

The Role of the New Technical Universities in the Improvement and Implementation of Technical Vocational Education and Training (TVET) in Ghana

ABSTRACT

This paper addresses the relevance of Technical Vocational Education and Training (TVET) in the new technical education model in higher education being pursued under the policy of converting the polytechnics into technical universities in Ghana. It rakes up the critical challenges facing the Tertiary Education system in most African countries, and illustrates how other countries address similar challenges vis-à-vis Ghana's model for tackling her own challenges. The difficulties encountered by Polytechnics, which were established to address some of the challenges are juxtaposed against the new paradigm shift which is the conversion of polytechnics into technical universities. These are done in view of the role that the new technical universities are expected to play towards the improvement of implementation of TVET as a basis for the technological advancement of Ghana's economy. It is suggested in this paper that TVET can be used as a measure in arresting youth employment in Ghana. The paper concludes by identifying the nature and kinds of support required from key stakeholders such as the Government, industry, development partners, the technical universities and other tertiary institutions.

¹Paul Effah

¹Paul Effah was a former Executive Secretary of NCTE and currently the President of Radford University College, Ghana.

Corresponding author's
email: president@radforduc.edu.gh

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INTRODUCTION

The Concepts of TVET and Technical Universities

A joint document by the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the International Labour Organization (ILO) titled “Technical and Vocational Education and Training for the Twenty-First Century defines “Technical and Vocational Education as “a comprehensive term referring to those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences, and the acquisition of personal skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life.” (UNESCO, 2002)

The document further lists some of the characteristics of a TVET system as follows:

- It is a means by which people develop talents, interests and skills leading to an occupation in various sectors or to further education;
- It allows transfers from one field to another within technical and vocational education;
- It develops the knowledge and skills that help the workforce to become more flexible and responsive to the needs of the labour market;
- It provides scientific knowledge, technical versatility and cluster of competencies; and
- Develops, among others, capabilities for decision-making necessary for active and intelligent participation, teamwork and leadership at work.

A Report of the Technical Committee on conversion of the Polytechnic in Ghana to Technical Universities published by the

NCTE (2014) also identifies the following characteristics of technical universities. They:

- Provide education and training for the world of work: students are trained to acquire high-level employable skills for the world of work: students are trained to acquire high-level employable skills for wage or self-employment;
- Have strong links with industry and business;
- Support existing and emerging productive sectors of the economy with technical expertise and R&D;
- Are focused on practical research activities, including industry and market-driven joint research projects;
- Provide skills training at all levels: certificate, diploma, degree and postgraduate degree levels;
- Are autonomous or semi-autonomous in their governance and management practices;
- Offer courses and programmes covering a wide range of economic activities;
- Place emphasis on innovation and application of new technologies, including ICT;
- Have well-trained faculty imbued with both academic and professional experience;
- Admit capable students into science and technology based programmes;
- Possess top grade teaching and learning facilities;
- Engage in consultancy and contract management activities;
- Encourage staff and student mobility;
- Provide skills training from the middle level to the highest level possible.

As is evident from the characteristics of TVET and Technical Universities listed above, both concepts set out to develop the knowledge and

skills that should help the workforce to become more flexible and responsive to the needs of the labour market and help to integrate workplace-based learning and training into the TVET curriculum. A joint message from UNESCO and ILO in a preface to the joint document referred to above emphasises the importance to be accorded TVET and Technical Universities as follows:

Providing all individuals with learning opportunities throughout their lives in an ambitious but necessary undertaking. All-inclusive lifelong learning system calls for the mobilisation of increased public and private resources for education and training and for providing individuals and enterprises with the incentives to invest in meeting their learning and skills development needs (UNESCO, 2002)

Human Resource Challenges in Sub-Saharan Africa (SSA)

A report by British Council (2014) highlights some of the human resource challenges facing Sub-Saharan Africa (SSA). It cites one of the major challenges facing the region as the lack of adequate jobs for its growing population. It cites a World Bank report which estimates that as many as 11 million young people in Sub-Saharan Africa would be joining the job market every year for the next decade. The British Council report further points to the booming higher education in SSA, noting that between 2000 and 2010, enrollment more than doubled, and increased from 203 million to 5.2 million. It is important to note that SSA has significant a youthful population. In 2010, for example, the population in the 18-23 age group in SSA was

101million, and it is projected to grow by more than 50% by 2030 (British Council, 2014). Such developments have implications for quality of education which is already under threat. The evidence available suggests that there are already 50 percent more students per lecturer in SSA than the global average (British Council, 2014). In a situation like this too few graduates particularly in TVET, gain the skills they need to find work.

Graduate Unemployment in Sub-Saharan Africa

The challenge of graduate unemployment in SSA is real and African countries must prepare themselves to address it if they are to avoid a time bomb sooner or later.

According to the British Council (2014) report, the graduate unemployment rate for Nigeria is 23.1 percent. It is 5.9 percent for South Africa but high for those with diploma or certificate level qualifications. Unemployment specifically for university graduates were not available for Ghana and Kenya. However, across the 25-29 age group as a whole, the unemployment rate is 41.6 percent in Ghana and 15.7 percent in Kenya. It is further estimated that it takes a university graduate five years to secure a job in Kenya. In South Africa, the Centre for Higher Education Transformation (CHET) has introduced a term, *Not in Education, Employment or Training* (NEET) and shocked the world with the revelation that there were million youth in that category in South Africa.

It may be revealing to work out our own NEET in Ghana to find out how many of our youth belong to this category. It could be a staggering and frightening figure. I now turn to how some other countries have attempted to address this problem by differentiating and diversifying

their educational system.

The Concept of Differentiation and Diversification in Selected Countries

The concept of differentiation as applied to the education sector in the Netherlands puts institutions into different categories each with specific focus, mission and mandate and made to keep to their respective missions. The Dutch higher education system has two distinct types of study programmes: the profession-oriented and research-oriented programmes. The latter is provided by the research universities while the former is provided by the applied science universities. In 2006, there were 41 universities of applied science and only 14 research universities in the Netherlands with enrollment in the former constituting almost two-thirds of all students in higher education. Even more significant are the characteristics of the system operated by the universities of applied science. For instance, according to HBO (2006), there is close alignment to professional practice (described as the most important value added). Thus, many applied science universities were actually founded by the business sector, which explains the kind of partnership and collaboration between them. Again, all programmes have committees with representation from educational institutions and regional business associations which work together to ensure the relevance of the programmes provided. Moreover, there is an agreement at the national level between the Netherlands Association of Universities of Applied Sciences (HBO-road) and the employers organisations to ensure alignment between national networks of educational programmes (education) and organisations representing branches of industry in the same field (the field of work). Furthermore, attachment and

internship programmes are not taken lightly as students of the universities of applied science are made to familiarise themselves with their future professional practice during the course of their four-year programmes.

Approximately 25% of a student's study consists of a practical component in a placement or graduation assignment. A study may also be available on a cooperative education basis, as part of which study and work may be seamlessly intertwined during the course of the programme. The structure of the system is based on the principle that the interaction between the applied science universities and the business sector is the best guarantee for the labour force which knows what the business sector wants. In 2004, 90% of the students of universities of applied sciences who graduated found work within three months. The benefit to business is the contribution in knowledge and innovation that the students and their teachers bring. Although, sociocultural differences may not allow the same situation to happen in Ghana to the same extent, the nature and structure of the universities of applied sciences and the kind of collaboration that exist between them have lessons for Ghana if differentiation should have meaning and applicability.

There are also lessons to be learnt from the higher education system in the United States of America, which offers a differentiated higher education system with the community colleges at the base. In the middle of the structure are the land grant colleges and the state universities established to deal with the problems of agriculture, mechanical arts and the trade, which were identified at the Boston Convention in 1848 literally by the whole of the US. The land grant colleges which became the great state universities were tasked to study and assist in finding solutions to the problems facing

America. At that time, the most important industry in America was agriculture, and, therefore, it was only natural that agriculture would be the focus of their endeavours.

The land grant colleges trained extension officers who were sent to the field to assist the farmers to identify their problems and find solutions to them. Such was their contribution that at some point it was estimated that 50% of the agricultural produce of America was attributed to the work of the land grant colleges (Bowden, 1977). At the top of the US differentiated higher education system are the research universities such as Harvard, Yale, Princeton, etc. many of which are private. Also, the study of mechanical arts and trade were taken seriously. In 1989 there were 12,300 post-secondary institutions in America. Out of these there were 2,070 four year colleges and 8,956 vocational and technical institutions, emphasising the importance attached to TVET (Department of Education and Science, 1989). More than half of the population of America enter higher education at some time in their lives and many of the students work while studying.

Unlike the British higher education system which frowned on TVET and career-focused education, the American system promoted it (Bowden, 1977). The American commitment to open access to higher education and career-focused and skills-oriented education was the reason for the establishment of community colleges which together enrolled close to a third of all American students in postsecondary education. It is at the colleges where students are equipped with the knowledge and skills in applied and vocational courses in a range of fields that lead directly to employment such as restaurant management, metal work and

automobile mechanics. The students are further trained in general education so that those who wish to transfer to other universities can do so.

The Canadian system of higher education is described as diverse, vibrant and dynamic because it offers a mix of opportunities in a variety of educational settings. In addition to universities, Canada's post-secondary system in 1989 included 175 community colleges that respond to the training needs of business, industry and public service, as well as the educational needs of vocationally oriented secondary school graduates. In 1995, I had the opportunity to experience the Canadian system at the Okanagan University College which combines practical vocational programmes with some theoretical underpinnings.

In Thailand, TVET is making significant progress in training skilled and semi-skilled technicians as well as technologists for the labour market. There are more than 800 public and private institutions providing TVET to about one million students in formal programmes. According to Boonplyathud and Choomnoom (2002), the mission of TVET in Thailand is to implement the following:

- Quality/Standard/Efficiency/Demand-driven technical education
- Opportunity/Continuation/Articulation/Variety
- Youth/Adult training in technical education
- Cooperation/Mutual Benefit/Partnership
- Modern/International Standard/Technology/ICT/Indigenous Knowledge
- Workplace learning/On-the-job training/ Practical Experience/Enjoyable learning

In Africa, Kenya offers a recent example of a technical university to focus on work related disciplines.

I now turn to Ghana's model of addressing the human resource challenge, emphasising what I term "the missing link in Ghana's educational systems".

Ghana's Model of TVET

Ghana's model of TVET at the tertiary level began with the upgrading of five technical institutes as polytechnics-Accra, Takoradi, Kumasi, Tamale and Ho. Cape Coast was established as a Polytechnic from the inception under the Polytechnics Law of 1992, PNDC 321. Sunyani, Koforidua, Wa and Bolgatanga were later added to the list to ensure that there was a Polytechnic in each of the ten administrative regions of Ghana.

The conversion of technical institutes into Polytechnics was largely to ensure that there was progression for students who opted for the TVET stream. The upgrading of polytechnics to tertiary status did not address the problem of deficit in skills training in TVET. Part of the problem was that the decision to elevate the Polytechnics was implemented in haste. The minimum resources necessary for the upgrading had not been met. Recruitment and training of the requisite staff and the provision of facilities and improvement of existing ones were not done before the upgrading exercise. The polytechnics received just about 28% of their assessed financial requirements (Effah and Adu, 1998). Although this figure increased to about 50% in 2000, given the magnitude of the requirements of the polytechnics, it was far below what was required to enable them to meet their objectives (Effah, 2003).

Although the mandate of the Polytechnics is to focus on the application of science and technology; the applied arts and skills training; encourage the study of technical subjects at the tertiary level; and provide opportunity for research and development, polytechnics currently enroll only about 30% of their students in science and technology programmes. As at the 2013/2014 academic year, the total enrollment in public and private universities was 208,117. This was about four times more than that of the polytechnics, whose enrollment stood at 54,897. This is a situation of an inverted pyramid, where the base is smaller than the top. With regard to the quality of staff, particularly faculty, one could confidently say that owing to interventions such as the Teaching and Learning Innovation Fund (TALIF) sponsored by the World Bank as well as UFFIC by the Government of Netherlands, the quality of staff has significantly improved with many staff acquiring the masters and a few doctorate degrees. This improvement notwithstanding, most of the teachers lack the necessary professional and industry experience which is a major requirement in similar systems like that of Germany (NCTE 2014). Collaboration with industry in terms of governance, internship and attachments is not structured, and that accounts for the deficit in skills training among most graduates of polytechnics, thus limiting employment opportunities, particularly in business and industry.

Polytechnics have also had a fair share of industrial actions and agitations that have tendered to dent their image and slow down progress. In 2005 when I was invited by the Sunyani Polytechnic to present a paper at their first lecture series, I spoke on the topic "A decade of Polytechnic Education in Ghana: An Assessment of Achievements and Failures". I

used the opportunity to share with participants' information I had worked out in terms of industrial actions and agitations. In the previous year 2004 alone, out of the 32 weeks devoted to academic work, 27 had been taken up by industrial action; 16 weeks by students, 5 weeks by the Polytechnic Teachers Association of Ghana (POTAG) and another 6 weeks by the Teachers and Educational Workers Union (TEWU). In more recent times agitations have taken a different form, characterised by the writing of anonymous letters, court actions, intimidation and various other kinds of unrest, sometimes at acrimonious proportions. These actions retard progress and cannot be carried into the new technical universities poised to make a difference and to bridge the gap between TVET institutions and the world of work.

Cataloguing achievement of some Polytechnics, I listed for Tamale Polytechnic, the design and manufacturing of a rubbish dump, a domestic waste separator and shea butter extraction and cashew shelling machines, among others. For Ho Polytechnic I cited the Catering Unit which had developed over 17 new recipes for the hospitality industry. Ho had also just developed its Strategic Plan.

Regrettably, these impressive beginnings have suffered stunted growth. You can imagine where Ho Polytechnic would have been if this impressive start had continued. These days, fruit juices of all kinds are beginning to surface on the local market. How much share of this fruit juice market can you annex at Ho to become the one-stop centre for all advisory services in the fruit juice industry? This is only one example that polytechnics and technical universities can set themselves up for.

Arguably, owing to a number of circumstances, some inherited at birth, and others acquired, the performance of polytechnics in terms of their mandate of providing programmes in applied science and technology with significant industry-content, skills training, and research and development (R&D) has been less than satisfactory. It is also true to say that the conditions of service for staff of the polytechnics have not helped the situation. Has a case been made for the conversion of polytechnics into technical universities? I think there is a strong case but this has to be accompanied with a number of provisions.

Which Way, Technical Universities?

I have titled the last segment of my Lecture, "Which Way, Technical Universities?", to discuss their role in the provision of quality and relevant TVET in Ghana. This section is organised around governance, financing, quality and relevance, R&D, and the roles of the private sector (industry) and Government.

I echo the point that has been made several times over, namely, that education is the foundation of economic growth, a necessary step towards economic and social development. No system of education is complete without TVET which is one critical avenue for creating opportunities for the child to escape poverty, to move upward on the social ladder and contribute meaningfully to the socio-economic development of the country. Among the stigmas linked to polytechnic education in its current form is the lack of progression. Until the recent opportunity to study up to the B. Tech level in some programmes, the impression had been created that students of polytechnics could not train beyond the HND without shifting to other disciplines.

Polytechnics have, therefore, become unattractive to many candidates seeking tertiary education beyond the HND. Polytechnic education is good for the country. Like the community colleges in the USA, polytechnic education in Ghana will also serve as the feeder in providing technical and career-oriented programmes to the technical universities so as to provide opportunities for all categories of students who are TVET inclined to progress to the highest level possible without shifting focus. And, as has been demonstrated, the country would benefit by creating more opportunities for students to go through the TVET stream.

Governance and Funding of Technical Universities

Effective technical universities require effective governance and management systems. For instance, how much power the governance system has on the decision-making process, how vision and goals are turned into management systems, and how governance and management systems are implemented have implications for the effective functioning of the technical universities. For, as it is said, 'the fish rots from the head'. An ineffective governing council will kill initiative and dampen morale and half progress in the institution.

The councils of the technical universities must have sufficient autonomy to run the affairs of the institutions. They must have a good mix of relevant educational background, industry experience, diversity, professional expertise, and fund raising skills. They should not limit their activities to the council chamber or boardroom. They must evaluate their vice chancellors and assess their own performances. The Councils must act on advice, particularly where they lack the ability to deal with specific issues.

Appropriate orientation should be given to both council members and the leadership of the technical universities to orient them on their new roles and responsibilities. Staff development must be pursued vigorously to improve quality.

Quality and Relevance

Every successful citizen must meet three criteria- knowledge, appropriate skills and the right attitudes; and technical universities must provide these in adequate doses. In other words, TVET at the technical university level must not shift focus to mere academic qualifications. It must combine theory and practice, skills development and entrepreneurship such that graduates of technical universities can create their own jobs or meet the standards set by the labour market. Every student whatever the course being pursued must have a project and a business model to be nurtured to completion to coincide with graduation. In order for these to be implemented, two things must happen. First, we need to establish in the technical universities business incubation centres where students would nurture their businesses. These centres would provide inclined business services such as legal, business development plans, tax regimes and other business advisory services where professionals and industrialists hired on either retainer or consultancy basis would assist the students to nurture and develop their business models to maturity throughout the entire duration of their programmes.

Councils and the leadership of the technical universities should muster support from all stakeholders, particularly the internal constituencies ensuring that they do not turn their backs to any of them. They should embrace and address all agitations and conflicts and try to address them early before they get

out of hand. They should set good examples by providing information using the approved channels of communication. They should be open and transparent in their dealings with the university community. Second, there is the urgent need to reorganise and restructure attachment and internship programmes. It is impossible to release the total of about 50,000 students pursuing TVET programmes during one long vacation to industry. In this regard the technical universities should be advised to restructure the attachment and internship programmes year round to permit the release of the students in smaller numbers to industry. The semester system should make such a scheme possible. Again, the term industry should not be limited to the large scale enterprises. The small and medium scale businesses are available to offer attachment programmes. Some incentive packages should be worked out to make attachments and practical training attractive to industry.

Research and Development

The Technical Universities should pay attention to Research and Development. A recent international study by the Netherland Development Assistance Research Council concluded that universities in developing countries are not fully geared towards solving development related problems. The study shows the lack of connection between research and development priorities. This is partly due to inadequate spending on R&D. For example, while Asia accounted for 31.5% of world expenditure on R&D in 2002, Africa accounted for only 0.6%. It is not surprising that Africa is experiencing rising levels of poverty, failing GDP and even political upheavals (Zakri, 2006).

In the area of agriculture, can our technical universities and the polytechnics manufacture special hoes that would be much friendlier to farmers and much more suitable to the agricultural land? When will mechanical engineering departments in our tertiary institutions envision and work towards the manufacture of local equipment and implements for our local industry? What creativity and innovation can our institutions come up with to address some of our local and peculiar challenges? Such are the challenges that our technical universities would be required to address if they are to be effective. But this cannot be achieved without the support and cooperation of all stakeholders which is my last subject.

Role of Stakeholders

All stakeholders have a responsibility towards making the emerging technical universities vibrant partners in the economic development of the country, particularly in addressing graduate unemployment among the youth, in reducing poverty and raising the standard of living of the people.

By far, it is the Government that has the biggest responsibility to set up the technical universities and to set them up well. This time around we should try to avoid the situation which befell the polytechnics where they were established without adequate preparations. In spite of the achievements that polytechnics have chalked over the years, they have not been well-resourced with the human, physical and academic infrastructure to operate on the same scale as their counterparts in South Africa, Germany and the Netherlands.

Governments across the globe, especially in China and India, are pouring unprecedented

sums into building and improving their universities and spending million more selling them abroad (Vencat, 2007). Our technical universities should be treated the same way. This is why I support a phased approach to the conversion of polytechnics into technical universities, a few at a time, to ensure that they are properly equipped for a sustained take-off. Abortive take-offs are expensive and have disastrous consequences.

Other Stakeholders

There are many other stakeholders that stand to benefit from well-functioning technical universities. Industry is one such stakeholder which stands to benefit from the skill-trained and knowledgeable graduates to help turn industry around as happened in France and Germany. Industry has to open up and partner with the technical universities, particularly in the area of curriculum design, practical attachments and internships. Both teachers and students should bring into the university the problems facing industry, study them, and find relevant solutions.

The technical universities would benefit from technological know-how, modern trends and equipment which industry is best suited to acquire because of the capital outlay involved. The technical universities need to reposition and apply themselves seriously to the work ahead of them. Staff and students should spend time dreaming, being creative and innovative. They should spend less time on agitations that only make the institutions ungovernable. Conditions of service for staff must be improved to stem the current brain drain: or, is it brain attraction to the traditional universities? Donor support is welcome but it must be demand-driven to allow flexibility in addressing local and peculiar problems and challenges.

Marginson et.al. (2002) have referred to universities as “Glonacal” institutions where “Glonacal” represents the three dimensions of global, national and local. Every university must meet the three criteria. The new technical universities must address local challenges; they must promote national aspirations and also become competitive within the global intellectual community.

CONCLUSION

This paper has tried to hoist the argument for identifying TVET as the training model that could help eradicate the challenges Ghana has faced for decades with the churning out of graduates, most of whom do not possess employable skills. Although, it is not possible to exhaust in one paper all the benefits, challenges, and the measures towards improving the implementation of TVET through technical universities, the major arguments that support the value and relevance of TVET have been established. This paper has registered the position that it is evident that the establishment of the technical universities is timely and the motivation behind it and its goals are legitimate, logical, genuine and beneficial. However, these would be best served if the conversion process is rolled out in phases, a few at a time. It is of critical significance to identify with the position that they have to be well resourced and positioned to train people in TVET to the highest level possible.

As the conversion is hailed today, the process and each technical university would be assessed in future by the extent to which they have been positioned to address industry-related problems and become institutions that train people to create jobs and to become entrepreneurs who can transform the economic fortunes of individuals, households and the nation.

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