
IMPLEMENTING THE UNIVERSAL BASIC SCIENCE EDUCATION CURRICULUM FOR DEVELOPMENT IN NIGERIA BEYOND 2020

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Abstract

Nigeria accepted education as an instrument for national development and as a tool to enhance the formulation of ideas, their integration for and into society for rapid growth, as well as a devisor of all worthwhile interactions and ideas that are capable of fostering both individual and societal development. Education and development in Nigeria beyond 2020 at this time is still being seen as a mirage. In a bid to actualize vision 2020 through the Universal Basic Education (UBE) Basic science curriculum the paper advocates the implementation of the Universal Basic Education Curriculum to ensure the optimal attainment for sustainable development in Nigeria, it x-rayed the concept of UBE, Basic science and its curriculum, development, the relationship between UBE Basic science curriculum and development, challenges for effective implementation of the UBE curriculum, way forward as well made some recommendations that would help to actualize vision 2020 and beyond with the view of fostering development in Nigeria.

Key Words: *UBE, Basic Science, Curriculum, Development, Vision2020*

Nigeria accepted education as an instrument for national development and as a tool to enhance the formulation of ideas, their integration for and into society for rapid growth, as well as a devisor of all worthwhile interactions and ideas that are capable of fostering both individual and societal development. To ensure that quality interactions are engendered, Nigeria provided that every child shall have a right to equal educational

opportunities, and that educational effort would be geared towards functionality in terms of individual, group, and social aspirations and integration. (FRN, 2013).The overall philosophy of Nigeria as a nation is to:

- (a) Live in unity and harmony as one indivisible, indissoluble, democratic and sovereign nation founded on the principles of freedom, equality and justice;
- (b) Promote Inter-African Solidarity and world peace through understanding. (FRN, 2004:6).

The above philosophy can be described as a carefully thought out, future oriented belief position that is capable of developing a formidable, solid and harmoniously integrated society, poised to stand out as a leader of other nations. A further articulation of the main national goals of Nigeria leaves no one in doubt as to the nation's determination to live her philosophy through. The five main goals as outlined in the National Policy on Education (FRN, 2013) as necessary foundation for national survival, growth and development include the building of:

- (a) a free and democratic society
- (b) a just and egalitarian society
- (c) a united, strong and self reliant nation,
- (d) a great and dynamic economy;
- (e) a land full of bright opportunities for all citizens.

Universal Basic Education (UBE) is a free and compulsory education for all children from the age of six to fifteen years and literacy training for adults. In Nigeria, UBE programme was introduced in 1999 in fulfilment of the governments' signatory to a number of international declarations on education. This includes the Jomtien Declaration of Framework for Action on Basic Education .The UBE act was passed into law in the year 2004 (Tahir,2005). Tahir further explained that at the end of nine years of continuous education, every child should acquire appropriate level of literacy, numeracy, communication, manipulative and life skills, be employable, useful to him/her and the society by possessing relevant ethical, moral and civic values. Thus, the vision of UBE has taken care of all that it entails to bring development. The National Council on Education (NCE) at its meeting in Ibadan in December 2005 directed the Nigerian Educational Research and Development Council (NERDC) to carry out this assignment. The NCE also approved a new curriculum structure namely: Lower Basic Education Curriculum (Primary 1-3), Middle Basic Education Curriculum (Primary 4-6) and Upper Basic Education Curriculum (JSS 1-3) with subject listings (Obioma, 2007). Obioma further explained that a High-Level Policy Committee on Curriculum Development (HLPC) made up of critical stakeholders and coordinated by NERDC took the initiative to provide the guidelines for re – structuring the curriculum. Between January and March 2006, the NERDC convened a meeting of experts and also organized several workshops to produce the 9 – year Basic Education Curriculum, which will ensure continuity and flow of themes, topics and experiences from primary

to junior secondary school levels. In general, the curriculum pays particular attention to the achievement of the MDGs and the critical elements of NEEDS. If the vision of UBE is to bring about socio – economic development, as explained by Tahir (2005), the role of science and technology education in the UBE programme cannot be said to be over emphasized. The world – over, it is generally agreed that development could only be meaningful and the vision 2020 could be achieve if and when it is science and technology driven.

The word curriculum was derived from the Latin word “Curere”, which means to run a race. It is a race course, which implies that the moment a child starts school; the race begins and stops at the end of the child’s educational career. Curriculum in a formal setting can be seen as the planned learning experiences offered to the learner in the school. According to Okoye, (2013), curriculum is a programme which is made up of three components: programme of studies; programme of activities and programme of guidance. Curriculum implementation, according to Okoye (2013) “is a network of varying activities involved in translating curriculum designs into classroom activities and changing people’s attitudes” to accept and participate in these activities”. Okoye (2013) held that the final step into curriculum planning consists of implementing the curriculum in the classroom and continued monitoring, reflection, and evaluation to improve it.

Development on the other hand is the process of acquiring the knowledge, skills and attitudes needed to build local and global societies that are just, equitable and living within the environmental limits of our planet, both now and in the future. In other words for a country to sustain its development, various knowledge, skills and attitudes need to be acquired, the process of acquiring this knowledge is known as teaching and learning. Thus, teaching and learning cannot take place without planning a good curriculum that will bring about development to the society. (Akpokiniovo and Akpokiniovo,2015). In line with this context, the paper advocated the implementation of the Universal Basic Science Curriculum to ensure the optimal attainment for development in Nigeria. Thus, the paper critically delved into the concept of UBE and the basic science curriculum, the concept of development, the relationship between UBE Basic science curriculum and development, education and development, prospects and challenges to effective implementation of the UBE Basic science curriculum and as well made some recommendations that will help to foster development in Nigeria beyond 2020.

Education and Development in Nigeria

Education in a broad sense is a process by which an individual acquires the many physical and social capabilities demanded by the society in which he/she is born into to function. In an ideal sense, education is an ultimate value and hence, through the provision of social service, it is an agent of change. Development on the other hand, is a

progressive unfolding of the potentialities of a given reality. As it applies to human, it is the integration of the various giving, natural, physical, acquired and human of a people towards the full working out, permanently and curatively of their being, as persons of their nation and their real productivity Owojori and Iwarere (2011). The essence of education whether formal or informal is to produce a person who will be a useful member of a society, Thus, it must engender in the individual a disposition of personal autonomy, responsibility and relevant forms of life thought and action. The word relevant as used by her is the matter of cultivating individual interest and potentialities while autonomy stands for a person who is able to judge, act and think accurately as well as rationally (Nakpodia,2011). The pursuance of education toward national economic growth and development was the basis for U.P.E and the recent U.B.E programme. The expectation had been that opportunity should be offered to the learners at the lower levels of education in order to avoid talent wastage, which derives from ignorance or poverty of the parents and guardians of the beneficiaries.

Vision 2020 statement: By the year 2020 Nigeria will be one of the 20 largest economies in the world, able to consolidate its leadership role in Africa and establish itself as a significant player in the global economic and political arena (Umaru Musa Ya'Adua, 2008.)

The Concept of UBE

Basic Education means the type of education, in quality and content, that is given in the first level of education. This construct changes from country to country. Universal Basic Education Commission (UBEC, 2006) defined Universal Basic Education (UBE) as an educational reform programme of the Nigerian Government that provides free, compulsory and continuous 9- year education in two levels: 6 years of primary and 3 years of junior secondary education for all school-aged children. The Commission explained that the legal framework for the UBE programme is the UBE Act, 2004 signed into law in May 2004 by President Olusegun Obasanjo. This Act provides for compulsory, free universal basic education for all children of primary and junior secondary school age in the Federal Republic of Nigeria. It also stipulated penalties for parents who fail to comply with its provisions. Currently basic education is extended to include the three years of Junior Secondary School. Universal Basic Education (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. It is a policy reform measure of the Federal Government of Nigeria, that is in line with the state objectives of the 1999 constitution which states in section 18 that...

Government shall eradicate illiteracy; to this end, government shall as and when practicable provide a free and compulsory. Universal Primary Education, free secondary education, and free adult literacy programmes.

Overview of the Basic Science Curriculum

According to Hamza (2007), the 9 – year Basic Science and Technology Curriculum is the product of re – alignment and restructuring of the revised curricula for Primary Science and Junior Secondary School Integrated Science. In selecting the contents three major issues shaping the development of nations worldwide, and influencing the world of knowledge today were identified. These are globalization, Information and Communication Technology (ICT) and entrepreneurship education. The curriculum of the basic is unique in several aspects. This therefore calls for the preparedness of Science, Technology and Mathematics (STM) teachers towards the reform in STM education through basic science teaching in junior secondary schools. Basic Science properly evolved from Integrated Science. Some relevant themes in integrated science are still maintained in Basic Science curriculum. Integrated science is a science presented to the child such that the child gains the concept of the fundamental unity of science, the commonality of approach to problems of scientific nature and an understanding of the role and function of science in everyday life and the world in which they live (FRN, 2013). The desire of Nigeria to be identified with contemporary development worldwide, called for the infusion of relevant contents of four non – school curriculum innovations in the areas of;

- Environmental Education (EE).
- Drug Abuse Education (DAE)
- Population and Family Life Education (POP/FLE)
- Sexually Transmitted Infection (STI) including HIV/AIDS.

Infusion of content occurred in every class from basic 1 – 9 some introductory technology topics have been introduced at the Lower and Middle Levels, while leaving the Upper Level with purely science topics.

Objectives of the Curriculum

The overall objectives of the new Basic Science Curriculum outlined by Adeniyi (2007) are to enable the learners to:

- Develop interest in science and technology;
- Acquire basic skills in science and technology;
- Apply their scientific and technological knowledge and skills to meet societal needs;
- Take advantage of the numerous career opportunities offered by science and technology; and
- Become prepared for further studies in science and technology.

In order to achieve a holistic presentation of science and technology contents to learners, the thematic approach to content organization was adopted. Consequently,

four themes were used to cover knowledge, skills and attitudinal requirements. These are:

- You and Environment
- Living and Non-living Things
- You and Technology
- You and Energy.

At the Upper Basic Level however, theme “3” You and Technology was changed to “Science and Development”. The topics under each theme were sequenced in spiral from beginning with the simple to the complex across the 9 – year of Basic Education in order to sustain the interest of learners and promote meaningful learning. The use of guided inquiry method of teaching and learning is implied in the activities prescribed under each topic in order to promote learning by doing and skills development. The theme “Science and Development” was added to expose students to developments in science and technology alongside skills that will enable them to face challenges, make informed decisions, develop survival strategies, and learn to live effectively within the global community.

Relationship between Basic Science Curriculum and Development in Nigeria

The basic science curriculum which is in use in Nigeria for science teaching and learning in the junior secondary school had built-in strategies where the learners are required to be involved in inquiry and related activities that can develop critical thinking skills. Basic Science on the other hand is basic training in scientific skills required for human survival, sustainable development and societal transformation. Basic Science combines science and technology. The general goal of the curricular reform was to reflect depth, appropriateness and inter-relatedness of the curriculum contents. Emerging issues which covered value orientation, peace and dialogue including human right education, family life, HIV/AIDS education, entrepreneurial skills etc were infused into the 9-year Basic Education curricula. Additionally, the curricula planners agreed that major issues shaping national and global development such as globalization, information/communication technology were the rhetoric of Basic Education curricula. Basic Science curriculum contents are arranged in particular order of thematic and spiral pattern. Thematic arrangement means that the contents, principles, facts, concepts are organized in themes that is, broad themes and sub-themes taking into account the learners needs, interest and overall societal problems and demands in the present age of science and globalization.

In the area of environmental education, students are meant to study and understand the environment in which they live, in other to words, the development of the society is inter connected with man’s physical environments. According to Akpokiniovo *et al* (2015), The intention of UNESCO favorably support school

Implementing The Universal ...

disciplines such as Basic Science, in learning the values. UBEC (2008) pointed out that Government syllabi aim at assessing accommodates ability to recognize role as an informed citizen and his contribution towards the achievement of development. UBEC (2008) highlighted the aims of Environmental Education is to develop in the minds of the students' positive attitude towards the achievement of sustainable development national unity and nation building. Taking a close look at Drug Abuse, from its inception, if student have been informed about the danger of drug abuse earlier, the rate at which it brings havoc to nation will decrease. The Basic science curriculum inculcates the right values and norms of the society to foster development. In the area of population and family life education, Nigeria has an average population of 160 million with over 34% of this population that are jobless, if the right and value of the society is to be accomplished, then the objectives of Basic science must be achieved, in terms of planning the family life, students now have the opportunity to learn how to maintain a healthy family by taking necessary precaution that will bring development to the society. Thus, if the individual family is healthy, then development is sure.(UBEC, 2008). In the area Sexually transmitted infection HIV/AIDS, before now the rate of HIV/AIDS is really on the increase, however, with the introduction of condom and sex education, in the Basic science curriculum, students are now been exposed to the implication of these various infections, due to the introduction of condoms and sex education, these various infection has really decrease, which has in turn fostered development in Nigeria education.

Basic Science equally helps to bring information; action and international education. UNESCO (2000) stresses that education should include critical analysis of the adequate information and contemporary factors of an economic and political nature underlying the contradictions and tensions between countries together with the study of ways of overcoming these contradictions, which are the real impediments to understanding true international co-operation and the development in the area of quality education. Thus, if education and development is to be sustained, then the objectives of the Basic science curriculum need to be achieved.

Challenges to the Implementation of Basic Science Curriculum in regard to Development in Nigeria

According to Chukwuneke and Chikwene (2012), the basic science curriculum was introduced in response to the reform in education sector, that is the introduction of 9-year continuous basic education. Unfortunately, there are so many challenges facing the implementation of this curriculum and some of these challenges are as follows:

- i. The teacher factor
- ii. Inadequate funding of the programme
- iii. Inadequate classroom block
- iv. Inadequate instructional materials
- v. ill equipped library

- vi. ill equipped laboratories
- vii. Poor method of teaching.

The Teacher Factor: The six months training given to the UBE teachers at the take-off of this programme can never be adequate in equipping the teachers with the necessary competence, knowledge, and skills needed to meet up with the goals and objectives of this curriculum. Most of the teachers teaching the basic science are single science specialist and are completely ill equipped to handle this new curriculum in any way. In other words, the teachers who are implementers of the curriculum are not trained for the programme. Again is the issue of inadequate number of teachers. In most schools, teachers teaching this basic science are completely inadequate in number. A situation where only two teachers may be teaching basic science from JS1-3, which may have up to 10 streams per level, does not augur well. In this type of situation, the aim of the programme has been defeated.

Inadequate Funding: The Success of the entire programme largely depends on funding. With the present inadequate provision of funds, the implementation of the curriculum is just like chasing a mirage. There is no meaningful strategy for generating enough funds to ensure that facilities needed for the workability of the curriculum are supplied in significant quantity.

Inadequate Classroom Block: No meaningful learning takes place in an overcrowded classroom. That is why Oyesola, (2000) noted that the provision of classroom block plays a major role in the achievement of the set education goals. Science is activity oriented. What type of activity is expected to take place in a class of 70-80 students? So the fact remains that curriculum is never implemented at the classroom level but on paper.

Inadequate Instructional Materials: For successful science teaching, a science teacher requires instructional material to illustrate, emphasize and explain his lesson for easy comprehension and possible application to real life situation. Some of these materials include, chalk, chalk board, models, charts, teacher's guild, self-learning modules etc are grossly inadequate in schools. In many schools the teacher finds it difficult to get chalk to write on the board. UNESCO (2000),stated that instructional materials are very important in the actualization of the curriculum. So lack or inadequate provision of the instructional materials poses great threat to the implementation of the basic science curriculum.

Ill-Equipped Library: The provision of library services is very essential at any level of education, now that we have information boom and also to enhance the spirit of inquiry among students. It is therefore of great importance that library services should be provided for the UBE programme to enable the children to have access to learning

Implementing The Universal ...

materials and information that facilitates their learning process. Unfortunately, you find out that in most secondary schools, library exists only in name with outdated books and no modern library facilities exist. Where library exists at all, no one supervises to ensure that the children use the library effectively as to inculcate the habit of reading in the students.

Ill-Equipped Laboratories: Both the basic science laboratory and the computer laboratory where they exist at all are completely ill-equipped. Most equipment/materials needed for practical work are not available in schools. In a research carried out by Eya and Elechi, (2011), they reported that most equipment necessary for meaningful practical work on basic science are not available and where they are available, most basic science teachers do not know how to use them. In other words, they are under -utilized. This challenge also hinders the achievements of basic science goals and objectives.

Poor Method of Instruction: Oluwatayo (2013) process-oriented activities are not usually carried out in science class rooms in Nigeria. Shaibu and Mari(1999) in Adarika and Oluwatayo (2013), in reported that pupils are seldom confronted with first-hand concrete experience which could allow them perceive relationship, predict events and draw conclusion. The basic science curriculum specifies hands on process and skill acquisition.

Most basic science teachers use the conventional method of teaching which have been found to be deficient in enhancing learning and achieving the objectives of basic science curriculum. Basic science is the basic training in scientific skills required for human survival, sustainable development and societal transformation. Inquiry method is hardly used in teaching. Teachers rely mainly on lecture method of teaching due to lack of adequate equipment and materials for practical work and also as a result of the fact that most teachers do not know how to use the available equipment/materials for practical work. [Akpokiniovo and Akpokiniovo 2015] This is a very big challenge facing the implementation of basic science curriculum where students are required to enquire, invent, predict and control events.

The Way Forward

For the effective delivery of the UBE Basic science Curriculum to attain its noble objectives, the following are the way forward

- Due to the fact that no education system can rise above the quality of its teachers, Basic Science teachers should be given opportunity for in-service training to improve their professional expertise. The Basic science teachers are regarded as the most vital resource in the education industry and at such should be sponsored to seminars, workshops and conferences to be abreast with modern technology in

other for them to be innovative to bring development to the nation. (Akpokiniovo and Akpokiniovo 2015)

- The Basic science laboratories should be adequately equipped to enhance learner centred activities which involve the acquisition of scientific, technological and entrepreneurial skills in order for student to capture the major elements during teaching.
- Adequate library facilities should be provided in schools so as to help cultivate the habit of reading among students. There should be regular supervision of these students to ensure that they students use the library effectively well to facilitate their learning process and curb some social vices like examination malpractice, cultism as they hinder the development to the nation.
- Cultural and family-restraining, inhibiting conditions must be systemically broken down in school by exposing and encouraging both sexes to participate actively in all school activities.
- If the Nigerian educational system is to develop and compete favourably with advanced countries of the world, there is the need to monitor and evaluate each stage of the implementation process of UBE to ensure adequate utilization of funds in the provision of resources (human, material and infrastructure) as well as compliance with National Policy on Education as reflected in the UBE Act of 2004.

Conclusion /Policy Recommendations

The UBE, Basic Science curriculum in conception and disposition has the capability of developing the nation even beyond the vision 2020, if properly implemented. It will enable Nigerian teachers and learners and the entire society to adjust and adapt to such complex social, scientific and technological changes that would create a new Nigeria, capable of holding out in the emerging new world order. However, the political class has often paid lip service to education issues thereby putting the system in an unpleasant state. There is therefore the need for change of attitude on the part of the political leaders. The planning and funding of education requires the contribution of all if Nigeria must progress at this state of development beyond 2020. The need to catch up with the western world's level of development always remind the leaders that education has been expected to bring national development, but that certain problems have not allowed the expectation to be achieved.

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