

TECHNOLOGY EDUCATION AND DEVELOPMENT IN NIGERIA BEYOND 2020

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Abstract

Technology Education entails acquisition of skills and knowledge as well as a process of training technically oriented personnel who are to be facilitators and implementers of technological development of a nation for economic and social transformation of the citizenry and rapid industrial revolution for sustainable development. This paper examined trend and development of Technology Education in Nigeria and possible causes of technology Education backwardness such as lack of commitment, poor funding, poor research and development activities and infrastructural challenges. In order to achieve the needed technology development in Nigeria beyond 20:20 the paper recommended that the government should equip technology laboratories with modern equipment to enhance teaching and research in nation's Universities, Polytechnics, Monotechnics, Colleges of Education and Technical Colleges.

Keywords: Technology Education, Technology Development, Technological Institutions, Technical Education National Development, Nigeria.

Technology Education involves the process of training technically oriented personnel who are to be initiators, facilitators and implementers of technological development of any nation for economic and social welfare of the citizenry. According to Danko (2006) Technology Education is that type of education in which students learn about the processes and knowledge related to technology. Again, as a field of study, it covers the human ability to shape and change the physical world to meet needs by using techniques. Adeogun (2007) defined Technology Education as a form of education in which people are provided with practical skills which allow them to engage in careers that involve knowledge, skills and practical abilities. Technology Education has remained the hub of global growth and development in the world today. Ogbuanya (2010) posited that the dynamism of every change in different fields of technology requires sound and adequate training of individuals in Technical Education. This implies that the needed national development that Nigeria looking for could not be obtained unless attention is given to Technology Education. Olunwa (2007) stated that any nation that wishes to attain a great height in national development cannot compromise the education of her citizenry.

Historical Background of Technology Education in Nigeria

According to Akaninwor (2008), technology means the study, mastery and utilization of manufacturing methods and industrial arts. It is the systematic application of knowledge to practical tasks in the industries. Technology is the result of man's efforts to do things more effectively. Okoro (1999) opined that Technology Education was slow until 1909 when two institutions offering some form of Technological Education in Nigeria. The Hope Waddell Training Institute Calabar had developed a technical programme in tailoring, carpentry and some commercial subjects and the Government school Kefi in 1909 had courses in metal work, carpentry, weaving and leather work. Okojie (2007) posited that the higher Technology Education Institute was established in 1932 the Yaba College of Technology as the first higher Technology institution in Nigeria. Additional two Monotechnics were established in 1977 which are the Nautical College of Nigeria now Maritime Academy of Nigeria Oron and College of Aviation Technology Kaduna. Nigeria was without a Federal University of Technology until in 1980s

when four Federal University of Technology were established, they are: Federal University of Technology Minna, Federal University of Technology Akure, Federal University of Technology Yola and Federal University of Technology Owerri. Today Nigeria is growing in arithmetic progression in Technology Education due to its poor perception by the people of Nigeria. According to Okoro (1999), before British intervention in Nigeria and the establishment of formal educational institution in the later part of the nineteenth century and the early part of the twentieth century, education in Nigeria were mainly Vocational and Technological in nature. An important function of education was to teach people how to earn a living by becoming expert producers of goods and services. Young men acquired the rudiments of an occupation from their parents or from expert craftsmen to whom they were apprenticed. Technology and Vocational Education ensured that foods and services necessary for the survival of the society were produced. Technology Education also insured that Agricultural skills, Building skills, Medical knowledge and Technical expertise were passed from one generation to another and remained a part of the culture and way of life of the people.

Challenges Facing Effective Technology Development in Nigeria

According to Uwaifo (2009), a country is said to be backward in Technology Education when:

- (i) the products from Technology institution cannot produce capital goods such as tractors, lathe machine, electrical and electronics devices, drilling machines, cars, iron and steel, train and other earth moving equipments,
- (ii) it is unable to exploit her natural resources except with the help of foreigners who will normally provide the technology and Expertise to undertake the exploitation of her natural resources,
- (iii) it is unable to mechanize her agriculture i.e crude implements are still used for agricultural production activities by a large percentage of those who are involved in agricultural production,
- (iv) it depends on other countries for the supply of its spare parts for industrial machinery,
- (v) it exports raw materials to other countries as against finished products,
- (vi) it is unable to produce her own military hardware with which to defend herself if the need arises on,
- (vii) it has strong propensity to consume the products of technology from other country,

A critical examination of Nigeria shows that all the points enumerated above are present in the country. Therefore, Nigeria in the items above is a technological backward nation. The problem facing effective technology development in the nation can be summed up as follows:

(a) Lack of coordination between Research Institutes and production enterprise. Most of the discoveries and inventions were never implemented. This is mainly because production enterprises operated independently with little or no exchange of information. Wodi (2012) asserted that there was no clear goals for research and development and the importance of research and development for purely scientific purposes.

(b) Inadequate funding of Education: No nation can develop technologically when the formal education sector that drives the technology is not adequately funded. Okoro (2014), observed that the Federal Government yearly allocation to the education sector has over the years been far below expectation. Ekundayo (2006) submitted that Nigerian government over the years has not been meeting the United Nation Educational Scientific and Cultural Organization (UNESCO) recommendation of the 26% of the total budget. Oseni (2012), posited that government budget to education is still very low, the apparent shortage of funds available to educational institutions have been responsible for declining library, infrastructure and laboratories in recent years.

Adeyemi(2011), observed that non implementation of educational budget has a negative impact on educational process.

(c) **Poorly Equipped Laboratories:** The Nation's Technical Colleges, Monotechnics, polytechnics and Universities that are supposed to train proficient Technicians, Technologists and Engineers are now filled with outdated and in most cases non-functional equipment. Sofolohan (2008) contended that shortage of workshops and laboratories in technological institutions hinders the realization of the goals and objectives of technology education curriculum. Non installation of important equipment meant for the teaching of technology subjects due to accommodation problems hinders its successful take off and the level of achievement by the student. Workshops in technological institutions are yet to become-functional. They are not serving the purpose for which they were built. Technological development is therefore hindered by poor nature of the learning environment. Workshops and laboratories for Technology Education programmes should be of high quality since the objective and strength of the programme lie in providing intensive training in a wide variety of workshop situation. A survey of most technological colleges in Nigeria reveals that their workshop and laboratory are inadequate and thereby create unconducive teaching and learning environment for both teachers and students. Asele (2010) observed that gross inadequacy of workshops and classrooms for pedagogic activities, irregular power supply and non-provision of materials for students' psychomotor learning have contributed to low quality of instructions.

(d) **Discouragement of Technical Education:** Technical Education was not taught in school by the colonial masters except by the second half of nineteenth century. Akaninwor (2008) observed that the colonialist discouraged further development of Nigerian technology as they reasoned that it was a threat to the smooth marketing of goods imported from Europe.

How to Develop Technology Using Educational Tool

Technology can be developed in Nigeria if government should be able to provide appropriate framework that generate interest, and encourage the training of Engineering Technologists in quantity and quality through technology institutions using model of light industries, craftsmen, technicians, technologists and engineers can be gainfully employed to operate at their various level of competence. Ekhovbiye (2011) posited that industrial market survey by technologist students should be encouraged. This is done by copying items already in use in the market for laboratory component analysis similar items to be produced. Again, Technology Education should be repositioned so that the training received by students in technical and vocational education should be the same with what they will meet after graduation. Abdurahaman (2013) observed that technical and vocational education is a tool that foster national development when the environment in which the trainee is prepared resemble the environment in which he will get employed. That means, the individuals should be trained specifically in the thinking and manipulative habits required in the desired occupation. Another area of improving technology is through student Espionage. According to Ekhovbiye (2011) highly technical knowledge are guided by their proprietors, the secrets can be obtained through Espionage. Technology spies are often used to collect top secrets and company documents required for developing such products. Furthermore, Ununadi (2012) observed that energy production and innovation technology curriculum a key to national development. Adequate energy generation will take the country high in the pedestal of technological development beyond 20: 2020. Okereke (2008), posited that for technology to take its rightful place in the country, government should institutionalized educational framework and policy for actualization of educational goals and objectives. Lawal (2013) posited that for Nigeria to develop technologically government should use technical and vocational education as a tool for national development.

Technology Education in Nigeria Beyond 20: 2020

Technology Education in Nigeria would experience massive growth and development in terms of technological transfer of knowledge and training of middle man power, highly skilled professionals from technical institutions that form competitive workforce that contribute to national growth and development. If the Federal Government of Nigeria is willing to sponsor technology education. Ojimba (2013) stated that technical and vocational education play vital role in socio-economic and political

stability in Nigeria. This would be shown in the space development where Nigeria would launch her own satellite in the space, far away in China. This satellite can be used to solve her internal problems security, crime detection, identify criminals, monitor oil pipelines and electric power facilities that are prone to vandalization. If technologists would be patriotic enough to use their skills and creativity to place Nigeria on the economic map of the world beyond the vision 20: 2020.

Conclusion

In conclusion, Technology Education should be given priority and technologists should be given opportunity for training and certification. Appropriate frameworks for inter and intra technology transfer should be in place, there is need to repositioning Technology Education for sustainable industrial growth, this will be possible if government will give education proper budgetary allocation, proper funding and implementation of research findings, improve infrastructural facilities training and retraining of technical teachers, equipped laboratories and libraries of technology institutions. Today, nations are reassessing their mosaic of economic strategies for thriving, rather than surviving, in a global economy. At the core of this transformation is increasing deliberation, and consensus among government, business and higher education leaders the need to create and attract a skilled and competitive workforce that contributes to national economic infrastructure that is sustainable, renewable and responsive to shifts in global market place. At the forefront of this deliberation is the role of Technology Education institutions in creating this competitive workforce. If the government will be willing to fund Technology Education and technologists are patriotic enough to use their skills in creating wealth and improve our economy, then the vision 20: 2020 and beyond would be achieved .

Recommendations

The following recommendations are made:

- Proper funding of technological institutions by the Federal Ministry of Education..
- Policy matters relating to Technology Education and technological advancement of the nation should be prerogative of nation's indigenous engineering family and should not be left to the politicians.
- Government should equip Technology laboratories with modern equipment to enhance teaching and research in nation's Universities, Polytechnics and Technical Colleges.
- The Federal Government through National Universities Commission (NUC) and National Board for Technical Education (NBTE) should embark on advocacy on the need for Technology Education development.

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