

## Refocusing Physics Education in Nigeria: Issues and Challenges in Teacher Education

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Doi:10.5901/mjss.2012.v3n13p11

### Abstract

*This paper spotlights a number of daunting challenges that fraught teachers education in Nigeria. It adjudges senior secondary education as being stuck in limbo, using senior secondary physics as illustrated examples. It advocates a repositioning of basic elements of teacher education inline with the realities of the 21<sup>st</sup> century.*

**Keywords :** Physics Education, Nigeria, Teacher education

### Introduction

According to Omatseye (2000), "the school is a social institution established by members of the society for the purpose of transmitting their culture from one generation to another". It improves the culture by producing generations of people who are more refined and enlightened than their parents or forefathers. Naturally, the teacher and the education system in which he (the teacher) operates cannot stand aloof from the society. They are part and parcel of it and are both an embodiment and a reflection of culture, traditions, yearnings and aspirations of the people. This fact though irrefutable at a global level, will at the national level, raise a couple of crucial issues, encapsulated in the question; what are the purposes (goals) of education in the Nigerian social context?

Turning to the national policy on education for answer, the Federal Republic of Nigeria (1981 and 2004) stipulated the following major national educational goals.

- \* The training of the mind in the understanding of the world around.
- \* The acquisition of appropriate skill and the development of mental, physical and social abilities and competences as equipment for the individual to live in and continue in the development of the society.
- \* The inculcation of the right type of values and attitudes for the survival of the individual and the Nigerian society.

To achieve the national goals "Government shall establish efficient inspectorate services at federal, state and local government levels for monitoring and maintaining minimum standards at all levels of education below the tertiary level" (FRB, 1981 and 2004). Unfortunately (Udofat, 2006),

*There are shouts of falling standards of education not only in Akwa Ibom State but in school nationwide. The school products are no longer making a living in the society in which they live. Also, the quality of education the children receives in school does not endow them with the means to lead more satisfying life and enjoy the humanistic*

*aspect of education as an end in itself. Employers of labour, parents and indeed the general Nigeria public now tend to wonder whether the schooling system in which they have made huge investments is still making dividend. They tend to wonder whether the system has lost it's focus.*

This apprehension presupposes the existence of a number of daunting challenges that bedeviled our formal education system, calling for refocusing or repositioning of basic elements, in line with the demands of the 21<sup>st</sup> century. To address any imperfection in formal education, we must first identify the goals of teacher education. This is why; No education system may rise above the quality of teachers (FRN, 2004).

### **Goals of Teachers Education**

A good teacher education programme has as its goals (FRBN, 2004) the:

- \* Production of highly motivated, conscientious and efficient classroom teacher for all levels of our education system.
- \* Encouragement of further spirit of enquiry and creativity in teachers.
- \* Helping of teachers to fit in the social life of the community and the society at large and enhance their commitment to national goals.
- \* Provision of teachers with the intellectual and professional background adequate for their assignment and makes them adaptable to changing situations.
- \* Enhancement of teachers' commitment to the teaching profession.

These goals, as stipulated by the Federal Republic of Nigeria (FRN, 2004), is to provide a focus on teacher education programmes. Therefore, the apprehension from the general public as to whether the school has lost its focus is predicated on the deep conviction that the school is not realizing its goals. In that vien, five fundamental questions will arise to agitate the mind on the issues involved.

- (i) Does teacher education in Nigeria produce highly motivated, conscientious and efficient classroom teachers?
- (ii) Does teacher education in Nigeria encourage further spirit of enquiry and creativity in teachers?
- (iii) Does teacher education in Nigeria help teachers to fit in the social life of the community and the society at large and enhance their commitment to national goals?
- (iv) Does teacher education in Nigeria provide teachers with intellectual and professional background adequate for their assignment, making them adequate to changing situation?
- (v) Does teacher education in Nigeria enhance teachers commitment to the teaching profession?

Let us reflect on each of these issues as we turn to the sorry revelation from school programme evaluation, in conjunction with research findings.

### **Issue 1**

*Does teacher education in Nigeria produce highly motivated, conscientious and efficient classroom?*

Among other things, the school programme evaluation assesses the success of the school in the actual accomplishment of its educational purposes, measured in terms of the observed out-of-

school life of its products in the community (Edem, 1987). But what revelation is available from the school programme evaluation? Monitoring and evaluation of our school products in the "labour market", over the years, reveal a nightmare scenario; our labour force is populated with teeming school products that are indeed products of a huge foundation for a life of immortality and crime, including the fraudulent foundation of examination malpractice. The "labour force" in question encompasses very many political leaders, bankers, accountants, engineers, medical doctors, university lecturers, civil servants and clergy men. The list is by no means exhaustive.

The fraudulent labour force (the poor quality school products) is the reason for the chronic embezzlement of public funds, many cases of failed banks, several incidents of deaths resulting from minor surgical operations, including incessant cases of collapsed storey buildings (with attendant devastation of lives of occupants) due to lack professional know-how of the contractors. This crisis-laden scenario presupposes that teacher education, from which all professionals stem, has tended to lose focus. It represents the failure of teacher education. It is the hall mark of ill-motivated, non-conscientious, inefficient classroom delivery system in which teachers can neither interpret learning theories nor engage learners in a reciprocal exchange of knowledge that can generate enduring success.

## Issue 2

*Does teacher education in Nigeria encourage further spirit of enquiry and creativity in teachers?*

Teachers in Nigeria teachers' institution preach the use of innovative methods (such as inquiry-oriented methods which encourage the spirit of enquiry and creativity) but they themselves do not practice what they preach (Ufot, 2006). As observed by Udofot (1987)

*The popular teaching methods in Nigeria teachers' education institutions are the lecture and notes dictation methods. These are the kinds of methods which tend to isolate the teacher- trainees from the teaching-learning process and have no significant bearing with any skills acquisition or development techniques acceptable to teaching.*

## Issue 3

*Does teachers education in Nigeria help teachers to fit into the social life of community and the society at large and enhance their commitment to the national goals?*

It is a common knowledge that education is expected to achieve certain objectives, one of which is to produce good citizens – that is, men and women of character. This is very crucial because any education which fails to equip its products with the enduring value of society, such as honesty, integrity, transparency, discipline, justice, sense of fairness, etcetera, is a danger to the society. Thus, a fundamental question is; Has Nigerian education equipped its products with these enduring values? For the answer, let's reflect on this classroom drama: a random sample of ten science students were lined in front of a science class of forty students, and were, individually, asked a simple question; why are you in school? The first nine answer oscillated between: "because I want to be a medical doctor" and "because I want to be an engineer". The class nodded impressively. The nine students bloated with pride and prestige. Then came the tenth answer: "Because I want to be honest and upright". The class giggled and burst into laughter. The tenth student was flushed with

shame and embarrassment. Now, if one may ask, have honesty and uprightness become qualities to be ridiculed and cast to the wind? Given that the teachers duty is not only to impact knowledge but to build character, where does the teacher stand in this drama of moral mockery? Ajayi (2011) provides an insight.

*Whether we like it or not, education has, in contemporary times, lost one of its important tenets; that is character building. For example, gone were the days when teachers were paragon of virtues and objects of respect ... It is pertinent to soberly reflect on one critical issue in our education system. That is, the menace of examination malpractice. They are now a serious cankerworm at all levels of education to such an extent that teachers are easy accomplices, aiding and abetting the misdemeanor.*

Remarking on the above misdemeanor, Onwioduokit (2006) regretted that, "this matter has become worse and is getting worst because the products of examination malpractice are now, unfortunately employed as teachers and lecturers". The teacher in the 'business' of examination malpractice can best be described as the most dangerous criminal in the society. Now, to the extent the image of the teacher is so dainted, it will be difficult to admit that teacher education has helped the teacher to fit into the social life of the community and that of the society at large, and to be committed to the national goals.

#### **Issue 4**

*Does teacher education in Nigeria provide teachers with adequate intellectual and professional backgrounds necessary for their assignment, making them adaptable to changing situations?*

Our teacher education has the challenge of training highly and imaginative teachers well equipped with knowledge and skills to cope with the emerging scientific and technological knowledge, including Information and Communication Technology (ICT) skills in the society (Udofot, 2006). Admittedly, Ajayi (2011) Averred that "the quality of graduates coming out of the chunk of the system lack the necessary technical and professional competence; thus many do not often suit the modern work places".

Research studies lend credence to the afore going challenge. For instance, using a random sample of 92 physics teachers in Ikot Ekpene Senatorial District of Akwa Ibom State of Nigeria, Udoh's (2010) research report revealed that; none of the physics teachers attended some form of ICT courses on power point, data logging, flash animation, excel and software CDs, which impact significantly on physics curriculum delivery. In summary, the representative sample under investigation was ICT incompetent and hence not ready to apply ICT in the teaching of senior secondary physics. This is lagging behind the reality of the 21<sup>st</sup> century in which educational system are increasingly obliged to use ICT in providing knowledge for learners in order to extend their abilities and skills. Thus, at best, it could be adjudged that teacher education in Nigeria is still grappling to provide teachers with intellectual and professional background adequate for their assignment in order to make them adaptable to changing situation.

## Issue 5

*Does teacher education in Nigeria enhance teachers' commitment to the teaching profession?*

As already indicated, there is increasing concern about the quality of education and the goals achieved. Parents are not only questioning and criticizing education, raising several issues and waiting for explanation from the ministry of education, Okon (2006) admitted among other issues.

- \* Inefficiency within the schools and the educational system, measured in terms of high drop out rates and illiterate graduates.
- \* Mismatch between what the schools are producing and what employers and parents need. Ajayi (2011) explains that teachers and school administrators are no longer committed to work; many of our certificates are now worthless; we experience mass failure in schools at all levels. Thus, it cannot be safely argued that teacher education in Nigeria enhances teachers' commitment to the teaching profession.

## Emerging Challenges

The fore-going issues arising from the stipulated goals of teacher education are interwoven with a serious challenge, viz; the actualization of the goals will have to be vigorously pursued with a vision which seeks to transform the country into a prosperous, highly-educated, technology-driven, united and pace-setting country. In an attempt to square-up to the changes, the Federal Republic of Nigeria (2004) posited that

- (i) All teachers in educational institutions shall be professionally trained.
- (ii) Teacher education shall continue to take cognizance of changes in methodology and in curriculum.
- (iii) Teachers shall be regularly exposed to innovations in their profession and
- (iv) The success of any system of education is hinged on adequate financing. Now, follow-up questions would arise to keep the issues involved in perspective
  - (i) Are all teachers in Nigerian educational institutions professionally trained?
  - (ii) Has teacher education taken cognizance of changes in methodology and curriculum continuously?
  - (iii) Are teachers regularly exposed to innovations in the profession?
  - (iv) Has government ensured financing of schools? Now, let's rely on the review of literature as we consider these issues.

According to Nwanekezi and Ifionu (2010).

*Teaching is one occupation that has the greatest number of quarks despite its position as the "key" for development of human intellect. From pre-nursery level, it is common to find people who do not have educational qualifications still parade themselves as professional teachers. It is no doubt that even the teacher education institutions which are expected to turn out teachers who are intellectually, socially and professionally competence end-up producing half-baked.*

Teacher education is expected to furnish acceptable level of achievement in professional abilities such as integrating content knowledge with effective teaching methodology, making the students

the center of learning. It is expected to produce professionals who can combine conventional teaching strategies with the global phenomenon of unfolding ICT, in the generation and impartation of knowledge, attitude and skills. Thus in this new global world of information and knowledge explosion, effective education can be achieved through active teaching and learning with adequate, relevant and effective instructional materials like the ICT facilities (Akudolu, 2002). In support of this, Jajua (2006) opined that one of the recent drives of the society towards making education relevant is making ICT common features of the education process. "Despite these recognized roles of ICTs in improving not only quality and quantity of education, ICTs remain a low policy or financial priority in our education" (Jongur, Mohammed & Abba, 2008). Underfunding has contributed to the decline in teacher education. The way in which education is financial largely determines who will be educated and in what fashion (Obi, 2010). Accordingly, "the majority of Nigerian teacher are computer illiterate in a globalised world where ICT is as prevalent as the water we drink" (Alas & Adelaba, 2006).

Staff development programmes are being paid lip services (Nwanekesi & Ifionu, 2010). The training programmes in the colleges of Education have been criticized as theoretical with very little application for skills development (Igbo, 2010). It thus appears that:

- (i) Teachers are seldom exposed to innovations in their professions
- (ii) Teacher education programmes are excessively academic and remote from the real challenges confronting classrooms.

### **Summary of Major findings from Literature Review**

Critical review of literature on issues involved in teacher education furnishes two aspects of findings. The first aspect reveals that teacher education in Nigeria tends to:

- (i) Produce ill-motivated, non-conscientious and inefficient classroom teachers.
- (ii) Discourage the spirit of enquiry and creativity in teachers
- (iii) Fail in its promise to help teachers fit into the social life of the community and society at large and is ineffective in enhancing teachers commitment to the national goals.
- (iv) Fail in its bit to provide teachers with adequate intellectual and professional backgrounds necessary for their assignment and adaptation for changing situations.
- (v) Be found wanting in terms of enhancing teachers' commitment to the teaching profession.

The second aspect of findings from literature review reveals that the teacher is the pivot of education life, the success of all fields of study revolving round teacher education. This finding/revelation is reminiscent of the universal law of planetary motion. Now, if the education system (comprising basically the teacher education and the different fields of study) can be likened to the solar system (comprising basically the sun and nine planets), then the teacher's position in the education enterprise fits exactly that of the sun which is the center of the solar system and around which the nine planets revolve, shining only by the reflected light of the sun. Should the sun be spent (which of course would spell doom for the entire system), other members of the solar system will (individually) wallow in eternal darkness.

Expectedly, if teacher education is spent (as shown by review of literature), the respective fields of study will tend to be in limbo, needing urgent refocusing. This expectation, probably, underlies Ajay's (2011) apprehension that the Nigerian education system is in a state of limbo, needing urgent revival", particularly for those fields of study that are a bedrock of sustainable development of the nation. Consider senior secondary physics education as an illustrative example.

Physics is a very crucial subject for technological development and as such its teaching and learning must be a matter of national concern. Based on this concern and on the analysis of the situation, the following general objectives are to be satisfied by the senior secondary physics curriculum (Ladipo, 1985; Obioma, 2009).

- \* To provide basic literacy in physics for fundamental living in the society.
- \* To acquired essential scientific skills and attitudes as a preparation for the technological application of physics.
- \* To stimulate and enhance creativity.

Unfortunately, despite the fore-mentioned national concern, there is an increasing low enrolment in physics in schools and in tertiary institutions in Nigeria (Ladipo, 1985) and students performance has continued to witness a downward trend (Udoh, 2012). The ever-increasing decline in physics enrolment and achievement (Ezeife, 1996) points to the fact that there are increasing conditions for underachievement and slow learning, portraying possible failure of previous efforts of science educators in improving the learning situation (Nkwo, Akinbobola & Edinyang, 2008).

Several researchers (Ali, 1998; Oguleye, 1999; Okebukola, 2002) listed problem areas of senior secondary physics education to include; dearth of instructional materials and laboratory equipments, lip-service attitude of government, inadequate funding and paucity of professionals trained physics teachers. On his part, Ikwa (1997) attributed the problems of underachievement in, and slow learning of, physics to ineffective grasp of physics concepts by students and teachers alike. Obioma (2009) capped it all;

*Physics is crucial for effective living in the modern age of science and technology. Given its application in industry and many other professions, it is necessary that every student is given an opportunity to acquire some of its concepts, principles and skills. Unfortunately, the teaching and learning of physics has been fraught with challenges which prevent many students from performing well in external examinations. The philosophy, objectives and concepts of physics curriculum have been adjudged by professionals in the field to be satisfactory; but its implementation has fallen short of expectation because of lack of sufficient number of qualified teachers, inadequate equipment to ensure the performance of related-students activities which are aimed at enhancing meaningful learning.*

From the afore-going, rather than achieve the general objectives of senior secondary physics curriculum, physics education at the senior secondary level is in coma, needing urgent revival or refocusing.

### **Refocusing Physics Education**

The hidden message conveyed in the acknowledgement that physics education is fraught with a host of challenges which have resulted in abysmal students performance at all levels of education, over the years, with attendant production of half-baked graduate by Nigerian Universities centre on the need to refocus (revamp, re-strategise, recreate and stabilize) the practice and delivery of education in Nigeria for sustainable development. Based on the analysis of the situation, the following strategies are advocated for teacher education in general, and physics education in particular.

- \* The quality of the existing teaching force must be improved primarily through extensive in-service training programme, incentive package being built into the programme.
- \* Better quality of teachers must be ensured through pre-service education of teachers by careful selection and training, effective induction, professional encouragement and adequate remuneration.
- \* Admission of candidates into physics education programme should be based on merit and interest, oral/written examination and interviews.
- \* Government should ensure that unqualified teachers who are already in the teaching field are sponsored to obtain the required qualification for proper functioning of teaching-learning process.
- \* Lecturers need to switch from the prevalence of lecture, the predominant method of instruction in the traditional classroom setting, to inquiry-based, constructivist methods (such as the guided discovery method), including online teaching, learning and research.
- \* Government should provide ICT training programme for teacher educators with incentive package. Unless teacher educators model effective use of technology, it will be impossible to produce a new generation of teachers to effectively deploy the new tool in the classroom. Thus, unless teacher education programme is redesigned to incorporate, in real terms, modern technologies of teaching/ learning, our education system stands the risk of churning out learners who are neither critical thinkers nor problems solvers, including those who cannot meet the challenge of rapidly technological society of the 21<sup>st</sup> century.

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