

SAFETY EDUCATION FOR CHILDREN IN SCIENCE AND TECHNOLOGY FOR SELF RELIANCE

Gabriel T. Osobonye

Abstract

Virtually all accidents are traceable to the behaviour and actions of people. Thus, all safety effort is geared towards correcting the attitudes, beliefs, actions and behaviours of people that constitutes potential sources of danger in every work environment. This paper therefore, presents safety education as a means of formally introducing our children to acceptable safety practices through the school system. Introduction

A careful review of the goals of education at the primary and secondary levels of our educational system will reveal that there is an emphasis in science and technology for self-reliance. This no doubt is as a result of the important role science and technology is playing in the provision of goods and services for the comfort and welfare of the various-peoples of the world. Thus, children, who successfully go through the primary and secondary education are expected to acquire science and technological skills that will enable them engage meaningfully in some productive venture or provide technological services for their survival and development of society.

No doubt the process of acquiring the necessary science and technological skills and competencies for self reliance in the school setting, and even out of the school setting may require greater children participation in laboratory and workshop activities. This may bring them in contact with machines, materials, personnel, equipment, space and other elements, that may be put together to obtain a product. The handling of the complex processes of science and technology activities involving a combination of one or more of these elements requires great care, accuracy and efficiency" in order to prevent accidents and obtain good results (Ekpa, 1996).

Since these children are being prepared for a life-long education in the society, it is the view, of this paper that they be introduced early enough to safety practices through the science and technology curriculum of the primary school system. This will afford them the opportunity to start-early to cultivate positive safety attitudes and habits which will result in general reduction in accidents: in our homes, industries, roads and other environments which is one of the big challenges this country is facing today.

Primary Science, Technology and Safety

Modern science education curriculum emphasizes discovery-inquiry teaching of science. This method requires students to use their mental processes to mediate or discover some concept or principle, as well as perform some relatively sophisticated mental processes such as originate problems, formulate hypotheses, design, investigate, test ideas, carry out experiments etc. (Carin and" Sund, 1975). Activities and experiments are tremendous assets to a science lesson (Ebhojie, 1982) and develops children discovery-inquiry thinking abilities. The development of discovery-inquiring capabilities is better kindled in infancy so that it will evolve through childhood and mature at adulthood. Thus, a cursory look at the primary school science curriculum reveals an activity-based curriculum in line with modern trends. Students are expected in course 'of their science lesson activities to:

- Construct or improvise simple machines
- Play with certain toys or materials in flight or motion
- Make use of simple machines for various tasks.
- Perform various experiments involving the use of various liquids, gases (and in some cases chemicals).
- Apply heat to objects using naked flames or by other means etc.

According to Ebhojie (1982) "doing things can be fun; it can also be dangerous". The danger' lies in children being increasingly exposed to unsafe conditions as a result of unsafe acts or at-risk behaviours resulting from the various activities they engage in while doing science. Ebhojie (1982), Fadiran (1990), Ekpo (1992), Ntibi (2002), have identified some of the common accidents that are likely to occur in course of doing science and also proffered remedies or possible preventions.

However, this paper advocates for a comprehensive safety education for children in science and technology as a means of preventing accidents in school science and technology activities as well as the larger society.

Safety Education for Self-Reliance

Safety is concerned with every act and conduct we practice to prevent and pre-empt any occurrence that places us in danger or likelihood of causing injury to our person or environment (Ntibi, 2002). According to Fadiran (1990), "Operational hazards exist in all human endeavours — and there is no job that is danger-free". Unsafe habits, forgetfulness, carelessness, wrong use of equipment, application of wrong procedure, lack of knowledge of nature of chemicals and not knowing the rules are some of the root causes of unsafe act or at-risk behaviour which are the predisposing factors to unsafe conditions that causes accidents {Ekpo 1992, Ntibi 2002, Osobonye 2003}.

Osobonye (2004) pointed out that safe and unsafe acts are highly related to behaviour and actions of people and that virtually all accidents at home, roads, industries and laboratories are traceable to the behaviour and actions of people. Education is all about producing desirable change in habit, belief, attitude etc on the learner. Therefore, the school as an agent of social change and the environment where children participate in science and technology for self-reliance should play a very active role in preparing children towards high safety practices and consciousness in their quest for education for self-reliance.

Safety Education therefore, could be incorporated into the primary science and technology curriculum. This could be in the form of:-

Giving general safety talks on selected activities in the curriculum regularly.

Discussing safety requirements and procedure of all science and technology activities with the children as a condition for them to engage in such activities.

Making safety evaluation as part of the overall evaluation of primary science activities.

Spending at least 5 minutes of the class activity to correct at-risk behaviour of the children as well as reinforce (or commend) their safe work practices

The Science Teacher and Safety Education in Primary Schools

In the activity based science curriculum, the role of the science teacher is that of a facilitator. He, assigns science activities to students and supervises them at work. The science teacher is therefore, responsible for safety in the class environment, and ensures that children work according to safety instructions. This presupposes that the science teacher must have some knowledge of common dangers inherent in science and technology activities and the necessary precautions to prevent or limit the occurrence of these dangers as well as children limitations in experimental work

Besides preventing accident in the immediate classroom environment, safety education aims at preparing children who will grow up to become safety conscious and responsible adults in all their life activities. This requires therefore, that the teacher attaches importance to safety not only in all the planned science activities in the school, but also in other school activities. His commitment to safety could be demonstrated to the children by making an ongoing safety observations of children in their science and other school activities, encouraging safe work practices by commending those working safely and eliminating at-risk behaviour by taking immediate corrective action and talking with those-not working safely to realize the consequences of their action (Osobonye, 2003).

Conclusion

Human activities that constitute potential sources of danger cut across all spheres of human endeavours (Osobonye, 2003). Safety Education is seen as a formal approach to addressing the attitudes, beliefs, actions and behaviours of people that constitute potential sources of danger through the school system.

It is expected that the introduction of safety education in the primary schools through the primary science curriculum will lead to the development of safety conscious adults in our society in the near future. This will in turn impact positively on the efforts to reduce accidents on our roads, homes, industries, schools and other environments.

Reference

Carin A.A. and Sund R.B., (1975). *Teaching Science Through Discovery* A Bello & Howell Co, Columbus Ohio.

Ebhojic G.E.A., (1982) Correct Techniques with Standard Science Equipment and

- Materials (Including Safety,) *Journal of Science Teachers Association of Nigeria* 21 (1) pp 143-146
- Ekpa M.M.M., (1996). Physics and Industrial Safety: A *Cursory Look*, *Journal of Technology Education in Nigeria* 1 (1) pp 32-33.
- Ekpo J. (1992). Safety Education for the Senior Secondary School Chemistry *Student Journal of Science Teachers Association of Nigeria* 2 7 (2) pp 1 04- 1 09
- Fadiran A.O., (1990) Standard First-Aid Treatments and Precautions Against Common Laboratory Accidents *Journal of Science Teachers Association of Nigeria* 26 (2) pp 109-1 16.
- Ntibi J.E., (2002) *Every day Physics: An Introductory Text For Vocational Education Students* Joralf Books Ltd., Yaba Lagos.
- Osobonye G.T. (2003) Safety Standards in Laboratories and Technical Workshops in Tertiary Institutions in Nigeria: A Case Study of Federal College of Education (Tech.) Omoku. *Nigeria Journal of Education, Science and Technology* I (1) pp 2 1 -23 .
- Osobonye G.T., (2004) Introducing the Dupont 'STOP' Safety Observation System in Nigeria Secondary School Science Laboratories, in Okpaku P.O., Edegbai B. P, Fatokun F.A, Adeniji T.I-I, & Agholor S. (Eds). *Current Lwnex in Science, Health and Education*. School of Science Federal College of Education, Osiete Abokula.