

RESOURCES AS ENHANCER OF EFFECTIVE TEACHING AND LEARNING OF PRIMARY SCIENCE

Elder Essien Udo

Mobil Pegasus School, Eket, Akwa Ibom State

Introduction

There has been a need to change our emphasis on teaching by the teacher to learning by the learner. Thus rather than be a teacher centred activity, instruction has become learner – centred. But if quality learning is to occur, the teacher is the channel through which this is to happen, hence the training and retraining of the teacher. Therefore workshop / interaction of this nature seeks to assist in equipping the teacher with appropriate knowledge and effective teaching skills.

In our interaction, we shall endeavour to make recommendations on how best resources can enhance effective teaching and learning in primary science.

For decades, one of the most persistent problems which teachers and occupational trainers have struggled to solve has been how to achieve maximum results with minimum but effective medium of instruction (Udo, 2005)

Just as science itself is universal, the quest for improved methods of teaching science is equally universal. The use of common and widely available resource materials in science teaching is also universally acknowledged as progressive. If science is to be learned effectively, it must be experienced. Science is so close to the life of every learner that no teacher can teach it without first hand materials for better understanding. At the primary level emphasis is expected to be on teaching methods that can de-emphasize the memorization and regurgitation of facts. It is expected to lay a sound foundation for scientific and reflective thinking. (NPE, 1998, P11).

To realize these objectives, practical exploratory and experimental methods are to be heavily utilized. The use of various resources (human and materials) add realism to scientific facts and ease the teaching of theoretical concepts in science.

Instructional strategies that promote the use of various resources in the handling of primary science concepts

From the aforementioned, it means the most effective way of handling primary science is an approach that ensures learner's full participation with ample provision for the inculcation in them the spirit of enquiry and creativity. A teacher who encourages creativity strives to provide a classroom environment replete with various resources (media) that capture learners imagination (Ekop, 1994). Such a teacher cannot but employ newer instructional strategies such as the followings:

Local community resource people

Experienced people in the community can be invited from time to time by the teacher to share their wealth of professional experience with pupils. Such people, may include:-

- Parents and other elders
- Local traditional craftsmen such as potters, tanners, weavers, blacksmiths, soap maker, dye markers.
- Local professionals and craftsmen such as Teachers (secondary, TTC, University), Agricultural officers, Medical Personnel, Mechanics, Builders, Musicians, Electricians.

The science room

A science room with adjoining preparation and storage areas for a primary school is certainly an excellent provision for the science programme. It will function as a place for storing equipment, a place for preparing materials for use as well as for work while discovering science teaching.

It should be imaginatively furnished and arranged for children. The teacher to man this room must be competent in the teaching of primary science as well as in improvisation of simple science equipment and materials.

In deciding what room to choose, (Odumosu, 2000) opined that care must be taken to ensure that:

- a) The room is a large or even larger than other classrooms
- b) Has a door leading to the school ground for easy access.
- c) Has windows located in such a way as to provide a maximum amount of natural light for science experiments and demonstrations.

Field Trips

In every community there are places to see and explore that will add meaning to the science programme. Field trips to these places should help pupils to gain information, solve problems and develop appreciations. In planning for field trip, the following points has to be noted:

- a) The teacher and the pupils should have a real reason for making the trip. They should got to answer questions that are best settled by first hand observation.
- b) The teacher, or the teacher and a group of pupils should make a preliminary trip to make certain that the objectives of the trip can be achieved. In other words, make sure that what you are going to see is really there and that you can find it.
- c) Follow – up discussions, reports and records are essential for maximum results.

Science Club

A science club should be organised in every school to provide co-curricular opportunities for self-expression and the development of individual interests.

The club, among other things, should improvise teaching aids which can be used in the school by any teacher. It should undertake a project work at least once in a term.

Demonstration Approach

This involves an instructor imparting not only knowledge as with the lecture method but also skills, a concrete illustration of a skill in this manner is always better than mere talk about it, (Yorke 1981) sees this method as serving two major purposes in instructional situation namely:

- i) It shows learners the correct use and limitation of apparatus and equipment,
- ii) It aids teachers in the teaching of theoretical concepts (when demonstration is class assisted, it is very useful. Here some pupils act as demonstrators while others are involved in observing questioning and explaining. When this method is well handled, it arouses a great deal of interest and attention in the learners.

Applicable Instructional Materials

The teaching strategies discussed will not be possible without appropriate instructional materials. Instructional materials are defined as all the resources which may be used by the learner in isolation or in combination formally or to facilitate the acquisition and evaluation of knowledge, skills and moral (Inyang – Abia, 1988).

Instructional materials can be classified as:

- i) Print and non – print
- ii) Visual, Audio and audio – visual
- iii) Phenomenal

The print instructional materials constitute the most widely used materials available to man. these are textbooks, workshop, proceedings, journals, newspaper and bulletins. Bulletin board is useful in any primary science classroom for cut-outs of scientific interest. It could be a display board for materials and things prepared during class sessions. The best or most original item for the week could be displayed on this Board to encourage healthy competition among children learning science.

The non – print on the other hand constitute all instructional materials that are non – book.

Visual instructional materials enhance learning by appealing to the sense of vision e.g. chalkboard, bulletin, flannel boards, still pictures, diagrams and models. Visual materials should be chosen carefully as should any instructional aid. They need to be evaluated regularly in terms of what they are expected to accomplish.

Ogunbi, (1986) posits that the selection of visual materials should be made with due regard for such factors as purpose, attractiveness to the science programme.

The following steps in using visual aids could improve their effectiveness:

- a) Select the materials on the basis of a real need.
- b) The teacher should be thoroughly familiar with the material.
- c) It is essential that the children are prepared for what they should expect.
- d) Use the materials as it seems best to meet the needs of the class.
- e) Have a definite follow – up
- f) Evaluate the effectiveness of the materials.

Audio materials appeal to the sense of hearing. They include radio, telephone, audio tapes and many others. Audio – visuals are instructional materials that stimulate both the auditory and visual sense simultaneously without completely relying on either. These include the television, audio slide and videotape.

Selection of instructional media

According to Adesanya, (1995), many factors are responsible for the selection of instructional media. These include the following:

Objective; subject matter; learning task; learner characteristics; teacher's attitude, method and constraint.

Some instructional materials that can be improvised

1. *Flash cards:*
These are cards with drawings or photographs which are stacked in a holder and shown to viewers in their correct order.
2. *Flannel Graphs or Flannel Boards:*
Flannel graphs are visual aids are made with rough surfaced and that allow materials with rough surfaces also e.g. words, pictures or charts to be pasted on it.
3. *Magnifying Glass:*
Magnifying glasses can be improvised from used electric bulb. In this case, the filament of the bulb is carefully removed without breaking the bulb. When the bulb is empty, water is poured into and it can be used on any object. the object will be magnified.

Criteria for selecting resources materials

- i) The learners characteristic and needs should be properly analyzed and addressed so that selected media may match their needs.
- ii) The central objectives of the required instruction and supporting or enabling objectives should be clearly focused.
- iii) Expected responses from the learners at the end of their interaction with the chosen media resources should also be anticipated.

Conclusion

The teaching of science in primary schools ought to be enhanced to ensure that knowledge can be effectively utilized by the pupils. This paper centred on the need to utilize various resources during the teaching and learning of Primary Science to add realism to the abstract scientific concepts.

Learners can be trained to help the teachers identify all unrecognized community resources for instructional use. That in itself can be a worthwhile learning experience.

The guiding question should be what kinds of creative, innovative responses will learners be apt to make as they internalized and put to use the information gain. It is hoped that teachers will select progressive instructional strategies that will necessitate their use of various resources for effective handling of science and will make definite effort to source for and select such materials for use.

Instructional materials are effective vehicles for carrying information required for learning to occur. When the resources used in the classroom are rich, the number of avenues for learning increases. Local materials are tools and should be used as a means to an end and not an end in itself.

References

- Adesanya, B. Y. (1995) Effective utilization of Educational media in the Instructional Process. A working paper presented at Mobil – STAN Workshop for Integrated Science Teachers in Akwa Ibom State. December 12 – 14.
- Ekop, C. M. (1994) Attitudes of Nigerian School Teachers toward media-based learning. An article

the teachers of STM and constantly updating their knowledge and competence through well-planned and regular in-service trainings. This regular in-service training can be made possible by removing obstacles that hinder in-service training in secondary schools such as lack of incentive to teachers of STM who want to go for in-service training, lack of study leave to those who want to go for further studies, and others.

The researcher strongly believes that if the measures enumerated in this research are implemented, Nigerian is sure to measure up with the developed nations of the world in the near future.

References

- Adedayo O.A. (1999). Evaluating Science, Technology and Mathematics Education: Effect of training on teacher's test construction skills. *40th Annual Conference Proceedings of STAN 71 –74*.
- Ajere, O; Dongpe, A.K.I; Guwai, P.T. and Longkuk, S. (2005). Professional practice amongst the STM teacher trainers at NCE level: A case study of Plateau State. *46th Annual Conference Proceedings of STAN*, 40 –44.
- Federal republic of Nigeria (1998). *National Policy on Education*. Lagos: NERDC Press.
- Kpangban, E. and Ajaja, O.P (1999). Current Practices and problems of in-service education and training of teachers in Nigeria. *Journal of the Association of teachers educators of Nigeria* 1 (2), 9 – 14.
- Nwachukwu, V.C. (1995). Updating the skills of electricity/electronics teachers of technical and secondary schools in Abuja. In T.I. Eze and N.P.M. Ezeani (eds). *Empirical Studies on Social and Economic implications of vocational and technical education in Nigeria*. Umunze: Research and publication unit.
- Nwagu, E.K.N. (1998). Continuous assessment competencies of senior secondary science and mathematics teachers in Anambra and Enugu State. In C. Obodo (ed). *Science and mathematics education in Nigeria*. Nsukka: The Academic Forum.
- Nworgu, L.N. (2004). Effects of gender sensitization of science teachers on gender gap in science achievement and interest among students. An unpublished Ph.D thesis of the University of Nigeria, Nsukka.
- Ochu, A.N.O. (2005). Evaluation of undergraduate Chemistry education programme in Nigerian Universities. An unpublished Ph.D. thesis of the university of Nigeria, Nsukka.
- Ojo, T. (1986). Manpower development in Nigeria's industrialization; the role of the private sector. In Ojo, et al (eds.), *Manpower development and utilization in Nigeria. Problems and policies*. Lagos: Lagos University press.
- Runi, J. and Biliyak, H.B. (2004). The teacher as agent of human resource development. *International Journal of continuing education* 3(3), 221-231.
- Ukeje, B.O. (2000). Teacher education in Nigeria. Current status. In Oyetunde, T.O.O. et al (eds.), *Teacher education in 21st century, challenges and strategies*; Jos: Department of Arts and Social Science education.