

Research article

# Industrial Technical and Technological Education as a catalyst for National development (The Nigeria factor)

Dr. Engr Gana A. J.

Coren Redg, MNSE, MNICE, Istructe (Lond) U.K, ICE (Lond)U.K.  
Civil Engineering Department, College of science and Engineering  
Landmark University, Omu-Aran, Kwara state.

Mobile No: 08059968656

Emails: [phildebo123@gmail.com](mailto:phildebo123@gmail.com), [doctorgana@yahoo.com](mailto:doctorgana@yahoo.com)



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## Abstract

Accumulation and utilization is the major focus of any nation that has developed to full capacity. Technological Education foundation upon which most countries are builds. The fact still remains that no country could ever make any meaningful advancement and progress without giving priority attention to industrial Technical and Technological Education. This paper critically discussed industrial Technical and Technological Education, its concepts, Roles, challenges in Nigeria for National development, and benefits. **Copyright © WJER, all rights reserved.**

**Key words:** - Industrial Technical and technological Education, concepts, Roles, Challenges, Benefits, developing a viable system.

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## Introduction

Industrial Technical Technological Education involves the study of Technologies and related science for the acquisition of practical skills, attitudes understanding and knowledge relating to occupation in various works of life. The development of any country is reasonably determined by its Technological advancement, ability to feed its populace, level of Education, Economic Stability, and the viability of the next century. Industrial Technical and Technological Education has been an integral part of National development strategies in societies, because

of its impact on productivity and socio-economic advancement. Technology for many centuries has been defined as human activities that involve designing and making products as diverse as clothing, foods, artifacts, machines, structures, electronics devices and computer systems. Other associated expressions Technology are as follows:-

- (i) Technology activities are as old as human history and its impact on almost all aspects of people's lives has been profound – for many, including government, its ability to contribute to the wealth generation and economic development makes it an encouragement for national priority. Technology has the goal of creating and improving artifacts and system to satisfy human wants or aspirations.
- (ii) Technology profession involves both the material resources and the Technical know how that have to be sufficiently transforming the resource to product.
- (iii) Technology and engineering are term applied to the professions in which knowledge of the mathematical and physical sciences gained by study, experience and practice is applied to the efficient use of the materials and forces of Nature. However, there are also individuals such as Technicians, inspectors, and drafters, who apply scientific and Engineering skills to Technical problems.
- (iv) Technology Education facilitates the acquisition of practical and applied skills as well as basic scientific knowledge. It is a planned program of course, and learning experiences that begins with exploration of career options, support basic life skills and enable achievement of high academic standards, leadership, preparation for industry-defined work and advanced continuing Education.
- (v) Technology makes jobs simpler and also makes workers productive. As a matter of fact Technology is aimed at developing not practical skills, but also attitude and that makes the recipient creative, innovative and resourceful person. It given an individual the skills to live, learn and work as a productive citizen in a global society.

### **The Concepts of Industrial Technical and Technological Education**

Industrial Technical and Technology Education refers to the Education and training that is provided at post junior secondary school levels, and also exposing the students to different levels of learned skills, such as industrial production, maintenance, construction of Buildings, Auto-mechanics Radio television, refrigeration, Machines repairs, fabrication, painting and decorating works, carpentry and Joinery. (Imandojemu 2001). It is usually meant for those that have received basic instructions Sciences and Technology courses, and also in pre-Vocational and Industrial arts courses, which will finally lead them to design, Build or construction in the field of Engineering and Technology.

Adikwanduaba (1998) see's industrial Technical and Technological

Education as that leading to the acquisition of knowledge, skills and attitudes that fit an individual wholly or partly for a define Occupation or career, that can be acquired at pre-Vocational levels, at technical college level, the pursuit which equips them for a successful living.

Dike (2009) says that industrial Technical and Technology Education is a planned program of courses and learning experiences that begins with exploration of career options, that supports basic academic and life skills that enables achievement of high academic Standards, leadership, and preparation for industry define work and also advanced and continuing Education. Industrial Technical and Technological Education prepares the learners for careers that are based in manual or practical activities.

In addition, Industrial technical and technological Education gives individuals the skills to live, learn and work as a productive citizen in a global society.

In Nigeria, industrial technical and Technological Education was viewed as an international planning of the Education system that is a creator and preserver of culture. It can be deliberately geared towards the development of the type of Technological and industrial development needed. Industrial Technical and technology Education must be seen as a kind of Education that every aspect of Engineering, Business, Agriculture, and home Economics is virtually involved. It is an integration of both Theoretical knowledge and applied science for the purposes of production and providing services.

### **The Roles of industrial Technical and Technological Education in Nigeria**

Industrial Technical and Technological Education play dominant roles in the Technological and economic transformation of the nation. The ability of a nation to develop technologically and provide goods and services in abundance, and at cheaper prices to its citizens depends on the availability of Technical competences that can develop appropriate technologies to solve peculiar problems. According to Okoro (1993), about seventy five (75) percent of secondary school leavers. In Nigeria do not go further for higher education. Adefaye (2004), noted that the neglect of technical education in the country is major cause of increased in youth unemployment. He added that primary school leavers accounted for 14% of unemployment. Secondary school leavers accounted for 53. 6%, while tertiary education graduates shared 12.4%. if these youths obtained some from of vocational of technical skills from technical institutions, they would render productive services towards National development and enhance their quality of life. According to Tommy (2007):- despite the country's abundant resources, Nigeria had continued to manifest abysmal industrial performance record over the years, because of the country's inability to synergize its resources to spam an organic productive sector capable of engendering sustainable development and alleviate the wide spread of poverty in the country. Ndomi(1998) attributed Nigeria's lack of industrialization to her inability to come up with a competent and dedicated workforce, which according to him is the most militating force against the nation is technological, industrial and any type of national development. He added that industrial technical and technological education is the way out to make the nation get out of the problem of lack of appropriable manpower and there fore need refocusing to produce the desired results. Fagerlind and saha (1989) argue that there are free meaning contained in the Nation's development. The values are simply the roles play b Technical Education towards the development of a nation. A few of these values are as follows:-

- (1) Technical education provides a nation with human resources to develop its own technology
- (2) Technical education makes efforts to improve the economic of the nation by making it richer, prosperous and resourceful.
- (3) Technical education improve the Nation's economy and opening up more jobs opportunities for individuals
- (4) Technical education provides a nation with human resources to develop its own indigenous technologies.
- (5) Technical education ensures the sustenance of technology transfer. This is because a technology transfer is as good as it is, not sustainable in the absence of unqualified Technical trained personnel's.

- (6) Technical education has helped more efficient means of transportation. Flyovers (road ways constructed to carry or link a road over another road) have been constructed to make for easy movement of people within and outside towns and cities
- (7) Technical education has helped in the supply, storage, distribution, treatment, and control of water
- (8) Technical education has be helpful in the safe disposal of waste (both solid and liquid wastes)
- (9) Technical Education has helped to transform materials or resources through production processes to products of value with minimum effort, and consumption of materials. An example is the manufacturing of bicycles, farm Implements, etc
- (10) Technologists working with chemicals have brought about great improvements in the household products. E.g. detergents, health care product, e.g pharmaceuticals, toiletries, diary products, .g milk, Yogurts, Cheese, etc
- (11) Influence in the use of Technology:- There is hardly any area that is not influenced by the use of technology. This ranges from Computers networks, software for office use, washing machine, ovens, and vehicles, machines for homes, offices and laboratory use.
- (12) Due to Technical education, Technologist working in Telecommunication have developed satellite communication which has made it possible to view programmes on Television set; what is happening in other parts of the world, thus reducing the entire large world into a small global village.
- (13) Technical Education has led to Technological innovations in Telecommunication which have brought about the use of GSM (Global System of Mobile Communication) and INTERNET (The information super high way). These have reduced considerably the time of passage of information between two people to a matter of seconds. Recognizing the increase in the Job requirement for today is four years degree qualifications is not enough and answer for the need of industrial demands. Technical and Technological Education provides the Nation with graduates who have positive view of issues are concerned on how to solve the Nation's problems.

### **Challenges facing industrial technical and technological Education in Nigeria**

Challenges facing industrial technical and Technological Education in Nigeria are numerous. Some of these challenges are outlined as follows:-

1. **Neglect of Technical Institution in the Country:-** these is no way the country can develop technologically when our Technical colleges or institutions are neglected. It is regrettable that successive administrations in the country have surreptitiously, deem-phasized Technical Education. Due to such short sightedness, almost all the Technical colleges exist only in name. In most of these colleges, there is a dearth of requisite equipment, good Teachers and optimum environment for Teaching and learning.
2. **Curricula:** - The curricula of these Institutions are no longer geared towards Technical Education. In fact, Technical education in Nigeria is in the doldrums and it will require more than the injection of any amount of money to revive it. It is not two late, however for Nigeria to rediscover its bearing and give utmost priority to this sector.
3. **Lack of Artisans and tradesmen:** - The country lack experienced Artisans and tradesmen for works, such as carpentry, plumbing, bricklaying, welding, Electrical wiring and auto mechanics. The neglect of Technical Education is the reason that the country lacks middle level man power in virtually all technical

fields; including Building construction. Nigeria can not achieve its dreams of becoming one of the best 20 economies in the world by the year 2020 if Technical Education is not accorded pride of place in the country.

4. **Inadequate knowledge:-** Lack of knowledge about Industrial Technical and Technological Education is one of the ..... issue retarding the development of the programme. It is sad at this age to the talking about ignorance of this Education programme in Nigeria
5. **Lack of Adequate Teaching facilities in our Schools:-** The acquisition of technical skills calls for the utilization of diverse Teaching facilities. The Teaching facilities in relation to Industrial development in the country are inadequate. In addition, they are few in number, but most of them are out dated and need modern replacement. On the other hand, government effort to build and equip the Schools with needed resources for the Teaching of technical Education courses are at a slow rate. It is sad to note that most available equipment that are installed already have No power supply to operate them.
6. **Lack of Funding:** - The present commitment by the government to Technical Education is not encouraging. Technical Institutions are to function well in terms of organizing workshops, seminars and other training programmes. This has actually hindered the development of Technical Education especially in the institutions of higher learning in the country. Olaitan (1997) maintained that inadequate funding is quoted as root of all evils.
7. **Social Character:** - There is no doubt that human character does affect meaningful development. Despite the country status as an Independent Nation of many years freedom from Colonialism, many of the Citizen still cling to the old habit of paying lip service to the training of skilled workers. Some people believe that those who could not cope with vigorous academic standard and demand of the Secondary Schools are the ones labeled '**Drop Out**'. Such ones are the candidates that should be trained in technical institutions in the country. Osuala (1999 PP. 90) states clearly the following challenges facing technical Education in Nigeria:-
  1. The difficulty in giving Technical Education credit due to prejudice
  2. The failure of higher education to provide the diversity and comprehensive education opportunity needed by millions of students who are entering a changing world of work.
  3. The inability of Technical education to achieve the status and prestige it needs to perform its proper and vital role in the Nigeria economy
  4. The inability of the Nigerian Universities educational programmes change to fulfill occupational educational needs of the individuals and the Nation at large.
  5. Lack of Consistent National policies and programmes for Technical Education.
  6. The difficulty of the educational system to accept Technical education as an integral aspect of the total education system for individual Nigerians.
  7. The inability of the Nigerian Education system to ensure quality of Technical Education programmes by establishing new programs. This is the reason for the restricted supply of competent Teachers in our Technical College in the country.
  8. Limited resources that are available for programmes expansions to make great contribution to the economy and industry.

## **Benefits of Industrial Technical and Technological Education**

- (1) A nation that is broadly and Technically Educated has nothing to be afraid of. When a nation is technically inclined, it will become civil caring, and will serve other fellow country men and women unquestioned, because people will believe that there is room for every one at the “Table”. We will treat every one with respect and most of all, we will settle our problem and challenges amicably and intelligent.
- (2) In a speech delivered in 1948 at more house college in Atlanta Georgia U.S.A on “The purpose of education” Dr Martins Luther’s king frowned on his fellow Americans who thought that education should equip them with the proper instrument of exploration so that they could forever trample over the masses. In Martin’s mind, education should enable us to become more efficient to achieve with increasing facility the legitimate goals of life.
- (3) Education must train us for quick resolute, effective and critical thinking, and to discern the truth from false or propaganda, differentiate the real from the unreal, and the facts from fiction. When we are completely educated, we will think intensively and erotically complete education gives us not only power of concentration, but worthy objective upon which to concentrates. The fact of the matter is that, it is not just reading and passing exams that is enough; we need people to get more involved in technical skills tanning and encourage artisan. Nigeria is a developing country that is set to grow. Therefore we will always need artisans for new existing or maintenance job.
- (4) Education is a social safety measure to many problems unemployment is a serious social will with its numerous remotes consequence like hooliganism, unstable and other social vices. Industrial technical and technological education helps to eliminates all these through the production of students that are easily employable.
- (5) Industrial technical and technological education is designed to meet the employment of particular area of the economy; The training provided is closely matched with the specific Job requirement so as to foster immediate production performances by the trainees. Trainees can become wage citizen who will be asserts to the society and not liabilities.

## **Developing a Viable systems for Industrial Technical and technological Education,**

Bearing in mind the importance of Industrial Technical and technological Education, there is no Skepticism about what tomorrow might bring about in Nigeria. Therefore, it would be possible if the country can develop a system that would make learning more interesting and important in all Technological institutions in the country.

A system that:-

- i. Helps the students to capitalize their interest and abilities to the highest possible degree.
- ii. Provides the students the challenges they would meet after graduating from their present Technical Colleges in the country.
- iii. Provides training academically and practically in all the courses available in our institutions.
- iv. Ensure that training is carried out to the extent that it gives the trainess a production ability with which with they can secure development or employment after graduation
- v. Helps to properly socialize the entire students in different technical institutions and put them on their toes academically, so that they should not be ridiculed by their graduate peers longer in the country

- vi. The government should attached importance to industrial technical and technological education especially in the area of financial support at all levels within the country
- vii. The technical institutions in the country should be well equipped with standard machines and workshops for the practical courses being offered in our institutions
- viii. Technical institutions should be provided with seasoned and highly trained technical staff in their respective disciplines. There should be provision for the re-training of staff at different levels from time to time. This will provide them the opportunity of being up till date in their various disciplines.

## Conclusion

- (i) There is no way the country can develop technologically when our technical colleges are neglected by the government. It is regrettable that successive administrations in the country have surreptitiously deem – phasized Industrial technical and technological Education. Due to such shortsightedness, almost all the Technical Institutions in the country exist only in the name.
- (ii) Industrial Technical and Technological Education is the live wire of technology and should be one of the vehicles to solving the country’s problems. It is no exaggeration to assert that industrial Technical and Technological Education constitute the arteries that supply life sustaining blood through the system of a country economy and standard of living. It should therefore be embraced as a cornerstone of Educational philosophy in improving the country in all sphere of life.
- (iii) For Nigerian to develop like other advanced Nations of the world], we must give more attention to industrial Technical and Technological Education. We must establish a link between programmes and the development of man power. This will then brings about a reduction in the poverty level, due to the fact that more small scale Industries and enterprises will be established.
- (iv) As George Washington Carver said: “There is no shortcut to advancement. Life requires through preparation”. This paper therefore implores industries, communities, religious organizations, labour unions and wealth individuals in the country to contribute and Technological Education at all levels.

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