

ROLE OF TECHNICAL EDUCATION IN NATIONAL DEVELOPMENT

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Abstract

National development, measured by the degree of socio-economic advancement of a country, reflected in her positive changes in science and technology, is a function of the standard of technical education available to her citizens. This paper attempts to discuss the gradual development roles, problems and prospects of technical education in Nigeria's national development. Brief references were made to the background of technical education and the attendant misconceptions that tend to hinder its progress. Some instance of the role of technical education and the importance of skill acquisition and self reliance as the panacea to national development were highlighted. Recommendations suggested and the conclusion made by the authors are personal opinions deduced from the context of the discussion.

Introduction

It is neither a mere coincidence nor a matter of divine providence that some countries are designated as developed while some others are perceived as developing or underdeveloped. The difference between the developed and the underdeveloped lies on the choice of value and the methods by which the values are pursued. The developed relies on man's ability of determine his fate, and therefore adopts an inward approach in directing development programmes to satisfy her aspirations (Onosode, 1993). That a country is developed means that she has appreciated that nothing moves without being moved and nothing changes unless it is changed. She has therefore developed new skills, new attitudes to life and to work, and developed ever adjusting strategies to confront new challenges. The instrument through which these changes are achieved is technical education, both formal and informal. Technical know-how, appropriate use of tools of all kinds, are related to the attitude of the user.

Technology education according to Eze (1987) emphasized the acquisition of technical skills; knowledge and work attitude as well as the methods for imparting them to students. Therefore the National Policy on Education (NPE) (1981) defined technical education as "that aspect of education which leads to the acquisition of practical and applied skills as well as basic scientific knowledge". The provision of technical education enables the human and natural resources of a nation to be properly utilized and harnessed. Technical education can be said to have contributed to national development prior to and after the nation's independence till date. National development in context of this paper may be viewed as the measure of standard acceleration of a country from primitivity to civilization reflecting in economic, social, cultural and political advancement. The basis of measurement is essentially the quality of changes, productivity, socio-political decency and per-capita income of a nation.

Productivity which is the measure of the efficiency with which a nation's resources are transformed into commodities and services is not simply a function of the amount of mineral oil, raw materials, physical capital and human population, available but depends heavily on attitudes knowledge and skills of the people which in turn reflects the education, training and complex organisation which technical education provides (Peter, 1981).

The objective of this paper is therefore to discuss the evolution and roles of technical education to national development from the pre-independence era till date and by highlighting the problems therein.

Background of Technical Education in Nigeria

The concept of technical education in Africa, vis-a-vis Nigeria is synonymous with the concept of manpower development. The popular Ashby commission report on Nigeria's higher education needs and the simultaneous Harbison commission report on the country's high level manpower needs (both commission appointed in 1959 to investigate and higher education recommend needs for 1960 – 1980) were concurrent on the principal objectives of producing locally trained and certificated manpower to bridge the gap between the top and the lower levels (Taiwo, 1976).

However, while Ashby commission emphasized on establishment of institutions to meet the increasing demands for high level manpower, Harbison commission concentrated more on categorizing the manpower levels. The latter outlined two essential levels for national development, viz: the senior and the intermediate. Harbison predicted that by 1980 the ratio of intermediate high level manpower to the senior high level to be needed would be 5:2. The intermediate cadre would be college gradates while the senior cadre would be university graduates. College here includes all post-secondary institutions below the university status. This is where the present polytechnics, colleges of science and technology (including colleges of agriculture and other resource institutes), colleges of education, technical colleges and many advanced training schools fall into. The newly introduced universities of technology are an advancement in the system (Mobisson, 1988).

Misconceptions about the Advent of Western Education in Nigeria

It is wrong for Nigerians to continue to lament indefinitely over the background education we inherited from the colonial system. After all, the colonialists did try taking the risks involved in bringing education to the interiors of Africa, whether for their economic or evangelical interests, the ultimate purpose was for development. Though their educational curriculum were devoid of technical skill/acquisition, it achieved the objective of the time, which was development of administrative and commercial strategies. They had no intention of building industries in the colonies; so the question of developing local technical manpower was uncalled for. Nevertheless, as technology was becoming the determinant of cultural and industrial progress, they did not hesitate to open nuclei of technical institutions in the colonies.

Historical Background of Technical/Vocational Education Curriculum

Before the introduction of western education to Nigeria, there was indigenous system of vocational education. According to fafunwa (1974, p.30) the aim of education in traditional society is character-training and job-training and job-orientation". The traditional vocation were divided into three group, viz **Agricultural education:** for example farming, fishing and veterinary science.

Trade and crafts: for example weaving (baskets and cloths), smithing (iron silver, gold etc), carpentry, building and so on.

Professions: for example doctors, priests, etc. vocational training in traditional society is largely more on the apprenticeship system and is a time –honoured device for educating million of African youths and adults.

The usual way it was being operated was that children were not trained by their parent but by relatives, master craft men in particular fields or friends in order to instill discipline and ensure concentration. As reported by Fafunwa (1974), Archibald Callaway, authority on the Nigeria apprenticeship system aptly describe it thus: This vast apprencheship training system began as a part of wider education process in which the indigenous society of Nigeria passed their cultural heritage one generation to the next. The skills "owned" by a family were highly valued. Crafts varied according to the area, but included mat-making, building of houses, leather work, black smithing and gold smithing, etc.

Unfortunately the traditional technical and vocational education did not receive an appreciable welcome from our colonial masters who introduced western literary education without technology. As Fafunwa (1974) would put it. "Technical education had a slow start and develop less quickly than other forms of education in Nigeria. This was partly due to the fact that the voluntary agencies which pioneered western education in Nigeria were unable to increase or popularize technical and vocational education on the same scale as literary education because technical and vocational education is much more expansive in terms of staff and equipment". From the above fact we can agree that the low priority accorded the technical and vocational education in Nigeria by our colonial masters (in failing to introduce the programme into the school curriculum at the post-primary level) contributed immensely to the delay in technological development of our nation. Consequently, we still found ourselves on this low level of technological development today because our leaders who took over from the colonial masters continued with the same idea of not popularizing technical and vocational educational the same scale as literary education.

The establishment of training courses in the various government departments, for example, Nigerian Railway, Marine, Public works etc; between 1908 and 1935 marked the beginning of

Role of Technical Education in National Development

organized technical and vocational education in Nigeria. This brought about the first major recommendation for the introduction of technical and vocational education which was made in 1945 when the commission on Higher Education in West Africa proposed that “the premises of the defunct Yaba higher college should be converted into technical institute’.

Between 1956 and 1960 several technical and vocational schools were built in various parts of the country. These schools were offering courses in civil engineering, mechanical engineering, electrical engineering, wood work, motor vehicle maintenance, painting, welding, etc; leading to the intermediate examinations of the appropriate British professional bodies particularly the City and Guilds Institute of London (C&G). The City and Guilds of London Institute was later changed to WAEC City and Guilds with the following courses among others: Mechanical engineering craft, electrical installation, motor vehicle mechanics, building, carpentry and joinery, radio, television and electronics.

From WAEC City and Guilds it was changed to WAEC technical. The reviewed curriculum includes the following courses: Vehicles body building, electrical engineering, mechanical engineering craft practice parts I and II, bricklaying, furniture craft practice, machine wood working etc.

In continuation of these changes which has been moving the curriculum over the years, the federal government in 1995 introduced the National Technical Certificate (NTC) and the National Business Certificate(NBC) which replaced the WAEC Technical and WAEC Business Examinations respectively. The National Technical Certificate (NTC) examination are based on both the National Board for Technical Education (NBTE) curricula and the modified WAEC Technical syllabus. For example, mechanical engineering craft practice, electrical installation and maintenance practice, refrigeration, and air-conditioning, bricklaying, block laying and concrete work, carpentry and joinery, electrical engineering and practice, etc. From the forgoing, we can see that the curriculum was just being moved along for the purpose of certificating the students. But no viable curriculum has been innovated to revive and sustain the interests of the young ones to take to technical education. According to Saul (1970), “An up-to-date technology, with a continuing capacity to promote and accept technical change, is the essential hall-mark of a modern economy and most important single agency in effecting higher productivity. Hence, effectively diffusing modern technology to developing countries, and promoting their capacity for absorbing it, is crucial if they, like the present advanced economies in earlier generation and to break out of a prison of poverty and standard of manual labour penal to the point of servitude. For leader economies’ processes of invention, innovation, and the diffusion of techniques (the lags associated with the latter process being reflected in the gap between best-practice technology and average technology in an industry can only be understood in terms of the fundamental characteristics of the economies concerned. Innovation though desired is fraught with problems normally associated with change. This is because generally man is resistant to change due to fear of uncertainties. Nonetheless, it is worthwhile venture in the educational enterprise. In short, innovation is a necessity in all human endeavours aimed at bringing about improvement in the existing practice.

Garba (1994) opined that curriculum innovation is not restricted to the curriculum content only; teaching strategies is also affected. The course structure and content in most of the technical institutions are not the most ideal for our circumstances. Most of them rely on model based on foreign environments where the trainees grow up surrounded by various marvels of technology. He does not need to strain his imagination to conceive of a crank shaft. But our students must be told what a screw-driver is.

One of the greatest needs of this great nation of ours – Nigeria, today, is to have industrial, technological and economic independence. There is a great need for changing the course structure and content in most of the technical education curriculum, to reflect the most ideal courses that are relevant to the Nigerian societies. And adequate arrangement should be made to teach the courses rather than printing them on the pages of papers.

Generally in education the curriculum continuously evolves in response to economic, technological, social and political changes. Thus, old courses are frequently withdrawn or modified and new courses are introduced as the needs of the students and society change.

Let us now look at some of the technologies that are relevant to our society that can be introduced into the technical education curriculum to enhance technological development of the

nation. They include such trades as: Bicycle repair, motor cycle mechanics lock and key, watch repair, torch light repair, shoemaker, stove repair eye goggle production and so on.

The Role of Technical Education in Nigeria

Technical education should not be seen as only that acquired from the traditional colleges. Similar education is obtainable from departmental schools, workshops, planned on-the-job training, seminars, industrial attachments and various part-time and sand-which technical courses. Example of such facilities abound and include the Public Works Department (P.W.D) schools, the Nigerian Railway Corporation Training School, the Civil Aviation Training School, Post-and-Telegraph (PT) Training School, the Petroleum Institute, the Water Resources Institute, Textile Workers Training School, the Federal Survey School, the Metallurgical Training Institute (M.T.I), the Marine Engineering Training Centre, the Federal Staff Training Centre, etc. their names suggest what specialized training they provide. Before all these there had existed the Yaba Higher college established in 1984 which had been able to produce high level manpower in engineering, technology medicine, agriculture, pharmacy, surveying and forestry (Fafunwa, 1974). The National Policy on Education (1998) spells out the aims of technical education to include.

1. providing trained manpower in applied science, technology and commerce, particularly at sub-professional grades,
2. providing the technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economic development,
3. providing people who can apply scientific knowledge to the improvement and solution of environmental problems for the use and convenience of man,
4. giving an introduction to professional studies in engineering and other technologies,
5. giving training and imparting the necessary skills leading to the production of craftsmen, technicians and other skilled personnel who would be enterprising and self-reliant,
6. enabling young men and women have an intelligent understanding of the increasing complexity of technology.

While the aims are laudable and ambitious, its statements tend to be underrating and demonstrative of the conservative colonial mentality that technical education must continue to be pre-technical, prevocational and sub-professional in content. There is no aspect of human activities today that has no technical orientation and complexity. Even religious worshipping today demands high technology as seen in the modern designs and construction of churches and mosques. The role of technical education graduates in design, construction and operation of our industries, including oil, agriculture, forestry petro-chemical, mineral and water resources, electrical power generation and distribution, constructions, textile, iron and steel, automotive and plastics; as well as in health technology, environmental designs, armament, commercial enterprises and in teaching, are evidences of the invaluable role of technical education in national development. Perhaps the role of technical education in national development may be more appropriately illustrated by citing an instance of such roles. It can be recalled that after the Nigerian independence in 1960, many dreams were conceived of possible short-cut to economic development, among which were explosion of crude oil exploration and discovery, mechanization of agriculture, exploration of iron and steel, discovery of gold deposits, and indigenization of all technological manpower for execution of the planned projects. By the year 1970 the idea of iron ore exploration had truly materialized.

Geology graduates from Nigerian universities were employed to work along with contracted Russian experts. Their work inspired the need for establishment of iron and steel factories. The objectives of the iron and steel project were:

1. indigenous production of all construction steel inputs, with the exception of heavy structures, by the year 1985,
2. initial foreign technical assistance in plant operation and maintenance and with gradual deletion of such foreign assistance,
3. inclusion of large facilities for spare parts manufacture as a first step to total equipment production,
4. development of incremental capability for plant construction and steel project execution institutions providing course offerings in the relevant disciplines.

Self-Reliance as an Indispensable Element in National Development

We often erroneously think that development and civilization are two different things. This is because we look at a few physical structures and conclude that these are evidence of development, whereas the percentage of persons who own such structures is very insignificant.

Suppose in a given hamlet of population of 1000 inhabitants there are two magnificent houses owned by two respective individuals, each of which more looks sophisticated than the Kaduna Boat House. One might look at them and say that the hamlet is developed. But suppose the owners imported all the materials for the building and contracted all the construction and finishing trim from distant cities. And suppose also that seen sitting daily at the gates of these buildings are the rest 998 inhabitants begging alms from numerous very important persons (V.I.Ps) who visit the two socio-economic giants. Would one rightly conclude that the given area is developed? The situation can be compared to a nation where most citizens are abjectly poor, illiterate, and lacking technical know-how.

If most citizens are not self-reliant the nation cannot be said to be developed. Self-reliance depends on the degree of gainful occupations. Self-employment, technical expertise and expert consultancy services available to the individuals, both in the public and private sectors. This is the aim of the federal government in introducing the Introductory Technology in the Secondary Schools to enable most youth acquire exploratory technical skills (National Policy on Education., 1981).

Problems Confronting Technical Education in Nigeria

It is not always correct to say that the only problem confronting technological advancement in Africa is the colonial mentality which is biased against science and technical education. A complementary problem is the poor status of the producer and the receiver of the technical education. We can ask what is the good of any system of education if it does not help the individual who possesses it in solving most of his immediate personal problems, or worse still, if all it does is to make worse off as if he has had no specialized education at all (Nwosu, 1972). Though technical colleges have been established by both federal and state governments, vocational training centres built by governments, individuals and organisations, polytechnics and similar institutions established in all states, yet technical teachers are in acute shortage. This is because there are not commensurate incentives to attract and retain technical teachers. This is an overlooked serious impediment to national development. We talk of manpower development but often tend to forget that there must be manpower to create and develop the manpower. The educational institution is the brood-house and the hatchery of culture and technology for national development. If the socio-economic status of the technical teacher does not compare favourably, with, if not exceed, those of his counterparts who are in administration or business, then he cannot confidently make researches, invent and innovate ideas, or give the best of what he has to the learner. If the teacher is destitute, then knowledge is devoid and, of course, development becomes derisory.

According to Okafor (1984), if there is one strand of behaviour discernible through the fabric of western progress and developmental policy it is the encouragement of and handsome remuneration of excellence, scholarship and concomitant creativity and invention which lacks in Africa.

Conclusion

From the foregoing discussions we can infer with consideration optimism that technical education is an aggregate of all the educational processes given and acquired in school and out of school which endow individuals with creative and practical efficiency and competence, to enable them contribute to the technological development of the nation. The contribution of an individual is a unit in national development, and the magnitude and efficacy of the individual's contribution is dependent on the quality of technical education received. Such education must be one that inculcates problem identification, calculated decision-making, practical application of scientific and technical know-how in problem solving, and precision in production of equipment and tools. The individual must see himself as an integral part of the total development. In other words, technical education is the principal instrument by which all modern national and international development can be attained. Government investment in technical education at all levels of the nation's educational system is the wisest step towards true economic and technological emancipation which today's world demands. Political power depends on economic power and economic power in turn depends on

technological power which is a function of the degree of technical education a nation can afford for her citizens. In this wise, despite our virtual inconsistencies and apparent misplacement of priorities, Nigeria cannot be said to be doing too badly.

Recommendations

1. In spite of the current global and national economic melt down, as we are told, and the consequent decline in Nigeria's monetary value, the federal and state governments should still afford to spend the greater proportion of revenue allocations on technical training both at home and abroad. The 100% localization of the Technical Teacher Training Programme (T.T.T.P) is not necessary because technology changes and Nigeria cannot claim to have known it all. About 40% the programme should still be attainable abroad. Whatever is spent on this venture can be justified by the end result.
2. A federal commission to be independent of the National Board for Technical Education (NBTE) should be constituted to monitor the performance and input of technical education products in commerce and industry with the aim of determining the effectiveness of all technical education programmes on which the government invests huge amount of money.
3. Fund allocation to institutions of technology should be based on quality and effectiveness of the programmes and their products rather than on equality of rights or pro-rata formula.
4. Remunerations of technical professionals, especially technical teachers, should be enhanced to par with or exceed those of their counterparts in other professional occupations.
5. The curriculum content should be structured to address the needs of the environment and should be more practically based. Each state can be supported to native technical education policy to meets the needs of the state. Curriculum review can be done. Planning should be given adequate time for the incubation of ideas and when possible proposal should be pilot-tested before actual implementation.
6. Federal government should allow local technicians modify ideas to suit their needs.

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Role of Technical Education in National Development

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