Abstract

In spite of numerous resources including funding that have been continually committed to improving Polytechnic Education in Nigeria, Polytechnics in Nigeria have not been able to adequately deliver on their core mandates. The reasons, which are numerous, are not far fetched. This paper looks at the state of Polytechnic Education vis-à-vis its core mandates and observed that there are either skills gaps or skills mismatch between those possessed by Polytechnic graduates and those required in the labour industry. The result is that we have many Polytechnic graduates that are without modern knowledge and skills, and hence unemployable. This paper discusses three areas where there should be creativity and innovations so that Polytechnic Education can adequately deliver on its core mandates so as to correct those skills gaps and mismatch so as to be able to produce skilled workforce for the country. This will translate into technological growth and sustainable National development for the nation. The paper concludes with recommendations and adds that for these desired changes to happen, issues of corruption, political instability, and poor macroeconomic management must be addressed by government and other stake holders.

Keywords: Polytechnic Education, Core Mandates, Creativity and Innovation, Technical Knowledge and Skills, Skills gaps, Skills mismatch, funding, practical skills training, industrial training.
Education as an instrument of change has been defined by many persons in different ways and Usman (2010) defined education as an instrument of empowerment which equips persons with knowledge, skills, and experiences needed to contribute immensely to the development of a well-disciplined workforce for a nation while Nwaka (2010) posited that education is an indispensable instrument for social transformation and empowering the populace. And these acquired knowledge, skills, and experiences are required to meet life challenges everyday (Nwankwo, 2005). A common denominator of these definitions and descriptions is that education is the acquisition of knowledge/skills either formally or informally for self empowerment. The importance of education has been severally expressed and that is why the Federal government of Nigeria (2004) adopted education as an instrument par excellence for effecting National development (FGN, 2004). Therefore, a nation that ignores the leading role of education in the drive for development risked producing citizens who ‘could become weapons of mass destruction’ (Enen and Owo, 2009). An example at hand now is the Boko Haram insurgency.

Polytechnic Education

From the time when Polytechnic Education was formally introduced into the Educational System of Nigeria through Decree No. 33 of 1979 till date, Polytechnics in Nigeria have made some progress in terms of provision of middle-level manpower needed for various industries, considering the number of Polytechnics, and their carrying capacities. As at 2008, there were a total of 103 Polytechnics and Colleges of Technology offering different courses in Nigeria (NBTE, 2008). Nigerian Polytechnics have recorded some impressive achievements over the years and as noted by Asuquo (1992), they have had successes in the areas of fabrication of equipment/instruments for the agricultural and industrial sectors, energy conversion equipment and application, textile and arts design, provision of manpower for the oil and gas industries, etc., but these achievements as pointed out by Aigbepue and Idogho (2010) have been rudimentary and therefore a far cry from the expectations of all considering the huge capital and human resource investments by government and other stakeholders, hence the desired technological advancement has not been attained.

The consequence of the above is that Nigeria which, is richly endowed with abundant human and natural resources has not been able to develop her human resources to the required international standard so as to fully harness the abundant natural resources that abound in the country, hence Nigeria remains an underdeveloped economy. It has been observed that Nigerian Polytechnic graduates lack the required technical know-how that will be able to launch Nigeria into becoming a technologically developed nation and in some few cases where there are skills training or acquisition, there is usually a mismatch between the training
provided at the institutions and those required in the industry. This is skills disconnect. The objective of this paper is to suggest the nature of creativity and innovations that the Nigeria Polytechnic Education should imbibe so as to position Polytechnics in Nigeria to produce skilled technical workforce that will not only be employable but will assist Nigeria to achieve technological growth and sustainable national development. The aim of this paper is for the nation to have an industry-tailored technical manpower that will grow all the aspects of the Nigerian economy.

Polytechnics in Nigeria were set up primarily to provide technical education for the middle-level manpower so that the graduates will possess industry-tailored technical knowledge and skills. Unfortunately, this is not the case now because of the present skills gap and skills mismatch (skills disconnect). It was observed that each year Nigerian Higher Institutions including Polytechnics produced no fewer than 130,000 graduates with only about 13,000 (10%) of them being employed while the other (90%) roam the streets (Makinde, 2007). Most of these graduates will therefore end up being unemployable thus worsening the already worse unemployment rate in the country. Umoh (2002) citing International Labour Organization, ILO (2001) gave the picture of unemployment rates in some selected African countries in 1999 in table 1 below.

**Table 1: Unemployment Rates in Selected African Countries**

<table>
<thead>
<tr>
<th>Country</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sudan</td>
<td>30%</td>
</tr>
<tr>
<td>Ghana</td>
<td>37%</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>45%</td>
</tr>
<tr>
<td>Mozambique</td>
<td>50%</td>
</tr>
<tr>
<td>Nigeria</td>
<td>68%</td>
</tr>
</tbody>
</table>


The production of more unemployable graduates will only lead to increasing the unemployment rate and the effects of increasing unemployment rate are many and can be found in social vices that plague the nation presently – kidnapping, armed robbery, cyber crimes, money laundering, drug and human trafficking, drug abuse, terrorism, e.t.c.

**The Way Forward**

The way forward lies in the pragmatic implementation of the objectives of the Polytechnic Education. Nigeria’s National Policy on Education in Section 6, Sub-section 49 stressed that technical education would provide the necessary technical
knowledge and vocational skills necessary for agriculture, industrial, commercial, and economic development through the provision of a well trained caliber of manpower to be produced by the Polytechnics (Aigbepue and Idogho, 2010).

The target or objective of Polytechnic Education as captured by The Polytechnic Act of 1985 is the production of middle-level manpower with requisite knowledge, skills, and orientation in Engineering, Applied Sciences, Environmental and Management Sciences that will make Nigeria to be industrialized and self-reliant (FGN, 1985). This manpower or workforce must be flexible so as to acquire new and the ever-changing skills for new jobs as the structures of the economy and occupations change. Prof. Fabian Osuji, a former Minister of Education in a forward to the National Board for Technical Education (NBTE) workshop on the review of NBTE curriculum stated that the level of competence of a country’s workforce determines the quality and efficiency of product development, production, and maintenance, as well as the efficiency of supervision and training of workers with lesser skills (NBTE, 2003).

Three Areas for Creativity and Innovation

Funding Pattern: It is now very obvious that the funding pattern of Polytechnics in Nigeria where owners, whether government or private, provide all the funding required for the development and sustenance of the institutions is not working. Gross under-funding is the case now and this has inhibited the development of both infrastructures and manpower in the polytechnics. Presently, the available infrastructural facilities in the Polytechnics are continually deteriorating, hence the preponderance of unaccredited programmes in the Polytechnics (Aigbepue, and Idogho, 2010). The current teaching staff strength is also inadequate and most teaching staffs’ knowledge and skills are outdated and cannot adequately cater for the present students’ population and training required. This was corroborated by the Principals’ Annual Report for Federal Colleges of Education in Nigeria (1998) where the report said that “The picture of staffing shows total weakness in all trade areas”. It is worthwhile to state here that the consequence of not funding educational institutions adequately is the production of graduates who are without required modern technical knowledge and skills needed to drive all aspects of the economy hence the country will continue to remain an underdeveloped nation.

Suggested Funding Innovations

Partnership and Collaboration between Stake Holders: All stake holders in the education sector, Government represented by the Polytechnic institutions and other government agencies, the industries, communities, and other donor agencies (internal or foreign) should pool their resources into what may be called school development fund (SDF) in a pattern that will be agreed upon. Communities here mean either
families or communities from where the students come from. The fund will be managed by a body to be appointed, supervised, and monitored by all stake holders of a particular school. Members of the body will be drawn from the government, the Polytechnics, the industries, the communities, and donor agencies. Funds contributed by companies into Industrial Training Fund (ITF) should be stopped and these funds paid into the school development fund directly. Most companies are reluctant in contributing these funds into ITF because they do not see the impact on the quality of graduates produced by higher institutions and they are not privy to how these funds are managed.

Payment of Sustainable School Fees: Education is costly but lack of education is costlier. In other words, to be literate in different skills is costly but to be illiterate in different skills is costlier. The consequences of illiteracy are seen everywhere in the country. At the Polytechnic level, tuition fees and other fees must be paid by students and this must be adequate so as to sustain the schools and grow them in a sustainable way. Every student must be on a sort of sponsorship or scholarship in a manner that the funds for the sponsorship are contributed by the government (federal, states, and local governments) and the parents representing communities. Private companies, non-governmental organizations, and well-meaning persons in the society should be encouraged to sponsor students.

Practical Skills Training: Presently, in the Polytechnics practical skills trainings are carried out in ways and manners that the trainings are not effective and efficient. Even though the trainings carried out in the Polytechnics are basic and general, they are not effective because of lack or inadequate facilities and teaching staff with outdated knowledge and skills. Furthermore, all the trainings except industrial training are done in the polytechnics which are not well equipped to carry out any meaningful training. It is either there are inadequate equipment/instruments in the laboratories or workshops or the ones available are going bad without hope of replacement. Consumables for practicals are most times not available or grossly inadequate.

Suggested Practical Skills Training Innovations
Development of the Teaching Manpower: It is often said that no educational system can rise above the quality of its teachers and that is why Ukeje (1986) opined that teachers are the hub of any educational system for schools cannot be better than their teachers. It is therefore imperative to suggest here that there should be adequate fund made available for training and retraining so that there will be a well trained teaching staff in the Polytechnics with the required knowledge, skills, and orientation that will be invariably imparted to the students. The training and retraining should be carried out in both the institutions and in the industries so that the teacher will acquire both
knowledge and skills required to teach basic knowledge and skills in the institution and industry-tailored knowledge and skills in the industry.

**Industry-Tailored Skills Training:** Since the trainings carried out in the Polytechnics are mainly basic and general but because it is desired that the Polytechnic graduates possess industry-tailored knowledge and skills, it will be suggested here that students should be made to undergo some training in the established training schools or centres of companies. This will be arranged by Polytechnics and companies in their catchment areas. The actual training of the Polytechnic students will be jointly carried out by the training staff of the companies and the teaching staff of the Polytechnics (who have undergone some practical skills training from the companies). The training centres will have to be expanded to accommodate the number of students and will be jointly funded by the companies and the Polytechnics representing government. The benefits will be mutual since the companies will spend less in the training and orientation of newly employed staff while the Polytechnics will produce employable graduates. This kind of arrangement is akin to the Shell Intensive Training Programme (SITP) organized by Shell Development Company Limited though with some variations. These training centres will create mutual and healthy interactions between the staff of the companies on one hand and the teaching staff and students of the Polytechnics on the other hand.

**Industrial Training/Attachment:** There is no point pretending that the way and manner industrial trainings/attachments by students are done these days will yield the desired result. About half the number of students on industrial training is not actually involved in the training while those involved are carrying out their own in organizations that do not have the minimum facilities for effective training. This is because the institutions who are supposed to secure attachment placements for the students are not actually doing that, such that most students end up not carrying out the training because they are rejected by many organizations. The result is that the students upon graduation will not possess the required industry-tailored knowledge and skills.

**Suggested Industrial Training/Attachment Innovations**

**Industrial Training Placement:** At the beginning of the programme, attachment positions should be sought for by the Polytechnic for all registered students. This is to ensure that every student has an industrial attachment position before the students proceed on the four months industrial training at the end of the first year of study i.e. NDI.

**Training Supervision:** Students on industrial attachments should be jointly and effectively supervised by both institution supervisors and Industrial Training Fund
(ITF) supervisors to ensure that students are actually involved in the training. The institutions and ITF supervisors should be empowered to carry out effective supervision.

Conclusion
The paper concludes that for the present skill-gaps and skill-mismatch between practical skills required in the industries and those acquired by Polytechnic graduates to be corrected so that graduates of the Polytechnics possess industry-tailored skills, new ways of doing things have to be introduced in the funding pattern, practical skills training, and industrial training/attachment that will make Polytechnic graduates employable and therefore be able to contribute their quota to the development of the nation.

Recommendations
1. The Polytechnic curriculum should as a matter of urgency be reviewed and updated to meet current and future challenges or needs of Nigeria. This review should be jointly carried out by the three stake holders-the government regulatory body, the Polytechnic institutions, and the industries. This will ensure that the industries which are the end users of the Polytechnic graduates will include the kinds of modern skills they require to man their equipment and instruments.

2. Incorporation of ICT knowledge in all the skills training programmes. This will enhance the learning of modern technological skills.

3. There should be training and retraining of the Teaching staff of the Polytechnics so that they can acquire modern and emerging knowledge and skills needed to train and produce graduates that possess requisite technical knowledge required by the industries. The established staff development centres in the country should be equipped and empowered to carry out their mandates.

4. Government regulatory bodies should be empowered so that they will be able to carry out their roles effectively. This will ensure that Polytechnics are not given approvals and accreditations for programmes they do not have the required human and facility resources to run.

5. Government at the federal and state levels should deliberately increase the number and capacities of the Polytechnics to admit and effectively train the ever-increasing number of persons wishing to access Polytechnic Education.

6. Issues of corruption, political instability, poor macroeconomic management, and the present general insecurity must be addressed by government and other stake holders.
7. While this paper recommends an increase from the present annual budgetary allocation to education to the 26% minimum recommended by UNESCO, it is strongly recommended that the present annual budgetary allocations should be closely monitored and well utilized. This is because government at different level are asking the educational institutions what they have to show for what they are presently receiving.

8. Every student in Polytechnic should be on a sort of sponsorship or scholarship with the funds for the sponsorship provided entirely by government or companies or well-meaning persons or jointly provided by government and parents.

References


Makinde, J.K. A. (2007, January 8). We are on to all – round excellence. *Tell, a Nigerian weekly magazine*, 60-62.


