

Redesigning Education Curricula as a Panacea for Unemployment and Poverty Reduction in Nigeria

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Abstract

Unemployment and poverty are twin scourge that are global phenomena. The rate of unemployment and poverty in Nigeria amidst plenty of natural and human resources has earned the country the image of a paradox. In spite of numerous policies and programmes initiated to address them, available statistics show that both phenomena are on the increase yearly. This paper advocates for a re-think in the country's educational curricula as one of the cardinal measures for unemployment and poverty reduction; in that light, it canvasses for a paradigm shift from emphasis and insistence on credit passes on core science subjects as prerequisite or sine qua non for studying Technical and Vocational Education courses and Training, to interests of prospective students in the area. It concludes that the shift will not only swell geometrically the number of students admitted to study such courses each session, it will produce graduates armed with requisite skills to take up self employment consequently reducing rates of unemployment and poverty on the one hand. On the other hand, it will also pave way on one prong for "artisans" who are practicing technicians with the "technical-know-how" to enroll in technical and vocational education courses and acquire the "technical-know-why" in their practices; one the other, graduates and teachers who have become informed and interested in the area could benefit from the new arrangement, thereby placing them and other professionals on good stead for unlimited technological exploration, innovations, inventions and discoveries propelled by advanced technological manufacturing and mechantronics.

Keywords: Redesigning education curricula, Unemployment reduction, Poverty reduction, Technical and vocational education and training

Introduction

To promote the production of skilled/semi-skilled technical and professional manpower, to revitalize, and sustain the national economy, reduce unemployment and poverty through the setting and maintenance of high standards, provision of current and reliable information for planning and decision making, sourcing and disbursing of funds and adequate linkages with industry.

- National Board for Technical Education (n.d)

Introduction

There is correlation amongst levels of education, unemployment and poverty. Education increases the stock of human capital, which in turn increases labour productivity and wages. Since labour is by far the most important asset of the poor, increasing the education of the poor will tend to reduce poverty. Nigerian poverty is high for those with little or no education. A study conducted by Anyanwu (2012) shows that the level of education is an important determinant of degrees of poverty. He notes that household heads with no education have a higher proportion of poverty than those with at least primary education. For instance, among household heads with no education, their proportion in terms of poverty was 74.1 per cent in 1996 and 68.7 per cent in 2003/2004. For those with post-secondary (tertiary) education, their proportion was 47.8 per cent and 26.3 per cent, respectively during those two years (see appendix i). According to Ugwuja (2010) in Nigeria, people go to school with the belief that education will enable them participate in the society. From the look of things, full participation in Nigerian society requires vocational and technical education at all levels of our education system, which will

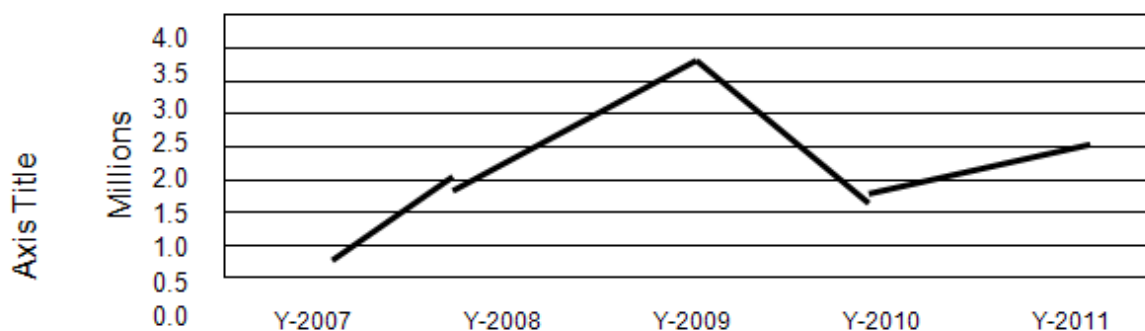
recognize the different skills and abilities and give an equal [opportunity](#) to all children to prepare for work. Thus, attention has been extended beyond Education for All to Education for Self-Reliance typified in the teaching and practice of entrepreneurship, technical and vocational subjects in primary and post-primary schools. 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. It is obvious that the waste of labour by improper employment can be largely avoided through vocational and technical training (Aworanti, 2010).

Furthermore, vocational and technical education is needed in every aspect of our national life. It is believed by many people that through vocational and technical education and training, boys and girls as well as adults will be trained to acquire requisite skills that will enable them secure employments, which will be beneficial to themselves and the society.

Youth unemployment appears to be shooting up the sky because many of them lack “employability” skills that are often acquired from technical schools. As Edukugho (2004) noted, youth unemployment moved from 4.3% in 1985 to 5.3% in 1986, to 7.0% in 1987 and jumped to 60% in 1997. The report shows that in 2003 primary school accounted for 14.7% unemployment, secondary school 53.6%, and tertiary schools constituted 12.4%. 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. Most analysts agree that today’s employers demand more skills than they did in the past (Yang, 2008). Oranu (2010) reported the several factors that have contributed to the rising demand for skills in the labor market to include: technological and organizational change, trade, deregulation of key industries, and the decline of unions.

National unemployment rate has been on the rise yearly in the country; recently, it increased to 23.9% in 2011 compared to 21.1% in 2010 and 19.7% in 2009. The National Bureau of Statistics (2012) has articulated the scenario of unemployment and poverty in Nigeria over the years; the analysis of unemployment data for the past five years shows that the rate of new entrants into the labour market has not been uniform in the past five years. The 2011 Annual Socio-Economic Report of the Bureau notes that the rate was on the increase from 2007 to 2009 but declined significantly from 2009 to 2010; the rate increased again from 2010 to 2011. In terms of sector or spatial spread, the rate is higher in the rural area (25.6%) than in the urban area (17.1%). Analyzing the statistics further, the result of the survey shows that persons aged 0---14 years constituted 39.6%, those aged, between 15---64 (the economically active population), constituted 56.3%, while those aged 65years and above constituted 4.2% (see appendix ii). The Bureau advanced four (4) cogent reasons for these; however, only two (2) of the reasons directly relevant to this paper are presented here. It argues that within the five year period, there has been an average of about 1.8 million new entrants into the active labour market per year (see figure i). The variation and in particular, rise of new entrants into the labour market since 2007 can be attributed to several issues. Firstly, Nigeria has added 15 new universities, 9 polytechnics, 9 colleges of education since 2006 (see appendix iii); However, Onwughalu (2012) rightly points out that the figures have exceeded that.

Figure 1: New entrants into active labour force, 2007 – 2011



Source: Adapted from National Bureau of Statistics. (2011). 2011 Annual Socio-Economic Report. Retrieved July 25th, 2012 from www.nigerianstat.gov.ng

Similarly, over 1.37 million students were enrolled in universities, polytechnics and colleges of education in 2006 and another 1.98 million in 2007 (see table 1). Given that most courses are completed in 4 or 5 years, many of these 3.2 million (sic) students that enrolled in 2006 and 2007 will be entering the labour force in 2010/2011. These highlights do not include the number of Nigerians of working age that dropped out of secondary school level for various reasons and entered the job market in the rural and urban areas out of the 21 million that were enrolled in 2006 and 2007 (see table 1).

Table 1: Statistics on enrollment rates in educational institutions in Nigeria 2006 – 2010

	2006	2007	2008	2009	2010
All universities	765, 522	1, 401, 888	661, 493	577, 029	605, 068
Federal Universities	464, 025	61, 0072	433, 950	340, 524	339, 364
State Universities	277, 043	448, 618	187, 279	191, 565	218, 861
Private Universities	24, 454	37, 369	39, 264	44, 940	46, 843
Colleges of Education	290, 318	305, 829	315, 426	346, 006	-
Polytechnics	303, 190	258, 877	233, 045	222, 273	229, 862
Monotechnics	19, 623	16, 789	14, 690	17, 321	13, 239
All Primary Schools	22, 861, 884	21, 632, 070	21, 294, 517	20, 080, 976	20, 663, 805
Public Primary schools	21, 717, 789	2, 046, 395	18, 980, 395	18, 818, 544	19, 042, 167
Private Primary Schools	1, 144, 095	1, 162, 675	1, 011, 914	1, 262, 432	1, 621, 638
Secondary Schools	5, 637, 783	6, 009, 869	-	-	-
Public Secondary Schools	5, 013, 531	5, 067, 787	-	-	-
Private Secondary Schools	624, 252	880, 194	-	-	-
Nomadic	408, 705	432, 411	415, 426	483, 557	484, 694

Source: Adapted from National Bureau of Statistics. (2011). 2011 Annual Socio-Economic Report. Retrieved July 25th, 2012 from www.nigerianstat.gov.ng

On the other hand, data on the poverty level provided by the Bureau portrays that relative poverty defined by reference to the living standards of majority in a given society stood at 54.4%, in 2004 in Nigeria but increased to 69% (or 112,518,507 Nigerians) in 2010. Absolute poverty defined in terms of the minimal requirements necessary to afford minimal standards of food, clothing, healthcare and shelter shows that 54.7% of Nigerians were living in poverty in 2004 but this increased to 60.9% (or 99,284,512 Nigerians) in 2010. The-Dollar-per-day measure refers to the proportion of those living on less than US\$1 per day poverty line. By this approach, 51.6% of Nigerians were living below US\$1 per day in 2004, but this increased to 61.2% in 2010. Although the World Bank standard is now US\$1.25, the old reference of US\$1 was the standard used. Subjective poverty is based on self-assessment and “sentiments” from respondents, in this regard, 75.5% of Nigerians considered themselves to be poor in 2004, and in 2010 the number went up to 93.9%. Thus, using the relative, absolute and dollar-per-day poverty measures, National Bureau of Statistics estimates that poverty may have further risen slightly to about 71.5%, 61.9% and 62.8% respectively in 2011 (Kale, 2012:4-5).

Magnus Kpakol (Senior Special Adviser to the President and Coordinator of the National Poverty Eradication Programme (NAPEP), cited in Omeiza-Michael (2010) publicly pronounced that poverty rate has dropped in the country and that Nigerians are better off. Kpakol claims that the 6.90 per cent growth in the country’s Gross Domestic Product (GDP) last year from 5.98 per cent in 2008 is an indication of a fall in poverty rate. He further argues that the growth in GDP meant increased industrial activities that created many new jobs for more Nigerians. Similarly, African Economic Outlook (2012) reports that Nigeria’s economic growth has averaged about 7.4% annually over the past decade and remained robust in 2011 at 6.9%, driven by the non-oil sector, particularly telecommunications, construction, wholesale and retail trade, hotel and restaurant services, manufacturing and agriculture. Growth is projected at 6.9% and 6.6% in 2012 and 2013, respectively. However, it notes that the country may be seen to be richer because of increased GDP but there are factors that nullify this calculation. The economic growth has not cut poverty nor created necessary jobs. Poverty is glaring on the faces of majority of Nigerians compared to the very few that control much of the money. According to Omeiza-Michael (2010) contrary to what seemingly impressive GDP figures may convey about the wellbeing of Nigerians, rising unemployment rate, high food prices, de-industrialisation and high infant and maternal mortality rates indicate that poverty is still rife in Nigeria. Appraising the National Bureau of Statistics’ Nigeria

Poverty Profile 2010 Onuba (2012) rightly observes that apart from the relative poverty index, other poverty measurement standards are absolute measure, which puts the country's poverty rate at 99.284 million or 60.9 per cent; the dollar per day measure, which puts the poverty rate at 61.2 per cent; and the subjective poverty measure, which puts the poverty level at 93.9 per cent. Instructively, all the four methods used in measuring poverty by the National Bureau of Statistics point to the fact that there was disconnect between the country's Gross Domestic Product growth rate of 7.75 per cent and the high poverty rate. It remains a paradox, however, that despite the fact that the Nigerian economy is growing, the proportion of Nigerians living in poverty is increasing every year. It is against this background that this study attempts the analysis of a paradigm shift or radical change in the conditions of intake processes for the study of Technical and Vocation Education course and Training as one of the cardinal measures of ameliorating the rate of unemployment and poverty in the country.

Brief Conceptual Exposition

The study attempts concise explanations of unemployment and poverty respectively. There is no standard definition of unemployment as various countries adopt definitions to suit their local priorities. The International Labor Organization (ILO) definition, however, covers persons (aged 15–64) who during the reference period (usually the week preceding the survey period for at least one hour), were currently available for work, seeking for work, but were unable to find work. The unemployment rate (Nigerian version) is the proportion of those who were looking for work but could not find work for at least 40 hours during the reference period to the total currently active (labour force) population. This definition of unemployment is the standard definition of unemployment used in Nigeria for many years to compute the unemployment rate and has been adopted by National Bureau of Statistics and the National Statistics System to conduct labour force surveys and to define unemployment in Nigeria as ratified by the National Consultative Committee on Statistics since 2001. It was agreed in that year by a technical committee involving the National Bureau of Statistics, ILO, Ministry of Labor and Productivity, National Planning Commission, Nigeria Labor Congress, Central Bank of Nigeria, Ministry of Youth and social Development amongst others. The rationale for adopting such a stringent definition rather than the standard simple ILO definition was to ensure that government policy was directed towards providing full employment (not just underemployment or temporary employment) for Nigerians as would have been the case if Nigeria adopted the one hour a week definition recommended by the ILO (National Bureau of Statistics, 2012:7-8).

Poverty reduction entails reducing the incidence or depth and severity of poverty in a given place to the barest minimum. The term poverty reduction is preferred here against poverty alleviation; the latter suggests palliative temporary measures that give room for poverty to resurface or re-emerge after sometime. The former connotes actions that bring about permanent solution or reduction in the prevalence of the scourge.

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, advanced and continuing education. Vocational education and training 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. Whereas vocational education is designed for a particular vocation, technical education does not target any particular vocation but gives general technical knowledge. The technical education could target the vocational, higher or any other education. While every vocational education programme is technical in nature, not all technical education programmes are vocational. (See appendix iv [a]).

The Technical and Vocational Education is the merging between the Technical Education and Vocational Education i.e. the inclusion of basic technical and scientific knowledge with the skill-based vocational programmes. This is the higher level of skills and knowledge required to be taught as advanced learning prior to workplace entry to cope with the emergence of technologies in the workplace. Vocational and technical education gives individuals the skills to live, learn and work as a productive citizen in a global society. (Dike, 2009)

Curriculum has been conceived and interpreted in diverse ways by scholars and stakeholders. In other words, these have been done in both narrow and broad sense: In a narrow sense, the curriculum could be considered

to be synonymous with the syllabus of a subject, for example Chemistry or History curriculum. In a wider sense, the curriculum is considered to be bigger than the syllabus of a subject as it embodies other strategies of teaching and learning. In a more general sense, the curriculum is defined as the sum-total of all the subjects taught in a school, college or university that is all the subjects or groups of courses appearing on the time table of an educational institution. Accordingly, while Rugg (1936) argues that the curriculum is really the entire programme of the schools' work. It is the essential means of education. It is everything that the students and their teachers do. Thus, it is two-fold in nature, being made up of activities, the things done, and of the materials with which they are done. Carter (1959) defined the curriculum as 'a group of courses or planned experiences which a student has under the guidance of the school or college. However, the perspective of Adeyinka (1988) shares the view of this paper: the curriculum as an integrated group of courses and planned activities which pupils or students have under the guidance of the school or college and the instruction of a number of teachers. Essentially, the curriculum should contain four main components or elements: the objectives or purpose, the content or subject-matter, the method or ways of passing on knowledge, and evaluation or assessment (i.e. the procedure for testing whether or not the pupils or students have benefited from the instructions given). Importantly, as Ajibola (2008:58) rightly observes curriculum issues, either in an explicit or an implicit manner, are inextricably linked to current thinking and action on educational concerns and reforms around the world.

Cursory Glance at Attempts on Unemployment and Poverty Reduction

The National Bureau of Statistics (2012: 10) asserts that the unemployment rate may have been a lot worse without many of the employment generating policies of government which has helped to curtail the rise compared to other countries in the world where rates have risen faster than Nigeria. In x-raying and dissecting the claims of the Bureau, Abubakar (2002) observes that the government of Nigeria has indeed long ago recognized the evil effects of unemployment and poverty and taken steps to address the problems. The war against problems associated with unemployment and poverty has been a common denominator of all government activities in recent history. He notes that the programmes have always been there, but the pertinent question to ask is: How effective and sustainable are the measures? He further explains that in Nigeria, the government, over the years, has carried out its crusades against unemployment and poverty through a number of ways. First, through the activities of its ministries/agencies; second, by collaborating with international agencies; third and more importantly, through the establishment of agencies equipped solely to fight rising unemployment and poverty in Nigeria. He identifies some of the core and indirect poverty reduction institutions, agencies and programmes as:

- i. The National Directorate of Employment (NDE)
- ii. Peoples Bank of Nigeria (PBN)
- iii. Nigerian Agricultural and Co-operative Bank (NACB)
- iv. Nigerian Agricultural and Insurance Corporation (NAIC)
- v. National Commission for Nomadic Education (NCNE)
- vi. National Primary Health Care Development Agency (NPHCDA)
- vii. National Agricultural Land Development Authority (NALDA)
- viii. National Commission for Mass Literacy, Adult and Non-Formal Education (NCMLANE)
- ix. Federal Agricultural Coordinating Unit (FACU)
- x. Agricultural Projects Monitoring and Evaluation Unit (APMEU)
- xi. Family Economic Advancement Programme (FEAP)
- xii. Industrial Development Centre (IDC)
- xiii. Federal Department of Rural Development (FDRD)
- xiv. Federal Ministries of Agriculture, Water Resources and Power and Steel
- xv. River Basin Development Authorities (RBDAs)
- xvi. Family Support Trust Fund (FSTF)
- xvii. National Centre for Women Development (NCWD)
- xviii. Nigerian Bank for Commerce and Industry (NBCI)
- xix. Nigerian Industrial Development Bank (NIDB)
- xx. Nigerian Export-Import Bank (NEXIMB)
- xxi. National Economic Reconstruction Fund (NERFUND)

In addition, Anyanwu (2012) identifies: the Green Revolution (1980); programs to alleviate the pains of Structural Adjustment Program (SAP) through the Directorate of Food, Road and Rural Infrastructure (DFRRI);

Community Banks; the Better Life Program (BLP); Family Support Program (FSP); as well as the Agricultural Development Programs (ADP) and the Strategic Gains Reserves Programs (SGRP). Another key measure was the establishment of the Poverty Alleviation Program (PAP) (2000) which later metamorphosed into the Poverty Eradication Program (PEP) and culminated in the National Poverty Eradication Program (NAPEP) (2001). We have also had periodic reviews of salaries/wages and tax rates and allowances as well as pensions for increase in the purchasing power of civil and public servants. In addition, there is the Interim Poverty Reduction Strategy Paper (IPRSP) with the aim of building on the gains of PAP and PEP. One of the recent measures that attracted a lot of attention was the National Economic Empowerment and Development Strategy (NEEDS), which was built on the interim Poverty Reduction Strategy Paper. This medium term strategy (2003-2007) derived from the long-term goals of poverty reduction, wealth creation, employment generation and value re-orientation, being a national coordinated framework of action in close collaboration with the state and local governments and other stakeholders. The main strategies were anchored on: empowering people (Social Charter or Human Development Agenda); promoting private enterprise, and changing the way the government does its work (Reform Government and Institutions). The equivalent of NEEDS at State and Local Government levels were the State Economic Empowerment and Development Strategy (SEEDS) and Local Government Economic Empowerment and Development Strategy (LEEDS). These are aside the recently introduced Subsidy Reinvestment Empowerment Programme (SURE-P) (2013) by the administration of President Goodluck Ebere Jonathan.

While concurring with Nweke (2008) on the performances of the institutions and programmes and the attendant results, Abubakar (2002) notes that notwithstanding the enormous human and material resources the government has committed to the war against unemployment and poverty in Nigeria through the aforementioned agencies, the rate of unemployment and poverty level has remained unacceptably high. Nigeria's economic growth has averaged about 7.4% annually over the past decade and remained robust in 2011 at 6.9%, driven by the non-oil sector, particularly telecommunications, construction, wholesale and retail trade, hotel and restaurant services, manufacturing and agriculture. The economic growth has not cut poverty nor created necessary jobs. About two thirds of the population lives on less than 1 US dollar (USD) per day and the unemployment rate in 2011 was 23.9%, up from 21.1% in 2010. Unemployment in the 15-24 age group was 37.7%, and for 25-44 years, 22.4% (African Economic Outlook, 2012:2).

Redesigning Educational Curricula: The Alternative Direction

One major aspect of Nigerian education that has been quite often criticized is the curriculum. According to Ajayi (1963) the early critics include members of the Phelps-Stokes and Advisory Commissions who submitted their separate reports in 1925. They observed that education in Africa generally had not been adapted to the needs and aspirations of the people. It is quite difficult to advance with improving the processes and the outcomes of educational quality without developing a comprehensive curriculum vision that justifies why and what it is relevant and pertinent (basic and needed) to teach children and young people according to an overall interpretation of societal expectations and demands. For as late as the 1960s (even till date), education in African schools, particularly in Nigerian grammar schools, was/is still "too literary; not practical, not adapted to the needs of a developing agricultural nation." This type of academic education only tends to produce proud, lazy people who dislike manual labour and prefer white-collar jobs (Ajayi, 1963).

In support of the above, Ajibola (2008:51) rightly recognizes that curriculum issues, either in an explicit or an implicit manner, are inextricably linked to current thinking and action on educational concerns and reforms around the world. He notes that Nigerian educational system has gone through various developments and changes vis-à-vis curriculum issues. The selection and organization of curriculum content, curriculum implementation and evaluation, the development, distribution and use of teaching materials, and the relevance of the curriculum to the needs of society are also problems associated with the Nigerian educational system. Therefore, the need for transformation in curriculum for all the educational levels becomes necessary (Ajibola, 2008:51). Moreno (2006) concurs that: 'Educational reform all over the world is increasingly curriculum-based, as mounting pressures and demands for change tend to target and focus on both the structures and the very content of school curricula'.

The National Curriculum Conference of September 1969 was the first attempt by Nigerians to formulate a school curriculum that is relevant to the goals, needs and aspirations of Nigerians. Today, all educational authorities in Nigeria are aware of the pressing need to relate our curricula, at all levels of education, to our national man-

power needs. However, Soyombo in Ajibola (2008) contends that unfortunately, 52 years after independence, none of the stated goals has been fully achieved. An important conceptual landmark in the effort to modernize and vitalize TVE was the publication of the first "National Plan of Vocational and Technical Education in the Republic of Nigeria", prepared by Dr. Adam Skapski (1966). Skapski called for action by "a group of professionally competent educators" united by a sense of mission and aware of relevant achievements in other countries to move the change process forward. Since the publication in 1966, Skapski's master plan has been the spirit of innovation and change in the profile of TVE in Nigeria. Most of the recommendations have been implemented in one form or the other including the 3-3 secondary education policy from 1982, the establishment of NBTE in 1977, ITF in 1971 and uniform educational structure and content nation-wide from 1977; some recommendations are yet to be implemented.

Redesigning the curricula could be in terms of or can be classified into: (i). **policy** (which emphasizes on the duration of stay at various tiers of educational levels and import of the scheme; e.g. Universal Basic Education, etc); (ii). **Objective, content** (subjects/courses taught in schools: core and elective subjects and their contents, number of subjects; in other words, focus is on the syllabus); (iii). **Methods** (classroom transactions optimally have four dimensional character, involving interactions between teacher and pupil, pupil and pupil, teacher and material, and pupil and material. What predominates in most Nigerian classrooms, from primary through to postgraduate level, is the unidirectional lecture mode, with minimal use of materials, questioning of teachers or pupil – pupil interaction.), **material** and changes in **evaluation techniques** (some special emphasis have been placed in the use of comprehensive and continuous assessment in schools. Similarly, new attention is been given to practical experiences and tests in the form of teaching practice and industrial attachment during which learners are observed and assessed). To actualize unemployment and poverty reduction, the direction and focus should be on (ii) objective and content.

No positive impact will be made with system that promotes theoretical knowledge, places emphasis on paper certification rather than stressing the development of innate abilities in a learner evolving through training or practice. Thus, the need for curriculum transformation becomes imperative (Bolaji, 2007). The need for a paradigm shift from theoretical and paper certification to a practical application of knowledge necessary for future employment and skills development for self employment should be the cardinal objectives of Nigerian education. Experiences of educational reform almost all over the world have shown that curriculum is at the same time a policy and a technical issue, a process and a product, involving a wide range of institutions and actors. This is where the roles of the federal and state ministries of education, the National Board for Technical Education, Polytechnics, Monotechnics/Specialized institutions, Vocational and Innovation Enterprise Institutes and stakeholders in Technical and Vocational Education and Training come to the fore. (See appendix iv[b]). The process of constructing the curriculum is unique to each national setting. It is a complex outcome of the opinions and solutions that key stakeholders propose for society's requirements and needs. However, Technical and Vocational Education and Training are faced by diverse challenges not limited to the following:

- i. Emphasis in Nigeria educational institutions has been on academic qualification rather than skill acquisition and problem solving activities.
- ii. The efforts of our Universities, Polytechnics, Monotechnics and Colleges of Education have not produced the type and quality of skilled worker that can support our economy in the 21st century. There is a wide gap between the theoretical curriculum taught in tertiary institutions and the practical skill needed by employers of labour.
- iii. Inadequate resources, the problems are legion but suffice it to say that three of them, namely resources, curriculum and teachers, stand clearly out as factors that can make or mar qualitative technical and vocational education.
- iv. 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.

According to the 5th Africa – USA International Conference on Manufacturing Technology cited in Nwajagu (2011:15) some of the problems of developing countries such as those in Africa cannot be successfully addressed until these countries are able to implement appropriate new and advanced technologies. Transfer and local adaptation of manufacturing technologies are essential to making each country self-sufficient in terms of industrial activities. By sharing the best practices in manufacturing education and research, promoting advances

in infrastructure development, it is hoped that a new generation of Africans well trained in manufacturing technology will be produced to advance the quality of life of Africa. Expatiating further, Okafor (2011:157) notes that 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. Thus, Onu (2011: xii) affirms that the ability to create and invent affords the legendary superiority over and above the so termed lower creatures. No nation can survive without it. All societies, no matter how seemingly premature at a point, must survive substantially by the sheer force of their creative and innovative talents.

The National Board for Technical Education is a principal organ of Federal Ministry of Education specifically created to handle all aspects of Technical and Vocational Education falling outside University Education. It was established by Act No. 9 of 11th January, 1977. In August, 1985 and January 1993 respectively, the Federal Government enacted Act 16 (Education (National Minimum Standards and Establishment of Institutions) Act) and Act 9 (Education (National Minimum Standards and Establishment of Institutions) (Amendment) Act). With these Acts, the functions of the Board were extended to include accreditation of academic programmes in all Technical and Vocational Education (TVE) institutions. Act No.9 of 1st January 1993 further empowered the Board to recommend the establishment of private Polytechnics and Monotechnics in Nigeria. In addition to providing standardized minimum guide curricula for technical and vocational education and training (TVET), the Board supervises and regulates, through an accreditation process, the programmes offered by technical institutions at secondary and post secondary levels. It is also involved with the funding of Polytechnics owned by the Government of the Federation of Nigeria. There are at present 110 approved tertiary technical institutions and 159 technical colleges under the purview of the Board with different types of ownership summarized in the table below:

SUMMARY OF NUMBER, TYPE AND OWNERSHIP OF POLYTECHNICS, MONOTECHNICS AND TECHNICAL COLLEGES IN NIGERIA

Institution Type	Ownership			Total
	Federal	State	Private	
Polytechnics	21	38	15	74
Monotechnics	23	2	2	27
Colleges of Agric.	17	19	-	36
Colleges of health Tech.	9	40	1	50
Other Specialised Ins.	13	-	3	16
IEIs and VEIs			71	71
Technical Colleges	19	110	3	132

Source: National Board for Technical Education (n.d). Brief history of National Board for Technical Education. Retrieved February 9th, 2013 from <http://www.nbte.gov.ng/history.html>

Justification for Redesigning Educational Curricula

The manufacturing technology in Nigeria has begun a move from the conventional form to a more advanced technology; at the heart of this advancement in manufacturing technology is Mechatronics (Nwajagu, 2011: xiv). Originally, mechatronics included the combination between mechanics and electronics; hence the word was coined from the words mechanics and electronics. According to the French standard NF E 01-010 Mechatronics as an approach aims at the synergistic integration of mechanics, electronics, control theory, and computer science within product design and manufacturing, in order to improve and/or optimize its functionality. Contextualizing mechatronics, it connotes “a design philosophy,” where mechanical, electrical, electronic components and IT should be considered together in the design stage to obtain a compact, efficient, and economic product rather than designing the components separately (Nwajagu, 2011:2-5).

In these times of globalization the demands for the economic viability of a product are very stringent because of the very competitive nature of the market. The use of mechatronic systems places a significant advantage for the users of the technology from an economic scale. Simply put, advanced manufacturing technology produces products that is globally competitive and of very high economic value and any country that seeks economic upliftment must adopt the use of advanced manufacturing technology. Clearly, manufacturing driven by advanced manufacturing technology plays an important role in the economic well-being of the people. With the use of conventional manufacturing technology, Nwajagu (2011:14) notes that it took Britain 58 years to double her per capita output; whereas China in the last two decades has been doubling her per capita output every 7 years using Advanced Manufacturing Technology.

All areas of Mechatronics are priority Nwajagu, (2011: 19) observes, but for a country like Nigeria where such technology has before now been non-existent priority should be in the area of Advanced Manufacturing Technology. The secret lies in knowledge, carefully and methodically acquired through appropriate and thorough education and apprenticeship. Knowledge coupled with appropriate infrastructural framework will still remain the basic foundation and springboard for effective leap-frogging in technology. Appropriate education is the only way that Mechatronics and Advanced Manufacturing Technology can be made to work for the techno-economic development of Nigeria. Thus, Nwankwo, Okonkwo, Ezeaku, Ejikeme, Onuchukwu and Okeke (2011: viii) advocate for the enlightenment of youths on technological advancement through practical application of scientific knowledge.

As technology becomes “more science-based,” Nwajagu (2011:19) points out that the need to appreciate the fundamentals of science, and of course that of all the components that make up mechatronics, becomes more relevant especially at the tertiary level of education. Furthermore, he explains that it is with lecturers and stakeholders in education that the responsibility of providing guidance and training that will produce a generation of Nigerians skilled and competent to use advanced manufacturing technology to advance the progress of the country lies. The role of institutions of higher learning as the only hope for the dissemination of the skills required to drive Advanced Manufacturing for National techno-economic development is attempted beneath.

School enrollment: The National Bureau of Statistics has done the permutation and combination of the tertiary institutions’ intake processes for a certain periods and the volume of graduands that are send to the labour market yearly, for instance. Pushing the analysis further, this paper takes cognizance of the fact that out of the total number of applicants/students that sit for entrance examination into tertiary institutions yearly in the country, only a few apply for science and technological courses. Going by this trend, departments in the faculties/schools/colleges of Arts, Social Sciences, Humanities, Management and Education are oversubscribed, while those in sciences, environmental, engineering and technological science are undersubscribed. Departments in the former faculties/schools/colleges cannot admit students beyond their carrying capacities; as a result, a good number of them do not gain admissions. On the other hand, a good number of these applicants/students may have interests in sciences and technological courses and training; however, owing to initial apathy in mathematics they shied away from core science subjects at the post-primary level. Nevertheless, when emphasis is shifted from insistence on core science subjects as sine qua non for the study of technical and vocational and training to interests of prospective students, the outcomes will be multi-pronged: number of those that would undergo study of advanced manufacturing technological courses and training will sky rocket leading to

unemployment and poverty reduction as a result of acquisition of requisite skills; Graduates, teachers and artisans that have realized the import of advanced manufacturing technology, mechatronics and other state-of-the-art technological courses and have developed interests, but do not have credit passes on core science subjects could participate and benefit from the innovations. Finally, the pressure for admission on theoretical courses will reduce drastically.

Bridging the gap between innovation and practice

This is a corollary to school enrollment thesis above. Some institutions have made and are still making concerted efforts at introducing state-of-the-art courses on advanced manufacturing technology and vocational education and training; for instance, the Federal Polytechnic, Oko, Anambra State has reached pact with Sharda University, Greater Noida, India; Indira Gandhi National Tribal University, Amarkantak; Central University, Sagar, India and Confucius Institute of the Chinese Government for exchange programmes on Mechatronics Engineering Technology, Nano Science Technology, Solar Power Technology, Bio-Energy Technology, Forensic Science Technology and Metallurgical and Materials Engineering Technology. Other institutions have introduced radical innovations on Information and Communication Technology. What will be the essence of these innovations when the number of students who could exploit these golden opportunities is few because of the JAMB and tertiary institutions' regulations on conditions for admissions? When the curricula is redesigned to de-emphasize insistence on core science subjects as prerequisites, the number of students that will enroll to study above-mentioned courses will increase; thereby producing self-employable graduates at the end.

Blending technical-know-how and technical-know-why

It is common knowledge that good number of graduates in engineering, technological and related courses cannot put into practice what they have learnt in theories at the classroom. On the other, road side mechanics, carpenters, etc collectively referred to here as artisans with no formal educational training execute the practical areas of engineering, technological and related courses for the professionals with tertiary education degrees. It implies that the professionals by virtue of their educational training understand and know why a particular job for instance, must be done with stipulated specification, but may lack the practical knowledge to execute the job. Similarly, artisans know the practical aspects of the job owing to their apprenticeship and constant practice in the field, but do not know and understand why the job has stipulated specifications. In other words, while professionals have the technical-know-why, many of them lack the technical-know-how; artisans on their part have the technical-know-how, but lack the technical-know-why. When insistent on core science subjects as a prerequisite is de-emphasized, artisans that are interested could enroll for formal technical and vocational education courses and training and acquire the know-why; the professionals on their part could tap from the wealth of know-how of these artisans as well as they undergo formal educational training. It is no longer news that lecturers of tertiary institutions taking their students to roadside mechanics, electricians' workshops, etc for practical experience. It would not be out of place to state here that most of the expatriate attached to construction and manufacturing companies in Nigeria are Technicians and not Engineers. They are trained technicians with the know-how and know-why.

Education versus certification

Reward system in Nigeria tends to engender emphasis on acquisition of certificates than knowledge (i.e. rather than being educated). The bigger/higher the certificates without corresponding knowledge the better and fatter the reward; when it is acquired overseas, irrespective of the country, it attracts more respect and honour in addition to the esteemed reward. A lot of Nigerian graduates are unemployed and poor today irrespective of their universities degrees in engineering and related areas, it could be traced to their refusal to attend tertiary institutions systematically designed and equipped to offer technical and vocational education and training because they will be awarded Higher National Diploma (HND) and regarded as Technicians and placed under Engineers with B. Tech or B. Eng in places of assignments. They acquired certificates as Engineers without acquiring the knowledge. The National Board for Technical Education should liaise and consult further with the Federal Ministry of Education and relevant agencies to upgrade HND to B. Tech and bridge the disparity in University and Polytechnic degrees. This could increase the enrollment rate for the study of technical and vocational education courses especially with the introduction of innovation in mechatronics, advanced manufacturing technology driven by most Polytechnics. This would not only boost the status/morale of students and graduates, it will go long way towards unemployment and poverty reduction in the country.

Interest as drive

Departments offering technical and vocational education courses and training could advertize for prospective students interested in studying such courses to apply. The entry requirements should be five (5) credit passes including English Language and Mathematics and any other three (3) subjects. Interests as drive, is the force and hub for studying these courses. When the performances of the students admitted on the basis of interests are evaluated after first and subsequent years, it may be surprising to find out that they are outperforming those with science background and orientation. In support of the interests thesis, allusion could be made to the monumental giant stride that have taken and are still taking place at the Federal Polytechnic, Oko, Anambra State; especially, in terms of introduction of state-of-the-art technical and vocational education courses – Nanoscience, Biotechnology, Renewable Energy, etc- in the institution by the Rector who is a Political Scientist. This is as a result of interest, he is not an Engineer, a Technologist, etc; he has interest in developing technical and vocational education. Thus, he researches in the area and implements his findings.

Conclusion

In conclusion, Tomlinson (2002) observes that in the last twenty years Nigeria has had thirty-seven unemployment and poverty reduction institutions and programmes implemented, the recently introduced Subsidy Reinvestment and Empowerment Programme (SURE-P) by Jonathan Goodluck's administration not included; yet the rate of unemployment and incidence of poverty in the country are high. These programmes and institutions failed because those in charge and at the helm of affairs were not sincerely and genuinely committed to the development, their motives were quite parallel with their actions. There is intense conflict between the manifest and latent functions of the institutions and programmes formulated and implemented by the political elite. For instance, in considering agricultural development in Africa, it is useful to distinguish between the latent and manifest functions of agricultural policies. More than not, the former undermines the latter. The manifest function of policy demands an increase in agricultural productivity, but the latent function emphasizes control. And that is the turn that policy has taken in most of Africa. The latent function of agricultural policy, which expresses the interest of the political elites, can prevail over the manifest function because of highly asymmetrical relations of power between the elites and the peasantry (Ake, 2001: 45 & 47). It is the position of this paper that one of the measures that could least be affected by the interaction of latent and manifest functions and impacts readily on the level of unemployment and poverty is the redesign of educational curricula as canvassed herein. This is because when it is done, the bulk of the responsibility rests with the people who Ake (2001: 125) rightly observes are the end, agents and means of development.

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Appendix i
Unemployment rate by educational level
Age – group, Sex and Sector (2011)

Educational Level	Urban	Rural	Composite
Never attended	19.0	22.8	22.4
Primary School	15.5	22.7	21.5
Modern School	14.5	27.5	24.3
VOC/COM	34.5	27.0	28.7
JSS	16.6	36.9	33.4
SSS ‘O LEVEL’	13.9	22.5	20.1
A LEVEL	34.1	29.7	31.0
NCE/OND/NURSING	17.2	22.5	20.2
BA/BSC/HND	16.8	23.5	20.2
TECH/PROF	5.0	27.9	20.6
MASTERS	3.2	8.3	5.1
DOCTORATE	11.1	7.7	9.1
OTHERS	31.3	36.1	35.5
Age group			
15 – 24	33.5	38.3	37.7
25 – 44	16.3	24.1	22.4
45 – 59	12.5	19.6	18.0
60 – 64	17.8	22.1	21.4
Sex			
MALE	16.9	25.1	23.5
FEMALE	17.2	26.1	24.3
National	17.1	25.6	23.9

Source: Adapted from National Bureau of Statistics. (2011). 2011 Annual Socio-Economic Report. Retrieved July 25th, 2012 from www.nigerianstat.gov.ng

Appendix ii
Statistics of employment status on Nigeria Population: 2006 – 2011

	2006	2007	2008	2009	2010	2011
Nigeria population	140,431,790	144,925,607	149,563,227	154,349,250	159,288,426	164,385,656
Economically Active	78,922,666	81,448,191	84,054,533	86,744,278	89,520,095	92,384,738
Labour Force	57,455,701	59,294,283	61,191,700	63,149,835	65,170,629	67,256,090
Employed	50,388,650	51,763,909	52,074,137	50,709,317	51,224,115	51,181,884
Unemployed	7,067,051	7,530,374	9,117,563	12,440,517	13,946,515	16,074,205
Newly Unemployed		463,323	1,587,189	3,322,954	1,505,997	2,127,691

Source: Adapted from National Bureau of Statistics. (2011). 2011 Annual Socio-Economic Report. Retrieved July 25th, 2012 from www.nigerianstat.gov.ng

Appendix iii
Statistics on educational institutions in Nigeria: 2006 - 2010

	2006	2007	2008	2009	2010
Total number of Universities	89	95	95	104	104
Total number of Federal Universities	27	27	27	27	27
Total number of State Universities	30	30	34	36	36
Total no of Private Universities	32	34	34	41	41
Total no of Polytechnics	66	67	71	75	75
Total no of Colleges of Education	79	80	85	85	88
Total no of Federal Colleges of Education	21	21	21	21	21
Total no of State Colleges of Education	42	42	43	43	45
Total no of Private Colleges of Education	16	17	21	21	22
Senior Secondary schools	7, 915	14, 410			
Junior Secondary Schools (private and public)	10, 615	16, 238	19, 244	3, 410	3, 439
Primary Schools	77, 668	92, 007	98, 631	98, 631	
Nomadic	2, 244	2, 304	2, 289	2, 953	3, 060

Source: Adapted from National Bureau of Statistics. (2011). 2011 Annual Socio-Economic Report. Retrieved July 25th, 2012 from www.nigerianstat.gov.ng

Appendix iv (a)
Types of Technology Education

Type of Technology Education	Principal Manpower Role	Principal Delivery Institution	Academic Awards
1. Pre-vocational education or general vocational education	Semi-skilled manpower for specific job training in apprenticeship or further formal education	Secondary schools	WAEC/NECO certificates in combination with other non-vocational subjects
2. Vocational (job-specific) education	Craftsmen and master craftsmen (low-level manpower)	Technical colleges and vocational centres	NABTEB certificates: NTC/NBC and ANTC/ANBC.
3. Technical education	Technicians/technologists (middle-level manpower)	Polytechnics/monotechnics	ND, HND, Post-HND
4. Professional education	Professionals (high-level manpower)	Universities	Degrees- Bachelors, Masters, Doctorates

Source: Adapted from Federal Ministry of Education (2003). Education Sector Report. Retrieved February 9th, 2013 from <http://planipolis.iiep.unesco.org/upload/Nigeria/Nigeria%20Ed%20Sector%20Stautus%20May%202003.pdf>

Appendix iv (b)
Functions of Parastatals in Technology and Science Education

Parastatals	Functions
NUC	Responsible for funding and supervision of federal universities, national minimum standards, curriculum development and quality assurance, through accreditation for all universities (federal, state and private).
NBTE	Soon to be legally converted to a National Commission for Polytechnics (NCP), with responsibility for funding and supervision of federal polytechnics and national curriculum development and quality assurance, through accreditation for all polytechnics (federal, state and private).
NCCE	Responsible for funding and supervision of federal colleges of education, and national minimum curriculum development and quality assurance, through accreditation for all colleges of education (federal, state and private).
NABTEB	An examination body responsible for national vocational examinations and awarding NTC/NBC and ANTC/ANBC. It also has responsibility by law for the conduct of national common entrance examinations into technical colleges.
NECO	An examination body responsible for junior school certificate examinations (JSCE) for federal secondary schools and senior school certificate examinations (SSCE) for federal and state secondary schools. It also conducts GCE examinations.
WAEC	An examination body responsible for senior school certificate examinations and GCE, (General Certificate of Education).
NERDC	Responsible for national minimum curriculum development for primary and secondary schools, book development and educational research.

Source: Adapted from Federal Ministry of Education (2003). Education Sector Report. Retrieved February 9th, 2013 from <http://planipolis.iiep.unesco.org/upload/Nigeria/Nigeria%20Ed%20Sector%20Stautus%20May%202003.pdf>

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