

Review

Development in technical and vocational education and training: Synopsis and implications of education policies for right skills in Kenya

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This article presents implications of education and training policies on Technical and Vocational Education and Training (TVET) from the pre-colonial Kenya to date based on systematic review of education policies and related literature. In the pre-colonial period the non-formal and informal vocational training was demand driven, relevant and flexible. Throughout the colonial period, the Kenyan natives developed negative attitude towards formal TVET because it was introduced and managed to suit the aspirations of missionaries and colonialists and so were there commendations of the various education commissions. At independence, and to appeal to the populace, the administrative and policy direction in the Country reinforced this negativity. On the other hand, there were indications that the government and policy makers saw TVET as a key solution to industrialization and the perennial youth unemployment menace. Through out the sixties, seventies, eighties and nineties the government's enthusiasm for TVET resulted in inertia, gaining momentum in the turn of the millennium and peaking with the promulgation of the Kenya Vision 2030 and the Kenya 2010 Constitution. However, well-meaning policies are yet to translate in production of adequate and competent middle level professionals to drive innovative economy and industrialization. As a way forward, the government needs to take the lead and coordinate reforms in this multifaceted and policy crowded field with many players, and create a robust TVET ecosystem to accelerate production of right skills for jobs in the Country.

Key words: Education polices, Kenya education system, technical and vocational education and training, competency-based education and training, right skills.

INTRODUCTION

Education and training, world over, is the primary means of social mobility, national and international cohesion and socio-economic development (Khanani, 2021; Republic of Kenya 2012b; 2019a) and there is a clear correlation between the quality of a country's educational system

and its general economic status and overall well-being (World Population Review, 2023). This is because developing nations tend to offer higher quality of education than least developed nations whereas fully developed nations offer best quality of education of all

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(Ibid). World Bank (2012) re-joins that economic development globally is driven by education policies. This is because the policies, which are government statements for carrying out activities (Wambui, 2017), guide education and training players to inculcate innovativeness and initiativeness in learners to transform knowledge, skills and technology into quality goods, services and works. These benefits depend on smartness of the policy designs, extent to which stakeholders are recognized and included in the development and implementation process, conduciveness of institutional, policy and societal contexts and coherence of implementation strategy (Viennet and Pont, 2017). In other words, good policies must be implemented intelligibly for citizens to realize the intended benefits.

In Kenya, the education structure is broadly stratified into basic and higher education cycles (Republic of Kenya, 2019a). Basic education, which constitutes pre-school, primary and secondary education, is free and compulsory to all citizens in line with Dakar Framework for Action (2000) on education (Khanani, 2021; Ndegwa and Gutiérrez-Colón, 2019) and lays basis for higher education. Higher education level is composed on TVET and University education (Republic of Kenya, 2012a). Kenya has been counting on TVET subsector to produce adequate and competent middle level manpower (technicians, craftsmen and artisans) to drive an innovative economy and industrialization to transit the Country into a middle level economy as espoused in the Kenya Vision 2030 and the Kenya 2010 Constitution (Republic of Kenya, 2019a), and as a cure to youth unemployment (Sifuna, 2020; TVETA, 2020).

Since pre-independence, several education and training policies have been enacted in the Country targeting skills development. However, the Country is yet to produce adequate and competent middle level professionals to drive the Country's socio-economic development as espoused in its development blue prints. Reports of skills gaps and skills mismatch between labour market and those supplied are still enumerated as challenges in the TVET subsector to date.

Through systematic literature review, this article synthesises education policies and related literature from the pre-colonial period, during colonial period, in independent Kenya to date, and how their implementation has impacted skills development in TVET, and makes recommendations for strengthening the TVET ecosystem. The study also seeks to establish a basis for future research in this subsector of education which accounts for over 80% of trainees who transit into higher education from the basic education cycle in Kenya. The article starts by outlining the position of TVET in Kenya's education and training system. The operational understanding of TVET and education policies then precedes the historical development of TVET in the Country from pre-independence, during the colonial period and after independence to date.

These results are then followed by discussions and recommendations to improve the TVET ecosystem in the Country.

OVERVIEW OF KENYA'S EDUCATION AND TRAINING SYSTEM WITH REFERENCE TO TVET

Fundamental characteristics that define and drive systems of education and training from design to implementation include access, equity, quality and relevance (Republic of Kenya, 1999a; 1999b; 2005; 2012; 2012b; 2019a; 2019b).

These characteristics also form the basis upon which education systems are evaluated and reforms instituted through education policies (Khanani, 2021; Veinnet and Pont, 2017). Throughout this article achievements, gaps and challenges in education in general, and TVET in particular are described in the context of these four characteristics.

Access addresses the open-ended nature of education (Republic of Kenya, 1999a) that is, adequacy of opportunities available to persons that wish to enter the system (Republic of Kenya, 2012a; 2019a). Access is indicated by enrolment ratios, transition, dropout, retention and completion rates as well as number of education and training institutions vis-à-vis the population (Republic of Kenya, 2012a). Equity refers to fairness in participation and allocation of resources to ensure equal education opportunities for all (Republic of Kenya, 2012a) and often calls for affirmative action. Quality of education can be gauged by relevance of the programmes in relation to aspirations of learners, expectations of parents and community, general needs of the society, effectiveness of the system in achieving set goals and efficiency of the system in terms of input required to achieve desirable results (Republic of Kenya, 1999b). Republic of Kenya (1999a) adds that quality education results in development of independent, analytical and creative graduates as it ensures identification and development of individual talents. This means that quality education should segregate learners at every level and produce diverse and high-end graduates.

While relevance refers to appropriateness and is an aspect of quality (Republic of Kenya, 1999b), an education and training system is relevant if it seeks to meet the development needs of the nation as anticipated by the national goals (Republic of Kenya, 2012) and if it allows for applicability of what is learnt in real life situation, as the learner is empowered for intelligent, dynamic and appropriate response to challenges in life (Republic of Kenya, 1999a). Relevance is a product of curriculum, resources, learning contexts and process, and assessment. Eshiwani (1990) concludes that access and equity describe internal efficiencies while quality and relevance describe external efficiencies of an education system.

This means that while access and equity can be ascertained at the beginning of a programme, quality and relevance can only be ascertained after the programme.

According to Khanani (2021) and Republic of Kenya (2012b), Kenya has posted impressive performance at all levels of education. For instance, the number of primary schools increased from 6,058 in 1963 to 35,442 in 2017, while that of secondary schools increased from 151 to 10,665 over the same period. Enrolment in primary education grew from 891,103 pupils in 1963 to about 10.4 million pupils in 2017, while in that for secondary education grew from 30,000 in 1963 to approximately 2.8 million in 2017 (Republic of Kenya, 2019a). In the TVET subsector, records from TVET Authority show that there were 2286 accredited TVET institutions as at February 2023 up from 700 in 2013, while universities increased from one in 1970 to 40 in 2017 (Republic of Kenya 2019a; Government of Kenya, 1964).

However, there is growing concern regarding quality and relevance of education in the Country (Inyega et al., 2021; Khanani, 2021). With 80% of Kenyan population being youth with immense potential to transform the Country's economic fortune, it is paramount that the quality and relevance of their skills as they enter the job market is prioritized (Inyega et al. (2021).

This rapid growth in education has partly been due to development and implementation of education and training policies (Republic of Kenya, 1999a) and partly because of the emphasis that government and the people of Kenya have given to education (Kisilu, 2004). For instance, entrenching education in the Country's Constitution, the Kenya Vision 2030, other development blue prints and various Acts of Parliament, and allocating 5% to 7% of its GDP to education annually is laudable commitment by the people and government of Kenya to provision of accessible, equitable, relevant and quality education and training (Republic of Kenya, 2019a; 2012a).

Since independence in 1963, through education policies, Kenya has overhauled its education system three times. The first post-independence system, dubbed 7-4-2-3 system, was as a result of Kenya Education Commission of (1964) recommendation and replaced the racially disaggregated system. It comprised of seven years of Primary Education, four years of Ordinary Level Secondary Education, two years of Advanced Level Secondary Education and at least three years of University Education (Government of Kenya, 1964). This system was implemented between 1964 and 1985 and was later faulted for being too elitist and not offering solutions to the rising unemployment among the learned youth (Inyega et al., 2021; Ndegwa and Gutiérrez-Colón, 2019; Republic of Kenya, 1981).

In 1985, the 8-4-4 system was adopted following the recommendations of Presidential Working Party for the Establishment of a Second University (Inyega et al. 2021; Sifuna, 2020). The 8-4-4 system, comprising eight

years of Primary Education, four years of Secondary Education and at least four years of University Education, was to make education in Kenya more responsive and accommodative to vocational training and address the rising unemployment in the Country (Inyega et al., 2021, Republic of Kenya, 2019a; Ndegwa and Gutiérrez-Colón, 2019). However, Inyega et al. (2021) and Republic of Kenya (1999a) regret that the anticipated growth of middle level colleges did not happen, yet vocationalisation of education was the new system's linchpin. This stifled the dream of the 8-4-4 system in terms of progression in skills development. The 8-4-4 system was later faulted for being too expensive, increasing drop-out rates among learners, not promoting life-long learning, being heavily examination oriented, promoting rote learning as opposed to knowledge application, and not in harmony with the educational structures of the other East African countries (Inyega et al., 2021; Kisilu, 2004; Sifuna, 2020; Republic of Kenya, 2012a; 1999a). The system seemed to have failed in terms of access, equity, relevance and quality.

In 2017, the Country adopted the current 2-6-6-3 system following recommendations of the Task Force on Alignment of Education to 2010 Constitution (2012). The Basic Education level, comprises of two years of Early Childhood Development Education, six years of Primary Education, three years of Junior Secondary Education and three years of Senior Secondary Education (Republic of Kenya, 2012a,). TVET subsector includes trade test/national vocational certificate, artisan, craft and diploma trainings offered in Vocational Training Centres, Technical and Vocational Colleges, Technical Trainers Colleges, National Polytechnics and Institutes of TVET in the Universities (Republic of Kenya, 2019; Sifuna, 2020; TVETA, 2020).

In this new education system, the concept of technical and vocational education starts from primary education as Environmental Activities and Science and Technology learning areas. Pre-technical and pre-career education learning area builds on Science and Technology and equips learners with foundational knowledge, skills, attitudes and values in vocational and technical education at Junior Secondary School. At Senior Secondary School, Careers and Technology Studies is one of the nine tracks that learners can choose from based on their talents and abilities. This track, which is to be implemented as a trilateral engagement between schools, tertiary institutions and industry, culminates in dual certification for employment (Republic of Kenya, 2017). It is evident that the new system amplifies vocational and technical education (Inyega et al., 2021).

CONCEPT OF TVET AND EDUCATION POLICIES

Technical and Vocational Education and Training (TVET) refers to a range of learning experiences from Vocational

Education and Training (VET) to Technical Education and Training (TET) which are relevant to the world of work and may occur in non-formal and informal learning contexts, education and training institutions and workplaces (Mosoti, 2011; Republic of Kenya, 1999a; 2012a; 2012b; 2019a; Sifuna, 2020; UNESCO, 2015). In most cases the learning is intended to lead to direct labour market entry (Sifuna, 2020).

While VET components are responsible for the production of skilled operators to support construction and carry out maintenance and operation of equipment and infrastructure, TET graduates perform supervisory and management functions as well as maintenance of systems, machines and equipment in industry (Mosoti, 2011). According to Republic of Kenya (1999a), vocational programmes have more practical skills while technical have more analytical skills together with general education component which increases the general knowledge of trainees in an occupation.

All in all, TVET is a vital tool for the development of a Country's skill capital (TVETA, 2020) and therefore a key sector for sustainability of the Country's socio-economic growth (Wasike and Maiyo, 2020). According to Mosoti (2011), from human resource management perspective, TVET is a means of giving people capacity not only to be employed, but also to work in their specific areas of specialization and employ others. In the context of the articles, TVET provides opportunities for trainees to learn practical, social and personal skills that enable them to function technically at workplaces through use of tools, equipment and machines, and as productive and responsible job creators in society.

According to Republic of Kenya (1999a) providing quality TVET under ordinary circumstances is very expensive; however, providing TVET in a rapidly technologically changing workplace is extremely expensive even for rich nations. This is supported by Sifuna (2020) that in many parts of the world, TVET programmes are more expensive than general education because TVET courses require special physical infrastructure, equipment and instructional materials.

Policy, in general, is a government statement of interest to carry out activities in a standardized and uniform way (Wambui, 2017). According to Viennet and Pont (2017) education policies are actions to be taken by governments in relation with educational practices, and how governments address the production and delivery of education in a given system. Papanikos (2011), looking at it more broadly, defines education policy as any systematic intervention to improve the practice of education at all levels. According to the author, the word systematic is used to describe a process by which means and resources are used to achieve predetermined objectives (targets, goals). It is clear that policy is about intentions, outcomes, processes and players. In this context education policies are documented purposive Statements by government to improve practice in

education by describing, prescribing and/or proscribing a course of action. These purposive statements are arrived at through transparent, participatory and inclusive processes.

DEVELOPMENT OF TVET IN THE PRE- AND COLONIAL KENYA

Before the coming of the missionaries, education was provided by parents, siblings, elders and villagers through Traditional African Education where the young were taught relevant fundamentals of their tribe, religion and practical aspects of their trade (Kisilu, 2004) embedded in societal values (Eshiwani, 1990) as means of survival. This form of education, though largely non-formal and informal, was vocational in nature, relevant to real life, demand driven and flexible. Looking at the system of education and its period, it may be right to conclude that there were no written education policies, however relevant information was stored and passed through the existing social structures.

Between 1884 and 1963, marking the advent of western evangelism and colonisation to the year of independence, formal training was introduced in Kenya by the missionaries and colonialists. This period also marked the advent of policy frameworks. Before colonisation formal education was carried out by missionaries as a strategy for evangelical success (Kisilu2004; Ndegwa and Gutiérrez-Colón, 2019). However, with advent of colonialists, formal vocational trainings were introduced to provide semi-educated skilled native manpower to the colonial masters (Eshiwani, 1990; Ndegwa and Gutiérrez-Colón, 2019).

The intent of African Education between the missionaries and colonialists seemed perpetually at cross purposes. These led to invitation of Professor Frazer, with an educational background, as an advisor on African education (Lelei and Weidman, 2012). The Frazer report (1909) proposed academic curriculum for white and Asian children and industrial training for Africans communities (Lelei and Weidman, 2012; Urch, 1971). Low uptake of industrial training by Africans led to setting up of a commission by colonialists, a decade later, to investigate educational procedures and prescribe appropriate education for Africans. The Education Commission for the East African Protectorate of 1919 recommended literary education dubbed 'hand and eye' for children up to 11 years followed by technical and industrial training (Urch, 1971).

The missionaries, feeling short-changed, petitioned Phelps-Stokes Fund to adapt African education to African needs. The Phelps-Stokes commission of 1924 recommended that religious and moral instructions be regarded as fundamental to the development of sound education and that vocational and technical education be strengthened (Urch, 1971).

Seemingly this was to appease the evangelists and colonialists while being numb to the aspirations of the African natives.

By 1934 formal education with a stronger emphasis on technical and vocational education began to take shape (Okech and Asiachi, 1992) not for improving lives of Africans and making them self-reliant, but to make them able to take instructions from their masters (Eshiwani, 1990) and as a repressive means to the development of African capacity to think critically (Republic of Kenya, 1999a). Because of these underlying motives, African technical and vocational education in the colonial period remained inadequate in quantity, quality and scope (Eshiwani, 1990; Lelei and Weidman, 2012) and stifled initiative, innovativeness and entrepreneurial skills which are key for self-reliance and industrialization (Republic of Kenya, 1999a). The native Africans inadvertently developed negative attitude towards formal vocational and technical training as well as industrialization as they desired academic education which was well funded and supported (Kisilu, 2004; Ndegwa and Gutiérrez-Colón, 2019; Republic of Kenya, 1999a).

In 1944 Beecher Education Commission was instituted to examine and report on the scope, content and methods of the African education system. The Beecher report stressed character development and practical skilling of graduates of primary and intermediate education. It further proposed that expansion of vocational and technical education be based on demand and after employability of graduates had been tested (Republic of Colony and Protectorate of Kenya, 1949).

TVET AT AND AFTER INDEPENDENCE TO THE TURN OF THE CENTURY

Kenya Education Commission of 1964, the first post-independence Education Commission recommended establishment of occupation specialized secondary trade schools to prepare graduates for TVET. It further proposed that provision of technical education be demand driven and based on manpower survey by government to avoid unemployment of the educated (Government of Kenya, 1964). However, this education commission, with the mandate to make the education system more responsive to the needs of independent Kenya, seemed cautious about TVET (Sifuna, 2020) as an independence honeymoon (Orwa, 1982). Analysis of the policy shows that over 95% of the 160 commission recommendations focused on elitist education. Kisilu (2004) adds that while the recommendations were good, they did not deal with the established situated negative view on practical education. The result was over-emphasis on white collar jobs compared to blue collar jobs. This was despite the fact that at independence the Country was faced with severe shortage of trained manpower for socio-economic development (Khanani, 2021; Republic of Kenya, 1976). These developments

are supported by Viennet and Pont (2017) that societal trends define issues that arise in the education sector and the way they are perceived, and that the timing and pace of implementation determine how the process unfolds.

However, the government and policy makers seemed convinced that TVET was key to socio-economic development of the young nation, especially in tackling the issue of youth unemployment. For instance, in the same year of 1964, the Government introduced National Youth Service, to inculcate values of citizenship and provide education to turn the 'out-of-school' youths into productive citizens (Sifuna, 2020). Furthermore, to give opportunity to young people who were left in the 'educational gap' and reduce rural-urban migration, the government established village polytechnics in 1968 with the support of National Christian Council of Kenya (Orwa, 1982; Sifuna, 2020) to provide more informal vocational trainings. While the National Youth Service was formal in structure, design and implementation of courses leading to certification, the architects of village polytechnics had in mind small, low cost, flexible and localized institutions aimed at community needs without certification (Sifuna, 2020). However, as formal employments weighed demands on academic certificates, the policies and foundations of training in the village polytechnics changed and became formal (Orwa, 1982).

Soon the school leaver unemployment replicated at the secondary school level due to a more rapid expansion of secondary education than wage employment and access to post-secondary education leading to expansion of TVET in 1970s (Republic of Kenya, 1999a; Sifuna, 2020). As the number of unemployed educated youth increased, planners were convinced that academic education alone was insufficient preparation for employment in a developing economy as it led to disdain for manual labour, exacerbating absorption of school leavers into blue collar jobs (Lelei and Weidman, 2012; Republic of Kenya, 1999a).

National Commission on Educational Objectives and Policies (1976), also known as Gachathi Commission confirmed high wastage of graduates as a result of the objective, structure and content of formal education. According to the Commission, formal education was producing few individuals who were well equipped for placement in urban and formal economy, while a large number was unaccounted for and wasted. The report decried little understanding for designing and developing vocational training that would benefit the Country. Based on situational analysis the report recommended expansion of vocational training, informal and rural economies through skills for self-employment, occupation specific skills and use of low-cost technology which could be introduced and maintained locally. In addition, industrial training was to focus on national and international standards. The Commission was emphatic that technical education be developed in close functional relation to commercial and industrial development

(Republic of Kenya, 1976).

This was supported by Inyega et al. (2021) that education system must operate in synchronization with demands from the ever-evolving labour market so that youths are prepared for existing jobs through right skills.

With strengthening of TVET, there was need to provide clear career progression pathways, rationalise TVET and improve equity (Lelei and Weidman, 2012). The government therefore, in 1981, appointed a Presidential Working Party for the Establishment of a Second University which was technology-based. Among the findings of this commission was admission of students attached to employers in the existing big polytechnics. Based on its recommendations, access to TVET was expanded to all potential trainees through liberalised admissions; a second university was established in 1984 not just for technology but to meet the growing demand for university education; and Education system was changed from 7-4-2-3 to 8-4-4 with emphasis on vocationalised education by ensuring that graduates, at all levels, had some scientific and practical knowledge for self and wage employment as well as further training (Ndegwa and Gutiérrez-Colón, 2019; Republic of Kenya, 1981).

Between 1988 and turn of the millennium, two other education commissions were established to right the wrongs in the 8-4-4 system of education (Inyega et al., 2021) by addressing access, equity, quality and relevance. The Presidential Working Party on Education and Manpower (1988), also known as Kamunge Commission, whose mandate included addressing the high wastage of school leavers and diverse and uncoordinated skills training proposed creation of centres of excellence; that education and training be orientated towards learning for self-employment; that entrepreneurial skills be included in all programmes; and that graduates of TVET be assisted through formalised credit system to establish themselves. To improve quality of training, skilled trainers and instructors were to be trained in pedagogy, subjected to regular in-service and staff placement in industry to keep abreast with changing technology and enable them offer career guidance and counselling to trainees (Republic of Kenya, 1988). Sifuna (2020) asserts that the mismatch between outdated technology in training institutions and modern ones in industries could be bridged through collaborations. A call for implementation of some of these recommendations was still being echoed over three decades later.

The Commission of Inquiry into the Education system of Kenya (Koech Commission) of 1999, proposed a totally integrated quality education and training to deal with challenges of education in the next millennium. The recommendations of the commission, though comprehensive, were not made public due to the cost implication of implementation (Republic of Kenya, 2005) in as much as most Kenyans lauded it the most exhaustive and comprehensive review with pertinent and

timely recommendations (Lelei and Weidman, 2012). The setback of cost is supported by Viennet and Pont (2017) who summarize the challenges of implementing education policies as co-ordination issues, inadequacy of organisational resources, actors' capacity and reactions against reforms. However, most of these recommendations were up scaled in educational policies developed post promulgation of Kenya Vision 2030 in the year 2007.

According to Koech Commission, technical education had failed to provide quality middle level workers due to poor linkages between training institutions and industry, non-modular curricula, lack of credit transfer and rigid systems where dwell time determined course completion as opposed to flexible system where demonstration of competence determined course completion. The Commission further stated that the Country needed a process-oriented system of education instead of examination-oriented system, which the 8-4-4 had become. The Commission's proposals for TVET included strengthened collaborations between universities, technical training institutions and informal (jua kali) sector to promote applied research and education for direct employment; modular and practical learning approaches which facilitate certification of each module independently; curricula designs that are flexible and promote lifelong learning; and entrepreneurship and strong linkage between training institutions and world of work to enhance practical training, staff exchange as well as staff and trainee work placement; establishment of a professional bodies to manage professional aspects of TVET; formation of national professional boards to monitor curriculum development, training, assessment and certification, and ensure professional ethics are upheld in each profession; and creation of legal accrediting processes to ensure relevance and that standards of training are developed and maintained (Republic of Kenya, 1999a).

In order to adequately prepare the TVET graduates for world of work, the Commission proposed categorization of units into common core competencies, common cluster competencies, specialization competencies and work experience. Common core competencies were to prepare all TVET trainees to handle general life issues. Common cluster competencies were to be undertaken by all trainees in a wide area of study to support knowledge application in their occupations. Specialization competencies would then relate to specific disciplines (Republic of Kenya, 1999a). The relationship between the competencies was as shown in Figure 1.

As illustrated in Figure 1, the competencies were expected to increase in content, volume of learning and occupation specificity from common core category to work experience.

This resonated with research that was undertaken by Kenya Institute of Education (KIE), now referred to as Kenya Institute of Curriculum Development (KICD), to

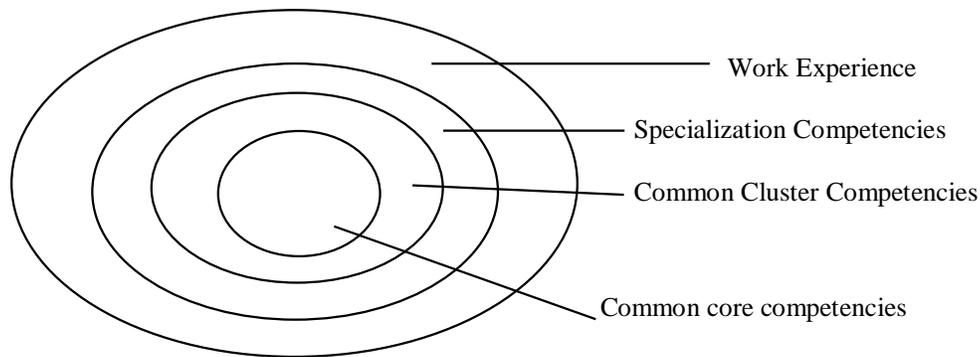


Figure 1. Categories of TVET competencies.
 Source: Republic of Kenya (1999a), totally integrated quality education and training. A report of the commission of inquiry into the education system of Kenya.

Table 1. Entry requirements, subjects and duration of TVET courses.

Entry requirements	Time Allocation (Approximate number of Hours and % of course duration)		
	Artisan	Craft	Technician
	Primary school education	Artisan certificate or secondary school education	Craft certificate or secondary school education
Subjects			
Supportive subjects/general education	165 (8%)	550 (19%)	924 (31%)
Trade support	-	-	550 (19%)
Trade theory	154 (8%)	275 (9%)	330 (11%)
Trade practice	1334 (67%)	1485 (50%)	506 (17%)
Industrial attachment	330 (17%)	660 (22%)	660 (22%)
Total course duration	1980	2970	2970

The research also proposed ratio of Hands-on Practice: Theory for the TVET courses as follows: Artisan – 90%:10%, Craft – 80%:20%, Technician – 60%:40%.
 Source: Kenya Institute of Education (1997).

guide the review of TVET programmes in an effort to standardize, harmonize and rationalize the curricula. During the survey questionnaires were administered to workers, trainees, instructors, course coordinators, heads of departments, principals, education officers, corporate organizations while observations schedules were used to evaluate TVET lessons and workers (KIE, 1997).

The proposed entry requirements, course duration and subjects of study for levels under the TVET subsector were as shown in Table 1.

The theory time was to be distributed between trade theory and supportive subjects. Supportive subjects were to prepare trainees for general life and were common to all trainees at each level irrespective of the trade (KIE, 1997).

These were comparable to common core competencies proposed by Republic of Kenya (1999a). Trade theory subjects were only applicable at Technician level (KIE, 1997) and were comparable to common cluster

competencies by Republic of Kenya (1999a).

One other concern was that the use of terms artisan and craftsman were more applicable to engineering workers and could not be adequately applied in social sciences or business education (KIE, 1997). Though the report did not give recommendations to this nomenclature, this would later be addressed in 2014 by the Kenya National Qualifications Authority during development of Kenya National Qualifications Framework where levels were used to describe the qualifications (Republic of Kenya, 2014; 2012b).

A comprehensive analysis of education sector conducted by the Government in 1999 concluded that the education system was producing 'docile conformists' with formal qualifications but devoid of vital qualities such as initiativeness, good judgement, self-motivation, good communication skills and sense of responsibility (GoK, 1999). The report concisely addressed the issues of access, equity, quality, relevance and proposed that

TVET should emphasise on linkage with industry, business community, informal sector and world of self-employment and that programmes be demand driven in terms of content, skills and duration. In addition, the report proposed that the Country set up a bank of curricula and create a dissemination network for their distribution and use (Republic of Kenya, 1999b).

While expounding on the benefits of linkages between training institutions and industry Inyega et al. (2021) are emphatic that strong collaborations enhance internships, service-learning field placements, quality of training, job readiness of trainees, mentoring, coaching, talent identification and nurturing and address funding crises that many institutions face.

According to Sifuna (2020) throughout the sixties, seventies, eighties and nineties the government's enthusiasm for TVET resulted in inertia, albeit at slower pace compared to reforms in other sectors of education. Lelei and Weidman (2012) add that despite the efforts of the various commissions, the implementation of their recommendations had been uneven at best. Still on process of policy implementation Viennet and Pont (2017) opine that too fast a pace of policy implementation may result in players not being able or willing to implement the reforms, while too a slow pace may result in loss of momentum and or draining of resources before meaningful achievements are made.

The implications are that achievement of adequate and right skills for jobs in the Country has been slow due to the manner and pace at which the educational policies are implemented. Viennet and Pont (2017) while noting that in a span of six years OECD countries adopted over 450 education reforms, describe education policy implementation as purposeful and multidirectional change process requiring systemic approach with all components moving in synchrony.

TVET AT TURN OF THE CENTURY TO DATE

At the turn of Century, the government continued to view TVET as a key subsector in accelerating economic growth and addressing youth unemployment menace (Sifuna, 2020; Republic of Kenya, 2007; 2012a; 2019a; Wasike and Maiyo, 2020). To continue transposing TVET to meet the challenges of the 21st Century, more policy frameworks were developed by the government. Wasike and Maiyo (2020) in support of this argue that in the recent years there had been a renewed governmental interest in TVET in Kenya based on a raft of policies developed and increased budget.

Sessional Paper No. 1 (2005) on Policy Framework for Education, Training and Research was government response on education to Millennium Development Goals and the National Conference on Education and Training held in 2003 to develop sector policies and implementation strategies that would ensure provision of accessible,

equitable, relevant and quality education and training under efficient management of resources (Republic of Kenya, 2005a).

Challenges in TVET, according to Sessional Paper No. 1 included inadequate capacities and facilities in TVET institutions, disparities in training standards due to lack of effective coordination system, inflexible and irrelevant curricula due to little participation of the industry, weak quality assurance mechanisms and pedagogy deficient teaching staff. The Sessional Paper outlined 13 educational objectives among them developing a national training strategy to ensure Technical, Industrial, Vocational Education and Training (TIVET) institutions are appropriately funded and equipped (Republic of Kenya, 2005a). This paper also proposed to return technical subjects to the school system and revamp innovations in TVET (Sifuna, 2020; Wambui, 2017). Since industrialization can only be achieved through application of technology, the sessional paper further proposed production of a critical mass of citizens with technical skills for technological take off and economic sustainability right from secondary education, through TVET to University level (Republic of Kenya, 2005a).

While issues of skilling and technology had come a long way since pre-independence, provision of clear education and training pathways for TIVET graduates, proposal of flexibility of entry and exit into the academic pathways through modularized programmes and inclusion of TIVET in the higher education subsector were great milestones in the development of TVET (Republic of Kenya, 2005a; Sifuna, 2020).

As a sequel to Sessional Paper No.1 (2005), the Kenya Education Sector Support Programme 2005-2010 flagged out technical, industrial, vocational and entrepreneurship education as one of its 23 investment programmes in an effort to provide right skills for jobs and accelerate socio-economic development (Republic of Kenya, 2005b). The overall goal of TIVET programmes, at the end of the five years, was to improve access, quality and relevance of skills by developing of the National Skills Training Strategy, enhancing transition from primary to TIVET, establishing TIVET centres of excellence, enhancing skills for automation and computer integration in industry, developing annual bursary awards programme for trainees, creation of industrial incubators, equipping national polytechnics to offer key industrial based degree level courses and rehabilitating TIVET training facilities (Republic of Kenya, 2005b; Sifuna 2020). The Sessional Paper No. 1 and the Kenya Education Sector Support Programme 2005-2010 seemed to magnified the role of industry in the process of skills development.

In an effort to improve the economy, Kenya in 1996 developed the Sessional Paper No 2 on industrializing the Country by 2020. A decade later the Government re-awoke its industrialization dreams through Vision 2030 and made more emphasis on skills development for industrialization. The Kenya Vision 2030, covering the

period between 2008 and 2030, aims at transforming the Country to a newly industrializing middle level economy by increasing the GDP at an average of 10% per annum (Republic of Kenya, 2007). Economically, the vision targets formalization of the informal economy which is the single largest employer in the Country due to its diversity (TVETA, 2020), as well as improving road infrastructure and energy provision in priority drivers of the economy. On its social pillar, the Vision targets to increase access to TVET and raise the quality and relevance of TVET programmes to exploit science, technology and innovations for faster economic development. The political pillar is to create a conducive political environment for socio-economic growth (Ibid).

According to Republic of Kenya (2019a), the Country is counting on TVET subsector to produce adequate and competent middle level manpower (technicians, craftsmen and artisans) to drive an innovative economy and industrialization required for achievement of the Kenya Vision 2030. The ideal ratio of Engineer: Technologist: Technician: Operator (crafts-person and artisan) is 1:3:12:60 (Ibid). In other words, for every one-degree holder, the Country needs about 20 TVET graduates to design, produce and maintain systems of production that will grow the economy at a rate of 10% annually. It is evident that the Kenya Vision 2030 gave prominence to TVET and prioritized its growth and development to achieve industrialization and desired economic growth.

With promulgation of the 2010 Constitution, the government embarked on re-aligning the education sector to the New Constitution and the Vision 2030 through a task force (Republic of Kenya, 2012a). In the same period, the government developed the sessional paper No 14 of 2012 on Reforming Education and Training Sectors in Kenya.

With reference to TVET, both the task force report and the Sessional paper No. 14 observed that curricula in various Institutions were divergent, inflexible and out dated with glaring mismatch between skills learnt and skills demanded by industries, thereby raising issues of quality and relevance of training. Further, the skills development system followed a curriculum-based, time-bound approach rather than demand-driven approach. Secondly curriculum development, training and assessment were diverse and fragmented under inadequate mechanisms for quality assurance. Subsequently, certification of TVET made it difficult for prospective employers to determine the comparative value of qualifications. This was compounded by the fact that certification was based on completion of courses and passing examinations rather than demonstration of competencies. Thirdly, the training infrastructure composed of physical facilities, equipment, and reference materials and trainers was wanting. Lastly, there was weak linkage between basic, TVET and University education, coupled with low participation of the industry

and private sector in curriculum design and development, training and assessment (Republic of Kenya 2012a; 2012b). These observations were corroborated almost a decade later by Sifuna (2020) and Wasike and Maiyo (2020) who described TVET curricula as supply-based, outdated, excessively long and inflexible and not meeting needs of stakeholders and industry.

Recommendations of the task force and the Sessional Paper therefore included: Modularization of curricula to promote access, multi-skill training, occupational specific careers and competencies, flexibility as well as self-paced and lifelong learning. A trainee would therefore earn a competency by completing determined number of courses in a module where each module comprised a complete employable skill. A certificate of competency would then be awarded to such a candidate. Other recommendations were the inclusion of life skills and knowledge in training; standardizing quality and relevance of TVET through development of standards, harmonization and coordination of programmes; streamlining management and assessment of industrial attachment processes; and lastly, establishment of a Labour Market Information System (LMIS) and other survey instruments for data on the actual employability of TVET graduates (Republic of Kenya 2012a; 2012b). suffice to note that most of these observations were made in the policy documents developed by 1990s.

One of the major outcomes of the Sessional Paper No. 14 was the enactment of the TVET Act of 2013 in which TVET reforms were actualized and three professional bodies established. These bodies were TVET Authority (TVETA), TVET Curriculum, Development, Assessment and Certification Council (TVET CDACC) and TVET Funding Board (Republic of Kenya, 2013). This was despite existence of Kenya Institute of Curriculum Development Act) which mandates the Institute to develop curricula and curriculum support materials for Basic Education and TVET (Republic of Kenya 2013b), and Kenya National Examinations Council Act which mandates the Council to conduct academic and technical examinations and award certificates and diplomas (Republic of Kenya 2012c). According to Viennet and Pont (2017) the number and variety of policies to be implemented in a given system make education a crowded policy field, with the possibilities of contradictions and or misalignments between the policies. This is evidently the case in Kenyan TVET ecosystem. While TVETA was to offer quality assurance for training programmes and training infrastructure, TVET CDACC was to undertake curriculum development, conduct competence assessment and award certificates of competency. TVET Funding Board which was to manage the technical and vocation education fund (Republic of Kenya, 2013) is yet to be established.

On governance of education, the task force recommended establishment of Education Standards and Quality Assurance Commission (ESQAC) as a national

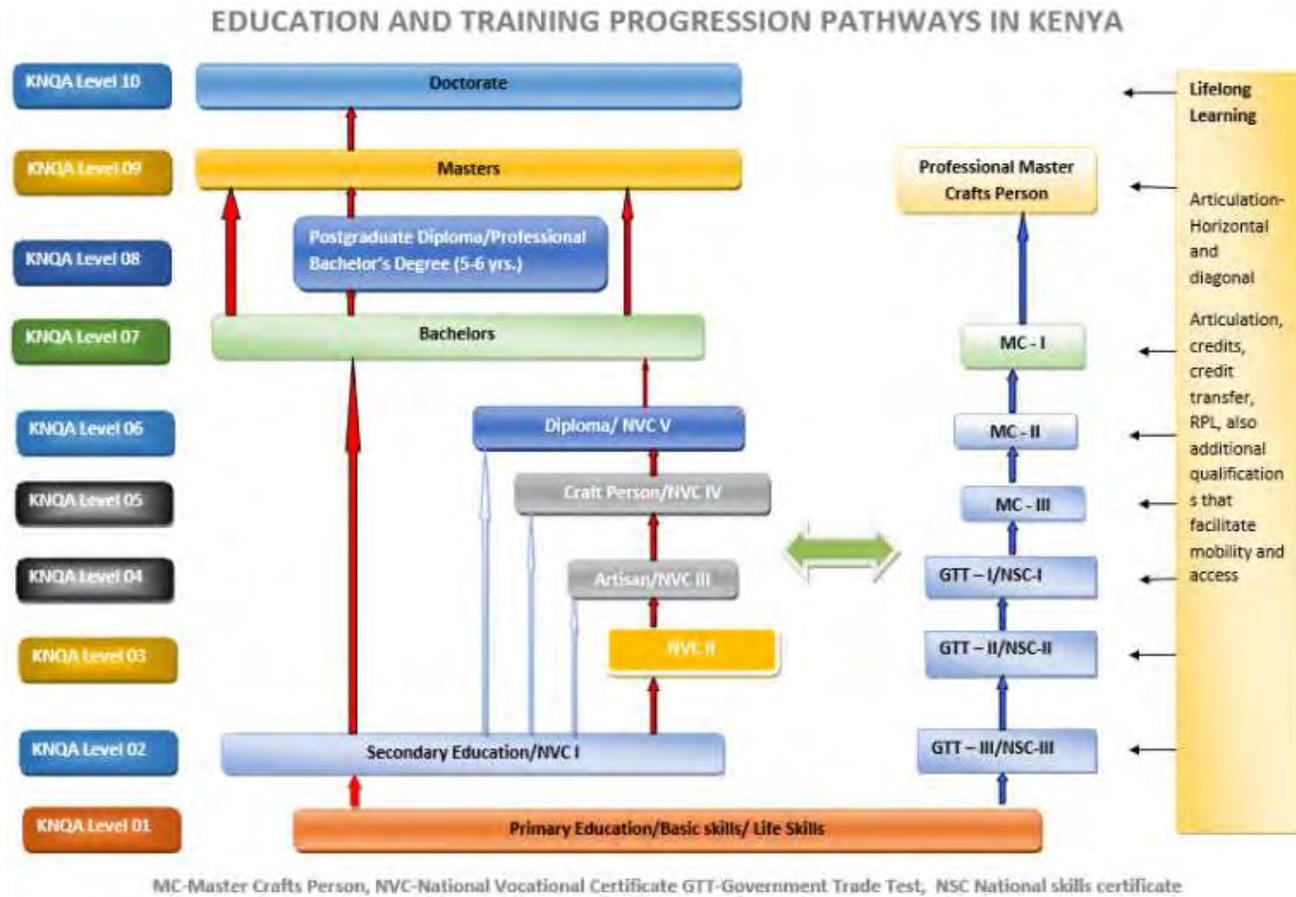


Figure 2. Education and training progression pathways in Kenya.
Source: KNQA website

custodian of standards and quality of education and a National Qualifications System based on a National Qualifications Framework (NQF) regulated by a National Qualifications Authority (Republic of Kenya 2012a). While the Kenya National Qualifications Authority (KNQA) was established via the Kenya National Qualifications Framework (KNQF) Act of 2014 (Republic of Kenya, 2014), ESCQAC is yet to be established.

KNQA, in collaborations with stakeholders, developed a ten level National Qualifications Framework (KNQF), as shown in Figure 2, as a system for articulation, classification, registration, accreditation, quality assurance, and monitoring and evaluation of national qualifications. The KNQF comprises three Pathways/Sub-frameworks namely Academic, TVET and Industrial/Skills, designed to allow mobility of learners and labour across the region, continent and globally.

TVETA, as a quality regulator, developed the Competency Based Education Training and Assessment (CBETA) standards in 2019 which currently guides competency-based skilling and assessment. The standards have implemented a lot of recommendations from Republic of Kenya (1999a; 1999b; 2012a; 2012b)

and KIE (1997).

Based on the Standards, TVET curricula are to be developed from industry standards, indicate qualification levels and be designed in competence modules. Further the total course is to comprise of basic, common and core competencies as well as Industrial attachment (TVETA, 2019). These are comparable to competencies proposed by Republic of Kenya (1999a). Records from TVET Authority show that, as at February 2023, 286 competency-based Curricula had been approved and were available for use as was proposed by Republic of Kenya (1999b).

On certification, the CBETA standards proposed that Certificates of Competency be issued to individuals who have demonstrated acquisition of skills, knowledge and worker behavior in a particular Unit of Competence as well as individuals who have been assessed for Recognition of Prior Learning (RPL) while a Final Certificate be issued when a candidate has demonstrated competence in all Units of Competency that comprise a qualification (TVETA, 2019) as was recommended by Republic of Kenya (1999a).

The period between the turn of the century to date saw

the Country develop more education and training policies in the history of the Country. However, a survey conducted by Federation of Kenya Employers in 2018 still showed increased trend in skill mismatch among employees in the labour market with employers confessing that most graduates lacked the right technical, soft, life and interpersonal skills to perform jobs. The report made recommendations to training institutions, government, learners and employers. While the institutions were to focus on making curricula more practical oriented, the government was to ensure enforcement of education and training policies while the employers were called upon to make their voices heard in the Country's skills development process. The report further proposed strong collaborations between players in the skills development process (Federation of Kenya Employers, 2018).

A survey on implementation of Competency Based Education and Training (CBET) Programs in Kenyan TVET Institutions conducted by TVETA and TVET CDACC in the year 2021 showed that more than half of the courses implemented in the TVET institutions were competency-based. However, these courses accounted for an average of 20% of trainees in the TVET institutions. This is despite the fact that in the past seven years, records from KNEC show that on average 83% of the over 700,000 student transit to annually TVET in pursuit of higher education. This low uptake of CBET courses was due to negative perception and inadequate access to TVET programmes because of lack of systematic career guidance, lack of public awareness on qualification pathways and curricula not meeting needs of industry and stakeholders (Sifuna, 2020; TVETA, 2020; Wasike and Maiyo, 2020).

According to TVETA (2020), currently, the challenges in TVET in Kenya include: Limited industry linkages of TVET programmes resulting in mismatch between TVET programmes and labour market needs; limited labour market research resulting in lack of data on skills needs and hampering the much needed evidence based policy making; limited number of occupational/industry standards and the need to revise the existing ones since they are prerequisites for developing demand driven programmes; fragmented and uncoordinated TVET ecosystem resulting in multiplicity of qualifications; resource constraints including human, financial, facilities and equipment; limited adoption of technology for delivery of content due to unavailability and high cost of internet; and limited certifications amongst informal sector workforce which comprise the bulk of wage employment in Kenya.

Suffice to note that these challenges, relating to access, quality and relevance of TVET programmes, have perennially been flagged out in policy documents since pre-independence. Wambui (2017) opine that educational development in any country is affected by historical, geographical, technological, religious, political and ideological factors, however in Kenya the political

factor is seen as the steering wheel of education in the country.

DISCUSSION

Quality of education and training determines any country's socio-economic well-being. It is therefore incumbent on governments to continually reform education and training to respond to pertinent and contemporary issues while ensuring the country's goals and aspirations are realized in tandem with international protocols and conventions. In an elaborate and multifaceted sector like education these reforms require policies to guide and concretize developments, assign responsibilities and provide basis for monitoring and evaluating impacts of interventions on access, equity, quality and relevance of education and training.

Kenya, through enactment of several education policies, has implemented major reforms in education and training since pre-independence. The Country has also posted impressive performance in education at all levels, most notably with reference to access. The current five-year old education system is stratified into Basic Education, TVET and University Education cycles. The government, historically, has been counting on TVET to provide a strong springboard for the desired socio-economic development as espoused in its development blue prints. This is because TVET produces hands-on workers for developing, running and maintaining systems of production. In the process of skilling, TVET must provide opportunities for trainees to learn practical, social and personal skills that enable them to function technically at workplaces through use of tools, equipment and machines, and as productive and responsible members of society. This makes provision of TVET very expensive; yet Kenya has to produce 20 TVET graduates for every degree holder for the Country to achieve 10% annual economic growth as desired.

Historically, non-formal and informal TVET preceded formal education and training which started with coming of missionaries and colonialists. A pattern of developing education policies to bring about reforms in education therefore started in the pre-independence era however; access, quality and relevance by then were skewed to the needs of missionaries and colonial masters. This led to resentment of TVET by natives.

At independence, and with the Country reeling from resistance to colonialism and vocational education, the poor reputation towards TVET continued. However, the pre- and immediate post-independence education developments appeared to have given a feeble start to technical and vocational training both through policy direction and administratively. Despite being cautious about TVET in this first post-independence education policy, the government and policy makers appeared to have held the view that TVET had a big role to play if the

nation's desired socio-economic development was to be achieved. All the same the negative attitude has persisted in the Country despite TVET accounting for over 80% of higher education progressions from secondary education annually.

Throughout the sixties, seventies, eighties and nineties the government's enthusiasm for TVET resulted in inertia, gaining momentum with the turn of the millennium and peaking after promulgation of the Kenya Vision 2030 and the Kenya 2010 Constitution. This made TVET a national priority and resulted in development of a raft of education and training policies.

With several reforms to be implemented against a backdrop of limited resources, the process of education policy implementation has been more political than technical, selective, slow and uneven especially in TVET. The well-meaning education and skills development policies have therefore not translated in production of adequate and competent middle level professionals since independence to date.

Further, the several education and training policies being implemented by different government agencies has resulted in duplication and clashing of mandates, slowing down production of competent personnel for the country's socio-economic development, undermining the performance of these organizations and creating confusion to other players in TVET, especially the industry, which is central in development and assessment of competency-based programmes.

Diverse nature of TVET, coupled with fragmented systems for quality assurance, uncoordinated systems for curriculum development and contexts for curriculum implementation, assessment and certification have resulted in multiplicity of qualifications that are incomparable. The bottom line is that the qualifications are obtained from varied programme designs (standard, broad-based and competency-based curricula designs) with varied durations and entry requirements. This situation has made it difficult for the Country to bridge the skills demand and supply mismatch, further compounding production of right skills.

RECOMMENDATIONS

The target of middle level professionals required for industrialization can be realized if the TVET "factories" are streamlined, harmonized and well-coordinated under strong quality assurance system, and training programmes made flexible and research-based with a reliable, valid, authentic, criterion referenced and evidence-based assessment process. These reforms are resource intensive and require proper coordination because they are multifaceted and involve many players. The government therefore needs to lead in these change processes for the tempo to be maintained and goals achieved. Education being a policy crowded field, the government should lead harmonization and

repealing of policy and legal instruments in TVET to clear off duplication of mandates, harmonize roles and concretize responsibilities of agencies charged with provision of TVET. This will create a clear reporting and reference system for TVET. Secondly the government should give a clear policy direction on migration from knowledge-based to competency-based education and training to increase uptake.

The TVET agencies need to improve public awareness on careers in TVET by documenting success stories through periodic publication.

One of the things TVET is lauded for is in increasing the rate of employment. However, education alone cannot solve unemployment and the government needs to plan the Country's holistic development including labour market skills demand with clear projections and milestones, then train young people in such a way that they will be able to benefit and contribute to this development.

Competency Based Education and Training, being industry dependent, there is need to build a strong and motivated industry that is able to participate in research and academia including use of tax rebates.

Through action research, the government, industry, research and academic institutions would each play their role effectively and in a relevant way in the production of adequate and qualified middle level human resource for industrialization and innovative economy as skills gaps will be flagged out real time.

With gains made so far, curriculum developing and qualification awarding institutions, as part of TVET ecosystem need to review the developed standards and frameworks which have been tried to accelerate access, equity, relevance and quality of the TVET. In addition, these institutions need to conduct periodic tracer studies of TVET graduates to ascertain their employability and create data for review of curricula, conduct of assessment and certification process.

Since provision of quality TVET in a rapid technologically changing is extremely expensive, digitalization of training process will not only avail the content widely and easily, it will also reduce the cost of training and waste, enable more students to be trained at the same time, reduce accidents especially when conducting dangerous activities, allow trainees to take responsibility of the learning process and make teaching and learning more interesting and appealing to the youth.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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