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# Sustainable Technical Education: Panacea to National Development

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## ABSTRACT

From prehistoric times, education has been the major source of information and knowledge. Its importance cannot be overemphasised. The fact remains that education plays a vital role in the development of every nation; hence it is of paramount importance for every citizen to be adequately educated. On the other hand, technical and vocational education is much more pivot to national development. In addition to general education, technical and vocational education is that branch of education which involves the study of applied sciences, technologies as well as the acquisition of various practical skills, understanding and the knowledge in relation to occupations in various sectors of economic life. It is a major means of preparing young adults for occupational fields and effective participation in the world of employment or work. In the light this, it is deducible that technical education is geared towards preparing people towards self and national development. In a situation where youth unemployment has taken the driver's seat in the nation, a lot of efforts need to be geared towards development and sustaining technical education in our quest for a sustainable national development. Of a nation, the aim of this paper is to look into the role(s) played by technical education in the development especially developing ones, draw inferences and proffer necessary solutions towards a sustainable national development.

**Keywords:** Development, Economy, Technology, Technical Education, Training

## INTRODUCTION

The challenges we are having today as a nation, whether in Job creation, Industrialization, Education and the Economy as a whole are all due to the neglect accorded to vocational and technical education. From the Old Stone Age till date, man has always developed ways and techniques of handling his problems. Vocational and Technical Education is a major tool which advanced countries like Japan, America, china, just to measure a few, have used to develop their economies.

According to Adikwanduaba *et al.*, (2013), he said that it is necessary to behold the fact that the growth and effectiveness of technology

development or transfer to any developed or developing nation, is largely reflective of her educational curriculum. . As the child grows up, he must be educated for effective performance in all aspects of living. In a world of work, there is no escape from necessity for formal preparation of the individual for vocational pursuit. A strong society depends upon her educated citizens. These axioms have less need for defense than for appraisal in the light of a fast changing world of technology such as ours.

Technical and vocational education on the other hand, as opined by Olubodun *et al.*, (2011), is a pivot to national development. In addition to general education, they argued that Technical and Vocational Education is that aspect of educational process which involves the study of applied sciences, technologies, and the acquisition of practical skills, attitudes, understanding and the knowledge related to occupations in various sectors of economic and social life. More so, it can also be regarded as a means towards preparing for occupational fields and effective participation in the world of work. It broadly involves technical education, vocational education, on-the- job training, apprenticeship and the like in either a formal or informal way.

Nuru (2007) indicated that changes in a country's economy is required to prepare young people for the jobs of the future and technical and vocational education have important roles to play in this process. To be more emphatic, the role of vocational and technical education cannot be over emphasised. Olubodun (2011) opined that, In order to train and their technical workforce for rapid industrialization and national development, Technical and Vocational Education has emerged as one of the most effective human resource development strategies that African countries need to embrace.

Furthermore, Asogwa *et al.*, (2007) maintained that there is an urgent need for the people's attention to be redirected towards self-reliant and sustainable means of livelihood which technical education provides. The importance of vocational and technical education in nation building cannot be over emphasized. Therefore, it is very important, that Nigeria and other African countries get down to work as regards the issue of vocational and technical education, so that they can also be a force to be reckoned with in global economy even as we pursue vision 20-20-20. The aim of this paper as earlier stated is to look into the role(s) played by technical education in the

development especially developing ones, draw inferences and proffer necessary solutions towards a sustainable national development

## **GLOBAL SCENARIO AND EVOLUTION OF TECHNICAL AND VOCATIONAL SKILLS**

According to the African Economic Outlook, over the last 40 years, the importance attached to technical and vocational skills in national and international development agendas has varied. During the 1960s and 1970s, TVSD became popular with many African countries as a way to ease the problem of unemployment among school leavers. However, in the 1980s, budgetary pressures resulted in many countries reducing the share of government budgets for public education, including formal TVET. Rate of return studies, which showed that returns to general education were higher than to vocational education, also undermined much external support for vocational education and training. TVSD has been gaining momentum since the mid-2000s. This upsurge in interest was greatly influenced by evidence of TVSD's key, transformative role in East Asia and its continuing importance in the OECD countries.

During the 1990s, the international policy debate on education was mainly focused on basic education. Although skills training, apprenticeships, and formal TVET programmes were seen as components of the expanded vision of basic education at the World Conference on Education for All (WCEFA) in Jomtien in 1990, they have not featured substantially as a core element of the global agenda of education since that time. Given the important delays faced by the continent, and of sub-Saharan Africa in particular, in terms of primary enrolment rates, many donor agencies focused on the Jomtien challenge of delivering universal access to, and completion of, primary education as their priority, which has led to a shift of resources both within national budgets and donor support towards expanding primary education, too often without regard for quality, at the expense of secondary and tertiary education, including TVSD. This tendency was reinforced by the International Development Targets in 1996, with one target being universal primary education (UPE). This target was in turn incorporated in the Millennium Development Goals (MDG2) in 2000.

The expansion of primary education during the 1990s has put enormous pressures on the still small secondary school and formal TVET systems of many African countries by increasing the supply of candidates. In the mid

2000s, recognising that universal primary education entails the need for coherent pathways to further education and to skills for employment and self-employment, an international consensus was reached on the need for a holistic, integrated, inter-sectoral approach to education, including TVSD. This new vision has driven several TVSD system reforms which are currently taking place in Africa and led to a reappraisal of donors' support strategies. The principles of a holistic approach to technical skills developments were accepted by the Commission for Africa, the Millennium Project, incorporated in new World Bank policies on secondary, higher and general education, and on skill development, and reflected in the World Development Report 2007 on Youth. TVSD has been mainstreamed into the agendas of both the ILO and UNESCO.

The ILO is primarily concerned with technical and vocational education and training in relation to employment creation and welfare of workers. UNESCO is primarily concerned with technical and vocational education as part of the education of human beings equipped to live in a society dependent upon technological development. In its Plan of Action for the Second Decade of Education (2006–2015), the AU recognises 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. However, the integration of TVSD strategies into comprehensive employment policies remains a challenge in most African countries.

#### **BRIEF HISTORY AND REFORMS OF TECHNICAL EDUCATION IN NIGERIA**

According to Shofoluwe (2013), the origin of vocational and technical education in Nigeria could be traced to the pre-colonial era when traditional education was in practice. During the period, the child was trained in the family trade by direct apprenticeship to either the parents or relations. In traditional education of the various ethnic nationalities, arts and crafts of various types have existed as their own expression of vocational training; while traditional agricultural practices have been developed to suit the cultivation of the agricultural species predominantly produce in the different eco-geography areas of the country.

In the early part of the colonial period, vocational training was not encouraged. Schools were built primarily for the purpose of evangelism by the early missionaries. The early missionary was characterized by literacy

type of education which was geared towards winning converts and producing clerks and interpreters (Ajayi and Ayodele, 2002). It was not until 1908 that government department started to organize some form of vocational training school in 1908, the marine training school in 1928 and the public works, the post and telegraph and railway training school in 1931 (Adegbile, 2000). Government's active participation in the provision of technical education became obvious between 1930 and 1960. Yaba Higher College was officially opened on January 19, 1934. Technical colleges were established by various regional governments in Enugu (1950), Ilorin (1951), Kano (1953), Bukuru (1953), Sapele (1955), Ijebu-ode (1959), Osogbo, Oyo (1961), Owo (1963), Aba (1964) and Abakaliki (1966).

These colleges were not fee paying and they were adequately funded by the government. In 1959, Federal Ministry of Education (Nigeria) appointed a commission to conduct an investigation into Nigeria's needs in the field of Post-Secondary Education in Nigeria. The reports (Ashby) recommended that adequate attention should be given to technical and vocational education, encourage students to study technical drawing and craft subjects and upgrade the technical schools courses to the award of City and Guilds of London. The Comparative Technical Education (1963) recommended three levels of vocational and technical education as follows:

1. Pre-vocational and pre-technical training usually offered in secondary schools.
2. Craftsmen training usually offered in technical colleges, trade centres and vocational schools.
3. Technical training usually offered in polytechnics and colleges of technology.

According to Adikwanduaba (2013) other major reforms aimed at developing sustainable and meaningful technical and engineering education in the country include the recently adopted reports tagged, The 1977 New National Policy in Education. This policy was revised in 1981 and the breed has remained the 6-3-3-4 educational system. This system which was adopted to encourage vocational, technical and engineering training and hence foster meaningful entrepreneurship engineering culture in Nigeria is defined as follows:

- 6 years of Primary school.
- 3 years of Junior school for Pre- vocational, Pre-technical, Grammar and Arts training.

- 3 years of specialized Technical, Grammar, or Vocational training.

The Fourth Commonwealth Education Conference (1986) recommended that industry should be closely associated with technical education and through policy-making, manpower planning, and curriculum development, provision of opportunities for industrial experience, accreditation, consultancy services, part-time courses and vocational guidance. In 1987, the National Council on Education (NCE) approved National Board for Technical Education (NBTE) for broad classification of vocational and technical institutions into:

- (i) Vocational Schools – These are made up of vocational/artisan training centres to produce artisans. They are post-primary level institutions that pursue courses leading to the award of the Federal Ministry of Labour and Productivity Trade Test Certificates Grades III, II and I.
- (ii) Technical Colleges – Institution that produces craftsmen at the craft level and master craftsmen at the advanced craft level. They are post-junior secondary school institutions taking courses that lead to the award of the National Technical Certificate/National Business Certificate (NTC/NBC) and Advanced National Technical Certificate/Advanced National Business Certificate (ANTC/ANBC) for technical and business studies respectively.
- (iii) Polytechnics/Monotechnics/Colleges of Technology: These are post-senior secondary school institutions, which produce technicians and higher technicians/ technologists. The courses offered by these institutions are of two years duration, each leading to the award of National Diploma (ND) and Higher National Diploma (HND) respectively. FGN (2004) identified range of courses to be offered at VTE as mechanical trades, computer craft practice, electrical engineering trades, building trades, wood trades, hospitality, textile trades printing trades, beauty culture trades, business traders and leather goods manufacture.

## **CHALLENGES AND PROBLEM OF VOCATIONAL AND TECHNICAL EDUCATION (VTE) IN NIGERIA**

Adikwanduaba (2013) opined that, some of the major clogs in the wheel of progress of TVE in Nigeria cannot be detached from the aspersion cast on this particular program since colonial era in the country. It must be recalled

that the TEVT was never seen as the education for the average Nigerian child. It was seen as the exclusive reserve for the children of the peasants, the school drop-out, the dullards and they would never-do-well children. Parents restricted their children to grammar schools and colleges, while government its effort to properly fund the program as well as to protect it in her policies made matter worst. The limiting and confinement to the industry of the products of this program who were awarded terminal certificates at the end of their programs, Trade Test Certificate (of the Federal Ministry of Labor and Productivity) and the Craft certificate (of the City and Guilds of London institute), provided no future opportunities for these groups to improve their lots in any of the tertiary institution in the country (Polytechnics and or Universities). The bleak academic future as propounded for these skilled personnel, turned around to negatively affect the social cum Techno-industrial growth and development of Nigeria.

Commenting on this ugly policy Ozerigbo, (1984) explains that “the process of biased regeneration continues by the fact that those who obtained University Degrees in the Arts and Humanities have become Administrators and Policy makers. It cannot be expected that the generality of such persons will be embedded by any over-riding desire to alter the form of education which has brought them to where they have arrived”

Meanwhile, Dike (2009), in Olubodun *et al.*, (2011) argued that Nigeria does not seem to give vocational education the attention it deserves, despite its proven contributions; and that appears one of the reasons for the rising unemployment and poverty in the society today.

Also, Dike, (2009) in Olubodun *et al.*, (2011) posits that Nigeria is terribly lagging behind in preparing its labour force for the 21<sup>st</sup> century economy. Adult education is also imperative as it would assist those who could not complete their primary and secondary education to acquire basic skills; and for the retired, who constitute greater part of the unemployed group in the society, to retrain for a second career. No nation would make any meaningful socioeconomic stride without well-equipped technical and vocational institutions.

From independence till date, all government administrations, even to the present one has not taken the issue of VTE seriously. Government attention has always been of the Universities. The disparity in University and

Polytechnic certificates is another major problem. No wonder, the vision 20-20-20 seems not achievable, Ozerigbo, (1984) in Adikwanduaba (2013) further, argued that the power and prestige which the British accorded their representatives to rule the country has been invested on the administrators, hence it was clear to every ambitious young person that the way to attain social status and prestige in Nigeria is to obtain a literacy education in grammar school and cap it up with a university degree as a pass-port to the much revered administrative post.

Other issues that have bed ridden vocational and technical education in Nigeria are as follows;-

- Lack of quality Instructors and Lecturers, both at College and Post College levels.
- Lack of practical training in schools.
- Dearth of machines and equipments in colonial established trade centers, technical colleges and polytechnics.
- Poor funding of technical programs.
- Staff recruitment on quota bases and political compensation.
- Use of new breed lecturers who may have earned their diplomas and degrees on the basis of sorting.
- Allocation of practical courses to instructors, technologists and lecturers who may not have any iota of idea of how to approach the course.

### **VOCATIONAL AND TECHNICAL EDUCATION/ TRAINING AND ENTERPRISE DEVELOPMENT IN JOB CREATION**

As we all know, VTE and Training empowers people most especially the youths to participate actively in the civil process. According to the ILO (2004), The total number of young people (in the 15-29 age group) in developing country like Nigeria increased by 12.4% between 1993 and 2003, but youth employment rose by just 0.6%, it is obvious that young people are 3.5 times more likely to be unemployed than adult, this is because in years to come, the number of young people coming on to the job market in Nigeria will be steadily increasing. It the means that by facilitating and promoting job-seekers,, access to the formal and informal labour market through its activities in the area of technical and vocational education and training and labour market, Nigeria leaders will be making important contributions to reducing unemployment and underemployment. As joblessness and underemployment among large sections of the population also have the

potential to fuel conflict, technical and vocational education and training and labour market policy measures can also contribute indirectly to conflict prevention and youth restiveness.

## **VOCATIONAL TECHNICAL EDUCATION AND SUSTAINABLE DEVELOPMENT**

Sofoluwe (2013) opined that, Sustainable development is a development which meets the needs of the present without compromising the ability of future generations to meet their own needs (Wikipedia, 2011). It contains within it two key concept:

1. The concept of needs, in particular, the useful needs of the world's poor, to which overriding priority should be given; and
2. The idea of limitations imposed by the state of technology and social organization in the environment's ability to meet present and future needs (Brundland Report).

The definition entails that world is a system, a system that connects space and time. Wikipedia (2011) opines that sustainable development is a pattern of resource use that aims to meet human needs while pressuring the environment so that these needs can be met not only in the present but also for generations to come. United Nation (1987) used the term sustainable development as to meet the needs of the present without compromising the ability of future generation to meet their own needs, social development, environmental protection and cultural development.

The International Union for the Conservation of Nature (IUCN) Sahel Studies (1989) sees sustainable development as involving the maximization of the net benefit of economic development, subject to maintaining or enhancing the service and quality of natural resources over time. Akorede and Onuka (2008) see sustainable development as a way by which the society is managed in an effective and efficient manner such that it benefits all and sundry, with enough resources still available for the continuation of the human race. This is achievable through the judicious and careful use of global resources. The sustainable development seeks to promote prosperity (economic objective) through growth, equity and efficiency in all sectors of development. It seeks to support people (social objectives) through empowerment participation of all stakeholders, social mobility, cultural identity and various institutional developments. Finally in the tripod, it seeks to maintain the planet (ecological objectives) through improving the

state of the ecosystem, biodiversity conservation, ensuring adequate carrying capacity and responding in sustainable manners to other global issues.

Vocational and Technical Education, if well developed can be used as a tool for achieving a sustainable development in Nigeria. There is an established positive linkage between economic growth and investment in human capital. The establishment of National Business and Technical Education Board and a resultant coherent national policy for technical education and vocational training is expected to be a key driver of Nigeria's economic growth. Nigeria's global competitiveness depends on ability of our VTE system to adapt and innovate.

Through industrial linkages, employment generation and growth supporting interventions for skill development, the VTE will contribute towards poverty alleviation in the country. It aims to provide adequate access to VTE facilities and cater for deficient areas and target groups such as women, workers of the informal sector and the destitute sections of society. It has an important role to play for economic development, industrial growth, employment generation and poverty alleviation.

### **REVITALIZATION OF TECHNICAL EDUCATION – PANACEA FOR SUSTAINABLE DEVELOPMENT**

It is generally said that he who fail to plan, plan to fail. This old saying is also applicable to any country that fails to plan towards achieving a sustainable economy. Adikwanduaba (2013) said, truly speaking the design of Nigeria's educational system is flawed. The neglect of technical education is an obstacle to national development. Not everyone needs a university education. In Nigeria technical degrees are regarded as inferior to regular academic degrees. But in advanced nations those with technical degrees are highly regarded individuals with years of field experience work in tandem with those with academic degrees. In fact, the worth of every worker depends on the person's skills and knowledge, and not on the stack of academic degrees one has. Nigeria must learn to blend theory and practice in its education because theories alone cannot serve any useful purpose. The nation's technical schools should be brought to international standard by employing teachers with field experience in the subject areas and experienced and professional administrators to run technical

institutions. As obtained in the developed nations the technical graduates should be thoroughly certified before they can work as technicians.

He went further to state that it cannot be overemphasized that technical education is the engine for economic growth and sustainable development. No nation can fight a war without an army. In the same token Nigeria cannot develop without well-equipped technical and vocational institutions. In fact, it is the missing link in Nigeria's development policy. Because of poor training and ineffective institutions, Nigeria suffers from low productivity. But the progress of any society lies in the productivity of its citizens. Higher productivity gives a nation advantage of economies of scale and lowers the costs of production and prices of goods and services. Nigeria should begin now to take very seriously investment in education and skill training as no nation can compete effectively in the emerging global market place with poorly educated and unskilled workers. The leading factors of production in the emerging global economy are said to be technology, knowledge, creativity and innovation.

Other issues which must be critically resolved and considered as a matter of urgency to bring about the much needed panacea to the techno industrial development of Nigeria includes:

1. Making a ten years development and capacity building plan for staff and man power training and recruitment to the various skills, trades, craft as well as engineering and allied courses offered at JSS, SS, Technical colleges, Polytechnics and University levels of the nation's educational sectional sector. It must be noted that the long standing acute shortage of science, commercial, business and technical teachers bedeviling this sector since ages is still rearing its ugly head. Panacea to national development via the revitalization of technical education in Nigeria without critically addressing this issue therefore will be efforts in futility.
2. Correcting the flaws in the present curriculum used by most Nigerian universities for the training of technical teachers which is over powered and over loaded with pedagogy as against one's specialist / professional course areas (science, technology and engineering courses) which ought to cover at least 70% of his program. This problem area need to urgently addressed by the stake holders – NBTE, NUC and all Professional bodies/Registration

councils, to make the programs worthy and relevant to the cause of the country.

3. Professional bodies should also recognize field and professional achievement as measures for registration as a professional as it is practiced in most developed countries of the world, Europe and America inclusive.
4. Reviewing the present curricular in all the levels of the nation's educational systems and ensuring that some of these trades/courses that seem to be missing links but play very vital roles in socio economics and techno industrial development of nations, are immediately mounted in the nation's schools such as Foundry, ceramic, glass plastics and rubber technology to mention but a few.
5. Making and installing right choice of personnel in every professional area must not be politically protected if the power to deliver is not there.
6. Declaring colleges, polytechnics and universities with skilled quality man power, machines and equipment to excel in certain specialists trades or options in engineering, with proven result of output, the centre of excellence in those particular specialist areas, The place should be declared a training ground for those aspiring to be professional extra- ordinary in that field in the country. Proven and gifted ones should be given grants and scholarships and be granted the opportunity to be trained in such places.. Staff mediocre must not have a chance in these areas.. Only those that have the capacity and potentials to deliver practically, theoretically and otherwise should be allowed to teach students in the areas.
7. Recruitment of staff in such fields like science and engineering must be based on practical and written tests.
8. Retired industrial/factory workers in the areas of engineering and sciences with proven capacity to deliver both in the laboratories workshops and classrooms must be considered for contract appointment in Polytechnic and Universities. Their inclusion into our educational system must be done if we honestly want to achieve good result..
9. Recruitment and appointment of fresh degree and diploma graduates into the lecturing field must be handled with care. The issue of "sorting", that is ravaging the tertiary institutions today is the product of this breed of staff.

10. Staff with technical college, polytechnic and university background in science, technology and engineering must be considered first in appointment as technologists, instructors, and lecturers in the Polytechnics and Universities.
11. Crash programs must be reinstated for staff training in Technical Colleges, Polytechnics and universities as well as in Research Centers and Institutes. This is a task that both the State and Federal Governments must not fail to implement and accomplish. This is because of the emerging new technologies which must have to be assimilated if the country has to move forward. The period must not be less than two years. It must not have a degree attached at the end. It must be an industrial and laboratory based training that should move the trainees to various parts of the world to master a given skill.
12. People in such scarce but all important areas like foundry, plastic, Ceramics and rubber technology must be given special grants and oversea Scholarship to enrich their knowledge.
13. All the unserviceable machines and equipment in various workshops and Laboratories must be put to service by staff and students in the Workshops and Laboratories. Therefore, people must be trained on how to fabricate and repair machines especially those they are working with.
14. Finally, the 6-3-3-4 educational system must be practically put to use. What do I mean? Vocational courses as it were, must be enforced and be followed rigidly in the 6years primary education program and in the first 3 years of Junior Secondary School .Those doing well in vocational, Science and Arts must be well guided in their last 3 years of secondary school (senior). The doors of the Polytechnics should be thrown open for the vocational and Technical students.

Finally, it is pertinent to note, that government at the state and Federal level must Properly Fund the Polytechnics and Universities.

## CONCLUSION

Nigeria has all it takes to become a giant in global economy if only it can achieve a sustainable development through effective vocational and Technical Education (VTE). The age long issue of the disparity between the polytechnic and University education must be addressed as a matter of urgency. The problem of unemployment which has given birth to youth

restiveness, terrorism, kidnapping, armed robbery, ritual killings to measure a few, will be greatly abated if government is serious with development of VTE. Sustainable Technical Education is a major tool for pursuing the vision 20-20-20 agenda. It is high time Nigeria pay much attention to the issue of sustainable VTE which is a panacea to national development.

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