

TEACHING GEOGRAPHY TO VISUALLY IMPAIRED STUDENTS IN NIGERIAN SECONDARY SCHOOLS: ISSUES FOR CONSIDERATION

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Abstract:

This paper attempts to examine the possible issues that should be taken into consideration while carrying out classroom pedagogy in the teaching of geography to visually impaired secondary school students in Nigeria in the wake of the education reform agenda. Taking cognizance of the effect of visual impairment on this category of special needs children, the paper attempts to identify some of their educational needs, cost implications, basic concepts and components as they may affect the visually impaired as well as attempt to identify problems that could interfere with the teaching of geography to the visually impaired. Furthermore, the paper attempts to take a close look at the classroom pedagogic issues that may relate to the teaching of the subject to visually impaired students with particular reference to supervision, administration and funding as well as proffer useful recommendations and suggestions on the best way to effectively teach geography to visually impaired students in Nigerian secondary schools.

Introduction:

Science and technology is believed to constitute the sub-structure of economic development and ultimately, political power and influence. According to Ayoku (1998), every nation strives for economic development and self sufficiency in order to wield political power and ultimately, influence other nations. The sub-structure of economic development that science and technology spear head promotes employment generation and facilitates self employment of many citizens directly or indirectly.

In Nigeria today, emphasis is laid on the study and application of science and technology at each level of our educational system mainly because of the

positive role of science especially in creation of jobs. This makes the participation of the visually impaired more of an inevitability rather than a desideratum (Ayoku, 1998) if they are to widen their horizon for job creation and employment. As pointed out by Abang (1992), knowledge of the nature and power of science is necessary for educated men and women, including the visually impaired, to live intelligently in the modern world. In the light of this, there is no doubt that visually impaired children have no other means of exploring their environment except through the teaching of the sciences (Dashe, 2003).

It is against this background that this paper attempts to examine the possible issues that should be taken into consideration while carrying out classroom pedagogy in the teaching of geography, which is a branch of the sciences, to visually impaired secondary school students in Nigeria.

Basic Aims of Teaching Secondary Science:

Science in itself is a body of knowledge which tries to unravel how nature works through an objective, logical observation, measurement and systematic analysis of phenomena by practitioners and/or committed scientists (Akpan, 1992). In this sense, scientific knowledge is activity-oriented, tentative and continuously influenced by both social and cultural factors. It is an uncertain and tentative way of imagining reality based on accumulation of facts, laws and theories. This implies that scientific facts should have some elements of logic, objectivity, methods, experiments, observations, hypotheses and a systematic analysis that help test such facts. This, according to Gyuse (1986) is the pathway to finding answers and solving problems posed by nature.

Akpan's (1992) definition tends to agree with Gyuse (1986) who sees science as the quest for knowledge about natural phenomena using methods called scientific methods. What this way means is that scientific knowledge is rooted in the desire to find answers to problems posed by nature. In this regard, to teach geography meaningfully, it must reflect adequately the nature of science which is the process-oriented nature of it which also emphasizes its products. From the foregoing, it will be observed that teaching science will entail the ability of the teacher to:

- # Promote positive affecting reaction to science
- # Stress attitudes which characterize scientists and the scientific enterprise such as honesty, open and critical mindedness, curiosity, suspended judgement and humility (Akinmade, 1992).

Basic in the development of this scientific knowledge, according to Akinmade, is the inculcation of:

- * Attitudes which will lead to having interest in scientific discovery and willingness to be involved in group work and perseverance of stamina for sustained independent work.

- * Formation of conceptual ideas leading to interpretation or reconstruction of reality in the already existing knowledge i.e. being able to draw out similarities, differences and adaptation.
- * Developing inquiry skills, having an ability for observing, structuring of scientific knowledge and processes and assumptions about the natural world intelligently.
- * Developing manipulative skills i.e. using an operation of scientific instruments or equipment, making and using models to investigate things by cutting, dissecting and culturing of specimens or materials.
- * Developing social skills to be able to work together with others, open mindedness and acceptance of faults and others views as well as willingness to share observations with others(Akinmade,1992).

Components of Geography:

Geography is divided into two broad spheres of study: physical and human geography. The physical geography as depicted by Bradshaw and Weaver (1993) is the study of the earth's natural environment with emphasis on spatial and temporal characteristics. Physical geography therefore comprises of those aspects which are concerned with the shape and form of land surfaces (relief forms); the configuration, extent and nature of the seas and oceans; the enveloping atmosphere and the processes therein (Oguntoyinbo, 1981). It also comprises the thin layer of soil, vegetation and animals (flora and fauna) (Bradshaw & Weaver, 1993). These various aspects of physical geography have developed over the years to be known respectively as geomorphology, climatology and meteorology, pedology and biogeography.

Even though each of these forms an area of specialized study, they are not mutually exclusive in that they exist and operate in ideal isolation. Human geography on the other hand seeks to examine issues which relate directly to man and his activities in space. The basic preoccupation and contrivance of human geographers is the provision of information, giving explanations and sometimes predicting spatial patterns especially those generated by man's occupation, his ways and pattern of living and his desire to satisfy felt needs. These two components of geography (physical and human geography) are studied by geographers within spatial and temporal contexts.

The geography syllabus as outlined by the West African Examinations Council, according to Ebisemiju (1981) divides the subject into four parts

- Elements of physical geography
- Elements of human geography
- Regional geography
- Map work

This has been the structure of the school geography syllabus as at about twenty years ago. However, for reasons of the dynamic nature of the subject usually to meet the changing environment; social, political and economic demands, there has been some amendments in the composition of the subject.

A survey of the current secondary school geography syllabus shows an addition of one element: local geography. This additional element consists of:

- * Location, distance and direction of the local area
- * Physical and cultural features, functions, towns/villages
- * Influence of physical features on human activities-transport, mining, farming, fishing, poultry etc.
- * Local government areas, capitals-locational relationships, physical characteristics, people, transport network and economic activities.

Obviously, this is more or less a miniature regional geography which makes the subject meaningful to the learner's needs and experience as well as relevant to local needs.

Map-work has been modified to be incorporated into what is today's practical geography. This embodies map reading and interpretation, methods of survey and survey techniques and field trips. Each of these and other aspects of the geography subject locates its niche either in the human or physical domain of the discipline.

The Visually Impaired and the Science:

As postulated elsewhere in this presentation, science which is the fulcrum of economic development has been given major stress at all levels of our educational system. Among the major objectives of secondary education in Nigeria is the quest to equip students to live effectively in the modern age of science and technology. This implies that every student, irrespective of his/her disposition, should have access to science and science related subjects. Ayoku (1998) noted that Khan's (1989) observations that manpower in science and science related subjects is in acute shortage are still valid for the visually impaired because many lacked the opportunity for practical work experience. This is however not to rule out the fact that the visually impaired cannot do well in learning the sciences. Jurnang, Hill and Mugu (1996) reported on a pioneering severely visually impaired mathematics student of the university of Jos in which the student did considerably well in the sciences including geography at the SSCE level. This serves as an eye opener to the doubting Thomases that the visually impaired can indeed benefit immensely from learning geography even though as Ayoku (1998) further observed, they experience problems with methods and materials that are used by their sighted peers.

Objectives of Teaching Geography:

The purpose of geography today may be understood (Ojo, 1981) in reference to two significant and complementary viewpoints of Wooldridge and East (1961) and Lukerman (1964) which attempt to represent the purpose of geography. The first holds that geography undertakes no less ambitious task than that of discovering the spatial relationship of manifold physical and human features which diversify the earth's surface. The second viewpoint stresses that geography today is to understand man's experience in space. Ojo (1981) was

however quick to point out that these viewpoints do not adequately stress the increasing concern of today's scholars for the applied aspects of the subject as they are silent on the utilitarian contribution of the subject to man's welfare. Ojo quoted Leigh (1971) as stating that the objective of geography today is being seen as the same as that of medicine – to postpone death and reduce suffering.

The sum total of the purpose of teaching geography from the academic point of view may be inferred from the objectives of the subject outlined by the University of Ife (Ojo, 1981) and propositions by UNESCO (1965), Ebisemiju (1981), Okunrotifa (1977), Unwin (1992) and Damar (2004) which include the following

- # To stimulate understanding and appreciation of nature and the relationship and processes therein, distribution of natural resources and their impact on human activities and problems.
- # To position learners towards finding solutions to some of the problems encountered by man especially in relation to the environment vis-à-vis transportation and traffic problems, food supply and deficit, land use and development, minerals and power as well as manufacturing and trade.
- # To equip students with suitable analytical and technological skills as well as sound knowledge of the principles of spatial organization of natural and human phenomena required for tackling problems of spatial planning and development.
- # To promote international understanding and solidarity which should exist between all men by means of knowledge of interdependency of people and by respectful acceptance of the differences among people of various regions in terms of culture, resources, goods and problems.
- # Development of critical faculty to breed the spirit of research as a way of responding positively to the world's phenomena as well as discerning relationships between diverse facts through geographic processes of observation, recording, analyzing, concluding and generalizing.
- # To provide students with a body of geographical knowledge: this is interesting, useful in everyday life and adequate for the school certificate geography examination.
- # To develop in students a geographical imagination: this is the ability to visualize with the mind's eye what conditions would be like in a place never visited before.
- # To establish in students by means of field work. the habit of observation and lively attention to what goes around him.
- # To organize and formulate concepts according to acquired geographic principles of interpretation and understanding of current world ideas.
- # To gain a workable knowledge of how to obtain geographic information through interpreting tactual maps. pictures, graphic materials and research.
- # To develop respect for orderly and objective methods of investigation.

- # To develop a sense of responsibility towards one's own society and an intelligent interest in the formulation of natural goals and policies especially as they influence the different resources and regions of an area and
- # To develop in students the ability to make worthwhile use of leisure to derive pleasure from the beauties of nature by successfully and independently making local trips and excursions.

Strategies for Teaching Geography to the Visually Impaired:

As pointed out by Sykes and Ozoji (1992), visual impairment limits perception in three major ways

- ✓ In the range and variety of experiences
- ✓ In the control of the environment and the self in relation to the environment and
- ✓ In the ability to get about in terms of orientation and mobility.

In order to overcome these limitations, Sykes and Ozoji quoted Lowenfeld (1973) as suggesting that instruction should

- * Be individualized and provide concrete experiences
- * Give visually impaired children opportunities to learn by doing to experience situations in their totality
- * Unify part – experiences into meaningful wholes
- * Provide sensory stimulation which is necessary to assist in the formulation of meaningful concepts.

Since science and particularly geography is believed to lend itself especially well to efficiency of instruction and to the principles of individualization, concreteness, unified instruction, additional stimulation and self-activity (Sykes & Ozoji, 1992:65), it would be necessary for teachers of geography to observe the following:

- Interact closely with the students individually while capitalizing on their individual differences during experimentation periods or practical field works.
- Concretizing instruction through practical manipulation of materials and apparatus like tactual maps and globes, raised diagrams and calibrated laboratory materials in Braille.
- Unifying instruction by providing experiences that the visually impaired can relate to through commonly recognized tasks like going on nature study, climbing steep hills and rocks as well as farming.
- Providing additional stimulation through the fullest use of all intact and residual senses during field trips, recorded programs, kinesthetic experiences etc. as well as group study methods to help the visually impaired to acquire more knowledge through study among especially sighted peer groups.
- Involving the visually impaired in out of school work on activities that could make them devise appropriate aids to help them function better in the society thereby making instruction meaningful and effective.

- Mani (1999) posits that first-hand experience is one effective way through which children learn science and advises that visually impaired children should be provided opportunities to tactually explore concepts taught. According to Mani, research indicates that tactile exemplars which provide hands-on experience to visually impaired children are effective in teaching scientific concepts. In this respect, by undertaking field trips to an industry, visits to the neighbourhood, community etc visually impaired children can be helped to gain first-hand experience in the environment.

In other words, interactive methods of instruction should be adopted through the use of active learning techniques to teach geography to the visually impaired effectively. However, such methods may not apply to every aspect of geography particularly those that may require observation. Interestingly, most of what is taught and learned in physical and human geography are within the capability of the visually impaired. For instance, the visually impaired easily familiarizes himself/herself with his/her immediate environment. To be able to recognize, locate and describe the major physical features of a particular location is an aspect of geography. Therefore when the teacher teaches the visually impaired on such physical components, he expects them to be able to relate the ideas to their own encounters in solving real life problems.

Problems Associated with Teaching Geography to the Visually Impaired:

In spite of what the visually impaired and the society stand to gain from the teaching/learning of geography, there seem to be some problems that may militate against the successful teaching of the subject to them. These include but are not limited to the following:-

- Lack of Braille geography textbooks and other specialized instructional materials e.g. Braille globes, maps, raised diagrams, tactual relief features. Braille calibrated laboratory equipment etc.
- Scarcity and prohibitive cost of instructional materials for the teaching of geography to the visually impaired,
- Lack of trained personnel that have the pre-requisite knowledge and experience in using Braille science notations or mathematical Braille to teach or supervise and administer the teaching of the sciences effectively to the visually impaired. Jurmang, Hill and Mugu (1996) have noted with sadness that many Nigerian literate blind individuals can only boast of knowing the first five basic mathematical operation signs in Braille (addition, subtraction, multiplication, division and equal sign).
- Nervousness on the part of teachers to have visually impaired students in their geography class because they have no specialist training. no special apparatus and large classes to handle;
- The visually impaired students themselves have some form of apathy towards the sciences and seem to resist any efforts made to help them offer such subjects in the secondary school curriculum;

- Lack of motivation to those who are interested and volunteer to work with children with special needs;
- Inadequate financing of educational programmes for persons with special needs. This has implications for the successful teaching and supervision as well as administration of the process of instruction in geography to visually impaired students
- Lack of adequate planning and the confusion that surround some of the policies churned out by various arms of government in respect of the provision of educational services for special needs children in general and the visually impaired in particular.

The Way Forward:

In view of what have been identified as some of the problems that may be associated with the teaching of geography to the visually impaired, it is pertinent to suggest that certain steps are taken to alleviate the situation. These could include but are not limited to the following:-

- There should be a deliberate and sustained effort for the procurement and distribution of appropriate, well labeled and practical instructional materials in the correct medium for the teaching of geography to the visually impaired in Nigerian secondary schools.
- Personnel involved in the teaching of geography to the visually impaired should be adequately trained in the rudiments of teaching the science to this category of special needs persons as well as be assured of the fact that they need not be apprehensive of their existence in such classes.
- Funding is a pre-requisite for the success of any endeavour. Therefore, it should be made a priority for the success of teaching, supervision and administration of instruction for the visually impaired in geography. Governments at all levels should make adequate funds available to enhance the teaching of such subjects.
- Adequate planning involving all stakeholders' including the visually impaired, their parents and teachers should be stressed in the effort to ensure that the teaching of geography to the visually impaired is made functional, enjoyable and fruitful.

Conclusion:

Although the teaching of geography to the visually impaired may be fraught with problems, there is no denying the fact that this category of students with special needs can benefit immensely from learning such subjects. However, it is only when the right atmosphere prevails that they can benefit favourably for the benefit of the larger Nigerian society. It is in view of this that every effort must be made to ensure that appropriate and conducive atmosphere is created for the successful teaching of geography to visually impaired students in Nigerian secondary schools.

References:

- Abang, T. B. (1992). Teaching of science to the blind. In O. E. Akpan (ed.) *Towards creative science teaching and learning in West African schools*. Ghana: University of Cape Coast. Catholic Mission Press.
- Akinmade, C. T. O. (1992). Science process skills in elementary and secondary school students. In O. E. Akpan (ed.) *Towards creative science teaching and learning in West African schools*. Cape Coast: Catholic Mission Press.
- Akpan, O. E. (1992). What is science education? In O. E. Akpan (ed.) *Towards creative science teaching and learning in West African schools*. Cape Coast: Catholic Mission Press.
- Ayoku, F. A. (1998). Science education for the visually handicapped in Nigeria. *The Exceptional Child* 2(1) 38-40.
- Bradshaw, M. & Weaver, R. (1993). *Physical geography: An introduction to earth's environment*. USA: Mosby Year Book Inc.
- Damar, D. N. (2004). *The making of a geography teacher*. Jos: Deka Publications.
- Dashe, N. P. (2003). The teaching of circulatory system to the blind children: A Practical approach. *The Journal of Special Education and Rehabilitation* 6(1) 54-59.
- Ebisemju, F. S. (1981). A conceptually based geography syllabus. In A. Faniran and P. O. Okunrotifa (eds) *A handbook of geography teaching for schools and colleges*. Ibadan: Caxtion Press Ltd. 29-36.
- Gyuse, E. Y. (1986). Who are the scientists. *Journal of Science Teachers Association of Nigeria*. 24(1&2) 120-133.
- Jurmang, I., Hill, K. E. & Mugu, Y. (1996). The pioneering severely visually impaired mathematics student of the University of Jos, Nigeria. *Journal of Research in Special Education* 1(1)108-113.
- Khan, M. R. (1989). Guideline for the improvement of science education in Nigeria. *Education Today* 39(1).
- Mani, M. N. G. (1999). Teaching curricular areas to visually impaired children. In G. Fariñez, C. Koenig, G. Mani & S. Tesni (eds.) *See with*

the blind: Trends in education of the visually impaired. Bangalore: CBM & Books for Change. 119-126.

Oguntoyinbo, J. S. (1981). Techniques in physical geography. In A. Faniran and P. O. Okunrotifa (eds.) *A handbook of geography teaching for schools and colleges.* Ibadan: Caxtion Press Ltd. 94-106.

Ojo, G. J. A. (1981). Geography today: Its purpose, content and method. In A. Faniran and P. O. Okunrotifa (eds.) *A handbook of geography teaching for schools and colleges.* Ibadan: Caxtion Press Ltd. 17-28.

Okunrotifa, P. O. (1977). *Evaluation in geography.* Great Britain: Oxford University Press.

Sykes, K. C. & Ozoji, E. D. (1992). *Teaching blind and low vision children.* Zaria: Ahmadu Bello University Press Ltd.

UNESCO(1965). *Source book for geography teaching.* London: Longman, Green & Co. UK Ltd.

Unwin, T. (1992). *The place of geography.* England: Longman Group UK Ltd.