

CHILDHOOD QUESTIONS: AN IMPORTANT ADJUNCT FOR CURRICULUM DEVELOPMENT AND INSTRUCTION IN SCIENCE.

M. J. O. Madueke

ABSTRACT

Children are often very curious *and* eager to learn. The desire to learn makes them to ask questions. But when children ask questions, not many people attach much importance to issues or events that evoked the questions. The triviality with which the questions are treated by adults tend to create the impression that children have little or nothing to offer in matters concerning their education. But very often the questions raised by children touch on fundamental issues in science and technology. Therefore instead of ignoring them and their questions, efforts should be made to encourage them to ask questions. This is because they learn a lot through the answers given to the questions. Again, it is through the questions children ask that one can get an insight into what interests them. And in this way both the teacher and the curriculum planner will be able to organize the instruction and materials to suit the different age groups.

INTRODUCTION:

Children are probably the most interesting beings to watch. Their behaviours and actions are very intriguing particularly when they start to communicate in words. Hitherto they could convey their feelings and emotions by crying but as soon as they start to talk, they could express themselves in a more vivid manner for the adults understand them.

However, the power of expression in words does not seem to be the same in all children of the same age and sex. Some develop the skill faster and much earlier than others. Most children, however seem to use words that are intelligible at the age of two. It is at this stage that questions from children become more apparent.

EDUCATION IN THE HOME:

Children are generally eager to learn and the education of the child starts from the home. The home provides the right environment for proper and orderly development of the child, in the home, children learn about the world around them and they are curious to find out how things are made, what they are used for and why they are used at all. It is this curiosity that makes them to ask questions. (Egbegbedia 1993:73) Agbovia (1987:7) expressed the same view when he observed that "the pupil is a rational being, very active and inquisitive. He wants to know the 'how and why of things he hears about and experiences'".

Ideally, the home should provide answers and explanations to questions that agitate their minds. However* **an** ideal home may be difficult to find. But it is generally recognised that a good home environment, with loving parents and siblings, will normally provide a suitable atmosphere for the physical, social, psychological and emotional development of children. But a home devoid of care and affection for the child will not engender the right emotional state for the child to learn. A child who grows up in a permissive environment, for instance, is not likely to be as timid as one brought up under restrictive conditions. While the former is allowed to explore his environment and express his feelings freely, the latter goes about his exploration more cautiously. It is therefore not surprising to find some children very active and inquisitive while others are very timid and docile.

The tendency to ask questions is encouraged by adults, especially parents, when they show interest in what the child does. And to become interested means spending more time with the child. But how much time do we parents spend with our children not to talk of answering their questions? However, children who are lucky to enjoy their pastime with their parents often have the opportunity to learn through questioning. For instance, a 6 year old boy who asked his father: "Daddy, will my Mummy be my mother when I **am 7-years** old? And if I become a big man will she still be my mother?" will not be able to ask questions if the father was not around. On many occasions the questions are not planned but rather spontaneous, more or less bizarre but at the same time fundamental. The questions are as diverse as there are differences in age and sex. Consider these questions by some 5 - year olds:

- (i) From where do we get the language we speak? (ii) Why do we have capital letters but we don't have capital numbers? (iii) How do people come about Monday, Tuesday, Wednesday etc?
- (iv) Those people who are mad, who made them to be mad? It is God or they made themselves?
- (v) Why is it that in the church people tell us what God has said, do they hear what God says?

Present day children are steadily becoming aware of many things their parents were ignorant of. This is because modern gadgets for collection and dissemination of information are now within their reach and they will continue to raise questions on a number of things they see and hear. For instance, while watching television programme, a 6-year old boy asked his father the following questions.

- (i) Daddy, that bad thing (kissing) they do in the television, does it concern God? (ii) How did this man (newscaster) get all this news he is reading? Did he go every place? (iii) Why do some people wear eye-glasses? (iv) Why do people tie a rope across the mouth of a horse?

These and similar questions need to be answered and the answers or explanations given form part of the education the child receives at home. But certainly the home cannot provide all answers to all questions from the children hence the education of the child is a joint responsibility of both the home and school.

EDUCATION IN THE SCHOOL

We have noted the important role the home can play in the education of the child. But there are certain aspects of education which the school is better placed to handle than the home. This is in the area of science education. The school is better placed because it is an organised place for imparting knowledge in addition to inculcating in the child the right attitudes and skills. In other words, the school provides a good environment for cognitive, affective and psychomotor development of the child. The school is equipped to do this through an organised system of instruction and trained personnel. However, we have to note, as Ukeje (1966; 137) pointed out, the environment may be rich but unless the child enters into direct and sympathetic interaction with it, it will not help him. He therefore advised that the elementary school must strive to inculcate in every child the habit of curiosity, of searching and testing. A teaching-learning situation where the child is directly involved in meaningful activities and encouraged to develop scientific attitudes of careful observation, classifying, recording, experimenting, manipulating etc, will certainly enhance his curiosity and impel him to ask questions.

Many children are always eager to go to school while others are scared. There are many reasons for this, such as fear created by a hostile school environment as well as uninteresting school activities. For instance, a little 4-year old girl, Ada, came back from school and announced to her father: "Daddy, I will be happy every day", when the father wanted to know why, she replied, "because we have get a new teacher" Is it because he is a new teacher? The father asked The girl replied "Yes and he said he will not flog us". Probably their former teacher had not been very friendly and they feared him but the new teacher had assured them of love and safety. From this, it is certain that children avoid going to school because of the cane. On the contrary, there are other things that attract children to school. These include the physical layout of the school, the available learning facilities within and outside the classroom, the friendly interaction among the pupils and between the teacher and their pupils. Above all, the curriculum content and the classroom instruction seem to be the decisive factors in attracting children to school.

It is common knowledge that some pupils like some subjects and hate others. The curriculum content may be good and adequate for a particular academic level of a class but the instructional method may be defective and therefore lead to a dislike for the subject. The reverse could equally lead to the same negative result. For science in particular, many children have the wrong notion that the subject is difficult to learn but many of them learn science. And in fact, practise science in their daily activities.

THE NIGERIAN CHILD AND SCIENCE EDUCATION

Craig (1962:2) defines science as man's attempt to explore, to interpret and to operate with materials and forces of the universe that surround him. It seems therefore clear that the knowledge and practice of science and technology is not an exclusive right of any particular society or culture. Rather science is part of the universal culture, for human beings everywhere are continually busy exploring their environment, searching for means of exploiting the resources for useful purposes (Madueke 1992:3).

A careful observer of children at play will not fail to recognise and appreciate the scientific traits they display. The average, normal Nigerian child seems to have the potentialities of a scientist. The child's ability to explore, interpret and operate with materials around him is attested by the simple toys he constructs. These toys like kites, toy telephones, bicycles, cars etc. operate on scientific principles. What the child probably lacks is a conducive learning environment with the necessary incentives and motivation. It is the recognition of the potentialities of our children that informed the Federal Ministry of Education (FME) to draw up the Core Curriculum for Primary Science (CCPS) The document states that science education should enable the Nigerian child to: (i) Observe and explore the environment, (ii) Develop basic science process skills, including observing, manipulating, classifying, communicating, inferring,

hypothesizing, interpreting data and formulating models; (iii) Develop a functional knowledge of science concepts and principles; (iv) Explain simple natural phenomena;

(v) Develop a scientific attitude, including curiosity, critical reflection and objectivity; (vi) Apply the skills and knowledge gained through science to solving everyday problems in his environment; (vii) Develop self-confidence and self-reliance through problem-solving activities in science; (viii) Develop a functional awareness of and sensitivity to the orderliness and beauty in nature (FEM Lagos Nov.

1979:6)

The above are laudable and achievable objectives. However, the study of science at any level, calls for certain Pre-requisites in mental and attitudinal dispositions. The dispositions are acquired at pre-school and early school age by experiencing the physical world and also by interpreting the reactions of adults when children ask questions. Therefore when children come to school they should be encouraged to maintain the habit of asking questions which they had already formed in the home. The curriculum planner, particularly primary science curriculum, should take into account the science - related questions that children ask. As Ukeje (1966:137) puts it, "the elements of this science programme will then include such things that children normally ask questions about (because) science here is an attempt to guide the child to understand nature and his immediate environment".

Children ask questions because they want to know the cause(s) of events around them. They need to develop the concept of cause-effect relationships. Therefore their questions will make more meaning if the appropriate topics are included in their science programmes or courses. For instance, in Year One, the following topics were stated in the CCPS:

- (1) Exploring the environment.
- (2) Using the senses.
- (3) Modelling with clay
- (4) Simple properties of Air,
- (5) Identifying and classifying objects by their properties.
- (6) Water-its, uses, sinking and floating, playing with water, blowing bubbles.

The age of Year One pupils in Nigeria is about six because according to the National Policy on Education {Revised 1981) Primary Education is education given in an institution *for* children aged normally 6 to 11 (P. 12). However, from a collection of questions from children, age range 5-6, the following science and science-related questions were noted:

- (i) Does everything die?
- (iii) Bourn vita looks like sand, do they make it with sand?
- (iii) When birds like vultures are flying, do they enjoy it?

On aeroplane alone we have the following questions:

Is there a main road in the sky for aero planes to use?

Do people in the aeroplane buy and eat food there?

Is there a shop there, what of latrine? Does the pilot have his leg on the gear and his hands on the steering while going to toilet? Do people inside open the door?

Why does it appear small in the sky? What happens when two planes coming in opposite directions jam? If I am

flying my kite and the plane comes what will happen? When the "driver" goes into the cloud can he see and how? When I wave for it to stop can it stop? Can pilot stop the plane in the air? If people inside it start to feel cold what do they do? These questions certainly are concerned with life in the air.

Children are equally interested in life on land. For the same age group (5-6 years) they want to know:

- (i) When does the growth of a tree stop?
- (ii) Why does the tongue move when someone is talking?
- (iii) When somebody dies can he get up again?

Does he know that he is dead? But if he prays before he dies will he get up again? (iv) Why is it that the small piece of broken bottle from a bottle of coke sinks instead of floating?

Children's interests go beyond what is happening on land and air. They are interested in water too. For that, they would like to know:

- (i) If somebody flashes torch light in water while swimming, will he find his way in water? Will the fish be afraid?
- (ii) Will the blood in a person move when he is swimming? If the person hits his head on a stone while swimming, will the blood still flow?
- (iii) If one person is speaking to the other person inside water, can the other person hear?

From the above questions it is quite clear that 5-6 year olds are already poised for science education. What they want to know in science is dictated by the pattern of their questions.

For the Year Two pupils, that is, for the 7-year olds the CCPS has the following:

1. Using the senses
2. Further activities with water
3. Grouping by shape, size and colour
4. Ordering of objectives by comparing volume, weight and lengths.
5. Growing plants from seed
6. Air and wind
7. Making simple objects and figures using match box and clay.
8. Observing animals from the local environment.

In as much as these topics are appropriate we can further capture the interest of 7-year-olds by the questions they ask e.g.

- (1) Since a giant is too tall, if he continues to eat, will he continue to grow taller and taller?
- (2) When NEPA takes away its light and somebody puts on his generator, how does he know when NEPA brings back the light?

(iii) How do fish get their names? Are they given names because of their behaviour? (iv)

Does an elephant have milk?

The range or scope of children's questions increases with age. At a younger age (3-5) many of their questions would sound nonsensical and sometimes funny but as they get older their horizon widens and more serious questions are asked. Look at this example from a 9-year-old boy:

Son: Daddy, they say people can go to the moon. By what time do they go?

Father: They can go at any time.

Son: No, it must be at night when the moon is up.

Father: No, the moon is always present both day and night. The fact is that the sun's rays during the day do not allow us to see the moon. But when the sun sets in the evening then the moon can be seen

As the explanation was going on, the boy's younger sister, 8 years old, retorted: which one is cloud, which one is sky, which one is atmosphere, which one is heaven?

For the 10 year-olds, they are concerned with thunder, lightning and earthquake and they want answers to questions like: What is earthquake? What causes it? Has earthquake occurred since the beginning of the world? If it happens in Nigeria, can it affect the whole of Nigeria? What is the cause of thunder? If there is an earthquake in a place will an aeroplane flying across that place be pulled down? I think no scientist has gone to the sun, how do they know the distance between the earth and the sun?

As long as there are events, children will never stop asking questions. For instance, a 11-year old boy said to his mother: the other day when I wanted to put salt in the pot, some fell on the stove and the flame turned red, why? The mother looked at him, perplexed, and said, "when you go to school tomorrow, ask your teacher".

CONCLUSION

Children are very active human beings. They are curious, very inquisitive and they want to come to terms with their environment. Those qualities are the requirement for science education. Their views which they express through questioning should be recognised by incorporating their questions into their science programmes.

Though the classroom teacher may not be regarded as curriculum planner *per se* still he is a curriculum implementor or manipulator. He should use his unique position of being very close to the children and getting directly involved in their activities, to encourage them to open up their mind and ask questions. He should also develop keen interest in children and observe what they do to use their activities to buttress some scientific concepts and principles which may be difficult to understand.

There should be a channel of communication between the teachers of primary school science and curriculum experts especially curriculum organizations through which both parties would exchange ideas on science education at the primary school level. For instance, the children's habit of toy construction should be exploited by the curriculum planner in order to make the study of science more exciting, more meaningful and more rewarding.

REFERENCES

- Agboola, B. A (1987), "Instructional Strategies/materials for Arts/Social Studies" *Lecture delivered at the orientation Programme on primary education Studies at F.C.E., Kontagora* 26-30 April.
- Craig, G. S. (1962) *Science for Elementary School Teacher* Boston, Crim & Comp. P 2.
- Egbegbedia, A. E. (1993) "Historical Review of the content and Teaching of Primary Science in Nigeria" in *KONJE Vol. 2. No. 1 P. 73*.
- Kurd, P. D. (1970) "Elementary School Science for the 1970s in Baspeciives" in *Development in Elementary School Sciences: A Report on Seven Regional Conferences School Administrators Washington (AAAS)* Pp. 5-6.
- Madueke, M. J. O. (1992) "Instructional Strategies for Science" in *KONJE Vol. 1 No. 1 p. 3*.
- Ukeje, B. O. (1966) *Educational Administration* Fourth Edition KMC Publishers Co. Ltd. Enugu Nigerian.