Industrial Technology Education: A Panacea for Productivity and Sustainable Development In Nigeria

Ibrahm Dauda & Abdulkair Mohammed
Department of Industrial Technology Education
Federal University of Technology Minna

Abstract

The technology development and the advancement of any nation in term of productivity and sustainable development, is a product of the application of practical skills as well as basic scientific knowledge. As the quest for industrialization cannot be attained without technology education playing a vital role, the paper examine industrial technology education as a tool for productivity and sustainable development in Nigeria. The paper will discus the concept of technology education, concept of productivity, concept of sustainable development, Role of industrial technology education in sustainable development, recommendation and conclusion.

Introduction

The level of development of any nation is measured by the abilities which provide people with such basic needs like food, shelter, health, clothing, minimum education, sufficient communication, transportation system e.t.c. As technology is the primary index of power today, technology education must be recognize as the foundation of socio-economic transportation of a nation. Technology education has long be pointed out as a tool for National development and growth as well as the foundation to a healthy economic of any nation. Many developed nations such as U.S, British, Japan, Australla etc have developed through investing and pursuing technology educations programmes in their institutions. Convergence of I.T and communication technology brings about greater potential and possibilities is using technologies as a powerful medium of delivery. Instructions and communication. The National policy on Education support government way of

achieving those aspect of her Nationai objectives of a "United strong and self reliant nation" and "a great and dynamic economy" using education as a tool. Industrial technology education provides the knowledge which would lead the country towards productivity and sustainable development (self sufficiency). Industrial technology has been defined as a field of study designed to prepare technical and/or management oriented professional for employment in business, Industrial, Educations and government (NAIT, 2004). The attainment of an industrialized nation varies from trades and profession which among other includes, Air conditioning,. Automotive service, Aircraft maintenance, Construction and maintenance trades, carpentry, electricity, fabric maintenance service, Industrial atomic energy, maritime occupations metal working, metallurgy, electric power and generating plant, textile production and fabrications, leather working, wood working to mention but few. Fourty Seven years of sovereignty as a nation, leaves one in doubt of our capabilities in transforming Nigeria into an industrialized nation. Therefore to attain a sustainable development and productivity in the country, the role of industrial technology education is crucial in our educational system.

Concept of Industrial Technology Education

Industrial Technology Education could mean the systematic study of technique for making and doing things. Miller (2003) describe Technology as the application of scientific knowledge or principles to practical task for developing and producing goods and services for mankind. Education on the other hand could be defined as a process of polishing the heart, head and the hand of the individual to enable him/her to live a worthy self-reliance life. Going by the concept of technology and education therefore. Industrial technology education can be describe as a systematic way of exposing individual to the practical task for developing and producing good and service to meets the needs and wants of man. It is the field of study designed to prepared technical and or management oriented professional for employment in business, education and government.

Technology refers to all that it takes for man to set in motion the natural forces of his entire body in order to make natural materials available informs useful to influence and control nature to aid his survival as a social being and all his attempts to solve essential but specific materials and spiritual problem in his life.

The National policy on Education revised (2004) define technology Education as "That aspect of education which leads to acquisitions of practical and applied skills as well as scientific knowledge" The aim of technology education includes the following.

1. To provide trained manpower in applied science, technology and commerce particularly at the sub professional grades.
2. To provide the technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economic development
3. To provide people who can apply scientific knowledge to the improvement and solutions of environmental problems for the use and convenience of man
4. To give training and impact the necessary skill leading to the production of craftsman, technicians and other skilled personal who will be enterprising and self-reliant and
5. To enable our young men and women to have an intelligent understanding of the increasing complexity of technology

Concept of Productivity

The concept of productivity, generally defined as the relation between output and input, has been available for over two centuries in the economic system. It is argued that productivity is one of the basic variable governing economic production activities, perharps the most Important one. Infact productivity is frequently discussed by managers but rarely defined, often misunderstood and confused with similar terms and seldom measured in an

appropriate way, leading to productivity being disregarded or even to that contra productive decision are taken.

According to koss and levis, remarkably many managers who every day make decisions about improving plant efficiency do not know how to answer the simple question "what do we really mean by productivity?". Nevertheless if we do not fully understand what productivity is, how can we decide what productivity measure to use?, how can we interpret them correctly?, how can we know what action to take to improve productivity?. Evidently, the confusion surrounding the subject makes it necessary to further investigate and emphasis the basic meaning of productivity. Hence an improper definition of productivity will often result in that action as being misdirected.

Despite the confusion on the subject several characteristics features that represent the concept of productivity have been identified. Generally speaking, productivity is in industrial engineering defined as the relation of output (i.e. produced goods) to input (i.e. consumed resources) in the manufacturing transformation process. Productivity is therefore on the one hand. Closely connected to the use and availability of resources. This means in short that productivity is reduced if a company's resources are not properly used or if there is lack of them. On the other hand, productivity is strongly linked to the creation of value. Thus, high productivity is achieved when activities and resources in the manufacturing transformation process add value to the produced products.

Concept of Sustainable Development

Sustainable development as widely used, is the development that meets the needs of the present situation without compromising the ability of future generations to meets their own needs. Sustainable development as conceived by the layman, relates to those infrastructure, policies and behaviours that are conceptualized, instituted and maintained over a period of time. These infrastructure are considered essential to the vitality, general welfare and continued existence of the people and environment such as housing, government,

retail stores and markets, agriculture, air, water, roads and highways, recreation, schools and universities, technology, mineral recourses (renewable and non renewable), transportation, industries and product distribution. This mean to ensure better quality of life for everyone now and for generation to come. The entire idea of sustainable development should therefore be considered as a non-negative trend in a measured output and technology where economic growth and environmental protection are inextricably linked and quality of present and future life rest on meeting human needs without destroying the environment on which life depends consequently satisfying human aspirations and needs is the major objective of development.

Considering the idea of sustainable development, Stephian (2000) quoted Lale (1991) to have accepted that sustainable development consist of two main components 1st the care for the natural environment and reversing the current destructive pattern of the society that threaten all forms of life on our extremely fragile planet, economic value of bio-diversity, and social relationship between humans and our natural environment. 2nd the concept that relates to sustaining culture because of the linear relationship between it and sustaining ecology. These component and attributes of sustainable development goes down well considering what are its objectives, goals and aspirations. The goals and aspiration of sustainable development according to Bryant (2003) explain that, it is mean to achieve four (4) objectives at the same time in U.K and the world at Large.

1. Social progress which recognize the need of every one
2. Effective protection of the environment
3. Prudent use of natural resources and
4. Maintenance of high and stable of economic growth and development

Need for Industrial Technology Education

Industrial technology education is education to earn a living in an occupation in which success is dependent largely upon technical information and

understanding of the laws of science and principles of technology as applied to moderns design, production, distribution and service.

Nigeria is a country rich in natural resources. Some of these natural resource are not utilized because of lack of technical manpower. Technology education is greatly needed in conserving and developing the nations resources. Most of Nigerian youth are under-developed and under utilized as a result of lack of technical training. The highest possible welfare for Nigeria citizens is achieved only when each individual produces to the unit of his capacity. Therefore an organized and carefully planned programme of industrial technology education is essential if the above objectives are to be realized In Nigeria.

Roles of Industrial Technology Education for Productivity and Sustainable Development in Nigeria

The rapid industrialization of any nation is tied to acquisition of science and technological knowledge. The National policy on education states that "the preparatory aspect of pre-vocational training offered to student is for the purposes of enabling individuals to have an intelligent understanding of the increasing complexity of technology. At the most fundamental level of teaching someone the systematic way of exposing individual to the practical task for developing and producing goods and service to meet the needs and want of man or its developmental role of training scientist, technologist, engineer and teacher education, fuel the engine of any nation progress. As education is a tool for livelihood and self sufficiency, Industrial Technology Education have become the driving force of change in the modern world of galvanizing resources for productivity and sustainable development in Nigeria.

Through the application of science and technology, the resource of the nature have been transformed into goods and services for better quality of life, the advancement in science and technology has assured man of comfortable living, improved his thinking process and very importantly conserved his energy for other activities. A country like Japan which has very little natural resources but,

depend on importation of raw materials from other countries has through efficient application of science and technology education transformed these materials into goods and service and now dominate the world market with her products. Japan has successfully established a self-sustained economy through effective use of science and technology education without much of natural resources (Okunday, 1995)

The developing countries of the world like Nigeria failed to attain solid economic growth because of over dependence on the industrialized world. This is a result of their inability to adequately use science and technology education to exploit their natural resources. They have abundant natural resources but lack the relevant scientific and technological knowledge to transform then into goods and services. Through science and technology, life expectancy increased through better health care services, improved transport and communication, industrial productivity increase as a result of efficient machines etc. (Lamorde 1988)

With the advent of Information and Communication Technologies (ICTs) access to knowledge has become a potent force for transforming social, economic and the internet may well become as transformative as the industrial revolutions.

Conclusion/Recommendation

Since it is believed that the rapid industrialization of any Nation for productivity and sustainable development is tied to acquisition of science and technology education and since 70% of the gainfully employed persons are engaged in work requiring manual skills and technical knowledge, Industrial technology education must be recognized as the foundation for socio-economic transformation of a nation.

However, for sustainable development and productivity of any nation the government of that nation must:

- Lunch necessary campaign that will direct the nation focus on acquisition of science and technology education which will propel the country into economic recovery through industrial growth.

- Government should learn lesson from that of Japan that rose from the devastation of the second world war and through effective acquisition of science and technology education which have now-taken over the world markets and consequently build a strong and vibrant national economy.
- Salaries, wages, condition of service and incentive must be improve to attract and retain technologist, engineer and technician.
- People with strong political will should be given the mandate of implementing industrial technology education policies.

Reference

Aleburu, J.O. (2005) Empowering Technology Education Institution for sustainable Youth Empowerment in Nigeria Through Integration of Information Technology. In Nneji, G.N., Onyeukwu, F.O.N., Ukpongson, M., Nnenji, E.A., Ndomi, B.M. (Eds) *Technology Education for Sustainable youth Empowering In Nigeria.* NATTs. Conference Proceedings Rivers State University of Science and Technology Port Harcourt.

Bryant, N.A. (2002) Sustainable Development: Its Application In Nigeria in Mathias, A.G. (2003 Ed). Science Teachers Association of Nigeria Proceeding of the 44th Annual conference.

Koss. E. and Lewis, D.A. (1993) "Productivity or efficiency-Measuring what we really want" National Productivity review (12) 273 – 295

Larmorde, A.G (1988) Science and Technology for Self-reliance A paper presented on the Occasion of Science and Technological Week, Plateau state 10th – 15th October

Mathew, I.A. (1998) The Roles of Science and Technological Education in Revitalizing a depressed Economy *Journal of Nig Association of Teachers of Technology* (JONATT), 2.

Miller. I.O. (2003) Technology Education: A Necessity for Youth Empowerment Against Unemployment in Nigeria in Nneji, G.N. Onyeukwu, F.O.N Ukpongson, M., Nnenji, E.A., Ndomi, B.M. (Ed.) *Technology Education for Sustainable Youth Empowerment in Nigeria* NATTs Port Harcourt, River State.

Okpara, E. (1993) Introducing Technology Into Nigeria Secondary School: The philosophy, Objectives and Pattern: *West African Journal of Education* (3) 241-151

Okundaye, S.E. (1995) Evolution of Technological Education and National Policy on Education: A paper presented at the National Conference on Polytechnic Education in Nigeria.

Osuala, E.C. (1987) *A Hand Book of Vocational Technology Education for Nigeria*: Uruowulu-Obosi Pacific Publisher.

Otuekong, E.E. (2005) The Role of Technology Education Institution In Sustainable Youth Empowerment. In Nneji, G.N., Onyeukwu, F.O.N Ukongson, M., Nnanji, E.A., Bidomi, B.M. (Eds) *Technology Education For Sustainable Youth Empowerment In Nigeria* NATTs Port Harcourt, River State.

Stephan, T. (2000) Sustainable Development In Frik, D.H.S (2000 Ed) Introduction to Development Studies. 66

Tanges. S. (2002) Understanding the concept of productivity: Asia pacific Industrial Engineering and Management System conference (APIEMS) Taipei.