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PERSONNEL CRISIS IN THE IMPLEMENTATION OF UNIVERSAL BASIC EDUCATION (UBE) PROGRAMME: THE ROLE OF SCIENCE TECHNOLOGY ENGINEERING AND MATHEMATICS (STEM) EDUCATORS

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**Personnel Crisis in the Implementation of Universal Basic Education (UBE) Programme:
The Role of Science Technology Engineering and Mathematics (STEM) Educators.**

Abstract

Universal Basic Education (UBE) is an education programme adopted as a process of fulfilling the aim of Education for All (EFA) as endorsed at the world conference on education. The major objective is to wipe out illiteracy and ensure the acquisition of functional skills for alleviation of poverty. The programme as young as it is, is facing some challenges ranging from funds, inadequate planning and most importantly personnel to see to the effective implementation of the programme. This paper therefore looks at personnel crisis in the implementation of Universal Basic Education programme. It highlight on the UBE programme and its objectives. It also looked at personnel requirements for the implementation of the programme and the roles of STEM educators in the UBE programme. Certain recommendations were also mad among which are UBE teachers especially STEM teachers should be exposed and retrained on some new innovations in teaching learning. Government should provide adequate fund, and apart from funding the scheme, should ensure that credible persons are involved in the implementation process etc.

Introduction

Universal Basic Education (UBE) is a reformed programme in Nigeria's basic education delivery (from primary one, all through to junior secondary school class 3) and is to reinforce the implementation of the National Policy on Education (NPE) in order to provide greater access and ensure quality throughout the federation as it is free and compulsory (Adomeh, Arhedo and Aluede, 2009). Nigeria is adopting UBE as a process of fulfilling the aim of Education for All (EFA) as endorsed at the world conference on education. Basic education is made free and available to all and sundry, thus emphasizing free access, equity, efficiency, literacy, numeracy and lifelong skills for all. Therefore, UBE is being implemented in Nigeria as a lasting legacy for the eradication of illiteracy. To achieve this laudable goal, a 9-year continuous free and compulsory education was proposed for immediate implementation. Following the declaration by the federal government of Nigeria for the introduction of 9-year free and compulsory basic education structures, which cover the primary and junior secondary school, strategies have been put in place by the Nigerian Educational Research and Development Council (NERDC) to re-structure and re-align the school curriculum for the 9-year basic education (Obioma 2006). A total of 19 curricula have been produced to cover the junior primary (years 1-3), senior primary (year 4-6) and junior secondary school (JSS) years – 7-9). A major gain from this educational system is that the contents of the new curricula reflect both the emerging issues and national values. For a proper take off and possible sustenance of the UBE programme, educational departments such as Universal Basic Education Commission (UBEC) and Nigerian Educational Research and Development Council (NERDC) are making bold drives and commitments to human development and materials provision for the successful implementation of UBE in Nigeria. Nevertheless, experts argue that the UBE programme may collapse due to certain challenges facing it. These challenges include inadequate funding, poor infrastructure and most especially inadequate qualified teachers and other personnel for the implementation and sustenance of the programme. Lack of resources could manifest in the following ways: corruption, lack of infrastructure, inadequate qualified teachers, overcrowded classroom, and increased admission without corresponding increase in manpower and infrastructures needed to manage the programme. Even when other resources are made available, human resources to man the infrastructures as well as redress the 19 curricula posse a problem for the implementation and possible achievement of the objectives of UBE. This paper therefore looks at personnel problems facing the successful implementation of UBE programme.

The Universal Basic Education (UBE) Programme

Global changes in recent times call for innovations and reforms in the school curriculum. Nigeria, as well as other nations of the world, has been experiencing changes in the education system so as to meet the challenges of the Millennium Development Goals (MDGs). The issue is how to eradicate illiteracy by the year 2020. This is the hallmark of Universal Basic Education (UBE) (Mbachu in Olubadewo, Onwuka and Ajaegbo 2011). The Universal Basic Education

UBE according to FRN (2013), shall be of nine-year duration comprising six years of primary education and three years of junior secondary education. The programme was launched in September 1999, with the sole purpose of ensuring that illiteracy is reduced to its barest minimum among the adult population of Nigeria in the nearest future. In pursuance of this goal, the UBE programme aims at making education compulsory and free at the primary and junior secondary school levels. UBE is conceived to embrace formal education up to age 15, as well as adult and non-formal education including education of the marginalized groups within the Nigerian society and also out-of school youths. This is one of the cardinal programmes of the government, aimed at demonstrating its strong commitment to international policies geared towards the eradication of illiteracy in Africa. Through the UBE programme, the Nigeria government demonstrates a strong commitment to the Jomtien Declaration 1990 on the promotion of basic education for all as well as the New Delhi Declaration 1991, requiring stringent efforts by the E-9 countries (nine countries in the world with the largest concentration of illiterate adults) to drastically reduce illiteracy within the shortest possible time frame. It is also a demonstration of commitment to the Durban statement of commitment 1998 and Organization of African Unity (OAU) declaration of Education for Africa 1997-2006, which requires African states to generalize access to quality basic education as a foundation stone for sustainable socio-economic development. (Nigeria Federal Ministry of Education (2001).

Objective of UBE

The major objective of the programme is to wipe out illiteracy and ensure the acquisition of functional skills for alleviation of poverty. However, in order to correct the inadequacies of the UPE and lay a solid foundation for the promotion of basic education in Nigeria, the Universal Basic Education (UBE) came up with the following specific objectives.

- a. Development in the entire citizenry a strong consciousness for education and a strong commitment to its vigorous promotion.
- b. The provision of basic education for every Nigerian child of school age.
- c. Reducing drastically the incidence of dropout from the formal school system (through improved reliance, quality and efficiency).
- d. Catering for the learning needs of persons who, for one reason or another have had to interrupt their schools through appropriate forms of complementary approaches for the promotion of basic education.
- e. Ensuring the acquisition of the appropriate level of literacy, numeracy, manipulative and life-long learning.

In order to achieve the above mentioned objectives and indeed the UBE's vision and mission of the scheme, an Act tagged UBE Act was enacted on the 26th May, 2004. It was titled Act to provide for compulsory, free, Universal Basic Education and other related matters. Following the

enactment of the Act, the Universal Basic Education Commission (UBEC) was established. The Act provides three sources of funding for the implementation of the UBE. These are the federal government grant of not less than 2% of its consolidated revenue fund; funds or contributions in the form of federal guaranteed credits and local or international donor grants. Although this Act covers both the state and the local governments, the state government can only benefit from the federal government block grant meant for the implementation of the UBE if it can contribute at least 50% of the total cost of the project. This is to ensure the 'states' commitment towards the project. To ensure that the UBE project enjoys a wide coverage, the Act provides sanctions for parents who fail to send their children and wards to school. Also in order to ensure that poverty is not a hindrance to schooling, the project provides free textbooks in core subjects as well as abolishes tuition at the primary school and at the junior secondary school levels.

The new scheme has therefore, changed the education system from 6-3-3-4 to 9-3-4. It is expected that there shall be a smooth transition from the primary school (6 years) to junior secondary school (3 years). This also translates to no entrance examination into the junior secondary school.

Personnel Requirements for the Implementation of UBE

The UBE programme is planned in such a way as to embrace formal education up to age 15, as well as adult and non-formal education including education of the marginalized group within the Nigerian society. The plan is that the school child is provided with facilities and services which should enable a learner to learn without difficulties and distractions. This is in line with the programme being free and compulsory. These services apart from teaching and learning include school health programmes. The school health programmes are the procedures that contribute to the maintenance and improvement of the health of pupils and school personnel (Igwe, 1998). The school health program includes; health services, healthful living and health education.

In order to meet with the objectives of UBE, personnel to man these services as well as teaching and earning are required.

The personnels include.

Qualified teachers: Teachers are the largest and most crucial inputs of the educational system. Teachers translate theory into practice, hence the qualities and effectiveness of the UBE depends on the quality, efficiency and devotion of the teachers.

The Federal Ministry of Education (FRN) (2013) realized this hence it stated that no educational system can rise above the quality of the teachers.

Teachers, therefore, should be trained to enhance his qualities, competencies, efficiency and effectiveness. Specifically, the STEM teachers should be trained for the following reasons:

- To acquire enough knowledge and skills of the subject(s) he/she will teach.

- To acquire the qualities and competencies he needs to inspire and impart knowledge and skills to those he will teach i.e. to acquire the skills of pedagogy – the science of teaching. These qualities and competencies include:

- To acquire the knowledge of the prerequisites for learning as well as factors which affect learning.

b. Drawing up the scheme of work, lesson planning, lesson implementation and evaluation.

c. Formulation of instructional objectives, selection of contents and learning experience, selection and appropriate use of instructional materials.

iii. To equip him with the knowledge of the physical, intellectual, social and emotional characteristics of the child as these will influence his actions and other activities involved in teaching and learning process.

iv. To acquire knowledge and skills of preparation, improvisation and maintenance of other school equipment and facilities.

v. To acquire the knowledge and skills of ensuring good sanitation in the school.

vi. To acquire the knowledge and skills of classroom management and control.

vii. To acquire the knowledge and skills of guidance and counseling.

viii. To imbibe the code of conduct (ethics) of the teaching profession.

ix. To acquire self confidence and interest in teaching.

Other personnel required for the successful implementation of the UBE include the School Health Team. They are made up of:

i. School physician who is employed full time or part time to direct the school health service programme and advice the school on medical matters.

ii. School Nurse who is a registered nurse (RN) employed by the board of education or board of health to perform public health-nursing services for school children and to counsel with parents and teachers about the health problems of children of school age. In most instances, a public health nurse with graduate training preparation in education.

Others include:

iii. Health Educators

iv. Counselors

These staffs are to cater for the UBE objective which looks at catering for the learning needs of the school child.

Personnel Crises in the Implementation of UBE Programme

The UBE programme as young as it is, is facing some challenges both at the federal and state levels. The world over, ability to allocate enough funds, for a programme remains the greatest challenge that a programme can have. This is also the case with the funding of UBE in Nigeria. Between 1999, when the country returned to participatory democracy and 2009, the central government has spent more than 1.13 trillion on education sector alone, with little to show for such a huge expenditure (Onlanne, Waju and Folorunso, in Labo-Popoola, Bello and Atanda, 2009). The highest allocation so far was in 2008 when it allocated 13% which is below the UNESCO's threshold of 26% of the total budget. This type of allocation is certainly affecting the implementation of government policy on education and in particular the Universal Basic Education since its inception. This position has been well captured by Dike (2001) and Igbuzor (2006) in Labo-Popoola, Bello and Atanda (2009) when they observed that the government is in the habit of allocating less money to the education sector and consequently limits the successful implementation of the programme. Another major challenge is lack of proper planning as a result of faulty census. From the personnel requirement for the implementation of UBE, the situation as described above poses a serious challenge to the successful implementation of UBE programme. Proper planning and funds are very essential for the procurement, and sustenance of Personnel for the UBE programme. This has led to personnel crisis for this programme. The human resource development or recruitment of teachers and other personnel that would man the UBE programme may encounter some difficulties if urgent remedies as regards to funding and proper planning are not taken care of. This problem is most acute in the Science, Technology, Engineering and Mathematics (STEM) teachers. STEM education teachers are very few, therefore qualified human resources that will handle the tools, machines and materials as well as impart the practical skills, knowledge and attitudes to the pupils are not there for the UBE programme. From Federal Ministry of Education statistics on the number of registered children, it shows that Nigeria needs about 109,000 STEM teachers for the effective implementation of the programme, considering the ratio of 40 pupils to 1 teacher as recommended at the secondary and technical college level, but only 8,000 were available. This shortfall on the number of STEM educators will affect the teaching and quality of teaching in the UBE programme.

With the new national policy on Education (FRN) (2004), the Nigerian Certificate in Education (NCE) teachers are meant to teach the UBE programme. Specifically, the NCE STEM teachers are the group of teachers that will handle the pre-vocational subjects in the junior secondary schools. However, this group of teachers are not there. This may be as a result of improper training of teachers because most colleges of education lack facilities to train their science and technical students properly as a result of lack of fund in procuring these facilities and improper planning.

According to Aina in Odu (2011), only 5,000 of the total number needed were available. Indeed, Sofolahan in Odu (2011) also noted that during the 1984/85 school year, there was a need for approximately 190,000 qualified teachers in secondary schools in Nigeria. He added that apart

from the general dearth of qualified teachers, special problems were envisaged in specific subject areas. He noted that the most critical shortage of teachers was the pre-vocational training for which approximately 30,000 teachers were needed for the 1984/85 academic year. In recent times, the situation is not different. A survey report by NERDC of the state of demand and supply of STEM teachers nationwide indicated that about 270 representing 74% of total needed were not available.

The crucial issue about UBE is indeed how to provide the teeming number of teachers required for the school system. Efforts had been made by the federal government to tackle these personnel crisis when some group of individuals were sent to developed countries like Russia, Romania etc during the Universal Primary Education (UPE) programme to get some professional training but this did not help matters as most of these group of people never came back. Even those that came, went for other more profitable job instead of teaching because of inadequate funds in the education sector. Also in the bid to see to the problem of personnel, the National Teachers Institute at the instance of the Federal Ministry of Education established a pivotal teachers training programme designed for secondary school leavers who may have passed in at least 3-4 subjects in the SSCE. The candidates will undergo a professional training programme in a combination of face-to-face and distance learning methods for a period of fifteen months. There is a built-in system monitoring, specifically directed at ensuring that the training programme attains a high level of efficiency and quality. Products of the programme will be awarded the pivotal teachers' certificate. Some state ministries and NUT were skeptical about the viability of the programme because the quality of the entrants are said to be poor and the duration of the programme (which they understood it to mean only two weeks) was regarded as grossly inadequate. The idea of training teachers using the distance learning method was repulsive to many, particularly the NUT who were obviously not too familiar with the rigorous process that distance learning entails. These also have not brought a solution to the shortfalls in teachers. One of the objectives of the UBE is to cater for the drop-outs and out-of-school children;/adolescents. The number of children affected runs to about 10 million. There is no indication as to how the problem posed by these drop-outs will be tackled. If they are however to be catered for through the various forms of complementary approaches to the provision and promotion of basic education as indicated by the federal government, provision must be made for teachers who would be involved with their rehabilitation. However, figures from sources close to UBE headquarters indicate that there is a surplus of 38,296 teachers in fifteen states of the federation and a shortfall of 84,270 teachers from 21 states. Even if all the surplus teachers are deployed to states with shortfalls, there will still be a shortfall of 45,974 teachers in the affected states.

From the personnel requirements for UBE implementation, it shows that, other personnel like the school physician, school nurse, health educators, counselors etc are needed. These calibers of staff in their various fields are placed in special salary scales, which is not obtainable in the education sector. This group of staff definitely will not prefer to work in the education sector

with low income instead of the special salary scale. This has made the provision of this caliber of staff to be impossible.

Role of STEM Educators in UBE Programme

Science and technology is a weapon of change, progress and development for every nation. In Nigeria, the realization of the need for science and technology is crystallized in the pronouncements of the National Policy on Education (Federal Republic of Nigeria (FRN), (2013) and the National Policy on Science and Technology (Federal Ministry of Education (FME) 2001). The National Policy on Education stipulates the teaching of science, technology and mathematics at all levels of education, while the National Policy on Science and Technology envisages an educational system that shall emphasize science at all levels. This is in line with the objectives of the UBE in the eradication of illiteracy. To achieve these goals, the STEM educators have major roles to play in the proper implementation and sustenance of the UBE programme even though the most affected area in terms of personnel shortage is more on the STEM educators.

The roles of the STEM educators are as follows:

- i. Introduce every school child to major scientific concepts (life; matter, biosphere, solar system and universe).
- ii. Demonstrate the complex interactions between science, technology and society.
- iii. Make students aware of the ways which scientific knowledge is produced and developed.
- iv. Promote students understanding of nature of science.
- v. Instead of transmitting content knowledge in a rigid manner, the emphasis in teaching will be in designing situations and a variety of activities which enable students to learn actively. This is in line with the new UBE curriculum which is activity-based and learner centered. In this situation, the teacher needs to investigate what the students already know, identify possible misconceptions and design an appropriate educational setting. Teachers need to be able to respond to situations in their classroom they might not have anticipated (Kennedy in Madu, 2010).
- vi. Teachers should pay more attention to aspects of science they usually ignore, or do not feel very comfortable with, like those topics introduced from higher school curriculum to Basic level and the relevance of science to the society. The basic science curriculum is a spiral curriculum and STEM educators at this basic level should take cognizance of that. This can be done through attendance to workshops and conference to update their knowledge.
- vii. Teachers should teach science in a way which appeals to all students both from cognitive, psychomotor and affective perspectives and not just students with high abilities or high motivations for science.

viii. STEM educators should make a shift toward the teaching of inquiry skills which is definitely more complex than the traditional way of practical skills.

ix. STEM educators should also organize internal in service training among themselves to help in their professional growth especially in this era of inadequate funding of the education sector.

These roles of STEM educators, if well implemented will reduce the problem of personnel in terms of science teaching and will help in proper implementation of UBE programme in order to achieve the stated goals of UBE.

Recommendations

The following recommendations are made to help in control of problems of personnel in the implementation of UBE programme.

1. Government should provide adequate fund and apart from funding the scheme, should ensure that credible persons are involved in the implementation process. probity, transparency and accountability should be ensured.
2. Professional teachers should be made use of in teaching, especially in teaching of science, technology, engineering and mathematics (STEM) at all levels. This will enhance productivity. Ugwuda (2009) in Ugwuda (2011) suggested that STEM courses need trained teachers with skills and ingenuity to tackle the problem of unavailability of materials, equipment and other modern teaching aids in Nigerian schools. A qualified teacher in his area tries his best in providing the needed materials in his subject.
3. As a result of the increasing demand for qualified teachers, colleges of education should be adequately funded and staffed to produce enough competent science and technology education teachers and other teachers of the UBE programme to cater for the manpower needs of the curriculum.
4. UBE teachers especially STEM teachers should be exposed and retrained on some new innovations in teaching and learning to enhance their productivity in the classroom. This can be done by organizing workshops, seminars and symposia for teachers by the federal and state ministries of Education and other professional bodies.
5. Recruitment of teachers and other personnel should be based on merit and not on any sectarian consideration. This will enhance the presence of qualified and effective personnel for the programme.
6. Job remuneration and working conditions of UBE personnel especially the Basic science and Technology teachers should be improved in order to enhance the professional image of the teaching profession and other professions, thereby attracting intellectually more endowed persons to train as UBE teachers. UBE personnel should be regularly promoted as at when due just like other civil servants.

7. Adequate planning should be made to enable the procurement of adequate human and material resources for the programme.

Conclusion

Universal basic Education (UBE) is a reformed programme of the Federal Government of Nigeria aimed at reinforcing the implementation of the national policy on education. UBE covers both formal and informal education of children 3-14 years of age and out-of-school adults and youths. The UBE programme as young as it is, is facing some challenges both at the Federal and State levels. Some of the challenges include inadequate funding, improper planning etc. These have led to crisis in the personnel for the proper implementation of the programme. The most affected in terms of personnel are the science, technology, engineering and mathematics educators. It is required that STEM educators be given adequate training and retraining for them to meet up with their roles in the UBE implementation.

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