

CONTEMPORARY ISSUES IN PRIMARY SCIENCE EDUCATION IN NIGERIA

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Abstract.

The vision and goal of primary science education in Nigeria has been enhancement of children's developmental and manipulative skills for attitude, and their forming of ideas about the world around them. Today, the goal and embodiment of primary science education are advancing and have become broadened raising some contemporary issues.-This paper seeks to raise and discuss three of such issues, viz, the goals of primary science education, the role of the teacher and the role of parents/guardians. Included are recommendations to facilitate attainment of the noble goals and roles, and hence to make primary science education effective in Nigeria and for Nigeria.

Introduction

Primary Science Education means elementary science which pupils at the primary school level are taught. The topics which are carefully selected from the three branches for pure science (Biology, Chemistry and Physics) are highly simplified for the pupils to digest. Its vision and goal have been enhancement of children's developmental and manipulative skills for attitude, and their forming of ideas about the world around them. Today, economic cum national development which is very much dependent on technological advancement has become a more surfacing goal of primary science education.

The new main goal of primary science education in Nigeria is sequel to Nigeria's urgent need for development in general, and technological and economic advancement in particular, like many other developing countries in the world. No wonder science education as stipulated by the National Policy on Education (FRN, 1981), is to equip students to live effectively in our modern age of science and technology. According to Oriafu (1997), "science has a transferable value to many other situations in life. It becomes alive when the learner is given the opportunity to experience science through active participation. Preparing the child early in life for this scientific and technological advancement becomes important". Thus, primary science education is the laying of an early foundation for knowledge essential for the understanding of more complex and abstract concepts & applications in science and life.

A focal point in primary science education is the development process (sometime called psychological development) of children. According to Maduewesi (2005), "human development is characterized by the inter-relationship between physical, emotional, social, spiritual, cultural and intellectual growth." The developmental psychology literature confirms that nearly all children follow the same developmental path and pass the same milestone along the way. However, different children travel different parts on this path at different speeds. The kinds of changes that take place and bring these differences about are circumscribed by both generic and environmental factors, particularly the kind of stimulation a child receives during the early formative years (Anthony, 2001).

Psychological development of the child is a multi-dimensional process with physical, cognitive, social, psychological and cultural facets. Different dimensions assume greater or lesser prominence at different stages of childhood development. Most basically, "the child needs to be psychologically fine to study science in this modern age of science and technology."¹ (Awake! 2005).

As children reach the age of about six, they enter a new stage of growth and development. Physical growth continues but at a slower pace, and then they are ready for formal education in a school setting. The primary school years which officially encompass the age range from six to eleven but are extended in practice to a much later age for many children in Nigeria, should provide children with a basic foundation in numerical, literal, basic life skills, and general knowledge that will help lay a basis for success in later life. As these children, develop the love and curiosity for learning early in life, the objective and direction of their education, the attitudes of teachers and parents/guardians become more surfacingly important. This point together with the child's right to education, growth and development, brings up the three contemporary issues we shall discuss, viz, the goals of primary science education, the role of the teacher, and the role of parents/guardians,

The Goals of Primary Science Education in Nigeria

Two important points underline the value of including science in primary education. The first is that whether we teach children science or not, they will be developing ideas about the world around them from their earliest years. If these ideas are based on casual observation, non investigated events and acceptance of "hear say", then they are likely to be non scientific, and just "every day" – ideas. The second point is about attitudes to the subject. There is evidence that attitudes to science seem to be formed earlier and children tend to have taken a definite position with regard to their liking of the subject by the age of eleven or twelve [Wynne (ed) 1985]. If the teaching of science with the-liking for science is not built in children on time, many find science confusing and difficult and perform – poorly in it. It is clear that primary science education can do much to avoid this crisis on time.

Thus, the fundamental goal of primary science education is twofold. Firstly, to enable-children begin to realize that useful ideas must fit into scientific evidence. Secondly, to enable – children less likely to form and to accept everyday ideas, which can be shown to be in direct conflict ;' with evidence and scientific concepts. This is to improve the situation in Nigeria whereby children r come to secondary school not merely lacking the scientific ideas they need but possessing alternative ideas, which are barriers in understanding their science lessons. Thus, the goal of primary science ' education in this respect includes to stimulate and prepare scholars in the science disciplines and to provide educational background required of individuals entering technology occupations or professions.

The last two decades (80s and 90s) have witnessed a convergence of a further ultimate goal of primary science education. It is to develop scientific attitude, acquire knowledge and understanding amid master certain skills amid active participation of the child in the teaching learning process. Primary science education aspires to begin for children when they realize that they can find things out for themselves by their own actions. The ideas they may have at the start of such actions may be changed as a result of what they do, what they see, and how they interpret what happens. So, the kind of science we are talking about concerns basic ideas, which can emerge from simple investigation of objects and materials around, as well as child-participative teaching learning process. Participation is the means to development as children and adolescents do not develop by being passive. According to Maduewesi (2005), "the condition for promoting effective participation includes the need to start as early in childhood as possible".

Primary science education aspires to fulfill and protect the child's right to education, growth and development as entrenched in the 1989 United Nations Convention on the Rights of the Child (UN-CRC). The UN-CRC 'recognizes that the particular status of children engenders specific forms of vulnerability, and particular interests and entitlements' (Otaala, 2004).

A very modern goal of primary science education is a timely enhancement of technological and economic development. The process of science provides a way of finding out information, testing ideas and seeking explanations. While the product of science arc ideas, which can be applied to understand new experience (Wynne et al, 1985) and improve the life of the society. As present Nigeria cries for scientific, technological and economic development, it becomes very imperative to start science education in early childhood stage. To say the least, the knowledge and skills needed by an individual in dealing with simple electrical, plumbing, furniture-making and human first aid may be cited as some of the justification for primary science education. Man's dependence on science for development needs not be over-emphasized.

It is interesting to note that the above goals have good bearing to the goal of primary education as stipulated by the National Policy on Education (NPE, 2004), paragraph 18, which states that the goals of primary education are to :-

- (a) inculcate permanent literacy and numeracy, and ability to communicate effectively;
- (b) lay a sound basis for scientific and reflective thinking;
- (c) give citizenship education as a basis for effective participation in and contribution to the life of the society;
- (d) mould the character and develop sound attitude and morals in the child;
- (e) develop in the child the ability to adapt to the child's changing environment;
- (f) give the child the opportunities for developing manipulative skills that will enable the child

- function effectively in the society within the limits of the child's capacity;
- (g) provide the child with basic tools for further educational advancement, including preparation for trades and crafts of the locality.

The Role of the Teacher

Without doubt, the teacher's job is not only a very high and dignified one, but also one of great responsibilities and far-reaching duties. The raw materials she is dealing with are the blossoms of the human race, and to a great extent the shaping of the destinies of the future generations of citizens is put into her hands (Maduewesi, 2005). The task of the teacher in bringing out the best science potentials in children is as important and broad as that of the parents.

The first task of the teacher is to understand that he/she is a facilitator and a motivator for learning. The teacher should not only create in children the desire to learn science successfully, but she should also provide appropriate materials for their learning. It is important that the teacher knows the children he/she is teaching as well as their home backgrounds. The teacher should

- Identify their strengths and weaknesses.
- Put the children in groups of abilities and interest.
- Study carefully the materials he is about to use for teaching (Elstgeest et al, 1985).
- Highlight the interesting points to motivate the children.

The greatest motivation for children is demonstration of interest and excitement by the teacher in the topic or subject in hand. When their curiosity is whipped up, they immediately want to know. Attractive books and other learning aids help to motivate the children. According to Imogre (2002), he categorizes teachers thus:

- The mediocre teachers 'tells'
- The good teacher 'explains'
- The superior 'demonstrates'
- The great teacher 'inspires'.

The teacher's role requires increasing personality characteristics. The personality characteristics of primary school teachers, according to Maduewesi (2005), "are expected to include activeness, empathy, as well as sympathy, initiative, self control, insight, vision, love of and concern for children, cheerfulness, fairness, sincerity, and firmness, as well as a keen interest in assisting others to learn, among others".

The teacher is the professional educationist charged with pedagogical and androgynous responsibilities of the learners. She is a catalyst who introduces concepts, ideas, information, and truths to the learner, and creates the actions that lead to the changes in inward and outward behaviour of a child. The teacher knows why, when, where and how the changing variables are initiated, emphasized, and used through listening, answering, corresponding, conversing, and interacting; as well as letting the learner to learn, to investigate and see for himself what is important (Symington et al 1985). In doing these, the teacher is also expected to respect the right of the child and to reassure parents that they are important in the learning of science by these children, so that there is mutual respect *of esprit de corps* such that they will work in cooperation to achieve the set noble goals.

The Role of Parents/Guardians

Parents are the grand stake-holders in the lives of children because the children belong to them in the first instance. Parents, father and mother in combination, constitute a formidable force for this role. Their role in this respect can be beautifully summed up as 'parenting the children for learning' (Maduewesi, 2005).

In law, parents are duty-bound to maintain and take care of their children until they reach the age of adulthood and when the children are properly educated. The immediate roles of the parents are to ensure that their children are brought to schools regularly and punctually, giving the children food to eat, providing books for them and writing materials to work with, looking after their physical fitness, and visiting the schools to know their teachers and check their performance in the curricular activities.

According to Awake! (2005), one of a parent's many functions is that of educator of his/her

children. A child's first word and her pattern of speech are usually learned from her parents. Thus, a person's first language is often referred to as his mother tongue. Since, the parents spend more time with their children each day it makes them chief teachers as well as principal disciplinarians of the children. Thus, the maxiran proverb "education is breast fed" honours the important role of mothers (Awake! 2005).

Parents can begin the above role in the learning of science by engaging their children in activities such as telling stories, discussing issues, questioning and answering, observing and experimenting, inquiring as well as encouraging them on responsibility-taking and to express their opinion on certain issues, According to Maduewesi (2005), "children of such parents, even where such parents are not school educated, go on to do well in school, and to be self confident adults able to chart their own progress and success"

It is the role of parents to make available a good part of their earned resources to be invested and committed into the education of their children at the primary school level. Since the rest of the education system is built upon it, the primary level is the key to the success or failure of the whole system (National Policy on Education, 2004). Parents must be so committed that they must hate any lapses in the execution of this educational programme. This confirms the popular saying that "education is the best legacy parent can give to their children"

In modern society, it is also the role and responsibility of parents to assist children to learn by enhancing the child's participation within the family, the school and the wider community, as well as respecting the child right to education, growth and development. By this, the child will be free from all forms of child labour. Thus, the role of parents/guardians in effecting primary science education is enormous and needs not be over-emphasized.

Recommendations

This paper presents the following recommendations:

- i. The goals of primary science educations in Nigeria in this millennium need be affirmed and made explicitly known to all stake-holders in order to actualize them optimally.
- ii. The teacher's working condition in Nigeria needs be improved, as "the teacher's working condition is the child learning condition" according to the Nigeria Unit of Teachers (NUT).
- iii. The preparation of primary school teachers should be qualitative and highly fine-tuned towards science education to optimize their ability and performance, as "no education can rise above the quality of its teachers" (National Policy on Education, 1981). Again, workshops, seminars and other in-service training activities should be organized for science teachers to update them on the pedagogical way of teaching primary science.
- iv. The science teacher should try and make use of information technology as well as other materials that are challenging, inspiring and appropriate. Improvisation of materials appeals so much to children and so should be embarked upon.
- v. Since a child's brain grows dramatically in size, structure, and function during the early years, both parents and teachers should make use of that advantage to build in the child a scientific attitude and interest. At this stage, attention and stimulation will change the child's future (Awake! 2005).
- vi. There is justification for parent education in order to adequately prepare the children for the learning of science. There is also need to put parenting programmes that assist children's learning in place. All these are to enhance the ability of parents to assist children to learn science and to cope, from the early period of their lives as it is in the developed world. "These programmes reach large numbers of people through existing community network at a relatively low cost" (UNICEF, 1999),
- vii. Parents and teachers should be awake to the child's right to education, growth and development. In this respect, they should support and facilitate all initiatives, programmes, schemes, policies etc that abound such as Charter on the Right of the child (CRC), Education For All (EFA), Millennium Development Goals (MDGs), New Partnership for Development (NEPAD), Early Childhood Development Network for

Africa (ECDNA), Universal Basic Education in Nigeria (USE) etc.

Conclusion

The central message of this paper is that as far as primary science education in Nigeria is concerned, its advancing goals need be explicit, as well as the roles of the teacher and parents/guardians. The recommendations given are to facilitate the attainment of the noble goals and roles and hence to make primary science education effective in Nigeria and for Nigeria.

The author strongly believes that if the recommendations given above are carefully considered and attended to, the goals of primary science education in Nigeria in this century will be far-reaching. The author implores everyone to help make primary science education effective as "education for all is the responsibility of all".

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