



Science Teachers'  
Association of Nigeria

48

ENRICHING SCIENCE, TECHNOLOGY AND MATHEMATICS  
EDUCATION



**41<sup>st</sup> ANNUAL  
CONFERENCE  
PROCEEDINGS  
2000**

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*Editor*



Published by the Science Teachers' Association of Nigeria

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## PAPER 27

### IMPROVING SOCIO-CULTURAL ASPECT OF CLASSROOM LEARNING ENVIRONMENT IN ENHANCING STUDENTS PERFORMANCE IN BIOLOGY

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#### Introduction

Criticism of biology teaching and learning at secondary school level has been widespread for many years due to poor performance of students each time the school certificate results is released (Ajewole, 1984). There is by now, general agreement on the need not only to achieve a much higher level of education in biology, but also to stress the importance of the relationship between biology education and Socio-cultural milieu. A survey of the science education literature indicates that a considerable amount of evidence abounds which suggests that teaching-learning environment of a school contributes a lot to the learning outcome variance of a school (Manor, 1987). This has necessitated the move among researchers towards the detailed study of classroom climate, which affect cognitive, affective and psycho-motor/practical skills outcome of students learning in science. Several classroom climate variables which relate positively to students achievement have been identified. These variables include task orientation, order and organisation, teacher support, instructional strategies, teacher control and innovation (Jegede & Okebukola, 1993; and Bybee 1977).

In spite of all these efforts, the socio-cultural aspect of the classroom environment has surprisingly not received the much needed attention it deserves from investigations. It is against this background that the study was conceived.

One major purpose of this paper therefore is to look at how the socio-cultural aspect of the classroom (learning) environment could be enriched to enhance student's achievement in biology. This is because the educational process, of which biology education is a subset, is a cultural and human activity, which deals with the transmission of the cultural heritage of the people. The educational process as Wilson (1981) points out does not take place in a cultural vacuum but in a cultural context since it uses the metaphors and images available to the learner and immediately appeals to the reserves of his mother tongue. There is also the realisation that the society itself is pluralistic and the response of biology teachers should be towards this pluralism if all children of differing races, colour, creed, political, geographic affiliation, socio-economic profile, ability level, and gender are to become scientifically literate. Although all teaching and learning of science have some common ground in all cultures, it is false to say all cultures learn science and scientific concepts in the same way. Several critical interactional variables come into play, and they relate to geographic, social, historical and worldviews of a particular society (D' Ambrosio, 1985). In recognition of the significant role of socio-cultural factors in biology classrooms therefore, there is the need to call attention to and encourage serious consideration of socio-cultural background of students which affect their learning and understanding of biology in a bid to improve on their achievement.

The questions that readily come to mind in this regard therefore are:

1. What are some of the socio-cultural factors that can affect the teaching and learning of biology in



school?

II. How can these socio-cultural factors be improved to enhance better achievement of biology? These and other related questions would be discussed in this paper.

### **Some Socio-cultural factors that can influence teaching and learning of biology**

As noted by Gallagher and Dawson (1984), Jegede and Okebukola, (1993), the values of youths are influenced by the cultural systems in which they are reared. This, is rightly observed by Gallagher and Dawson, can be counter scientific for a variety of reasons including the myths, superstitions, beliefs or worldviews held by a particular group of people. For instance, in the continent of Africa, day to day interactions and natural explanations of natural occurrences are governed by factors operating in the socio-cultural environment. The system of philosophical and religious beliefs which is rooted in the African Community is deeply rooted in causality, the role of a deity and the existence of socio-cultural beliefs, taboos and superstitions (Ogunniyi, 1988; Jegede & Okebukola, 1988; 1989; Jegede, 1989). These values and belief systems strongly influence attitudes, thought and behaviour and consequently the desire to study and learn biology by pupils, their understanding of it and their ability to apply it to both within and outside school (Jegede & Okebukola, 1993).

For instance, when biology was introduced to schools in the Nigeria by the colonial government, the Assistant Director of Education in the Northern provinces then, believed that its teaching could offend "Moslem susceptibilities" (Omolewa, 1977; 75), and when it was finally introduced, the first reaction of the people to the teaching of biology was that of hostility.

The Nigerian society of today is also beset by a myriad of problems which have direct effect on the achievement of students biology. These are those relating to food, shelter and security.

### **Enriching Socio-Cultural Learning Environment**

In his early work on Yoruba Lore Universe, Stone (1965) observes that pupils from a traditionally non-Western society came to school aware of beliefs and explanations of the external world which are at variance with those that they meet in biology. A lot of what happens in the environment are sacred to them. Sacredness of biology has to do with the general conception of the structure and nature of biology. This is a pervasive view held by a large proportion of the traditional society in which the study of biology is regarded as something special requiring magical or weird explanation. For instance it is in the culture of some ethnic groups in Nigeria that pregnant women should not eat snakes because the offspring's will either have scales all over their bodies or the offspring will take a long period of time to crawl. Some communities hold the pervasive view that all events in nature from the growth of a seedling to the harvest of crops are strictly controlled by gods, a god being specific for an event.

To some traditionalists the poor performance of a child in school, lack of rain, attack of small pox, malaria, diarrhea attack express the mood of some god, to them any other explanation is scornful. It is also the belief in some circles that improved productivity does not depend solely on the use of fertilizer and other artificial agents but on the activities of the agents of a supreme God (symbolized by animate and inanimates e.g. trees, mammals and birds, rock, water etc). These agents are consulted and appeased by way of sacrifices. Not only do the underlying assumptions differ but so do values and attitudes towards the world. These factors, Stone suggests, can affect students learning of biology in so far as they are related to difficulties in understanding or affect attitude to learning. It is therefore necessary for the biology teachers to be very knowledgeable in the subject to teach the students on how to disabuse their minds from the superstitious beliefs.

Secondly, there is the need to develop suitable ways of teaching biology in African schools. The new ways of teaching should take into consideration not only the students pre-school background, but also the realities of African school laboratories as well as the students post-school environment (Ureubu, 1984). At present, it seems that most schools in African teach too many things too fast—often from the syllabus set long ago on external models and perpetuated by the requirement that all official examinations be based on these. There is the need to be more discriminating with regard to subject matter and to teach fewer topics better. Furthermore, curricula, methodology and teaching materials should as far as possible be drawn directly from the life of the community and from the environment. This is an enormous task, according to Ureubu, which is complicated by the fact that many aspects of traditional African life

have "counter-scientific" undertones.

It is also to be noted that authoritarianism is part of our culture in which case, the biology teacher knows all solutions to biological/scientific problems through indoctrination and the use of lecture/expository methods. The traditional society holds the notion that supernatural forces do have significant roles to play in daily occurrences. The younger members of the traditional society are supposed to grow up to learn and believe these without questioning. It is therefore necessary for biology teachers to encourage students to freely express their mind during biology lessons, be expected to question the biology teacher on what they do not understand, and they should initiate talk during biology lessons.

In Nigeria, there exists a chronic shortage of teaching materials. In this circumstance, the use of audio-visual media might seem to be the answer. It may even be that computers might facilitate instruction.

Moreover, because audio-visual media must be imported from overseas, they tend to prolong the dependence on external sources and to undermine local attempts at improvisation of biology materials reflecting the cultural background of the learner. Efforts should be made to produce teaching materials locally, though initially inefficient according to Ureybu (1984), represent a better approach on the long run.

### Conclusion and Implication

This paper has looked at the socio-cultural climate of the learning environment and discussed how authoritarianism, goal structure, traditional (African) worldview, societal expectations and sacredness of biology exert a lot of influence on students achievement in biology and how these socio-cultural factors can be improved to enhance better achievement of students in biology.

The implications of this paper are that:

1. Biology teachers must be aware that student's import into the Class, socio-cultural variables which have serious pedagogical and conceptual impact on new biology information presented. Teaching the learner, according to Jegede & Okebukola (1993), in a climate that fosters the construction of new biology knowledge based on previously constructed socio-cultural framework would be advantageous and enhance students better performance.
2. Curriculum development must take into account relationship between what should be learned and what the societal structure is like.
3. Curriculum development for traditional societies begin with and the worldviews of the learners.

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