

SCIENCE CONCEPTS AND CULTURAL BELIEFS CONFLICT: IMPLICATION FOR A VIRILE SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT.

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Abstract

The struggle for scientific recognition world wide has triggered serious awakening to increase the manpower needs of this sector. This is in the realisation that a nation is rated on the basis of her scientific and technological advancement.

This paper attempted to look at Nigeria's impediments in science learning in the area of our cultural beliefs and values. Suggestions on how to acquire scientific attitude, values, behaviour and skills by modifying unexplainable beliefs and values were made.

Background

The place of science and technology in any nation's economic, social and political development can not be over stressed. The aggressive move towards technological advancement by countries world wide have been remarkable since Russia in October, 1957 launched the first artificial satellite (Sputnik 1) into space. The challenging break through has led to serious curricular reforms especially in the sciences by many nations in an attempt to fit into the scientific and technological age (Okafor, 1986).

This situation has led to the re-examination and evaluation of the entire science education programme in schools in the western world especially United States of America, Britain and other European countries. The situation also brought about an awakening or consciousness of African countries to the role Of science in their national development.

It is in realization of the need for scientific re-awakening that the Federal Republic of Nigeria in her National Policy on Education (1985 revised p. 16) stated that "A greater proportion of education expenditure will be devoted to science and technology" and further stressed that: Universities and other levels of the education system will be required to pay greater attention to the development of scientific orientation..,

The ratio of science to liberal arts students in our Universities has been fixed at 60:40 during this plan period. This ratio will continue to be reviewed in accordance with the manpower needs of the country (39,2).

Paradoxically however, the enrolment in the sciences has been found to be grossly inadequate to meet up the manpower need of the nation. The problem is further compounded by the alarming rate at which students continue to perform poorly in science subjects in public examinations (Aremu, 1997 & Egbegbedia, 1998).

The incessant poor performance has been of concern to many educators, teachers, counselors and governments in this society. As a result, several factors have been identified as the causes of poor performance. These include inadequate quality science teachers, students' negative attitude, poor science equipment, poor laboratory facilities, low self-concept, lack of interest and poor study habit to mention a few. However, this paper focuses on our cultural ambivalent beliefs and values that may run counter to scientific reasoning and explanations.

Cultural Beliefs

It is a known fact that a child's education should not alienate him/her from his culture. For instance, the National Policy on Education (1985, revised, p. 10) stated that a child's education should "develop and project Nigerian culture, art, and languages as well as the world's cultural heritage". A Nigerian child fresh from home in the primary school is filled with a number of culturally 'givings'. More so it is known that culture has to do among other things with their beliefs, values and life style. But, there are some cultural beliefs and values that can not be given scientific explanation because of their irrationality/illogicality. Meanwhile, a Nigerian child should be equipped to live effectively in our modern age of science and technology.

According to Jahoda (1970), superstitious beliefs could be an inhibition of desirable actions, analytic perception and rational thinking. In the same manner, Lambo (1978) cited in Agaja (1991) posited that such individual beliefs to the Western culture are rather antiquated and may be harmful to advancement/development. But to the Africans, such beliefs are attached salient meanings, considered sacred and strictly adhered to unquestioned.

In most African cultures, much is attributed to external control which relate to supernatural forces. As such, an individual would feel that he/she has no control over both negative and positive consequences of the events of his/her life, and as such feels him/herself less a master of his/her fate.

Cultural beliefs in Nigeria are known to be inculcated at an early age within the immediate family circle and the community in which the child is brought up. Lambo (1978) being overwhelmed about the perpetuated beliefs in magic and ritual in Nigerian culture, conducted a survey study with 1300 elementary school children over a four year span. Findings revealed that 859 of the children upheld that they used parapower like incantations, charms magic and others to help pass examination or fight evil. In a similar report based on African students in British Universities. Lambo's respondents subscribed to the believe that their emotional problems had origin in or were influenced by charms and diabolical activities of other students or people at home.

Different cultures in Nigeria have divergent and unexplainable conception of beliefs that tend to guide the activities, thinking and behaviour of her members. For instance, that it is catastrophic to kill a duck with a vehicle, pointing finger at a rainbow, using a mirror at night, lying on bed with face up, collecting rain water with hand and spitting on a pathway. Also, beliefs in witchcraft, magic and predestination are very strong and in some instances reflected in songs, proverbs adages, stories and folklore.

Beliefs in most Nigerian cultures are so fine-tuned and dogmatically handed down from one generation to the other unquestioned. The rigidity and mode of presentation of some of the taboos/beliefs make it difficult for the young ones to question or source for explanations. For instance, some forms of illnesses, diseases, accidents/deaths are commonly attributed to unseen forces of the enemies/gods. In a typical culture especially in the rural settings, a common malaria fever (scientifically caused by mosquito bite) may be attributed to a completely unseen external cause (witchcraft).

At times in schools, rather than considering the intervening variables such as ability, effort, interest and personality construct to mention a few, a Nigerian child may attribute lack of success to the forces of hatred, a magical machination of their enemies and to the interventions of gods and ghosts (Lambo 1978). A trend like this if not nipped early may lead to poor scientific conception, perception, reasoning, interest and performance.

Importance Of Values In Science Learning

According to Agaja (1991) the act of valuing involves classifying objects or actions as 'good' or "bad". Values are not necessarily goals except in long term sense but they do provide the criteria upon which goals are chosen. Values are not attitudes but they provide the pre-dispositions toward attitudes.

Nwosu (1978) opined that the experiences- acquired from learning by an individual determine his/her values and value orientation. This therefore points to the need to incorporate or design curriculum for teaching values rather than emphasizing on the development of knowledge and intellectual abilities.

There are in any case different schools of thought as to the position of value in the education process. Nwosu identified three schools of thought; first, the position that the school cannot and should not seriously involve itself in value education and the learning of values is at best incidental and secondary to the learning of intellectual abilities. The second school of thought however posited that, education can and should be deeply involved in the education of values. A third school of thought opines that the function of the school in value education is not primarily to train students in value commitment but made to educate students in value processes including value reasoning, value inquiring and realistic decision making.

But whatever way it is taken, the fact is that values are culture bound hence the child rearing experience has a lot of influence in the values acquired and orientation of the child. Hence, our society which emphasis on keeping alive its cultural heritage should have focus on those aspects

that can enhance scientific thinking, reasoning and behaviour. For instance, Maduewesi's (1983) study on children's curiosity reported that cultural actors often reinforce parental ignorance about value of encouraging. According to this author, the typically curious Nigerian child reacts positively to a new/strange situation or phenomena by focussing attention on and exploring/manipulating it.

Suffice to say therefore, that value education and re-orientation is needed to imbibe scientific knowledge, behaviour, attitude and skills that can enhance scientific and technological development in tune with the global science age.

Suggestions

For the nation to achieve the desired objectives, science teaching should be done to enhance the development of reasoning behaviour in learners rather than a dogmatic and unquestioned obsolete idea. This will enable recipients to acquire an intrinsic judgement of situations and disseminate a factual information about events as they occur.

There is the need for the modification of attitude, beliefs and values through the use of psychological approaches such as relearning by shaping, reinforcement of approximation to the desired behaviour, restructuring of pupils' cognition acquired during pre-school home experience. The use a cognitive disputing of irrational/illogical beliefs could be employed. A successful early modification will improve rational scientific thoughts, reasoning and explanation of concepts.

Elementary school teachers should be re-trained in modern science teaching approaches, which can better prepare the learners for later interest in core science subjects and science careers. Teaching in realness at this level will further assist in nullifying learners' ideas about events or situations occurring around them that are given unscientific meanings.

Sorting out relevant cultural beliefs that can be used to the advantage of the child is the responsibility of the teacher. This can be done if the teacher is equipped with some guidance skills that can simply be employed during the routine classroom teaching.

Conclusion

The world all over is clamouring for scientific and technological inventions/innovations as a basis for development. Our society does not exist in isolation, hence we are caught in the struggle. It is therefore imperative that what is taught, how it is taught and how much is acquired by the learners should be of concern. A properly planned science programme taking cognizance of the divergent culture vis-a-vis our goals and objectives will assist in the inculcation of the desired knowledge, attitude, values, beliefs and science behaviour.

It is uneconomical, undermining of reputation/image and retrogressive for the nation to continue to be at the mercy of foreign experts in the manning of our installations. Potentials can be identified and nurtured to meet up our needs.

References

- Agaja, A.M. (1991). *Relationship Between Superstitious Beliefs and Perceived Locus of Control of Students in Yagba Local Government Area*. Unpublished M. Ed. Thesis, University of Morin, Morin.
- Aremu, O. D. (1997). *Effects of Two Group Counseling Approaches on Self-Concept, Locus of Control and Attitude of Selected Adolescents Toward Science*. Unpublished Ph. D. thesis, University of Morin, Morin.
- Egbegbedia, A. E. (1998). *Effective Science Education for National Development: The Challenges of the Next Millennium*. A National conference paper at F. C. E. Kontagora from 21st - 25th September.
- Federal Republic of Nigeria (1985, revised). *National Policy on Education*. Lagos: FME information section.

Jalioda, G. (1970). Supernatural Beliefs and Changing Cognitive Structures Among Ghanaian University Students. *Journal of Cross Cultural Psychology*, 1, 115-130.

Lambo, T.A. (1978). Psychotherapy in Africa. In A. M. Agaja (Ed) *Relationship between Superstitious Beliefs and Perceived Locus of Control of Students in Yagba Local Government Area*. Unpublished M.Ed thesis, University of Ilorin, Ilorin.

Maduewesi, O. (1983). *A handbook of Social Psychology*. New York: Deacon Mouse.

Nwosu, S.U. (1978). *Educating for Values*. University of Lagos inaugural Lecture Series.

Okafor, F.C. (1986). *Philosophy of Education and Third World Perspective 3rd Ed.* Enugu: Star Pub Co.