

SCIENCE EDUCATION AND NATIONAL DEVELOPMENT

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Abstract

The role of science education in the march towards the development and modernization of any society cannot be ignored or underrated since science itself forms a component of the wall dividing poverty and prosperity. This paper attempted to examine view points in the interpretation of science, and science education. The paper argues that science education is composite in nature with elements that are advantageous in expedience and utility. Environmental needs for physical survival, economic needs and socio-cultural needs to which science education can address for the overall development of society are briefly highlighted. Science education must therefore give prominence to what can be considered as a 'triangle' of needs; the economic needs for modern living such as efficient communication, better clothing and adequate supply of energy. The paper concludes that education that cannot address these needs, be it scientific or otherwise is a luxury Nigeria can least afford at this stage of the nation's development.

Introduction

Perhaps it is worthwhile in discussing science education and national development to first of all attempt a definition of science and education. The definition of science varies from Scientist-to Scientist such as Conant (1951), that science is an organized body of knowledge, and this definition is in terms of its products. To others, such as Schwab and Brandwein (1966), it is a way of investigating about events in nature. Here the definition is in terms of its methods and processes. Therefore, science can be defined as both a body of knowledge and the method or process of acquiring knowledge.

Education, by its very nature, is regarded as an important instrument of change in any society. Developed and used rightly, it will make a better society. What then, is education and science education?

According to Imogie (1998), education is the cultural process by which successive generations of men take their place in history. Since it is generally agreed that acquired characteristics are not inherited, education assumes the full burden of bringing men up-to-date and creating the modern man.

Education according to Urevbu (1997) is a process by which a society generates the knowledge, necessary for its survival and sustenance and transmits this from one generation to another.

Aigbomian (2002) believes the proper meaning of education is drawing on the teacher, the learner and the global society...an instrument of desirable change and service to mankind in all respects. Education therefore is a social process which deals with harmonious development of all the abilities and faculties of man (lyobhebhe, 2003).

Science education has interpretations from several viewpoints: from the perspective of curriculum and instruction, it is an integration of science, technology and educational practices. The classroom viewpoint of science education limits it to the teaching and learning of science, technology and related subjects. The fundamental principle that will be examined in this paper is that science is pervasive and very useful to the development of any nation.

Science Education and Development in Nigeria

Science education can be a veritable medium to ideological and cultural reformation for possible progress, development and well-being in Nigeria.

As Oriaifor (1997) opines, science education is a nascent field of study which has width, depth and importance that are critical to development in Africa. Development is true and sustainable if the human and material resources of a community are properly harnessed among others, to promote

socio-economic growth, political stability with overall progress in the context of an enhanced standard of living.

Contemporary science has gone beyond the simplistic memorization and regurgitation of scientific facts and figures. What is being advocated today is that science which is firmly rooted in experimental methods that can be applied for growth and development. The recognition of science education as a basic requirement for social and economic progress has universal support since there is so much evidence to the relevance of science in our everyday life.

The destiny of Nigeria depends on the success that can be achieved in the application of science education to the solution of myriads of problems. Abubakar (1969: 193) had noted that science education in Nigeria ought to contribute to national development. National development according to Abubakar entails: "Producing more and better food to eat; healthier and happier individuals; better living accommodation; improved transportation and communication system; sound education and enlightenment among the populace and, generally more money floating around".

Thus, Teibo (1988) stressed that for national survival, Nigeria should be able to revolutionize industry and agriculture since these are the structures on which the economic mainstay of the nation must stand. Revolutionizing agriculture will enable Nigeria to feed her population of over 120 million at the moment and even be in a position to export finished products.

In the past five decades the more advanced nations of the West have generated at least 90% of all the knowledge known in the discipline of science education (Awokoya, 1976). These translated from the production of automobiles, aeroplanes, communication, satellites, computers radio, television and what is more, have even landed on the moon. Nigeria cannot afford to continue to be mere spectators of these stupendous achievements. No one can predict what scientific breakthrough will occur before 2010.

Contemporary Nigeria appears to be faced with a triangle of needs that must be addressed by the discipline of science education, which is composite in nature and rich in diversity with elements that are advantageous in expedience and utility. The needs are environmental needs for physical survival, the economic needs for modern living, and the socio-cultural needs of a society discarding the superstitious garb of old and emerging into a cosmopolitan world.

Needs of Physical Survival

The needs of physical survival dominate the activities of all animals including man. The ingredients of science necessary for physical survival are air, water and food. With food comes agriculture, the production of animal and plant food, processing of agricultural produce, storage and preparation of food. The discipline of science education cannot ignore these areas:

Needs of Economist Living

The requirements for living in a modern Nigeria call for a science and technological education. Goods will always be needed and they can either be produced or imported. If the needs of over 120 million Nigerians are imported now, the ports cannot cope with them. If the needs of the economy must be met, a rapid transformation of the pattern and emphasis of science education should be now. Science education will be most useful when tied to a strong agricultural, medical and technological care that responds directly to the needs of survival, economic living and socio-cultural advancement. Only under such an arrangement will science education fit naturally and appropriately into the scheme of things.

Needs of Socio-Cultural Development

It is science education that demarcates the developed and developing countries of the world. It is the type of education that dictates the master and servant of the world. The needs of socio-cultural development constitute one of the challenges of modern science learning if men of two worlds are not to be created. Science education has failed if the knowledge acquired from it cannot erase superstitious beliefs incompatible with scientific outlook. The socio-cultural needs of a society comes under the general name of entertainment. Science properly so called, cannot be fully relevant if it ignores the joys that brighten lives, and the music that moves minds.

Conclusion

Science education in Nigeria should be oriented towards eliminating what Combs (1985), had referred to as the "striking incongruity between the purposes of education and the reality of the.¹ economy which has been that schools stimulated the aspirations of many young people for a kind of-life and work they will never actually live". The reality of this assertion has never been as it is in today's Nigeria.

Nigeria is a country endowed with abundant mineral resources including fossil fuels. With the notable exception of fossil fuels, none of these resources is exploited to any appreciable extent. To be able to produce goods and services, the country must support and galvanize scientists into action. This paper concludes that the only sure way Nigeria can survive and develop, as a nation is massive investment in science education, since science is the primary base of industrial power. Indeed, this is Nigeria's finest hour when Universal Basic Education is to be made compulsory. Planning the future and making science education relevant is for this country a dire necessity if Nigeria must participate in the exhilarating adventure of scientific, information and technological age.

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