

SCIENCE EDUCATION: A TOOL FOR EFFECTIVE IMPLEMENTATION OF THE UNIVERSAL BASIC EDUCATION (UBE) PROGRAMME

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Abstract

The importance of science for the effective implementation of the Universal Basic Education programme cannot be over emphasised. The paper discusses nature, goals and objectives of science at the primary and the Junior Secondary levels. The paper also gave the reasons for teaching science at both the primary and junior secondary school levels. A brief history of UPE was given. The paper focuses on the objectives of the UBE and how science can be effectively used to achieve them. Recommendations and conclusion for the effective implementation of UBE programme through the teaching of science were made at the end of the paper.

Introduction

Science is one of the most important subjects for effective implementation of the UBE programme. The UBE programme is designed for primary and junior secondary school pupils. The science that is taught in the primary school is called "Primary Science", while the science in the junior secondary school is referred to as "Integrated Science". Science at both the primary and junior secondary schools suffered serious set backs.

Some reasonable amount of work has been done and written on the nature of science (eg Abah, 1982), status of Primary Science (Aliyu, 1982; Yoloye 1982; Bajah 1982), the importance of science (Bajah, 1982), Primary science teaching (Aliyu, 1982; Ikoku, 1982), education and training of primary science teachers (Allison, 1982), primary science curriculum (Nwana 1992).

In the area of Integrated Science. Balogun (1982), identified some researchers and writers on the nature of Integrated Science (eg. Bajah (1978), Jegede 1979), Integrated science teaching (Olarewajju 1982) and education of the teachers of Integrated Science (Notably Mani, 1978), and problems of personnel for integrated science teaching (Okebukola and Adeniji, 1982).

Despite the efforts put by these learned persons, science education in Nigeria has never proven successful.

Nature of Science Under the Universal Basic Education (UBE) Programme

Science education in Nigeria is offered at all levels of the educational system from primary level of education to the university. At the primary school level the type of science taught to children between the ages of 6-11 years is referred to as "primary science", while at the Junior Secondary school forms 1-3. the science taught is referred to as "Integrated Science".

At the primary school science depends very heavily on the use of concrete materials (Asun. 1982). This is because the majority of the primary school children are at concrete operational stage of cognitive development. Children are made to observe, classify, collect data, weigh, measure and make inferences and so on.

At the Junior secondary school level, the science taught is more advanced than the primary science. Integrated science is taught in an integrated manner, no boundry between biology, chemistry and physics. Concepts such as energy, equilibrium are all found in biology, chemistry and physics, so an integrated science teacher can teach these concepts without being a specialist in three of the basic sciences.

Goals of Primary Science

The 1971 national workshop on the primary science curriculum stated that: "For the child, science should aim at three broad goals:

- (i) Providing intellectual growth;
- (i) Providing the capacity of self-directed growth;

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- (i) Promoting healthy, social interactions". (Federal Ministry of Education, 1979), in Jegede and Brown(1980).

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Objectives of Primary Science

Specifically primary science education should enable the Nigerian child to:

- (i) Observe and explore the environment;
- (i) Develop basic science process skills, including observing, manipulating, classifying, communicating, inferring, hypothesizing, interpreting data, and formulating models;
- (i) Develop a functional knowledge of science concepts and principles;
- (i) Explain simple natural phenomena;
- (i) Develop a scientific attitude including curiosity, critical reflection and objectivity;
- (i) Apply the skills and knowledge gained through science to solve every day problems in his environment;
- (i) Develop a functional awareness of and sensitivity to the orderliness and beauty in nature. (NPE, 1981).

Why Teach Science in the Primary and Junior Secondary School?

Ango (1982), identified the following as some of the reasons for teaching science at the primary school level:

- (i) We are in a scientific age when our lives, homes, works, interests, methods, media are all fascinating and enjoyable both to adults and their children;
- (i) People think scientifically and talk scientifically. In our expressions we use scientific terms.
- (i) The life of the child as a child has scientific learnings. As a child, he has interests which relates to science, therefore these should be developed from childhood. The child may grow up to be a future scientist therefore beginning early gives him ample opportunity to become proficient.
- (i) Disapproving of superstitious beliefs. Some superstitious beliefs are incidental happenings that correspond with actual events as pure work of change; but from the religious point of view many happenings if not all are acts allowed by God.
- (i) Development of scientific mind and scientific attitudes to problem solving helps a child to face life's issues. When science is postponed to later stages of the child's schooling or course, his natural traits like interest would have become almost obliterated and replaced with undesirable traits.

Further more, Jegede and Brown (1980), gave more reasons for teaching science in the primary schools, these are:

- (i) To replace expatriates who own multi-national firms and companies who handle big projects in the country.
- (i) To give a basic knowledge and understanding some of the innovations that are taking place around him;
- (i) To prepare the child to continue his studies in science in either secondary. Technical College or Teacher Training college, should he have the opportunity.
- (i) To prepare him for the labour market if he is not able to attend any post primary school.
- (i) To help in the achievement of national objectives.

Why Teach Integrated Science at the Junior Secondary School Level.

Integrated science is comprehensive in nature by teaching it at the junior secondary school level, the students will get the basic scientific principles:

- (i) To enable students continue their studies in science.
- (i) To unfold the natural potentials in the students.
- (i) To catch the young scientists.
- (i) To produce medical doctors, physicists, engineers in the area of electronics etc.

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To develop the country scientifically and technologically.

Historical Development of Universal Primary Education in Nigeria.

The Universal Primary Education, (UPE) was introduced by the Western Region under the leadership of Chief Obafemi Awolowo in 1955. The government of Eastern region followed suit in 1957. The government of the Northern Region engaged in mass adult literacy education. Shika (1999), lamented, "noble as these schemes were intended to be the outcome was disastrous in all the cases". The Universal Primary Education was re-introduced in September 1976 by the military government under the leadership of General Olusegun Obasanjo (Rtd). The Federal Government also experienced the same problems as it was in the Western and Western Regions of the country.

The problems include the following:

- I. Improper Planning-** Government did not make proper planning to cater for the high enrolment of pupils, shortage of qualified teachers and lack of infrastructure to accommodate pupils and staff.
- I. Funding:** Large sum of money is required to maintain the existing structures, build new ones, pay staff salaries and purchase teaching materials. All these were not provided for the successful implementation of the scheme.
- 1. Teachers Salary and Status.** Teachers were denied prompt and regular payment of salaries. Some of the primary school teachers were caught stealing due to lack of payment of salary for about three months. Teachers are like second class citizens in the country.
- /. Politising Primary Education:** Schools are not build in the correct location due to politics. Education secretaries, chairman and secretaries of primary school boards are not competent but are appointed to man the affairs of *education*.
- 1. Lack** of qualified and competent teachers: Teachers were recruited any how. Tom, Dick and Henry were found in the four corner of the wall teaching and cheating.
- 1. lack of Textbooks.** Textbooks were absent in most of the primary schools, teachers were left to teach what they think they can.
- 1. Poverty:** Some parents could not afford these things so they withdrew their children to farm and to hawking.

Universal Basic Education

The UBE programme was launched by the President of the Republic of Nigeria Olusegun Obasanjo in Sokoto on the 30th of September 1999. The scheme differs slightly from the UPE programme both in scope and objectives. The scope ranges from primary school to junior secondary school. Shika (1999), Birniwa (2000) all agree that UBE is a modification of UPE.

Objectives of the UBE Scheme

The objectives of the UBE programme are:-

1. Developing in the entire citizenry a strong consciousness for education and strong commitment to its vigorous promotion;
1. The provision of free, universal education for every Nigerian child of school going age;
1. Reducing drastically the incidence of drop out from the formal school system;
- I. Catering** for the learning needs of young persons who, for one reason or another, have had to interrupt their school through appropriate forms of complementary approach to the provision and promotion of basic education; and,
1. Ensuring the acquisition of the appropriate levels of literacy, numeric, manipulative, communicative, and life skills and as well as the ethical, moral and civic values for laying a solid foundation for life long learning. (Federal Republic of Nigeria, 2000).

Science for Effective Implementation of UBE Programme Recommendations

Science as most of the school subjects has a role to play in the implementation of the universal Basic Education (UBE) programme. Generally people talk of science as a difficult subjects. This is true when science is taught in the same way humanities are taught. The language of science is highly specialised, this is because it is foreign to the child and to the teacher. It has a foreign background.

For this reason, the paper recommends that:-

1. Indigenous authors should be encouraged to write textbooks using examples with local materials around us. Thanks to the Science Teachers Association of Nigeria STAN for publishing the Nigeria Integrated Science Project (NISP) pupils books 1 - 3 with teachers' copies.
1. Training of Science Teachers. The current training of the secondary drop outs into a pivotal programme will not help in the implementation of the UBE programme rather it will jeopardised it. Each of the states of the Federation should set up teacher training colleges for this purpose and teachers provided to train them for two years duration.
- I. Payment of teachers salaries. The salaries of science teachers should be paid on time so that they can teach very well.
 1. Status of science teachers be raised. Teachers in general are not accorded recognition in the society. The reason for this is that, teachers are not chanced to handle public funds, and loot.
 1. Appointments of chairman, secretaries, of the primary school management board, education secretaries of each local government, headmasters should be based on merit.
 1. There should be a very good conducive atmosphere for students/pupils learning. Teacher should make their lessons very well so that students at the junior secondary school do not run away from further study of science. Laboratories, chemicals, equipment and other materials must be provided for the effective implementation of the science education programme.
 1. Mass mobilisation campaign. The society should be informed of what UBE programme is and what it will bring to the society, the benefits.
- I. Poverty alleviation: Peasants and herdsmen prefer going for farming and rearing than going to school. This is because they depend solely on their agricultural products for their own survival. They cannot cater for their children's education so they see UBE as a waste.
 1. Provision of Jobs. There is need to provide job to those who complete their schooling. Graduating without jobs discourages science teaching and learning in the society. People go to school to obtain certificate not to further their education but to contest the post of councillorship, chairmanship etc.
 1. Finally, incentives in the form of cash should be given to science teachers to help cover up their health hazards. Some state governments e.g. Jigawa has already given to its teachers 25% of their salaries as incentive.
 1. There should be motor cycle, car loan, housing loans for science teachers so that they do not run away to greener pastures.

Conclusion

The success of the UBE can never be achieved without paying good attention to the teaching of science in both the primary and junior secondary schools. The government should realise that no educational reform can be effective without the agreement, support and co-operation of its teachers. The government should also realise that most of the problems of shortage of qualified and competent teachers are mostly found in the area of science teaching. Government should take time now to address the real issue and obstacles that prevent correct teaching of science for effective implementation of the UBE programme.

References

- Abah, C. O. (1982) The Nature of Science and Science Education: Some current Trends. *Journal of STAN* 20(20). 108-114.
- Aliyu, A. (1982), Science Teaching in Nigeria. *Journal of STAN* (20(2), 193 -200 Allison H. T. (1982). The Training of Primary School Science Teachers. *Journal of STAN*. 20(3). Ango, M. L. (1982), Making Science Enjoyable, Interesting and Fun to the Primary Child: A Preamble for Establishing Effective Foundation in a Radical Approach to Primary Science Teaching. *Proceedings of STAN held at University* 11-15 September 1983.
- Asun, P. (1982) Candles, Jars and Time: *Music or Primary School Science*". Proceedings of STAN Held at Akure, 23rd to 28th August 1982.
- Bajah, S. T. (1982), *Two Decades of Primary Science in Nigeria. A Critical Education*. Proceedings of STAN. Held at Akure, 23rd to 28th August, 1982.
- Balogun T. A. (1982) A Commentary on the Integrated Science Enterprise. *Journal of STAN* 16(2), 269-280.
- Birniwa, M. S. (2000), *The Future of Pre/primary Education in a Democratic Nigeria*. A paper presented at the 2nd National Conference held at Federal Colleges of Education, Katsina. Federal Republic of Nigeria Implementation Guidelines for UBE February (2000)
- Ikoku, C. (1982), *Primary School Science Materials: Problems and Prospects*. Proceedings of STAN Held at Akure, 23rd to 28th August 1982.
- Jegade O. J. (1978). Towards a Definition of Integrated Science in Nigeria *Journal of STAN* 16(2)234-240.
- Jegade O. J. and Brown (1980), *Primary Science Teaching*. Macmillan Nigeria Publishers Etd. Ilupeju Industrial Estate, Yaba, Lagos.
- Mani, T. C. (1978). The Education of Teachers of Integrated Science at the Ahmadu Bello University in Nigeria" *Journal of STAN* 16(2) 82 - 91.
- Nwana O. C. (1982), *Primary Science Curriculum. What it Should Be*. Proceedings of STAN. Held at Akure, 23rd to 28th August, 1982.
- Olarewaju, A. (1983). The Conception of Integrated Science by Pre-Service Science Teachers *Proceedings of STAN Held at Jos, September, 1983*.
- Shika A. M. (1999), An Assessment of the Development in Nigeria Primary Education with Special Reference to the Northern States. *Zaria Journal of Educational Studies* 3(1) September 1999. Yoloye, E. A. (1982), *Science Education in the Nigerian Primary Schools: A Need for a Radical Approach*. Proceedings of STAN. Held at Akure, 23rd to 28th August 1982.