

Technology Education: A Viable Option for Sustainable Employment and Poverty Alleviation in Nigeria

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ABSTRACT

No nation can grow above the quality of her workforce. This means that the quality of labour produced by a nation's educational system determines to a great extent her industrial and economic development. It is implied therefore, that an educational system that is technology based can guarantee adequately skilled manpower to run her industries. However, it is reasonable to note that the rapid rate of development of new technological tools through innovations have caused phenomenal changes in the workplace of today and tomorrow. Such changes have lead to the obsolete of machines and work skills to the extent that robots are fast replacing the industrial workforce. This paper sets out to investigate the need for Technology Education; investigate the need for Technical and Vocational Education and Training (TVET) in the face of changes industrial processes, challenges of acquiring modern work skills like programming, operations and trouble shooting of manufacturing devices. Suggestions were made for improving the acquisition of skills in Nigerian institutions to bridge the gap between schools and the industries in Nigeria.

Key Words:

Technology, education, sustainable, employment, creation, poverty, alleviation

INTRODUCTION

The socio-economic and industrial development of any nation is driven by her technological advancement which is hinged on quality skills development through Vocational Technical Education. The Nigerian National Policy on Education (FRN, 2004) defines Technical Education as that aspect of education that leads to the acquisition of practical and applied skills as well as basic scientific knowledge. Such education leads to employment generation and increase in production of goods and services. Unfortunately, technological advancement may also lead to obsolesce of jobs and machines, thus creating a need for improved manpower training and retraining. .

As observed by OECD (2010), for the past three decades, the world has become increasingly technology-rich and technology-reliant. It is so because innovation and technological changes are powerful drivers of economic growth but the rapidity with which technological innovations spread into mass use is too fast

for the less developed nations of the world to cope with. Even institutions which are expected to take their place as the advanced guard of the knowledge society have been very slow in advancing training on the use of technologies as they are developed. The work place is not static but dynamic requiring the services of a labour force needed in a global environment. In such an environment workers are expected to acquire skills that will fit them into the modern industry.

Davenport (2012) sees workers in the manufacturing industry as two distinct groups often contrasted as “white collar vs. blue collar” or “management vs labour.” The white collar consists of managers and engineers who are degree holders. They design and run the manufacturing plants. The blue-collar group consists of factory floor workers who operate the machinery and perform any necessary physical work. They are often designated as unskilled labour with high school certificates. Davenport further observed that a third group of workers has emerged often referred to as technicians or “techs.” This category of workers does programming, operate, troubleshoot and maintain computer and network-driven manufacturing devices in the modern factory. Such devices include computer numerical control (CNC) driven routers,

stampers and drill presses, robots, additive manufacturing devices such as 3D printers and devices in manufacturing cells that communicate through local area networks. The author concluded that these devices have proliferated in manufacturing at the same time that many traditional blue-collar factory jobs have been outsourced or automated out of existence. Therefore, jobs for technicians are rising as overall manufacturing job levels fall.

This picture is indicative of the current and future trend of workforce requirements in the global market place. Some manufacturing executives lent their voices to this trend by describing the importance of techs in their companies. For example, David Kohler, President of Kohler, a plumbing fixture company, in 2012, stated that technicians are a big issue for his and other companies in the United States, which are expanding manufacturing labour in two forms. The entry level lower-skills class and higher skills technicians doing machine set up and CNC programming as more and more of their products have embedded electronic systems and connectivity, which also raises the demand for technicians with skills in those areas.

Taske (2012) CEO of Briggs and Stratton explained that over the last ten years, their plants have become very

different because labour cost has gone up and fixed capital down, the environment has shifted. Briggs went on to state that now they have a lot of robots as many in a single manufacturing cell as they once had in the whole factory. This means that the services of robot operators will continue to rise in their future workforce demands. Since the modern industry will continue to bring many challenges and changes to the workplace and to our society, Edu, Mbang and Effiong (2009) observed that today's young people will require vocational skills beyond the specifics. ILO (2011) also observed that change happens fast in the world of work, driven by innovation and by developments in technology and markets. Keeping up with this pace of change is a continuing challenge for training institutions. Therefore, the active participation of employers' and workers' representatives in vocational education and training institutions is essential to bridging this gulf. The absence of this type of education and training will lead to unemployment and poverty.

The growing problem of unemployment in Nigeria has contributed largely to the worsening problem of poverty among the populace, which according to Olaitan (1996) leads to frustration, disillusionment and eventual crimes. For any nation to develop, she

must be comparatively free from the overwhelming consequences of poverty, illiteracy and unemployment. Poverty, according to Corbett (2012) is the condition of having insufficient resources or income.

Nwachukwu (2014) sees Africa as one of the blessed continents, yet remains the poorest and the least developed region of the world, Nigeria inclusive. The reason is that many African countries have been engulfed by series of internal crises over the past three decades. As a result, poverty has increased throughout the nations, and it has underpinned the education and national development of the affected countries. Nigeria, for example, is ranked among the poorest of developing countries in the world and the living standard showed a tremendous increase in poverty incidence of 69% (National Bureau of Statistics (NBS), 2005).

THE CHANGING FACE OF WORK (NEED FOR TVET)

The need for gainful employment of the citizens of a nation cannot be overemphasized. Despite the fact that adults play multiple life roles and each of us defines a "balanced life" differently, work contributes to one's sense of purpose and identity in contemporary society. Such interactions are bound to reinforce

the contention that in a fluid industrial society occupation is the principal determinant of social status.

A lot has happened in the modern work environment, which adversely affect employees. Recent development in the nature of work has led to many organizations downsizing in unprecedented numbers, organizational hierarchies are flattening resulting in fewer career ladders to climb. Contingent workforces are emerging to replace the long-term employees. Computers are replacing workers and adults are forced to acknowledge that, although they have a job today, they may be unemployed tomorrow regardless of how competent they are or how hard they work (Rifken, 1995).

These shifts in work are causing workers to reconsider their definition of success. A successful career can no longer be defined as reaching the top of the ladder. Many companies are examining ways to restructure work to make it more responsive to employees growing concerns about fitting work into modern life. Some people may argue that the success of companies today hinges as much on their commitment to work/life issues as on introducing new technologies and products.

ILO (2011) in a document titled “A skilled workforce for strong, sustainable and balanced growth: A G20 Training Strategy,” submitted that equipping the workforce with the skills required for the jobs of today and those of tomorrow is a strategic concern in the national growth and development outlooks of all G20 countries. It was also observed that new occupations are emerging and replacing others. Within each occupation, required skills and competencies are evolving as the knowledge content of production process and services is rising. It was agreed that each country’s prosperity depends on how many of its people are in work and how productive they are, which in turn rests on the skills they have and how effectively those skills are used.

At the centre of quality skills production is a robust training policy and system. The G20 group argued that a good skills development system will be able to: anticipate skill needs; engage employers and workers in decisions about training provision; maintain the quality and relevance of training; make training accessible to all sectors of society; ensure viable and equitable financing mechanisms; and continuously evaluate the economic and local outcomes of training. The document identified the basis

of the policy framework for developing a suitably skilled workforce as:

Broad availability of good quality education as a foundation for future training; a close matching of skills supply to the needs of enterprise and labour market; enabling workers and enterprises to adjust to changes in technology and market; and anticipating and preparing for the skills needs of the future. In summary, the document stated that good quality primary and secondary education complemented by relevant training and skills development opportunities prepare future generations for their productive lives, endowing them with the core skills that enable them to continue learning.

TECHNOLOGY EDUCATION AND SKILLS' REQUIREMENTS FOR MODERN WORKERS

Citizens of a nation who are looking for their first job are better prepared for a smooth transition from school to work when they are given adequate vocational education and training opportunities, including in-work apprenticeship and on-the-job experience. Those already in employment may periodically need opportunities to up-date their skills and learn new ones to keep abreast of modern workplace dynamics. With the changing nature of work in

modern manufacturing industries, workers need to have skills involving the programming, operation and troubleshooting of a variety of electronic devices used for manufacturing. These may include CNC-based machines, robots, local area networks and other programmable logic devices (Davenport, 2012). Other skills required of technician jobs include data interpretation skills and understanding of statistical process control approaches. Technical Vocational Education and Training (TVET) graduates need these necessary occupational skills to be self employed and to affectively function in today's world of work.

The skills requirement highlighted above set the stage for vocational and technical education of youth for emerging technology based careers. Schooling as encapsulated in the sustainable development post 2015 – Goals, directly equip people with competencies that increase their income. Better-educated individuals in wage employment are paid more to reward them for their higher productivity.

Lending a voice to the skill needs of modern industrial workforce, Okoye (2013) opined that technology education programmes require steady revision and updating in order to flow with the current practices in engineering and technology.

Ogbuanya and Izuoba (2015) observed that this revision will go a long way in enhancing capacity building via intellectual training and ability to solve problems pragmatically. This, they said, would make it possible to find new solutions to problems as they emerge; reawaken manpower development to bridge the yearning gap in industrial manpower need for employment and poverty alleviation in Nigeria.

The positive gains associated with quality technology education notwithstanding, Ogbuanya and Izuoba (2015) observed that this type of education has not been taken seriously by the Nigerian government. This neglect, Jubril (2008) observed, is socially injurious as it robs the nation of the contribution graduates would make to national development. There is an urgent need, therefore, to direct our educational policies towards skills and competencies to fill the gap in manpower need in order to arrest unemployment and its attendant poverty.

TECHNICAL VOCATIONAL EDUCATION AND TRAINING (TVET) TO THE RESCUE

TVET has been the most effective human resource development strategy would wide. It prepares trainees for jobs that are based on manual or practical activities,

traditionally non-academic and totally related to a specific trade, occupation or vocation (Alenoghena, 2010). Alenoghena also observed that in the past, TVET was focused on specific trades such as welding, automobile mechanic, building construction, etc and it was therefore associated with the activities of lower social classes. However, the author concluded that as the labour market becomes more specialized and economies demand higher levels of skills, TVET has become the bedrock for technology and industrial development. Hamza (2011) asserted that TVET is a form of education, training or retraining which is directed towards developing the learner to become productive either in a paid employment or in self-employment. The training is also targeted at developing not only practical skills but also attitudes and habits that make the recipient creative, innovative and resourceful (Ibeneme, 2012).

By making individuals employable and informed citizens, human resource development through Technical and Vocational education contributes to economic development and to achieving full employment and promoting social inclusion (Edu & Effiong, 2013). Edu (2013) observed that the true economic test of the value of any educational programme is its ability to meet the

manpower needs and solve employment problems in the society. While making a case for a dual system of technical training, the author suggested that the curriculum for technical education programmes should be drawn up by a combined team from the federal and state governments, employers of labour and trade unions. The National Board for Technical Education (NBTE) should in collaboration with representatives of industry, business and trade unions determine what skills and knowledge are required for each occupation at any particular time.

Discussing the case for technical and vocational education as an index of development, Aworanti (2013) observed that human development is much more than the raising of national incomes. It is about creating an environment in which people can develop their full potentials and interest. The author concluded that the return on investment in technical and vocational education for society will be skilled workforce that will enable global competitiveness and economic growth while the return for the individual will be an improved career path, increased earning power and a better quality of life (Aworanti, 2013).

It is worthy of note to realize that, it is not enough to establish a need for

technical and vocational education for development, it is also necessary to realize that there is need for sustainability. According to UNESCO world conference on education for sustainable development in 2009, the following demands were made:

1. Sustainable development issues must be incorporated in formal education as well as non-formal and informal education.
2. Education for sustainable development must become an integral part of the corporate policies of private sector actors particularly in vocational education and workplace learning.

The emphasis on sustainability is born out of the fact that, in all countries of the world, the implications for skills development are momentous. ILO (2010) projected that many of the jobs that will be generated over the next two decades do not exist today; yet most of the workforce of those years is already in education and training. Even so, they said, the need to upgrade skills applies not only to young people in schools, universities and training institutions, but also the current generation of workers.

ILO (2010) affirmed that good-quality basic education is closely

correlated to economic growth observing that such education is a foundation for future skills development in productive employment, both initially and throughout adult life. A country's capacity to pick up new technologies and turn them to economic advantage is greater if its education and training system creates a broad base of adequately educated individuals able to continue learning throughout their careers.

SUGGESTIONS FOR IMPROVEMENT

1. Nigerians should be empowered through technology education to acquire modern skills of the information technology to be able to take advantage of being the largest market in the Black World.
2. Nigerian institutions should establish and sustain the involvement of employers and workers and their representative organizations in running their educational programmes to keep them relevant and ensure that training costs and the gains of productivity improvement are shared equitably. Bringing together business and labour, government and training providers, at the local, industry and national levels is an effective means of securing the relevance of training to the changing needs of enterprises and labour market.
3. Education is the key to sustainable job creation all across the world. The Nigeria government should, therefore, rebuild the dilapidated educational facilities, engage quality skilled teachers, equip both rural and urban schools for technology education. This is one of the most reliable measures towards the production of up to date skilled personnel for industries.
4. Manpower planning and production should guide educational planning in Nigeria. As observed by Dahunsi (2013) it does not make any reasonable sense to keep producing graduates massively into a choked labour market.
5. National Planning Commission should play a role in the establishment of tertiary educational institutions. There should be a link between the courses run by these institutions and Nigeria's development requirements and also a link between graduate output of our

- tertiary educational institutions and the labour market requirements.
6. There should be modernization of TVET curriculum to match the global trend and increase relevance of technical and vocational education in Nigeria as a matter of necessity and urgency.
 7. There is also an urgent need to align technical and vocational provisions with industry and community labour demands.
 8. There is need to identify current and future skill needs in all sectors of the Nigerian economy and align TVET to developing such skills.
 9. It is time for even general education curriculum to be reviewed and made technology compliant so that its products can fit into the modern technological age for employability and poverty alleviation.
 10. Establishing solid bridges between vocational education, training and skills development and the world of work makes it more likely that workers will learn the right skills, especially those required by the evolving demands of labour markets, enterprises and workplaces in different economic sectors and industries.
 11. Effective partnerships between governments, employers and work organizations, and training institutions and service providers are critical to anchor the world of learning in the world of work.

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