

REPOSITIONING POLYTECHNIC/TECHNICAL EDUCATION FOR SUSTAINABLE DEVELOPMENT

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Abstract

This paper discusses how to reposition polytechnic/technical education for sustainable development. The paper highlights the deficiencies in the polytechnic education ranging from poor quality of students and lecturers, shortage and low quality of teaching resources/facilities, quality of programmes and lack of adequate modernization of the teaching/learning process. It also suggests manageable lecturer/student ratio, incorporation of information and communication technology, entrepreneurship/vocational education and new methods and techniques in educational management such as management by cost benefit analysis or project evaluation and execution. The paper gives recipe for the much needed improvements that can properly reposition education in Nigeria.

Introduction

The document on National Policy on Education (2004), specified training in engineering, other technologies, applied science business and management that leads to production of trained manpower

It is also specified the provision of technical knowledge and skills necessary for agricultural, industrial, commercial and economic development with the skilled personnel being possibly enterprising and self-reliant. The document also specified the training of people who can apply scientific knowledge to solve environmental problems for the convenience of man.

Also, from the policy document (in 1981 revised), the Government of the Federation has no doubt given preference to technical education by recognizing 5 (five) types of technical educational institutions outside the universities. These are the pre-vocational schools at post primary level, the technical colleges, the polytechnics and colleges of technical teachers' education at post secondary level.

The main aim of this policy is to bring technological advancement into the country in order to enhance living standard. In order to reposition technological education, we need to know how far the programme has fared well and what can be done to make it work better.

First and foremost, the government policy makes it clear that the polytechnic graduates are supposed to meet the-middle level manpower needs. The disparity between the functions of the university graduate (who are basically administrators) and the polytechnic graduates (who are technologists) is very clear. Their roles and functions though well delineated are supposed to be complimentary.

Secondly, the polytechnic education and the vocational studies are expected to meet the demands of global unemployment through making such graduates self-reliant.

Thirdly, while the engineering graduates do more of the planning jobs, the technologists and the technicians carry out actual construction since their orientation is basically practically oriented. Similarly, community developmental needs are premised mainly on "can do" and not solely theoretical knowledge.

Theoretical knowledge would only be the bedrock on which practical knowledge will thrive in order to achieve the much-needed development. Therefore, in order to correctly reposition technical/technological education so as to meet our present day requirements, certain things must be addressed such as: quality of students and teachers, availability of teaching resources and facilities, quality of programmes, optimization of available teaching/learning resources and new methods of re-positioning or refocusing polytechnic/technical education including funding.

Objectives of the Study

The objectives of the study are;

- (i) to highlight the present state of polytechnic education vis-a-vis the quality of students (entry qualifications), quality of teachers, availability of teaching resources/facilities, quality of programmes and optimization of available teaching/learning materials.

- (ii) . to lay emphasis on the state at which polytechnic education can be refocused via new methods and techniques, new methods of managing institutions and decision making process and staff discipline.

Present State of Polytechnic/Technical Education

Quality of Students and Teachers

The low quality of students and the falling standards of education in the present educational system cannot be over emphasized.

It is an incontrovertible fact that the success of any educational system is usually determined primarily by the quality of teachers. This by implication means that the higher the quality of the teachers, the higher the success of the educational system. Therefore, there is an urgent need for teachers to be of high quality in terms of relevant academic and professional qualification and discipline.

The National policy on Education (NPE) proposed in 1989 that, (i) National Certificate of Education (NCE) would be the minimum qualification for teachers in primary schools; (ii) only degree holders (Bachelors Degrees) would teach in secondary schools, (iii) the structure of academic staff in the universities would be in the ratio of 20%, 25% and 55% made up of Professors, Senior Lecturers and Lectureship grades.

In the polytechnic, the National Board for Technical Education (NBTE) has recommended that the structure of the academic staff would be in the ratio of 20%, 25% and 55% of Chief Lecturers, Senior Lecturers and Lectureship grades with the proviso that at least a department should have a Chief Lecturer/Principal Lecturer.

The National Policy also offers teachers enough opportunities for promotion in order to serve as motivation and encouragement for professional growth at all levels. Unfortunately, the Nigerian educational system has not been able to meet with the targets set by the National Policy and has therefore continuously declined in quality.

Availability of Teaching Resources/Facilities

The United Nation Educational Scientific and Cultural Organization (UNESCO), proposed a minimum of 26% annual budget of member countries to education. To date, at least in Nigeria, this minimum requirement has not been adhered to.

This was accentuated by the neglect of the education sectors by successive governments. The inadequacy of budget provision leads to embarrassing shortage of teaching materials e.g. chalk, duster etc.

It also leads to decay of educational assets e.g. buildings, infrastructure, equipment with no hope of putting them in shape or outright replacement. The maintenance culture is almost absent in the Nigerian context.

According to Suleiman (2001): "This decay is characterized by (i) lack of concrete and authoritative support for replacement of obsolete resources and facilities....."(ii) persistent lack of appropriate and necessary infrastructure..... Suleiman (2001:2)

There is a general absence of critical educational resources e.g.

- (i) Books, newspapers, journals and study guides.
- (ii) Visual: charts, projector, illustrative diagrams, slides and transparencies.
- (iii) Audio-Visuals: slides, tape, films, television, video and multimedia.
- (iv) Static/display: chalk boards, multi-purpose boards, bulletin boards, cloth boards, flip charts, magnetic boards, exhibition etc.
- (v) Electronic: radio, computer, television, and internet.
- (vi) Lack of basic technical/engineering equipment and tools.

The positive effect of the above mentioned resources is enabling both the teacher and the lecturers have easy and repeated reproduction of an event cannot be overstated. They not only provide experience to a large audience, they also provide visual access to a process/technique, and gain or hold the attention of the learner and also help to focus attention or highlight key points.

It should be noted that apart from the unavailability of the teaching resources or critical educational resources, the matter is not helped by the attitude of the learners. Often times, the learners do not show sufficient interest by poorly attending lectures. Coupled with this, their reading culture is very poor while their responses to assignment are anything but discouraging.

The decay in the education sector has been worrisome to the Federal Government to the

extent that sometime in 2006, it gave the Minister of Education, a six-month mandate to revamp the sector.

The rot in which the education sector has found itself is corroborated by Gabriel Dike (2006): Described the six-month mandate given to the Education Minister as a wrong approach to adopt because the problems of the sector are multi-dimensional and does not see the political will from the Obasanjo's administration to accord education top priority.

In the same vein, a concerned parent traced how rot in the system started which includes policy inconsistency, frequent strikes, lack of facilities in schools, non-payment of teachers' salaries and a lot more which are some of the challenges the education minister must focus on if she intends to revamp the sector.

Quality of Programmes

It is plausible to observe that the quality of the technical programmes will have direct impact on the quality of the "graduate".

According to the 4th edition of the National Policy on Education (NPE): "In order to ensure that admissions into polytechnic are broad based, admissions into the technology and business courses be weighed in the ratio of 70:30 IRN (2004:2)

It is instructive to note that most polytechnics/colleges of technology are not adhering to the above structure. At best, the above structure has been followed between 45:55. Also, the National Board for Technical Education (NBTE) in a recent study revealed that only 25 percent of polytechnic graduates offer technical courses.

Similarly, the curricula provide by the National Board for Technical Education (NBTE), gave minimum guidelines so as to allow enrichment of the curricula. It is doubtful if this has been done in most institution. This is so, because the academic programme is so jam-packed within a semester or session that it becomes very difficult if not impossible to complete the NBTE curricula (without enrichment).

Also, according to the 4th edition (2004) of the National Policy of Education, which contained innovations and changes to the 3rd edition (1998):"Introduction of information and communication technology (ICT) into the school system,repositioning science, technical and vocational education for optimum performance"FRN (2004:5).

With the above innovations and changes in the National Policy of Education since 2004, one would have expected that the Government should have created an enabling environment for the polytechnics to be ICT compliant, or as a tool of effective delivery of lectures.

We can easily see those three years after a policy proclamation, that most lecturers are not even computer literate. So since no one can give out what he does not have, computer-aided studies cannot take firm root in the polytechnics/technical colleges.

In some polytechnics around the country, computer related courses like Computer Aided-Design (CAD) and Computer-Aided Management (CAM) have not been effectively taught partly because of lack of relevant infrastructure or workstations.

Multimedia systems have become very useful in the current educational practice. In the first place, there is a trend towards individualization of instruction and promotion of active learner participation. Secondly, learning here is multi-sensory. Multimedia systems are therefore, useful in making learning more meaningful and exciting. However, the cost of purchasing and installing multimedia for effective delivery may be an impending constraint for most polytechnics.

Optimization of Available Teaching/Learning Resources

One of the problems hindering the realization of the objectives outlined in the policy document was the increase in the population and expansion of the facilities at all levels of education in the country.

The facilities became overstretched and more are required to make the desired impact. Equally true is the fact that the management and maintenance of these facilities are capital intensive, which the government alone cannot bear.

It is generally accepted amongst educationists that instructional media play a very critical role in teaching and learning.

Instructional media provide concrete experience and enable students to integrate prior

experiences with new learning. Psychologists like Jerome Bruner has proposed that learning is facilitated when instruction follows a sequence from actual experience through iconic representations (as in pictures, films, etc), to symbolic representations. Educational media provide concrete experiences, which facilitate learning and the acquisition, retention and usability of abstract symbols. Instructional media provide the teacher or learner with various options to choose from, and hence enhance the efficiency of the teacher and the learning process.

However, in spite of the overriding importance of instructional media in increasing the efficiency and the effectiveness of the learning process, the Nigerian experience makes it scarce or almost unavailable. It must be emphasized that even items as simple as chalk, duster, marker, etc are often times not available in their right quantities and quality. At this juncture, one cannot stop from thinking that a major setback to the realization of the goals of the National Policy is corrupt tendencies of some officials or school heads who divert or make useless allocations to the sector.

Usually, in trying to optimize teaching/learning resources, teacher's sometime improvise/design instructional materials. It is only when the improvised materials are accurate and reliable that makes the mental impression created to be clearer. In addition, such materials should be durable and convenient to handle.

In cases of projected media e.g. television and computers their operational manuals should be carefully studied and the instructions guiding their usage should be religiously followed in order to prolong their lifetime.

Lastly, facilities, materials and other relevant resources should be maintained regularly and also protected from dusts, pilferage and damage.

New Methods at Which Polytechnic/Technical Education can be Refocused Admission Policy to be "Strictly on Merit"

In order to properly re focus technical education, there should be a paradigm shift in the admission policy from politicization to being strictly on merit. Suffice it to say that this method has the tendency of sifting the shafts from the seeds and thus obliteration the possibilities of admitting cultists.

Anaekwe (2003) argued that only serious-minded and academically conscious students should be given admission and under this dispensation, it would be difficult to force a square peg in a round hole thereby by minimizing the incidence of some social vices on campus.

Manageable Teacher-Student Ratio

The National Board for Technical Education (NBTE) and the National Policy on Education have specified staff-student ratios as 1:40 and 1:35 respectively. There is hardly any technical institution or polytechnic that has adhered religiously to this specification. It is a common sight in polytechnics to see more than 100/150 students against a lecturer, with more students standing to listen to the lecturers through the window.

It is instructive to note that delinquent students take the least opportunity to become unruly during classes or lectures since it may not be possible for the lecturer to have the eye-to-eye contact to all students. This makes the class/lecture to be some time noisy and easily out of control. The provision of adequate equipment, facilities and infrastructure, e.g. microphone, instructional media or multi-media may make class control or class management much easier.

Incorporation of Information and Communication Technology (ICT) and Internet Facilities into the School System

According to Liverpool (2002), "ICT is a generic term referring to technologies that are used for collecting, storing, editing and passing on information in various forms." (Liverpool 2002:1).

ICT is used to support classroom work and can help in the design and development of learning materials. Many materials can be downloaded from the Internet, which may be adapted to suit the specified instructional objectives.

It is instructive to note that electronic teaching materials such as books, journals, newspapers, magazines etc can be exchanged through ICT. ICT is particularly useful in research as it gives access to a world of resources, especially in electronic form.

Robyler (2003) described the Internet as the mother of all networks, because it is a network of networks.

The Internet is also a simple acronym derived from Internet work of computers. It enables people to communicate between or among networks. A major benefit of the Internet is the wide range of information available and services provided. Once connected, users can use the Internet to exchange messages and files among themselves and with others anywhere in the world.

From the foregoing, it is easily seen that Computer networking can provide a better lecture delivery than the conventional lecture method, because it is learner-centred.

Presently, ICT and Internet cannot be utilized in Nigeria because of poor infrastructure such as electricity and poor telecommunication facilities. In order for Colleges of Education, Polytechnics and other tertiary institutions to be adequately connected to computer network, there is need to fund the institutions properly and address the issue of infrastructure.

Also, the issue of computer literacy needs to be tackled. At present, most of the teachers and students in Nigeria are not computer literate.

According to Abifarin (2000)... "a large proportion of African teachers and students do not have knowledge of computer." Abifarin (2000:114)..

Entrepreneurship/Vocational Education

Training in entrepreneurship education should be emphasized at the polytechnic/tertiary level. This is because, owing to rising wave in global unemployment, inclusion of entrepreneurship and vocational education may turn the would-be-graduates into job providers than job seekers. There is therefore, an urgent need to inculcate the true entrepreneurial spirit in the students while in school. It is obvious that training in vocational education is central to self-reliance. It is the addition of the practical to vocational skills coupled with entrepreneurship that makes technical education more functional.

[New Methods and Techniques in Educational Management

It is agreed that management is an integral part of any organization. It is the accomplishment of set goals through careful or efficient utilization and manipulation of available human and material resources in the system. The survival of the school system is dependent on the quality of management or administrative services available. Management therefore, influences the results to be achieved, the direction to be pursued, and the priorities to be recognized within the organization. However, education management and decision making process in Nigeria have not been effective. Most of the education management problems are inherent in poor leadership in the education sector. Right from the ministers, the commissioners, the chairmen of education boards, vice-chancellors, rectors/provosts and the principals of secondary schools, effective leaders have not been incorporated into the system. What would be expected in educational development if school administrators have to part with a substantial portion of their allocation before their cheques could be released to them?

In terms of sustainable educational development, what sense does it make if the school administrator either diverts the funds or "takes" his own portion? One of the best techniques to "source" for educational leadership in schools and ministries is by taking time to check the track records of such individual. Altitudes that include discipline and ethics, moral sensitivity, moral intelligence, moral courage, honesty and strict observance of code of conduct are worthy of checking before such leaders are recruited into the educational system.

If the above qualities are absent in any administrative leadership in the education sector, then, no meaningful development should be expected.

Also in order to obtain the best efforts from teachers/lecturers, such group needs to be motivated by training or promotion during appraisals, as this would have direct impact on their effectiveness and efficiency.

It is also pertinent that school administrators should imbibe maintenance culture as one of their major tasks. This includes keeping the facilities in good condition so that they can be put into operation whenever required for teaching and learning. Kenezovich (1975) has rightly stated that the time it takes for a building to become physically obsolete depends on the quality of the original construction and materials as well as the quality of housekeeping and maintenance.

Efficient and effective management can only be built on good planning and sound decision-making process. Education is supposed to involve the use of modern-day techniques in management. These techniques include but not limited to MBO (management by objective in human resource planning, planning, programming and budgeting system for financial planning and cost benefit analysis/profitability index for project evaluation. This would invariably lead to a more precise

definition of objective; a more systematic resource allocation and use and a more accurate enumeration and evaluation of costs and benefits before embarking on any project..

It is evident that the school system is underfunded; judging from the unavailability of teaching resources/facilities, quality of programmes, shortage of instructional materials and lack of provision of modernized equipment and facilities. It is obvious that educational needs cannot be funded by government alone and it is time we start looking into other sources of funding.

Recommendations

The following recommendations if considered for implementation are capable of bringing much needed improvement to the education sector,

- (i) Strict adherence to the specified lecturer/student ratio
- (ii) Adequate budget allocation and effective utilization of resources in the educational sector, (iii) Good admission policy and recruitment of quality lecturers into the polytechnic system (iv) Incorporation of Information and Communication Technology and internet facilities to modernize the learning process and improve research.
- (v) Provision of infrastructural facilities to aid the modernization of teaching and learning e.g. electricity and communication equipment.
- (vi) Inculcation of maintenance culture into our educational system.
- (vii) Industrialists/Private Sector should be appealed to for possible contribution to educational funding since it is obvious that government alone cannot fund it.
- (viii) I advocate adequate retirement benefits/welfare policy so as to obliterate or reduce fraud in the system.
- (ix) introduction of new methods and techniques in educational management such as management by objectives, planning, programming and budget system for financial planning and cost benefit analysis for project evaluation and execution.

Conclusion

From the discussion so far, it is evident that education in Nigeria is in crisis. Ranging from poor quality of students, teachers, to unavailability of programmes, the crisis is unabated. The fact that Education is under-funded is incontrovertible and is mainly responsible for the non-implementation of the modernization of the teaching/learning process. Modernization of educational process requires the use of Information and Communication/Technology equipment which in turn requires adequate infrastructure e.g. electricity and communication equipment.

Lastly, there is so much fraud in the educational sector which understandably is a reflection of the larger society. One at least expects the meager resources allocated to the education sector to be judiciously utilized so as to optimize the benefit there from.

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