

REPOSITIONING TECHNOLOGY EDUCATION IN NIGERIA

Igbinovia .O, Famous

Abstract

Technological Education has not been given due consideration in our educational system in Nigeria. Hence, the need for the repositioning of Technological Education in our educational system for a sustained economic development, knowing that technology is a pre-requisite to greatness and development. This paper takes a look at the meaning of technological education and gives a brief historical sketch of technological education in Nigeria and thereafter discussed the national educational objectives and policies as it affects Technological education in Nigeria. It further identified major defects and obstacles to technological education in Nigeria. Solutions to these problems have also been proffered.

Introduction

Technology is perhaps the most important; single factor that promotes the development of every facet of life in any society in the world. After many developing countries have been relieved of the yoke of colonial rule, technology has become an instrument used by the developed countries for dominating the economy of these less developed countries, such as Nigeria. A high percentage of the world population live in the less developed countries of the world, but these countries account for a very few percent of world's income and consume almost half of the world's total food production (Makanjuola and Olateju, 1977). Nigeria is no exception; it imports nearly everything, from food to electronic equipment and heavy machinery. All of these items which are products of modern technology take several years of hard work to develop. They result from the brainpower of scientists, engineers and technologists who carried out the design, the manufacture and testing of these devices in such a way that they are able to operate under different application conditions. The production of these equipment in Nigeria can only be carried out if there is technically skilled manpower of fairly high caliber in the right numbers. Hence, the need for the repositioning of Technology education in Nigeria in the right direction.

In respect to technological education in Nigeria, there is an abiding awareness that we have now become fully convinced that for our country to have any effective economic take off, we need the backing of modern technology. For years we have blamed other people, especially the colonial masters, for our demise in technological development. The fact is that, since independence, we have not really succeeded in implementing a technology advancement policy nor have we succeeded in making technological manpower development a high priority item in our National Development plan.

Expatriate personnel will be in our economy for a long time. This is because we have not prepared ourselves adequately for their departure. We are not yet able to produce the technology which brought them here in the first place, and which will keep them here for a long time within our economy. Therefore, to acquire the basic scientific principles, practices, and creative skills involved in technological development, we have to develop educational programmes, which whilst teaching national consciousness, will also deliberately enhance the development of technological education. The foundation for such a programme should start at home and the Primary school, with special efforts made to integrate engineering technology programmes into the curricula of all Schools from the Primary level through the Secondary to the University level.

Meaning of Technological Education

The *Concise Oxford Dictionary* defines technology as "Science of the Industrial arts; ethnological study of development arts". Thus technological education would appear to cover the study of the industrial or development arts. It is concerned with the production of leaders in the development arts.

Education generally, is a process of socialization. It is a process of re-orienting an individual to become an accepted member of the society. Technology refers to methods and processes developed by people to enable them to provide their various needs such as food, shelter, clothing, transportation, communication, good health and security. Hence, Technological Education is that part of education aimed at preparing the individual for the world of work in order to make him a contributor to the society.

A Brief Historical Sketch of Technological Education in Nigeria

From the beginning of British occupation, it was a natural policy of Colonization to impede or indeed prevent any form of technical education especially technological education at the University level. In fact British Colonial policy was opposed to University education of any form in the Colonies. (Ozoro, 1978). Thus it was close

to or after independence before any real technological institutions of University standing were founded in Nigeria.

Any history of technological education in Nigeria must start from Yaba Higher College, which was founded in 1930 to provide well trained assistants for various departments of government" and private enterprise. The course in Civil Engineering trained Civil engineering assistants who were subordinate to British professionals. The manner of its founding and operation demonstrated British' obscurantism in higher education very clearly to Nigeria nationalists even at this great distance from independence. The institution was attacked from the outset and it had a checkered history until it was dissolved in 1948 to give way to the University College Ibadan.

At the founding of University College Ibadan, one would have expected that after Yaba Higher College, engineering would be given prominence but on the contrary, the founding of University College Ibadan demonstrated a remarkable continuity and consistency of British policy on higher technological education. There was no faculty of engineering at University College Ibadan when it opened in 1948 although there were agricultural science, medicine and religious studies amongst the foundation faculties

Instead of founding a faculty of engineering at University College Ibadan, it was decided to establish the Nigerian College of Arts, Science and Technology with branches at Zaria, Ibadan and Enugu which would offer technological courses at below University level; thus reviving the pattern of technological education started at Yaba Higher College.

The Nigerian College of Arts, Science and Technology like Yaba Higher College did not satisfy the Country's need for high level technological manpower. It was attacked in a manner reminiscent of Yaba Higher College. Thus it was with some relief that the Ashby Commission in 1959 recommended that the college be dismembered such that each of its three branches should form the nucleus of a University.

Which are, Ahmadu Bello University (ABU) Zaria, University of Nigeria Nsukka (UNN) and University of Ife (UNIFE), Ile-ife; each based in the three former regions of the Federation. ABU absorbed the engineering courses at Nigerian College Zaira, when it formally opened in October, 1962 thus making the faculty the oldest engineering faculty in the country. UNN absorbed the buildings and equipment at Enugu branch when it opened in October 1960 and in keeping with its founding principle of vocational bias, the University endeavoured to develop a faculty of engineering from the beginning. UNIFE opened in October, 1962 at the old Nigerian College and has also developed a faculty of engineering at its permanent site at Ile-Ife.

The University of Lagos was opened in October 1962 but its faculty of engineering did not open until 1964/65 academic year. In the year starting from 1970 to 1977 eight new Universities have been established and are at different stages of development at Benin, Ilorin, Kano, Jos, Sokoto, Maiduguri, Port Harcourt and Calabar.

Presently, there are 16 Federal Universities (Regular), 3 Federal Universities of Agriculture, 5 Universities of Technology, 17 State Universities (Regular), 4 states Universities of Technology, 15 Private Universities and 19 other degree awarding institutions. Also, there are 18 Federal Polytechnics, 27 states Polytechnics, 35 Monotechnics, 10 Private Polytechnics, 11 Federal Colleges of Education (Regular), 8 Federal Colleges of Education (Technical), 1 Federal College of Education (Special), 39 State Colleges of Education, 6 Private Colleges of Education and 10 Polytechnics with National College of Education programmes, most of the tertiary institutions have faculties of engineering and schools or colleges of technology. In addition, the Federal and State Governments are still developing Colleges of Technology to produce middle level technical manpower.

Faculties of engineering whether in University or Colleges of Technology require very heavy investments in building, equipment and high level teaching staff. Given the almost non-existence of technological education in the country prior to independence, it is excusable if one wonders whether the present deluge in the founding of technological institutions is well thought out and coordinated, to solve the country's problems of development.

Educational Objectives and Policies as it Affects Technological Education in Nigeria

In the third National Development Plan (1975-80) one of Government's main objectives was "to make an impact in the area of technological education so as to meet the growing needs of the economy". This objective had serious policy implication on technical education.

Government, aware of the fact that the products of the new secondary technical school system would certainly force a higher placement demand on post-secondary technical institutions, decided to reorganize and expand such institutions substantially. It was decided that tuition-fees charged in all Polytechnics and Colleges of Science and Technology Nation-wide would be harmonized with those paid in all comparable technical

institutions owned by the Federal Government.

Field work and industrial attachments would be encouraged and this would be taken care of through the Manpower Board, the Industrial Training Fund and the Private Sector. For proper administration of the programme and related issues, a National Council for Technical Education was proposed. Apart from disbursing federal funds to appropriate institutions, it would direct and coordinate relevant post-secondary technical education programmes.

During the fourth National Development Plan (1981-1985), Government said that technical education would continue to be given priority attention. It would require the National Board on Technical Education to design new incentives, which would attract and keep required manpower at the technician level. During the plan period efforts would be intensified to increase training facilities for all level of technician and tradesmen. Tuition would continue to be free and, boarding facilities would continue to be a necessary feature of technical schools and other technical-oriented institutions though such facilities would only cater for a limited proportion of the student population. The existing free boarding and lodging policy would be reviewed and students would be required to pay for their lodging and boarding. Government would phase out the existing crash programme for technical education.

The *National Policy on Education* (2004) vividly states that Technical and vocational education is used as a comprehensive term referring to those aspects of the educational process involving in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life. Technical and vocational education is further understood to be.

- (a) An integral part of general education;
- (b) A means of preparing for occupational fields and for effective participation in the world of work;
- (c) An aspect of lifelong learning and a preparation for responsible citizenship;
- (d) An instrument for promoting environmentally sound sustainable development;
- (c) A method of alleviating poverty.

Though the nation has witnessed tremendous progress in technological education, the gap between aspirations and achievement is still quite wide. Government, from time to time, took a stance that tended to negate Us policies thus helping to make the gap wider (Etuk, 1984), There is need to guard against this kind of dysfunctional development. Government cannot, talk of technological revolution in the country when, in actual fact, it allocates very little for technical education or when it adopts policies that continue to encourage higher enrolment in non-science courses.

Major Defects and Obstacles of Technological Education in Nigeria

The most outstanding defect in our present Educational system as regard technological' education is that it has not been evolved to cater for the needs of this society but has been transplanted, from alien sources almost without adaptation. Hence, the curriculum is not sufficiently oriented towards educating to solve our problems. This is inevitable at the beginning given the historical circumstances. •

Most of our University teachers and professionals in technology have been trained abroad and it is natural to start from the acquired background. In establishing our Universities therefore foreign models have been used more especially .when the initiative has been from the former colonial power. Borrowing stock and barrel is often a good and sometimes the only way to start but what is reprehensible is failure to adapt to local needs. Nearly five decades after independence, we cannot plausibly attribute failure to evolve curricula to the problems of our nation, and to historical factors alone. We must bestir ourselves to evolve curricula more in tune with the nation's needs.

An important aspect of the defect in technological education in Nigeria is that while foreign developed countries on whose models our system is based, rely largely on domestic industries to provide orientation and challenge to students of technology during employment, we do not have adequate industries to provide similar orientation and practically to technological education. Thus we are operating a borrowed system without the infrastructure apparatus inherent to its design, which enables it to function more effectively. It is apparent that a radical departure or restructuring is inevitable if we are to realistically tackle our problems.

Another problem is lack of conscious effort to inculcate pride in achieving technological breakthroughs in solving our problems. There is a lack of sufficient awareness on the part of both teachers and .students, about technology gaps in our national endeavours. There are many problems amenable to technological solutions which existing technology as developed in foreign environments cannot solve for us. H is up to us to identify such problems and associated technology gaps and then to solve them with new technology or adopted existing technology.

A major obstacle to technological education is that we have not sufficiently begun to lay the scientific and technical foundation in the secondary school system on which technological education must rest. Efforts in this direction have not received adequate support from government in order to make the desired impact.

Needed Reforms in Technological Education

The following reforms could be adopted for effective improvement of technological education in Nigeria:

Changing the Attitude and Orientation of Lecturers and Students

Teachers must be encouraged to believe and demonstrate that technological education must be relevant to solving the technological problems of our society. There is too much emphasis on the teaching of engineering science without a corresponding orientation to actually using this science to solve problems peculiar to our society. The quality of engineering science being taught is quite good in most cases but to stop there is a major failure in leadership for technological innovation.

Changing the orientation of students is a much more difficult task because they come in the mould which the value system of the society has caste them. Like most people they come wanting to graduate through the line of least resistance. The example for the right attitude and orientation must come from the teacher because he knows or ought to know what it takes to achieve certain desired ends in and with technology. He has to make the student realize that solving problems in technology requires long, patient and painstaking effort in humility and cooperation with others. Flashes of rare insight are of course very important but only real geniuses possess them in abundance. For most people, solving problems is slog work and young students should be prepared for it.

Changing the Curriculum Content

The Curriculum is not just the syllabus but all the learning situations to which the student is exposed. The syllabuses in engineering science in our institutions for technological education are quite good. But if orientation is made in the direction of changing the attitude and orientation of lecturers and students, the content of the existing engineering science might have to be revised most especially in the area of suitable facilities to acquire industrial experience in most branches of engineering and the applied sciences.

Continuous Curriculum Renewal and Innovation

The content of a Curriculum should not be static; it must be continually reviewed and adapted to changing needs. The usual problem of course is implementation, if there is a weak or no mechanism for implementing a good idea nothing happens. It is necessary to evolve a strong and standing mechanism for curriculum design and renewal in technological education in the country.

Problem of Research Creativity and Innovation

In this country, we must have the good sense to recognize rare genius and encourage it. But to engage in research in areas where the advanced countries are already very far removed from us merely in the hope of achieving equal prestige is ridiculous and unreasonable in the extreme. Our best bet is to engage in research which will enable us to achieve the best use of our factor endowments at least until the base for a real technological take-off has been well founded. Our research efforts should therefore be in the areas of identifying technology gaps and filling them either by adaptive technology or by creating new technology.

Therefore, the challenge of research in our technological institutions is how to stimulate the creativity of our people in seeking solution to our problems. Creativity is the solution of problems in novel ways and could be tax from research or from uncommon insights of real genius in everyday life. A good creative solution to a practical problem is not much use on paper until it has been transformed into a working tool for our social or economic well-being.

Transforming a bright solution into practice is innovation. In the advanced countries, private initiatives often take the risk to develop a creative idea into innovation. In a developing country private capital is not only scarce but whatever exists is often averse to taking risk in technological innovation. Hence, Government leadership is indispensable in this direction.

Conclusion

Technological education in Nigeria is yet to be accorded its recognition. Nigeria cannot continue to

sit back and hope that technology will be developed some day in our midst. And we cannot afford to take centuries that it has taken the developed countries to develop to their stage of development. Technological education is very important for a sustained economic development and yet the most neglected in the country when it comes to implementation.

It is therefore, necessary that the government should make every effort to change the attitude and orientation of lecturers and students towards technological education. There should also be a change in the curriculum content of technological education at all levels. Adequate efforts should also be made towards continuous curriculum renewal and innovation. And the problem of research, creativity and innovation should be addressed.

The general aims and objectives of engineering and technology training should be in consonance with the realization of national needs and aspirations viz-a-viz industrial development and technological emancipation. The minimum academic standard being proposed are to meet these needs and to produce engineers with sufficient academic background coupled with sufficient practical experience and who are able to rise to the challenges of a developing economy.

Our future is in our hands. Education for consumption without production is clearly a wrong choice of priority. Hence, technological education must be oriented towards national development as this is the first step to true national liberation and self-reliance.

References

- Bamiro, O.A. (1992). *The Engineering Question In Nigeria* Engineering Focus. Vol. 4, Number 2. The Nigerian Society of Engineers. .
- Etuk J. D. (1984). *Government and Education. Calabar, Paico Limited.*
- Hlek\va 1. el- al (2001). *Introductory Technology for Schools and Colleges* (Revised edition). Ibadan: Evans Brothers (Nigerian Publishers) Limited.
- Federal Republic of Nigeria. (2004) *National Policy on Education. Lagos NERDC Press.*
- Jamb News (2005) Federal Republic of Nigeria. Joint Admissions and Matriculation Board. Vol. III, No.1.
- Makanjuola G.A. and Olatju O.T. (1977). *Engineering Manpower Development.* National Engineering Conference. The Nigerian Society of Engineers. Ikeja: Literomed Press, Lagos.
- Monotechnics, polytechnics and college of education brochure (2005). Federal Republic of Nigeria, Joint Admission and Matriculation Board.
- Ozoro O. (1978). Technological Education for National Productivity. Nigerian Journal of engineering and Technology Vol. 1
- University Matriculation Examination?Direct Entry Brochure (2004). Federal Republic of Nigeria. Joint Admissions and Matriculation board.