

POLYTECHNIC EDUCATIONAL SYSTEM AND THE SUSTAINABLE ECONOMIC DEVELOPMENT OF GRADUANDS*

Preamble:

Let me congratulate the Polytechnic on her 3rd convocation ceremony, of which this lecture is part of the customary activities to herald the event. Permit me also, to thank the Polytechnic management for selecting me to deliver this year's convocation lecture. I do not know what yardstick they used in selecting me, but I do know that my coming here today is indeed a re-visit , or if you like, a 'second coming'. As most of you probably know, the present Federal University of Uyo was hitherto a State University, namely the Cross River State University, and during that time the faculty of Law, of which I was a staff, occupied the site of the present Polytechnic; which is why I say that today I am making a re-visit, albeit for an entirely different purpose.

The title of the Convocation Lecture is: "Polytechnic Educational System and the Sustainable Economic Development of Graduands".

Introduction

With a long topic such as this it often makes a lot more sense to begin

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from the beginning and then go down to the end. So I propose to start with the first key word, “Polytechnic” before touching on the second key phrase, “Sustainable (economic) development”. For graduands, we already know who they are. They are those who have completed the courses of study in the polytechnic and are about to be conferred with certificates, diplomas and degrees as the case may be. After being so conferred, they become polytechnic graduates.

“Polytechnic” is formed from two Greek words, “Poly” meaning many, and “technic” meaning arts. It came about to meet the demand of an age which was not for skills in a single science, but for multiple applied sciences. The focus was on the “useful” or practical disciplines, and this emphasis was both the catalyst and the result of the industrial revolution, which was inevitably also known as “the age of engineering”. In other words, engineering and technoplosion facilitated the industrial revolution and at the same time proliferated due the industrial revolution. There was a movement toward industrialisation and with this came the demand for trained technicians and engineers.

Thus, by the seventeenth century in England the Royal Society of London for Improving Natural Knowledge had been formed in 1663 to

address the necessity of having “to complete the knowledge about the matters of nature and to improve all of the useful arts, manufacturing processes, mechanical proceedings, machines and inventions by experiments”. To this end, it was clear that institutions for instructing students on the engineering and “useful arts” had to be established apart from the institutions that offered courses in the traditional disciplines such as theology, metaphysics, morals, politics, grammar, rhetoric or logic. By 1799 this vision was realised in the founding of the Royal Institution of Great Britain at #21 Albermarle Street, for “the promotion, diffusion and extension of science and useful knowledge”. The terms ‘useful knowledge’, ‘useful arts’, and ‘applied learning’ all refer to courses that were practice-oriented and could lead to invention, adaptations, production and innovations, as opposed to courses that could only lead to white collar jobs. Instruction consisted of lectures given three times a week as well as sessions in a “state of the art” laboratory. The wave of Polytechnic education spread like wild fire throughout Europe. In several cases, particularly where communities of skilled mechanics or technicians already existed, polytechnics became the means through which those already familiar with the practical side of engineering could formalize these skills in an institutional setting. This was particularly so in the case of the Liverpool Polytechnic, founded in 1823,

which had begun as the Liverpool Mechanics and Apprentices Library. By the 19th century, the idea of the polytechnic was also to provide the working classes with an education which emphasized the practical skills as opposed to the education of the upper classes whose children were destined for administrative careers via university education at institutions such as Oxford or Cambridge.

Quite often the term ‘Institute of Technology’ is used in many countries instead of Polytechnic. Some even use the term “Polytechnic University”. More rarely, both polytechnics and institutes of technology are considered universities when they have autonomy to offer Masters and Doctoral degrees and they are at the same time independent research institutions, these conditions being necessary to be formally considered a university. Examples are the Federal Institute of Technology located in Zurich, Switzerland, and the Massachusetts Institute of Technology (MIT) in Cambridge, MA, USA which are the oldest institutions to use the term “institute of technology” in their titles but are actually universities.

What this brief historical survey has shown is that the aim and purpose of polytechnics has been to provide hands-on, experiential and vocational training towards skills acquisition for self-sustenance and industrial and economic development. This is why emphasis has from the

inception been on “useful” or practical disciplines rather than traditional “theoretical” disciplines offered in universities. The idea is that the Polytechnic should cultivate what the Royal Polytechnic Institution referred to as “the whole man” or “the total person” who not only has the “know-how” but also has the “know-why” in his discipline, i.e. a man who knows and can explain how and why he does what he is doing. This means that the polytechnic education equips or is intended to equip the graduand with both the theoretical underpinings and practical skills in the vocation to enable him sustain himself and to meet the economy’s needs. The same philosophy underlies the establishment of polytechnic institutions in Nigeria.

Polytechnic education in Nigeria started in 1948 when the Technical Institute was established in Yaba, Lagos. The Institute was upgraded to a College of Technology in 1963. By 1968 the number of polytechnics had increased to 4, and the number has been on the increase ever since. In 1987, the nomenclature was streamlined for all such post-secondary technical colleges and they became known as ‘polytechnics’ Presently there are virtually as many Polytechnics in Nigeria as there are Universities. It may be said that the rapid growth of polytechnics over the years, and the upsurge in student enrolment, shows the high regard for and the contemporary

relevance accorded to this type of education by both the government and the citizenry.

The Akwa Ibom State Polytechnic is one of the relatively new Polytechnics in Nigeria. The statutes setting up the polytechnics embody their aims and purposes, which have not shifted the emphasis from technique and practice. For the Federal Polytechnics, their enabling law is the Federal Polytechnics Act¹, Section 2 of which lists the functions of federal polytechnics as:

- (1). (a) To provide full-time or part-time courses of instruction and training –
 - (i) In technology, **applied** science, commerce and management; and
 - (ii) In such other fields of **applied learning** relevant to the needs of the development of Nigeria in the area of industrial and agricultural production and distribution and for research in the development and adaptation of techniques as the Council may from time to time determine.
- (b) To arrange conferences, seminars and study groups relative to the fields of learning specified in paragraph (a) of this subsection (1),

¹ Cap F17 Vol.6 Laws of the Federation of Nigeria 2004.

- (c) Nothing in this section shall preclude the government of a State or any of its agencies from setting up a polytechnic similar to any polytechnic established under this act.

It is interesting that the Federal Polytechnics Act (by S.1 (c)) enables a State Government to set up a State Polytechnic. This is actually a surplusage, as such enabling provision is absolutely unnecessary in view of the fact that education is in the Concurrent List in the 1999 constitution and, indeed, item 29, Part II in the Second Schedule to the 1999 constitution specifically empowers a State House of Assembly to make Laws for the State with respect to the establishment of an institution for purposes of university, technological or professional education.

The Akwa Ibom State Government was therefore on the right course when she “established at Ikot Osurua in Ikot Ekpene Local Government the Akwa Ibom State Polytechnic”². Like its federal counterpart, the Akwa Ibom State Polytechnic Law lists the functions of the Polytechnic to include:

- 3(a) To provide course of instruction, training and research in the field of applied sciences, technology, commerce, business management and other fields of learning as the

² Cap. 97 vol.5 Laws of Akwa Ibom State 2000.

Council may from time to time determine having regard at all times to the manpower needs of the State in particular and the Federation in general.

For the sake of completeness, one may also include the Federal Universities of Technology Act³, which established Federal Universities of Technology. The establishment of Universities of Technology from the early 1980s was to bridge the gap between theory and practice at the tertiary level of the educational system. The object of this category of specialised university is to provide education in technology, with emphasis on planning, adaptive, technical, maintenance, developmental and productive skills in the engineering, scientific, agricultural, medical, and allied professional discipline, with the aim of producing socially mature men and women with capability not only to understand, use and adapt existing technology, but also to improve on it and develop new ones⁴. Like the polytechnics, universities of technology are therefore supposed to be basically experiential and practice-oriented, and to follow the founding conception of cultivating “the whole man”, who would not only fix a problem but would be in a position to explain how it is fixed, a man who can marry theory with practice for

³ Cap F23 Vol. 7 Laws of Federation of Nigeria 2004

⁴ section 3 (a)-(b).

optimal results, a man who would not necessarily look for employment but will create it, an independent rather than a dependent man, a man whose capacity for sustaining himself also rubs off positively on his society. It is doubtful if our Universities of Technology are in fact living up to these expectations, which informed their establishment. Our Universities of Technology appear to pattern themselves too closely towards the practices and programmes of conventional universities. Political considerations rather than the founding objectives, now appear to dictate what programmes are mounted, so that the Universities of Science and Technology have become sometimes even more theoretical than the conventional universities. Indeed, most Universities of Technology are anything but science, and certainly very far from technology. Some offer courses such as Law and English, which should be left to traditional universities and even for the sciences, their workshops and laboratories are more deficient than those of traditional Universities. What this means is that if an educational system is to be found which still furthers the cultivation “the whole man” for sustainable economic development, it is to the Polytechnics that we must turn. In this connection, one must congratulate the Akwa Ibom State Governor, Obong Arc. Victor Attah, who, with the benefit of both hindsight and foresight, has set up and carefully thought out the Akwa Ibom State University of Technology which,

from the blue print, is unlike the existing ones, in the sense that it is totally technological and will lead to sustainable economic development of this State, by the production of the much-needed manpower in that sector.

But, what is “sustainable development”? “Sustainable development” simply means continued, increasing development. In some sense, it may sound somewhat paradoxical to talk of sustaining or maintaining development in an undeveloped country. However, even among the less developed countries, it is a known fact that some are less “less developed” than others; so that there is a desire for constant improvement of well being in line with the preamble to the United Nations Declaration on the Right to Development⁵. “Development” itself, as a word, has no generally agreed definition and the definitions that abound only reflects the initiative value-sets of their authors⁶. Development is sometimes used interchangeably with “modernization”⁷; and if you ask a westerner what “development” means, he will tell you that it means, “to be like us”⁸, which is really not wrong!!

Indeed, for a third world country like Nigeria, development means to be like the West, i.e., the first world country. Development in this context embraces both individual and national betterment, and cuts across the

⁵ Adopted by UN General Assembly Resolution 41/128 of December 4, 1986.

⁶ Sedman, R. B: “The State Law and Development, Croom Helm, London (1978) at p. 55.

⁷ Seer, D.: “The Meaning of Development” (1969) vol.11 *International Development Review*, p.2.

⁸ Nettl, J. P. “Strategies in the study of Political Development”, in Leys,C (ed): *Politics and change*, at p.13; Higgins, B: *Economic Development : Principles and Policies*,New York. 1959.

mental, physical, educational, health, social and commercial sectors. Development thus includes better education; enlightened creative populace, better roads network, constant electricity supply, better and constant water supply. The World Health Organization (WHO) links about four million deaths each year and almost five million sickness incidents to the lack of adequate sanitation and drinking water⁹. To be added to the list is better health care, better clothing, adequate housing, ownership of automobiles, radios, television and telephone sets and, in this era of information technology and globalization, internet connectivity and computer literacy. Better and adequate food also forms part of the constituents of development. Indeed, today, the nutritional status of many Nigerians is desperate, or in crisis, in the sense that they suffer the “daily terrorism of hunger”. Properly articulated polytechnic educational system can do a great deal to impact on the parameters and determine priorities influencing access to food. Through agro-engineering and agribusiness, the polytechnic granduads are better poised to mediate between food entitlement and food availability. It is true that some third world countries have sought to sustain economic development through generous assistance from developed countries, instead of local capacity-building through systematic polytechnic education. From

⁹ Jaap De Visser, Cottle & Mettler, “Realizing the right of access to water: Pipe dream or watershed?”, in *Law Democracy & Development*, vol.7 (2003) 1 Lexis Nexis Butterworths, Western Cape, at p.27

experience, this has not been helpful because such foreign assistance and loans have conditionalities attached to them, which, in the local circumstance, might be anti-development. In any case, prolonged foreign assistance can in fact cause additional problems by creating dependencies and by undermining indigenous self-help capacities.

Other than seek foreign economic assistance, some developing countries have sought to sustain economic development by privatization, so that the private sector gains more visibility and greater role. This is a laudable thing to do. The problem however is that, as the Nigerian experience has shown, extensive privatization of State assets and services, a neo-liberal approach often favoured by Western donors, can end up in “favouritism” or “grab-it-ism” and lead to considerable social and political tensions in the country, which ultimately is anti-development.

Again, the solution therefore appears to lie in a polytechnic educational system that ensures the sustainable economic development of graduands, who would then contribute to national economic development. Certainly, an economically developed citizenry will lead to an economically developed state and country.

To achieve this, our polytechnic education system must enable the graduands develop new technologies in the various human activities in our

environment. Our agriculture, our food processing and preparation processes, our artefact production etc, should benefit from the development and application of new technology by the graduands. In addition, new technology developed indigenously is likely to be more affordable, more economical to maintain and operate, and will also have a multiplier effect on employment generation. As sustainable economic development implies self-reliance, the polytechnic education must not only enable the graduand indigenise or adapt received technology to make them more relevant to local conditions it must also enable him develop new machinery.

How has the polytechnic education system prepared the graduands for sustainable economic development? How has it prepared the graduands for the roles, which we have highlighted so far? Some have argued that the goals and objectives of Polytechnics, which are teaching, research - with emphasis on application and development, have not been met; that Polytechnics have relaxed on the identification of technological problems and needs of industry and production of technicians and technologists for self-employment and direct employment in industry, and rather exert much of their energy on competing with the Universities for parity of status, academic staff structure and system administration. These arguments were

well articulated in the Report of the Commission on the Review of Higher Education in Nigeria (better known as the “Longe Commission Report”.)

All said, it is fair to say that the Polytechnics have substantially kept to their goals, aims and purposes of running a system that makes for sustainable development of graduands. The split system of teaching and long period of compulsory industrial attachment is one commendable system, as it affords the graduands an appreciable period of hands-on training, and thus better equips them for sustained economic development. The attachment ensures that theoretical knowledge is complemented with skills for practical work..

To encourage the system, however, the necessary educational and instructional materials must be in place. Tools, equipments and other instructional materials must be available and sufficient vis-à-vis the student population. Workshops, studios and laboratories must be well equipped to the standard required by the accrediting bodies. This calls for proper funding by Government, which for now is the major source for funds for polytechnics. Indeed, funding also impacts on academic staffing. The staff-student ratio should be such that it facilitates meaningful academic and practical interaction. A situation where each student becomes deindividuated in a huge class is inimical to learning and instruction. No

doubt there is an internationally recognised place for polytechnic education in a country's development effort, but funds have to be sufficiently injected into the system, and must be judiciously utilised to ensure that the system works and produces the right result, which is ensuring the sustainable development of polytechnic graduands.

It is clear that with the current system in place, polytechnic education is in no way inferior to university education. It is just that the foci in the two somehow differ. The lower bias for polytechnic graduates is purely of historical antecedent, namely, that in its origin polytechnic education was a means through which those already familiar with the practical side of engineering could formalise their skills in an institutional setting; later, it became a means to provide the working classes with an education which emphasised the practical skills as opposed to the education of the upper classes whose children were destined for administrative careers via university education at institutions such as Oxford or Cambridge. The polytechnic education system is therefore more vocational, experiential, hands-on and skill-based. This should in fact be a plus for the graduands. In any case, the polytechnic educational system today is such that it is no more for the training of mechanics, artisans and technicians. Rather, it equips the graduand to analyse complex issues, identify the core of the problem and the

means of solving it; the graduand can effective use of numerical, computer and other data; he is trained to work cooperatively and constructively with others and is highly fluent in oral and proficient in the written linguafranca. The polytechnic training today covers as much ground as the university training does, which is partly why today many polytechnics in the UK have been converted into full-fledged universities, and they are very highly rated even as a university. Accordingly, the general social perception of university graduates, as being of higher social status than polytechnic graduates, is totally misplaced. The perception may also be because one issues a diploma (ordinary or higher) while the other issues a degree. This perception can only exist in a country like Nigeria, or maybe Africa as a whole, where experience and expertise are of little value compared to sometimes indefensible paper qualification. On the other hand, it is as well the logic of paper qualification that prompts the polytechnic graduates, particularly the holders of HND, to seek parity with first-degree holders. To my mind this should not be the case: Higher National Diploma (HND) cannot be the same as a university degree, **at least in name**. What should be advocated, which I do, is the removal of any lid to academic progression beyond HND, and professional affiliation or/and recognition of HND holders. This way, the

graduand will have unlimited opportunities for self-actualisation, for self-fulfilment and for sustainable economic development.

Thank you.