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Technical and Vocational Education and Training in Ghana: A Tool for Skill Acquisition and Industrial Development

Samuel Kwame Ansah[1] Kissi Ernest[2]
[1]Head - Department of Building Technology, Cape Coast Polytechnic, P.O. Box AD 50, Cape Coast, Ghana
[2]Department of Building Technology, Kwame University of Science and Technology, Kumasi
E-mail: kisernest@yahoo.com

Abstract
Basically, the purpose of Technical and Vocational Education and Training (TVET) is to equip people with the technical and professional skills needed for socio-economic and industrial development of the country. The emphasis is on training people for self-employment. This paper highlights the importance of (TVET), its policy framework to promote science and technology and its curriculum design and delivery to meet the labour market. Literature reviewed indicated that the Government of Ghana recognizes the strengthening of TVET as a means of developing the technical and skilled human resource base which the nation needs urgently as a key strategy for achieving its industrial development. It was noted that, to achieve this objective, requires a policy framework and direction as well as a radical shift in the design and delivery of the TVET curriculum at all levels. The paper suggested that Competency Based Training (CBT) should be included in the TVET curriculum design and delivery at all levels of TVET institutions to help promote skill acquisition and industrial development. The paper also highlighted that, it is the people with requisite scientific and technological education and technical skills who can create wealth and help a country to attain economic prosperity and industrial development.
Keywords: Industrial Development; Policy Framework; Technical Vocational Training.

INTRODUCTION

The importance of Technical and Vocational Education and Training (TVET) in nation building cannot be over emphasized. Indeed, technical and vocational education is a major agent for industrial development as well as for social progress of any country. Without skilled technical manpower produced by the polytechnics, technical and vocational institutes for industry, commerce and agriculture, national development would virtually grind to a stand still (Budu-Smith, 2005).

In Ghana, the case for education, especially Technical and Vocational Education and Training (TVET), is overwhelming both in terms of fulfilling human security and as an investment with very high returns. According to Nsiah-Gyabaah (2009), 'there has never really been any argument over the link between education and development because education helps to build national capacity to apply science and technology to social and economic problems'. Education is a fundamental human right and it is necessary for socio-economic development of society. It is a means to the fulfilment of an individual and the transfer of values from one generation to the next.

Technical and Vocational Education and Training is a fundamental element in the development equation because it allows individuals and societies to unlock their potentials, expand their horizons and adapt to the changes in the dynamic world (Nsiah-Gyabaah, 2009). Basically, the purpose of technical and vocational education is to equip young men and women with the technical and professional skills needed for socio-economic development of the country. The emphasis is on training people for self-employment.

The Government has, in recent times, given renewed recognition to the TVET sub-sectored and has identified it as one of its priorities for addressing poverty alleviation.It has accordingly highlighted TVET in its Ghana Poverty Reduction Strategic (GPRS) document in that regard. The Government also recognizes the strengthening of TVET as a means of developing the technical and skilled human resource base which Ghana needs urgently as a key strategy for rapid economic growth and for realizing the Ghana vision 2020 plan. In line with this realization, one of the basic philosophy and orientation of Ghana's vision 2020 plan is to reform all Technical/ Vocational Education system to make it more responsive to the national goals and aspirations as well as local and global demands. Indeed, an improved TVET system will promote manufacturing, construction technology, agro-based industry and commerce. To achieve the said objective, requires a policy framework and direction as well as a radical shift in the design and delivery of the TVET curriculum at all levels especially at the Polytechnic level (Afeti, Baffour-Awuah and Budu-Smith, 2003). It is in this regard that Competency Based Training (CBT) has been introduced and emphasized in recent TVET education especially at the Polytechnic level. This change of focus of training is based on the fact that it is the trained technical manpower in the advanced countries which has served as catalyst for industries in their economies.

Since 2004, Japan International Cooperation Agency (JICA) has set up a Technical and Vocational Education and Training Support (TVETS) project which facilitated the passage of the COTVET law, developed detailed

implementation plans for COTVET, and has been piloting CBT in technical/vocational training institutions and Polytechnics.

TVET and CBT education when adopted and applied very well will help to reduce or eradicate the high level of widespread poverty and deprivation because science or technology, which is applied on the farm, the clinic, in the office, at sea, in the mines, in the forest, at the workshop, at dressmaking, etc., depends on a workforce of skilled, competent technologists, technicians and craftsmen (Nsiah-Gyabaah, 2009). It is the people with requisite scientific and technological education and technical skills who can create wealth and help a country to attain economic prosperity. In the context of this realization, TVET has been recognized as constituting a vital segment of Ghana's educational system and human resource development initiative.

Statement of Problem

Many observers trace the missing link in Ghana's industrial development to the neglect of technical and vocational education and training (Nsiah-Gyabaah, 2007). Although, TVET is recognized as an important sub-sector for the attainment of the industrial development in Ghana, the training content at some levels are outdated and the quality of teaching and learning has continued to decline. Ghana, desirous of achieving industrial development Goals as stated in the Ghana vision 2020 plan, it is believed, cannot achieve any meaningful results without paying particular attention to technical and vocational education at all levels. At present, teaching takes place mainly in the form of head-on learning by teachers. Many of the TVET learning centres, especially the Polytechnics, are unable to combine theoretical training with practical exposure in order to produce qualified graduates for direct absorption into industry. There is a need therefore for strong industry collaboration and improved practical training in industry as well as a platform for seconding staff in the technical and vocational institutes especially the polytechnics to gain some useful practical experience in industry in order to improve teaching and learning. The recent emphasis on Competency-Based Training (CBT) system is to enhance relevance of technical vocational education and ensure that training is guided by competencies endorsed by industry so that TVET graduates would acquire and demonstrate skills that meet the needs and specific standards of industry. According to the Japan International Cooperation Agency (JICA), the adoption of a Competency-based Teaching approach would improve quality and relevance of TVET. It would also help meeting the diverse needs of students and industry.

Objectives of the Paper

The objectives of this paper are to highlight on:

- Importance of Technical and Vocational Education and Training
- TVET framework policy to promote science and technology
- TVET curriculum design and delivery to meet the labour market in Ghana
- Challenges facing TVET implementation and the role of COTVET in the TVET reform in Ghana

What is Technical and Vocational Education and Training

The United Nations Educational Scientific and Cultural Organization (UNESCO) and the International Labour Organization (ILO) document 'Technical Vocational Education and Training for the Twenty First Century' (ILO, 2002), defines 'Technical and Vocational Education' as…'those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences, and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life'. TVET is used as a comprehensive term to cover institution-based formal and non-formal education and training programmes in the Technical and Vocational institutes (JICA, 2001).

Objectives of Technical and Vocational Education and Training

Basically, the purpose of technical and vocational education is to equip young men and women with the technical and professional skills needed for socio-economic development of the country. The emphasis is on training people for self-employment.

TVET provides a mix knowledge and career focused, hands-on, and skills based education that is needed to run the productive sectors of the economy and build the nation (Government White Paper on Education, 2004). It is particularly meant to provide avenues for skills development for the youth who complete the Junior High School and Senior High School who want to acquire technical skills for employment and the world of work.

The focus on practical hands-on training and skills development distinguishes the Technical Vocational Institutes and the Polytechnics from the traditional universities.

The TVET system is oriented towards:

- Skills acquisition for wage employment and greater self employment for the private sector development

- It has been identified as the prime-mover for socio-economic and industrial development
- It is directed towards employment oriented competency-based training with opportunities for further training and education
- It is linked with industry

RESEARCH METHOD

This study adopted literature review as the main research method to retrieve data for the study. Therefore, the data gathered for discussion were obtained mainly from secondary sources, which involved the use of information from conference proceedings, books, periodicals, journals, and internet, about issues raised and concepts discussed in the text. In addition, various reports and documents relating to Technical and Vocational Education and Training in general and Ghana in particular, were used for the study. The analysis used for the study is basically qualitative and descriptive in nature.

DISCUSSION

The Importance of Technical and Vocational Education and Training

Since TVET is concerned with the preparation of learners for employment, through the provision of knowledge, skills and attitudes desirable in the world of work, its contribution to industrial and national development cannot be overemphasized. TVET remains the country's hope of reducing the high level of widespread poverty and deprivation because whether on the farm, the clinic, in the office, at sea, in the mines, in the forest, at the workshop, or the dressmakers, among others, the science or technology, which is applied depends on a workforce of skilled, competent technologists, technicians and craftsmen (Nsiah-Gyabaah, 2009).

The most important role of TVET is enhancing economical, social and industrial development. It is therefore an essential approach in preparing human resources within the educational economical system. TVET by itself does not create jobs, but is beneficial when it is associated with the actual needs of the labour market. This is the reason TVET programmes in Ghana should match current and future labour market needs. A standard TVET is expected to mobilize resources needed to face the present problems and future challenges. Due to its concentration on the actual needs of labour market and focus on the output, it designs flexible programmes that serve the needs of production and service sectors and design practices and learning experiences that best serve job requirements (Johanson and Adams, 2004).

In today's knowledge driven and competitive global economy, Technical and Vocational Education is a fundamental element in the development equation because it allows individuals and societies to unlock their potentials, expand their horizons and adapt to changes in the dynamic world. TVET provides a mix of knowledge and career focused, hands-on, and skills based education that is needed to run the productive sectors of the economy and build the nation. Quality technical and vocational education and training (TVET) helps develop the individual's knowledge of science and technology in a broad occupational area requiring technical and professional competencies and specific occupational skills.

The African Union (AU) recognizes the importance of TVET as a means of empowering individuals to take control of their lives and recommends therefore the integration of vocational training into the general education system. The AU also recognizes the fact that vast numbers of young people are outside the formal school system, and consequently recommends the integration of non-formal learning methodologies and literacy programmes into national TVET programmes (COMEDAF, 2007). Technical and Vocational initiation in the general education of youth for purpose of eradicating the scourge of poverty in the country should fulfil the educational requirements of all spheres of interest and abilities.

It is largely accepted that TVET can equip men and women for the job market or self-employment, thereby increasing their self-reliance and self-confidence. It is therefore seen as a means to promote human resource development and consequently, can be regarded as a panacea to combat ever increasing poverty problem in Ghana.

Education Strategic Plan and TVET Policy Framework in Ghana

The Education Strategic Plan (ESP) 2003-2015 is in two volumes and was developed in 2002. Volume 1 describes policies, targets, and strategies while Volume II describes the Work Programme. The Plan outlines ten policy goals, which are clustered into four areas of focus: (a) Equity and Access; (b) Quality Improvement; (c) Educational Management, and (d) Science, Technology and TVET. Regarding TVET, the Plan aims to "Extend and Improve technical and vocational education and training" (GoG, 2002, p. 8). Specifically, the ESP aims to: extend and support opportunities for young people, including out-of-school children and 'drop outs', to engage in technical and vocational opportunities. The aim is to achieve this by increased diversification and greater relevance to 'the real workplace' in the technical and vocational curriculum and by increasing the number of Technical Vocational Institutes and improving Polytechnics (GoG, 2002, p.14). Existing laws which guide

TVET delivery include the National Vocational Training Institute (NVTI) Act of 1970; the National Board for Professional and Technician Examinations (NABPTEX) Act, 1994 (Act 492), the Children's Act, 1998, the Council for Technical and Vocational Education and Training (COTVET) Act, 2006 (Act 718), and the Polytechnic Act, 2007 (Act 745).

The Government recognizes the strengthening of TVET as a means of developing the technical and skilled human resource base which Ghana needs urgently as a key strategy for rapid economic and industrial growth and for realizing the Ghana vision 2020 plan. In line with this recognition, one of the basic philosophy and orientations of Ghana's vision 2020 plan is to reform all Technical and Vocational Education systems to make them more responsive to the national goals and aspirations as well as local and global demands. A firmer commitment of Government to technical and vocational education to serve as the key to wealth creation and socio-economic development was made in 1991, with the publication of the Government White Paper on the University Rationalization Committee Report. When the White Paper on the Reforms to the Tertiary Education System was published in 2004, particular attention was paid to technical education with emphasis on the role the Polytechnics can play in developing the skilled manpower that the country needs for development (Polytechnic Law, PNDC 321; MOE, 2004).

Management and Structure of TVET Institutions in Ghana

There are different sector ministries offering TVET courses with different certification standards without effective co-ordination between them. The sector ministries and their agencies also have legal mandates to make policies and implement them in the management of the TVET system without co-ordination of efforts. As a result, there are inefficiencies in the management of the TVET system from the national point of view (JICA, 2001). The structure and ministries that are involved in the provision of technical and vocational education and training in Ghana are shown in figure 1.

Table 1: The Structure and Ministries in Charge of Various TVET Institutions in Ghana

Ministry	Educational Sector	Goals	Outcomes
Ministry of Education, Youth and Sports	**JHS** Pre-technical & Pre vocational subjects	Provides general education and basic technical and vocational skills	BECE
	SHS SHS Technical & Vocational stream (150)	General Arts & Science, Technical, vocational & agricultural electives	WASSCE Products may enter university,polytechnics, technical institutes, or workforce.
	Technical Institutes (23) Public and a few private institutes	Emphasis on practical skills to produce technically qualified individuals for direct employment and entrepreneurship.	Certification includes: Craft (3 levels)Technician (3 levels)Level II Technicians qualify to enter polytechnics
	Polytechnics (10)	Tertiary level courses in: ➢ Manufacturing ➢ Science & Tech ➢ Applied Arts ➢ Applied social Science ➢ Business ➢ Technical Programmes for direct employment	Highest Qualified is HND Courses. Some Polytechnics have introduced B-Tech. programmes in line with mandate of the polytechnic Act.
Ministry of Manpower, Youth and Employment	**NVTI** (38), **ICCES** (66), **OIC** (9), Youth Training Centres: Under National Youth Organizing Commission; Department of Community Dept, Technical & Vocational Institutes (26); Department of Co-operatives: Ghana Co-operative College, Kumasi	NVTI Centres & Other technical and Vocational centres teach a wide range of vocational courses for direct employment and entrepreneurship	Trade Certificates, National Craftsman Certificate (NCC)
Ministry of Environment and Science	**GRATIS/ITTU**	Upgrade Skills of Vocational and Technical Institutes and SHS leavers for direct employment. It also offers attachment and extension skills training for polytechnic and university students	No formal qualifications offered but certificates of achievement or completion
Registered Private TVET Institutions	207	They teach a wide range of vocational courses for direct employment and entrepreneurship	Trade Certificate, National Craftsman Certificate

Sources: (Nsiah-Gyabaah, 2009)

TVET Curriculum Design and Delivery to Meet the Labour Market

The TVET system has remained practically the same in content and delivery for decades with curriculum being institution-based. The curriculum is generally regarded as being out of date and not responding to the needs of

trainees and demands of industry and the labour market. The mismatch between institutional training and the needs of industry has serious implications for the employability of graduates from the TVET institutions especially the Polytechnics and Technical Institutes. This condition, ultimately, has implications for the nation's economy (Afeti, Baffour-Awuah and Budu-Smith, 2003).

In order that graduates from TVET institutions may meet the needs of industry and commerce and be productive, the curriculum delivery must be reviewed at all levels. In this regard, the proposal by JICA to introduce Competence-Based Training (CBT) methodology of teaching at the polytechnic level should be supported. Quality assurance mechanisms need to be introduced to ensure the practical content of programmes; and entrepreneurship training must be made part of the curriculum to encourage polytechnic graduates to go into private sector and self-employment so as to
create wealth for themselves and the nation.

This change of focus of training is based on the fact that it is the trained technical manpower in the advanced countries which has served as a catalyst for industrial development and transformation of industries in their economies. CBT education is more of career-oriented and a more practical focus than traditional method of teaching. Competency-Based Training has been defined in different ways by different authors. Some people use the terms Competency Based Education (CBE), and Competency Based Learning (CBL) to promote their approach to designing their curricula and to describe education that focuses on the acquisition of the competencies necessary to be able to perform professional tasks. Professor Agodzo (Agodzo, 2005) has defined competency-based learning simply as 'do-it-yourself (DIY) learning. According to him, a graduate who has gone through CBT should be well equipped for hands-on, practical work that is demonstrated in the specific tasks he can do and must do. Competency is an integrated entity that is made up of knowledge (what you know), skills (being able to perform a task), values (what you want, feel and think) and personality (your being). The aggregate of these attributes leads to a desired professional attitude and behaviour that defines the competency of an individual. It moves education's focus from what academics believe graduates should know (Teacher-focused) to what students need to know and be able to do in varying and complex situations (Student focused/workplace focused).

There is growing support for CBT because it enables people to acquire skills and competencies that meet the needs of industry and society (Norton, 1987). Foyster (1990) argues that using the traditional, time-based model for training is inefficient compared with CBT. The good thing about CBT is that when it is combined and integrated with traditional or old learning methods, students are able to learn what their future employers expect from them. Many countries such as Britain, USA, New Zealand, Australia, Canada, Singapore and South Africa have adopted and used CBT as an effective education and training system which can effectively respond to the needs of people entering the workforce for the first time, re-entering the workforce or upgrading their skills for an existing job (JICA, 2001).

Some Challenges facing TVET Implementation in Ghana

The lack of attention to the TVET system in Ghana, over the years, has created a number of constraints for the development of the system. Major among these has been the lack of national policy framework to guide the management and implementation of TVET programmes in a coordinated manner. Years of poor resource allocation to the TVET sector persists and this has resulted in weakness in the system. These include obsolete and inadequate training equipment and tools, lack of training materials, inadequate number of qualified instructors with requisite industrial practical experience, lack of linkage between training institutions and industry and lack of relevance of institutional training to the needs of industry. According to Akyeampong (2010), employment rates of TVET graduates in Ghana are low, leading to suggest that TVET has been too supply-driven and focuses on training which has a low market demand. Gondwe & Walenkamp (2011) also added that the actual content of the TVET programmes does not meet the needs of the workplace.

The cumulative impact of these constraints and weaknesses has created a situation where the tendency has been a greater emphasis in class room theoretical instructions to help students pass examinations and obtain qualifications based mainly on theory. The practice has tended to neglect the acquisition of workshop practical skills, which are the aspects of training programmes so necessary for the development of skilled workforce to promote productivity. The effect is that the TVET system is producing graduates at various levels, well qualified in theory but rather weak in practical skills. Every effective TVET system must necessarily be a combination of related theory and practical skills in appropriate proportions depending upon levels of training.

The Ghana Educational Reforms, initiated in 1987, was to address the recognition of the need for relevant practical education for the solution of problems for the country's overall development. Hence, emphasis was essentially to be placed on the study of technical and vocational subjects along with academic subjects in schools at the pre-tertiary level.

Ghana's Polytechnics were also upgraded in the Reforms from Second Cycle Technical Institutes to Tertiary level institutions. This was on account of the growing importance Ghana was giving to the development of

technical and vocational education and the need for Ghana to produce more middle level manpower. But in spite of the realization of the importance of TVET in nation-building, the sector continued to be regarded as a "second cousin" to general academic education.

Ironically, the extensive Educational Reforms undertaken by Ghana in the 1980's and 1990's, and which had their philosophical underpinning in "vocationalization of education" did practically little for the entire TVET system. The technical institutes including vocational institutes, which together with the senior secondary schools should supply the polytechnics with students, were regrettably left out in the reform processes. The technical and vocational institutes whose products should constitute a significant component of intake into the Polytechnics (Ministry of Education, Youth and Sports, 2002) had been neglected in the reform process.

It is, however, encouraging to note that the Government has, in recent time, given renewed recognition to TVET Sub-sector and has identified it as one of its priorities for addressing poverty alleviation. It has accordingly highlighted TVET in its Ghana Poverty Reduction Strategic (GPRS) Document in that regard. The Government also recognizes the strengthening of TVET as a means of developing the technical and skilled human resource base which Ghana needs urgently as a key strategy for rapid economic growth and for realizing the goals of the "Golden Age of Business". In helping the capacity buildings in the TVET institutions, the Royal Netherlands Government, since 2004, has initiated several NUFFIC projects in all the ten Polytechnics of Ghana. This NUFFIC project (capacity building) in the Polytechnics has tremendously improved the quality delivery of TVET programmes in all the Polytechnics in Ghana. Indeed, an improved TVET system will promote manufacturing, agro-based industry and commerce so as to enhance Ghana's competitiveness in her participation in the emerging global market economy.

In order to facilitate Ghana's competitiveness, the goal is to build a broad spectrum of highly trained and skilled workforce to support the growing sectors of the economy; and to be able to achieve this objective requires a policy framework and direction as well as radical shift in the design and delivery of the TVET curriculum at all levels especially at the Polytechnic level (Afeti, Baffour-Awuah and Budu-Smith, 2003).

The Role of COTVET in the Reform of TVET in Ghana

Currently, the TVET system in Ghana is undergoing a reform as recommended by the government white paper on education in October 2004. The white paper states that 'there should be a RADICAL transformation in the quality of TVET graduates that TVET providers produce and TVET should be seen as a CREDIBLE ALTERNATIVE to general education' (Turkson, 2010).

In pursuit of this radical transformation, government of Ghana through an Act of parliament established Council for Technical and Vocational Education and Training (COTVET) in 2006 to be responsible for formulating policies to improve the quality, relevance and perception of technical and vocational education and training across Ghana (OECD, 2008). It was also mandated to formulate skills development policies and to develop the TVET system to 'improve the productivity and competitiveness of the skilled workforce and raise the income generating capacities of people, especially women and low income groups, through the provision of quality-oriented, industry-focused and competency-based training programmes and complementary services'. One of COTVET's principal challenges is to co-ordinate the work of the Ministry of Education and the Ministry of Manpower, Youth and Employment (Ministry of Education, 2009). Since the establishment of the COTVET Act, more and more effort is being made to provide a better policy and legislative environment for TVET to thrive in. The suggestion was that COTVET and its allied agencies such as the National Vocational Training Institute (NVTI) and other stakeholders such as the Opportunity Industrialisation Centre (OIC) and Integrated Community Centre for Employable Skills (ICCES) require a more functional collaboration in any attempt to develop the TVET sector.

The new radical reform introduces the CBT concept as a mode of delivery of TVET in Ghana. This COTVET's CBT programme is an exciting new outcome based qualification which is being developed in partnership with leading employers. According to Turkson (2010), this new programme will provide the kind of workers industry demands, and also prepare individuals for self employment. Baffour-Awuah (2010) also emphasized that, the system is to ensure quality delivery of TVET in Ghana to help contribute to social and economic development in the country.

As part of COTVET's vision to harmonising and institutionalize quality CBT-TVET system in Ghana, it has set up three standing committees to develop a TVET qualification framework to determine training standards and competencies and also to provide registration and accreditation services. These committees are National TVET Qualification Committee (NTVETQC), Training Quality Assurance Committee (TQAC) and Industrial Training Advisory Committee (ITAC). There has been a number of training and workshops organised by COTVET to enable the standing committees and board members to prepare plans towards the full transition to CBT-TVET. It was noted that TQAC have finalized the guidelines for registration and accreditation for the piloting institutions

and future implementation of CBT by TVET providers. NTVETQC have also completed several documents on guidelines for the Awarding Bodies.

A Skill Development Fund (SDF) has also been established to provide a challenge fund to ensure sustainable TVET funding. The Government of Ghana and other donor partners in collaboration with COTVET are strategizing on the mechanisms to support capacity building through the skills development fund to make TVET more attractive to the Ghanaian youth. COTVET also in collaboration with international partners such as JICA and ECOWAS has been organising an institutional capacity building programmes for selected TVET curriculum Development Specialist in Ghana to better place training providers (Institutions) to effectively deliver training in CBT. The focus was to build capacity for TVET Teachers, Ministry Officials, Policy Makers, and Curriculum Development Experts. The objective was to demonstrate the capacity to implement innovative TVET reforms in the ECOWAS sub-region.

CONCLUSION

The primary objective of TVET is to prepare for the country labour force meeting needs of the labour market, to enable people contribute to sustainable social, economic, environment and industrial development. TVET also help to alleviate poverty through the acquisition of employable skills. The paper highlighted that TVET contributes to industrial development and economic growth and economic growth is directly related to poverty alleviation. Poverty, like other macroeconomic variables such as unemployment, can be reduced by economic growth.

It was noted that TVET by itself does not create jobs, but it is beneficial when it is associated with the actual needs of labour market. This is the reason TVET programmes should match current and future labour market needs. A standard TVET is expected to mobilize resources needed to face the present problems and future challenges. Quality TVET promotes skills acquisition through competency-based training with proficiency testing for employment, sustainable livelihood and responsible citizenship. It is largely accepted that TVET can equip men and women for the job market or self-employment, thereby increasing their self-reliance and self-confidence. It is therefore seen as a means to promote skill acquisition, human resource and industrial development and consequently, it can be regarded as a panacea to combat ever increasing poverty problem in the country. It is therefore important to make sure that every Ghanaian citizen has equal access to TVET programmes, which should be quality and relevant to needs and aspirations of our society.

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