Reforming Technical and Vocational Education for Industrial Revolution

Aliyu Mohammed Bisalla
School of Environmental Design
Department of Art & Industrial Design,
Federal Polytechnic, Nasarawa
bisalla2003@yahoo.com
08069449353

Abdulfattah A. Adeyemi
Department of Art & Industrial Design,
Federal Polytechnic, Nasarawa
abdulfattahadeyemi@yahoo.com
08095634971

ABSTRACT
This paper focused on the reforms of technical and vocational education for industrial revolution, socio-economic and political stability in Nigeria. It reviewed the concept of technical education and vocational education. Historical attempt on vocational and technical education were delved into; especially as it concerned the pre-independence and post-independence era. An attempt was made to highlight on the type of education, our colonial masters bequeathed to us as ‘general’ rather than “vocational/technical”. However, imperatives such as vocational and technical education were critically analyzed for socio-economic and political stability of Nigeria. This paper eloquently evaluates basic drawbacks of vocational and technical education in Nigeria to include: lack of funds, poor facilities, brain drain syndrome, staff retention problem, curriculum inadequacy, lack of interest of political office holders/lawmakers. Furthermore, the way forward and its attendant solutions to these problems were proffered. The paper suggested that a holistic reform towards technical and vocational education and a deliberate attempt to lift the programme is the only panacea to technological problems in Nigeria with socio-economic and political stability in its preview.

Keywords: Technical, Vocational, Socio-Economic, Political, Education

INTRODUCTION
Technical and vocational education (TVE) has been an integral part of national development strategies in many societies because of its impact on productivity and economic development. This paper focuses on reforming technical and vocational education that will enhance industrial development. According to Dike (2005), technical education is a planned program of courses and learning experiences that begins with exploration of career options, supports basic academic and life skills, and enables achievement of high academic standards, leadership, preparation for industry-defined work, and advanced and continuing education. Vocational education and training also prepares learners for careers that are based in manual or practical activities, traditionally non-academic and totally related to a specific trade, occupation or vocation. In other words, it is an education designed to develop occupational skills. Vocational and technical education gives individuals the skills to live, learn and work as productive citizens in a global society. A variety of components fall under the umbrella of Technical and vocational education: agricultural education, business education, family and consumer sciences, health occupations education, marketing education, as well as art and craft education.
The National Policy on Education (1981) defined technical Education as “that aspect of education which leads to the acquisition of practical and applied skills as well as basic scientific knowledge”. Under critical examination, technical and vocational education has been an integral part of national development strategies in many societies because of its positive impact on human resource development, productivity and economic growth.

Technical and Vocational Education: An Overview

It has been noted that technical and vocational education are designed to offer training to improve individual’s general proficiency especially in relation to their present or future occupation. The provision of technical and vocational schools has a long history. Before the industrial revolution (between 1750 and 1830), the home and the “apprenticeship system” were the principal sources of vocational education. Societies were, however, forced by the decline of handiwork and specialization of occupational functions to develop institutions of vocational education. Furthermore, the Columbia Encyclopedia of 2001 noted that manual training, involving general instruction in the use of hand tools was said to have developed initially in Scandinavia (c.1866). Vocational education became popular in the elementary schools in the United States after 1880 and developed into courses in industrial training, book keeping, stenography and allied commercial work in both public and private institutions. Some of the early private trade schools in the US include Cooper Union (1859) and Pratt Institute (1887). The number of public and private vocational schools has greatly increased since 1900. Without gainsaying, the current preoccupation with university education in Nigeria reduces socio-economic opportunities of those who are more oriented towards work than academics. Not everyone needs a university education. But who would employ them if everyone became a university graduate? Graduates of vocational and technical institutions are highly skilled entrepreneurs. It could even be said that many of the so-called “expatriate engineers” who are being paid huge sum of money in dollars to build the roads and bridges in Nigeria are graduates of vocational colleges!

Dike (2006) posited that the issue of youth unemployment appears to be shooting up the sky because many of them lack “employability skills” that are often acquired from vocational schools. Dike further stated that the nation’s poverty level was put at 70% and more than 91 million Nigerians are said to live on less than one dollar per day, and it has been well documented that Nigeria’s higher institutions lack the tools to give students the skill employer’s needs. It is evident that Nigeria has teething problems in social, economic and political stability. Are vocational and technical skills acquisitions by the citizenry likely to be the panacea to these teething socio-economic and political problems?

Let us critically examine the concepts of technical and vocational education. The National Policy on Education defined technical education 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 practical skills, attitudes, understanding and knowledge relating to occupations in various Sectors of the economic and social life (NPE, 1981). Technical education therefore, can be seen as the formal training of persons to become technicians in different occupations. Thus any education that is geared towards teaching technical skills and attitudes suitable to such skills can be regarded as technical education. Furthermore, Uwaifo (2009) states that technical education is the training of technically oriented personnel who are to be the initiators, facilitators and implementers of technological development of a nation. He opined that this training of its citizenry on the need to be technologically literate, would lead to self-reliance and sustainability. He stressed that technical education more than any other profession has direct impact on national welfare. However, technical education contributions are widespread and visible ranging from metal work technology, mechanical/automobile technology, electrical and electronic technology, building and woodwork technology etc. Consequently, technical education can serve as change agents not only for technical systems but also for many other-societal changes. The practical nature of technical education makes it unique in content and approach thereby requiring special case and attention.
The Nigerian National Policy on Education defined Vocational and Technical 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 practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life (NPE, 1981). In his own views, Okoro (1993) defined vocational education as any form of education whose primary purpose is to prepare persons for employment in recognized occupations. Vocational training, he explained, deals with the training or retraining designed to prepare individuals to enter into a paid employment in any recognized occupation. Iheanacho (2006) defined vocational education as that aspect of education which deals with business education, farming, book keeping, and bricklaying with the aim of acquiring vocational skills in these fields. In the same vein, Ojimba (2012) had posited that vocational education encompasses fields of study such as agricultural education, fine and applied arts education, business education and vocational trades in soap making, hairdressing, computer training etc.

In “Western Influence on Vocational and Technical Education” Iheanacho (2006) posited that the advent of colonialism and western foreign influences were unfavorable to the area now called Nigeria in terms of vocational and technical education. This influence of colonialism forced our fledging indigenous technological development on a foundation of poorly mastered foreign technologies. In other words, western type of education came and hijacked our indigenous processes of technical education and vocational education. Invariably, we abandoned our indigenous technology and focused on foreign technology which we could neither properly adapt to our environment nor holistically adapt to our alien environment. Furthermore, the simple technical capabilities emanating from our local processes such as local gin brewing, wood carving, goldsmith and others should have been systematically and scientifically exploited and built into new forms of vocational and technical education. Indigenous technologies would have been given the chance to develop, no matter how crude they were. They would then metamorphose into foreign technologies. In the same vein, our traditional technical and vocational education processes would have been recognized, formalized, encouraged, developed and institutionalized.

If this had been the case, Nigeria would have been different today, because the indigenous technologies would have been vastly improved as viable alternatives to the foreign ones. Patriotic and economic reasons would have engineered us to develop our local technologies in order to compare and compete with foreign ones. In this circumstance, some economic strength would have been generated. This would have alienated the current cry of technology transfer emanating from government and policy makers. Up to the end of the Second World War, there was no serious attempt, whatsoever to develop our indigenous technologies through the commitment to a viable technical and vocational exposure in our colonial educational system. Rather our colonial masters bequeathed to us a purely literary type of education. They foisted on Nigerian people an educational culture that recorded low on technical and vocational education which provided no viable grounds for the development of indigenous technology and impeded any form of technological independence.

However, a nation without technology cannot in economic terms produce anything in “real” terms. In others words, they cannot produce secondary products like cars. The best they can do is to assemble cars and trucks from knocked down parts manufactured overseas. So the money earned from crude oil go back to the makers of the machines and owners of the technology used in drilling and refining our oil. Esen (2002) had posited that technical and vocational education is the ingredients of socio-economic and political stability of a nation and its economic survival. For a long time now, Nigerians have adopted education as the official ingredient for achieving socio-economic stabilities and political survival. Political stability and economic survival implies development in real economic terms and also improving the quality of life of the average Nigerian. It is in this perspective, that a re-examination of Nigeria’s place in this fiercely competitive global economy is necessary.

Perhaps, if we had adopted vocational and technical education rather than general education as an instrument for national stability and economic survival, the nation would have been better for it. The classic examples of the Asian Tigers viz South Korea, Malaysia, Singapore, Indonesia etc not to mention the economic giants such as Taiwan, China and Japan come to mind. In terms of socio-economic and
political stability, we want to be a producer nation that is, producing mainly secondary goods rather than primary and crude raw materials. We do not want to remain a consumer nation. Since, socio-economic and political stability means sustained economic development, a transformation from a “consumer nation” to a “producer nation” becomes imperative. This is because a “consumer nation” in this competitive world economy is a dying nation. A developing nation must be willing and capable of producing at least a large proportion of its consumer goods. In his own views, Obiefuna (1998) had earlier retorted to asking these questions. One may ask, he opined, “do Nigerians need to wear clothes?” Then we must have the capability to produce some of the clothes we need to wear; not just the raw cotton. Do we need to have food drinks? Then, we must be willing and capable of producing finished goods like pronto and the like, rather than cocoa. Do we need to drive cars? Then, we must not only mine and stockpile iron ore/steel at Itakpe and Ajaokuta we must have the capability to transform this steel/iron ore into finished goods. It is not sufficient to assemble cars from completely knocked down parts but to manufacture them as is done in Japan, France, and Germany etc. A developed Nigeria means a Nigeria where the average citizen enjoys an appreciable standard of living and we produce most of what we consume with substantial leftovers to sell to foreign countries. However, is it “general education” that turns our hides and skin into shoes, or raw cotton into clothes? It is only the relevant technological skills that are only derived from vocational and technical education that will transform wood pulp into paper and our crude oil into a wide spectrum of petroleum consumer goods. Therefore, technical education and vocational education and not just “general education” are the real ingredients of socio-economic and political stability in Nigeria.

Factors Militating Against the Success of Technical and Vocational Education Reforms in Nigeria

Though technical and vocational education seems to be the panacea for Nigeria’s socio-economic and political problems in terms of stability, they are engrossed with teething problems such as:

**Funding:**

Universities in Nigeria are owned and funded by the Federal Government, state government and private individuals. In Nigeria, the allocation to education as a share of the GDP is quite minimal. Till date, government funding of vocational and technical programmes has not been impressive.

**Facilities:**

Most technical education departments in Nigerian universities do not have laboratories or workshops space let alone usable equipment and facilities and where they exist, they are grossly inadequate, as the laboratories only have the items or equipment that were provided when the departments were established.

**Brain Drain:**

In the context of this paper, brain drain refers to the movement of lecturers of technical education which are needed for the socio-economic and technological advancement of Nigeria from one university to other universities or to other professionals (including politics), calling for better conditions of service. Akintunde (1989) had earlier identified five different components of brain drain:

- Experts in academics who moved to the industry where they get better pay for their services.
- Lecturers and students who leave the country to acquire more knowledge and skill but later refused to return.
- Lecturers who move from one country for other conditions of service.
- Skill professionals who abandon the practice of technical education in favour of other more lucrative economic activities and political appointments which are not related to their training.
- Skilled professionals, although in their field of training who do not devote their full attention to their job because of their effort to supplement their earning through other unrelated economic activities.

**Staff Training and Retention**

The training of academic staff is ordinarily a continuous exercise to ensure consistent improvement in the quality of their outputs. The training is two-fold: training to acquire minimum qualification to teach, and continued professional training. Both types of training can be acquired either locally or overseas.
However, the salary and service benefits paid to technical education teachers in Nigeria can be assumed to be too low compared to the efforts and time needed to be invested in the profession. This leads them to migrate to other countries especially the United States of America or local industries for better pay.

Staff Situation
Many universities across the country are inadequately staffed both qualitatively and quantitatively (Uwaifo, 2005). In most departments especially in technical education programme, the proportion of staff without Ph.D out numbers those with Ph.D. However, it is difficult to get people trained to the level of Ph.D because academic is not as attractive and commensurate to the effort, commitment and finances put in to acquire it; whereas a first “degree graduate” can function well in the industry and politics etc and earn good money.

The Curriculum of Technical Education
The curriculum of a subject with practical content is generally organized into an average of 67% for the theoretical classes and 33% for laboratory. Olunloyo (2002) in Ojimba (2012) noted that one of the issues confronting the design of appropriate curriculum for technical education is preparing students for the shift from the florist to ICT paradigm in technology practice. However, some problems inherent in curricular include:

- They are based on a foreign model
- There is a lack of basic textbooks and available ones are illustrated with examples from outside the local environment.
- There is usually a shortage of highly competent indigenous teaching and support staff with sufficiently wide practical experience of technology.
- The curricular are adjudged to be too academic and over-loaded with intellectual content in pure science and mathematics at the expense of basic engineering and technology.
- The teaching approach follows the conventional method of transforming knowledge across through the lecturer reading out to students, who would then take down notes. The educational system continues to place considerable value on this method of teaching.

The Apathy of Political Office Holders/Law Makers
Education generally, including technical education programmes has been grossly neglected in Nigeria. Technical educators have the greatest challenge of convincing the law makers on why they should give priority to the programme in allocating resources. However, if this lopsided attitude to the proper development of technical education remains, Nigeria’s dream of becoming a technologically developed country will be a mirage.

THE WAY FORWARD
It is evident that Nigeria lags behind in preparing her workforce for the challenge of the rapidly changing global economy. For that, the nation must invest copiously in education with particular attention given to vocational and technical education. No nation would make any meaningful Socio-economic stride without viable educational institutions. This was buttressed by the United Nations Educational Scientific and Cultural Organization (UNESCO), noting that revitalizing this sector is among the ways to improve economic opportunities for the youths. Furthermore, the NEEDs and SEEDs programmes should include vocational education and job training program in their economic growth and development strategies as part of poverty alleviation and assist the unemployed for job search. This is the way things are set up in many societies, and Nigeria should adopt and adapt the system if she wants to move forward. However, political rhetoric without action will not solve Nigeria’s problems. The progress of Nigeria lies in the productivity of its citizens and quality education and genuine vocational programs hold the key. The 1991 policy of the World Bank harped on the development of a skilled labour force which makes an important contribution to development. The challenges are to use employer, private and public training capacities effectively to train workers for jobs that use their skills and to do so efficiently in developing economies increasingly influence technological change and open to international competition.
CONCLUSION
No nation would make any meaningful socioeconomic stride without well-equipped technical and vocational institutions. The United Nations Educational Scientific and Cultural Organization (UNESCO) have noted that revitalizing this important sector is among the ways to improve economic opportunities for the youths. The National Board for Technical Education (NBTE) and teachers in this area should take up the campaign for more funds for technical and vocational education and to launder its image. No society has ever become an industrialized nation without technological capability. Nigeria can become an economic power-house (and realize its visions) only if proper attention is given to education and technological development, if creativity is promoted and rewarded, and if its material and human resources are channeled to productive use. The leaders should recognize the relevance of technical and vocational education in national development and adopt and adapt what works in developed nations. Those in positions of authority should salvage Nigeria’s image by sincerely tackling corruption and fixing the dilapidated institutions so that with a fundamental shift in values, commitment and thinking, and with technological capability, Nigeria will continue to stand tall in the midst of industrialized nations of the world.

REFERENCES