate the behaviour studied. Then, they go to the next level

where the trainees who were able to do things themselves with little error begin to dominate. Training for skills gives confidence to the trainees, allowing them to enter the next stage. The final stage is reached when the trainees are capable of teaching the skills they have acquired to others. These three skills formation process trainees learn from instructors in stages. The skills upgrading method is seen solely in terms of individual skills while not gazing at the social processes that support the abilities development process (Ngure, 2013)

According to Tarno, Simiyu, Kitainge and Rono (2017), the field of vocational training emphasizes attaining of skills through experiential learning; this can be realized by teaching the skills in sequential stages. In line with this study, this means that the competencies will be gained through practicing the skills in stages as suggested in the above discussed theories.

2.2 Research Design

This study employed both quantitative and qualitative descriptive research design. The main purpose of utilizing descriptive research was to portray the existing state of affairs. As per Sileyew (2019), studies regarding situations, individuals, or groups purposely to obtain accurate and complete information are best carried out using descriptive studies.

2.3 Target Population

The target population is the group of objects or individuals having traits that can be quantified or observed (Dahabreh et al., 2018). The target population of the study was obtained from the two mentioned national polytechnics. The study targeted 58 Administrators and Management, 450 Trainers, and 15150 Students in these two institutions. The target population was 15658 as indicated in Table 1.

Table 1: Target Population

No.	Institution	Administrators & Management	Trainers	Students	Total population
1	Kisumu Polytechnic	33	250	9400	9683
2	Kisii Polytechnic	25	200	5750	5975
	Total	58	450	15150	15658

2.4 Sample size

Three hundred and ninety respondents were sampled from this study. Sample size usually represents the entire group in terms of characteristics (Fowler & Lapp, 2019). The sample size was based on the objective of the research, credibility, and time and resources constraints. Slovin's formula will be adopted in this study to establish the sample size.

$$n = \frac{N}{1 + NE^2}$$

Where by:

n = number of samples

N = target population

E = margin of error (0.05)

$$n = \frac{15658}{(1 + 15658(0.05)^2)}$$

$$n = 390$$

The sample size distribution was 390 respondents as shown in Table 2.

Table 2: Sample Size Distribution

No.	Institution	Administrators & Management	Trainers	Students	Total population
1	Kisumu Polytechnic	1	6	234	241
2	Kisii Polytechnic	1	5	143	149
	Total	2	11	377	390

2.5 Data Collection Instruments

Data collection is a process of collecting and analysing particular data to offer solutions to relevant questions and assess the outcomes (Hassan, 2019). Depending on type of research, data collection methods include: observation, measuring, documents review, questioning, or a combination of various methods. Instruments of data collection are tools utilised by researchers to gather data in the research process. This study utilised semi structured questionnaires and interview schedules to gather data from the population.

2.6 Data Analysis

The quantitative data collected from the questionnaire was analysed through descriptive statistics and inferential statistics. Descriptive statistics involved frequencies, percentages, mean and standard deviation. Descriptive statistics was used because it provides a description of the phenomenon of the study. Inferential statistics will involve Pearson correlation analysis. Correlation analysis was used to test the nature of the relationship that existed between the independent variable and dependent variable (Mugenda & Mugenda, 2008). The researcher utilized Statistical Package for the Social Sciences version 23.0 to perform the analysis. Qualitative data was analysed using thematic arrangements while descriptive statistics was used to present quantitative results.

3. Results and Analysis

3.1 Response Rate

The researcher distributed 388 questionnaires to respondents who were learners and trainers from the National polytechnics in the Nyanza region, Kenya. Three Hundred and Seventeen (317) out of 388 respondents responded. This accounted for 81.7% response rate. According to Mugenda and Mugenda (2008), over 70% response rate is very good. The above response rate therefore was considered suitable for the study.

3.2 Instructional Methods used on CBET

The objective of the study was to examine which instructional methods are used in Competency-Based Education and Training. The findings in Table 3 reveals that both the learners mean = 3.93; Std. dev. = .976) and Trainers (mean = 4.04; std. dev. = .837) had agreed that instructional methods were used in Competency-Based Education and Training. The findings was in line with Anane (2013) who established that CBET instructional methods involved discussions, demonstrations, observation, group discussions, direct methods, and research methods. The findings agree with Fer and Cirik (2011) who argued that a trainer utilizing different but correlated and compatible instructional methods in one lesson will be more able to support his/her trainees in achieving effective, permanent, and meaningful learning. Enhancing teaching-learning process by including as many methods as possible has almost become a universal principle and generalization (Küçükahmet, 1992). In teaching, no single method is the best method, but a good teacher or trainer needs to involve a variety of teaching methods (foster, 2009). Therefore, it was advisable for the TVET trainers to ensure that they adopt the appropriate teaching methods that will enhance effective delivery of the CBET contents.

Table 3: Descriptive Statistics of Instructional Methods used on CBET

Instructional methods	Trainers		Learners	
	Mean	Std. Deviation	Mean	Std. Deviation
Lecture method	3.64	1.206	4.10	.847
Discussion	4.18	.405	4.22	.726
Demonstration	4.09	.701	4.02	.992
Presentation	3.82	1.079	4.22	.714
Role-play	4.09	1.136	3.81	1.046
Field Trips	3.82	1.328	3.65	1.265
Cooperative learning	4.36	.505	4.09	.778
Collaborative learning	4.00	1.095	3.86	1.040
Brainstorming	3.82	1.079	3.87	1.025
Training games	3.91	1.136	3.72	1.097
Simulation	3.82	.982	3.50	1.130
Case Studies	4.09	.701	3.72	1.084
Inquiry	3.73	.786	3.84	.958
Debate	4.18	.603	3.57	1.203
Direct	4.00	.775	4.11	.989
Indirect	4.09	.831	3.32	1.202
Interactive	4.27	.647	4.22	.778
Experimental	4.18	.751	4.15	.959
Independent study	4.36	.674	3.87	1.082
Information processing	4.09	.701	3.97	.922
Behavioural	4.18	.603	3.71	1.042
Social interaction	3.91	1.136	4.08	.913
personal	3.91	1.136	3.82	1.151
Evaluation	3.82	1.079	4.09	.906
Questioning	3.91	.831	4.22	.803
Demonstrating	4.27	.467	4.06	.962
Direction-Giving	4.18	.603	4.06	.895
Planning	4.27	.467	4.27	.811
Overall mean score	4.04	0.837	3.93	0.976

Likert Scale: 1= strongly disagree, 2= disagree, 3=undecided, 4=agree, 5= strongly agree.

Source: Fieldwork data (2022)

The findings obtained from the interview schedules shown that there was instructional methods used in the competency based curriculum in the institutions such as practical sessions, demonstrational, lecture methods, assignments, face to face, simulation based, and modelling. . The following statements were noted from Interviewee X and Y

"We utilize Practicals/Experiments, Demonstrational, Lecture methods and assignments."

[Interviewees X]

"We apply Face to Face Learning, Simulation Based, Modelling and Practical Sessions."

[Interviewee Y]

Correlation Analysis

The study carried out Pearson correlational analysis to test the nature of relationship between the independent variables and the dependent variable. The following results was obtained and placed in Table 4.

Table 4: Pearson Correlations of the Effectiveness Implementation of CBET

		Instructional Methods	Effectiveness Implementation of CBET
Instructional Methods	Pearson Correlation	1	.635**
	Sig. (2-tailed)		.000
	N	309	309
Effectiveness Implementation of CBET	Pearson Correlation	.635**	1
	Sig. (2-tailed)	.000	
	N	309	309

The Correlation analysis results in Table 4 revealed that there was moderate positive correlation between the Instructional approaches and effectiveness of CBET implementation ($R = .635$; p value = .000).

4. Conclusion

Based on the findings above, the study concluded that Instructional methods had influence on the effective implementation of the CBET. Various instructional methods are appropriate in different contexts.

5. Recommendation

The study recommends that the trainers should use mostly the learner centred instructional methods to enhance quality of learning. A variety of instructional methods should also be blended in the learning process.

The study revealed that there were cases where respondents disagreed on the instructional methods applied in the CBET implementation. There was need for the management and the officers in charge of the curriculum implementation to ensure that they improve and adapt more and divergent instructional methods to enhance the effective implementation of the CBET in the institution.

References

- [1] Adebambo, K. A. (Ed.). (2007). Vocational and technical Education and training. Ibadan: Gabesther Educational Publishers
- [2] Anane, C. A. (2013). Competency based training: Quality delivery for technical and vocational education and training (TVET) institutions. *Educational research international*, 2(2), 117-127.
- [3] Boahin, P. & Hofman, W. H. A. (2012). Implementation of innovation in higher education: The case of competency based training in Ghana. *Innovations in Education Teaching International*, 49 (3) 313-323
- [4] Chen, C. H. (2020). Impacts of augmented reality and a digital game on students' science learning with reflection prompts in multimedia learning. *Educational Technology Research and Development*, 68(6), 3057-3076.
- [5] Dahabreh, I. J., Robertson, S. E., Stuart, E. A., & Hernán, M. A. (2018). Transporting inferences from a randomized trial to a new target population. *ADVANCES IN WATER RESOURCES, SOUTHAMPTON, UK, COMPUTATIONAL MECHANICS PUBLICATIONS*.
- [6] Fowler, S. B., & Lapp, V. (2019). Sample size in quantitative research: Sample size will affect the significance of your research. *American Nurse Today*, 14(5), 61-63.
- [7] Hassan, S. A. (2019). Data collection instruments based on the definition of hadith. *International Journal of Academic Research in Business and Social Sciences*, 9(12), 685-693
- [8] KNBS, G. (2019). *Economic survey 2019*. Kenya National Bureau of Statistics.
- [9] Landesmann, Michael A. & Stöllinger, Roman, 2019. "Structural change, trade and global production networks: An 'appropriate industrial policy' for peripheral and catching-up economies," *Structural Change and Economic Dynamics, Elsevier, vol. 48(C), pages 7-23*
- [10] McCullough, M., Campbell, A., Siu, A., Durnwald, L., Kumar, S., Magee, W. P., & Swanson, J. (2018). Competency-based education in low resource settings: development of a novel surgical training program. *World journal of surgery*, 42(3), 646-651.
- [11] Mugenda, O. M. and Mugenda, A. G. (2008). *Research methods: quantitative and qualitative approaches*. Nairobi. Acts press
- [12] Sileyew, K. J. (2019). *Research design and methodology. In Cyberspace*. Rijeka: IntechOpen.