
TEACHERS OF POOR LEARNING ENVIRONMENT: IMPLICATIONS FOR THE IMPROVISATION OF SCIENCE TEACHING AIDS/INSTRUCTIONAL MATERIALS IN SCIENCE EDUCATION

By

OKAFOR N.M.

*Department of Integrated Science,
Federal College of Education,
Eha-Amufu.*

Abstract

Perhaps, the most constant report in Nigerian school system learning environment are dilapidated classrooms, insufficient or non-availability of teaching materials. Such report implies the existence of poor learning environment with urgent demand for improvement. However, this paper presented improvisation as a means of supplying science teaching aids for classroom instruction. Features of improvised materials were examined as harmless, time, money and energy saving. Its implications were noted as it helps learners remember conceptual ideas more than no material

Education can never be separated from life, rather it will be described as business of life. No wonder Ocho (2005) viewed Education as a process of equipping the individual with appropriate knowledge, skills and competences for effective functioning in society. This implies that Education is the bedrock of development in every society. Based on this idea, there is need for quality, and comprehensive education in the nation's school system. Recognizing the roles teachers play as agents of societal goodness in national development, and Education being the vehicle for developmental change must have sound learning environment.

Unfortunately, classrooms (with facilities and furniture) in the Nigerian school system are not habitable due to dilapidation, insufficiency or lack of equipment to set-up experiment. Such situation creates a poor scenario for the teaching and learning process. Poor learning environment do not make for progress in a school system. Insufficiency and lack of instructional materials poses problems in any teaching/learning situation. However, instructional materials are highly important in

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teaching/learning but where it is lacking, its usefulness and purpose are completely ineffective thereby posing great challenges to teaching and learning Science Education. At times, it becomes difficult to provide instructional materials for certain science concept (e.g. radiation) probably due to its danger of usage. The danger of usage, or/and difficulty in provision makes improvisation another easy means to make teaching/learning interesting, relevant, adequate and useful to the concept so as to attain the achievement of curricular goals and objectives. It is against this backdrop that this paper seeks to discuss the need for improvisation of instructional materials in any poor learning environment of Science Education.

The Teacher Is an Agent of Societal Goodness

Education is the business of life and all kinds of goodness. The agents that make it possible for the realization of this assertion are the teacher, learner and society. Obviously, it is unquestionable if the teacher claims to be the chief social agent for all the goodness the society can produce. No wonder Tokunboh in Amadi (2014) declared that Oando Foundation is extremely delighted to be selected to join the Academy for Global teacher prize and is cognizant of the increasing important role teachers play in today's society. Tokunboh stressed further that the award seeks to recognize, celebrate and strengthen the teaching profession. In the same vein, Varkey in Amadi (2014) said:

“I'm extremely pleased that Oando Foundation has joined me in drawing attention to the achievements of teachers and the enormous impact they have on all of our lives by being part of the Global Teacher Prize academy. I believe teachers must be returned to their rightful position as the most respected profession in the society, which is properly rewarded and celebrated”.

The above facts stand as clear evidence that teachers are strong key players for the goodness of the society as it concerns education, bearing in mind that no education can rise above the quality of its teachers. The question of who is a teacher, what does the teacher do that differentiates him/her from other fields of life, and how can the teacher perform better in things that he/she does, reminds the learner and society of the characteristics and the roles of a teacher. The encyclopedia Britannica (1951) in Ama (2007) indicated that teachers roles are those of a mediator of learning, disciplinarian/controller of students behaviour, judge of achievement, organizer of curriculum, bureaucrat, scholar and research specialist and so on. The teacher's roles indicated that the teacher, the learner and the learning environment are inseparable. The mere mention of “teacher” reminds one of the school which provides a setting within which boys and girls grow intellectually. The learner's intellectual growth is accomplished through the learner's association with information, knowledge and fact delivered by the teacher. Thus the teacher as an organizer, controller, researcher and

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mediator of learning arranges the learning/instructional materials to suit the learning process.

The teacher is at the centre of learning activities, nurturing, adapting, translating, transforming and interpreting ideas in the instructional materials to the understanding of the learner. As the learner interacts with the learning materials, the teacher has to adjust the teaching and learning strategies to suit the challenges the learner experiences in the classroom for progressive teaching/learning. Really teaching is not an easy task, yet teachers are doing their best to better lives in the society. President Bill Clinton in support of the noble work of teachers in Amadi (2014) stated that attracting the best people to teaching, developing and supporting their skills and holding teachers in high regard are all critical and important steps to achieve excellence both in teaching and learning.

Teaching Materials/Aids

Teaching materials/aids are vital tools in teaching/learning. They are teaching aids used by both teachers and learners either within or outside classroom during teaching/learning processes. This implies that the learner interacts with the learning materials as the teacher uses them in transforming, translating and interpreting idea to suit the understanding of the learner. Bradley, Sankar & Raju (2005) defined learning materials as print and non-print items that are designed to impact information to the learner in the educational process. Among the items are books, chart, slide, microscope, beaker, thermometer, crucible, bursen burner, pen, pictures etc and others that cannot be provided in their real nature due to risk of usage. Dogo (2010) maintained that learning materials assist in simplifying, teaching, motivating learner's interest and facilitating quick understanding of abstract concept. Supporting this noble view are works on learning which indicated that achievement is better when learner's are exposed to learning materials, Symonds (2001); Mboto, Ndem & Utibeabazi (2010); Akagu, (2013). This implies that learning refers to anything that helps to bring success in the classroom.

Poor Learning Environment

Learning environment is attributed to habitable space that provides to the leaner what it takes to make a meaningful change in behavior, belief and attitude after an active self conscious process. Adokiye (2012) listed item of physical learning environment as classroom blocks and furniture, library, laboratory, information and communication technology (ICT) facilities, toilet and health facilities, field/play ground. These items and other valuable teaching materials are necessary in the learning environment and must be improved for the achievement of curricular goals and objectives. Moreover the concepts of learning environment are in line with Egunjobi's view, where learning environment comprises the classroom and its location, the

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furniture and other teaching and learning materials within the vicinity where learning is taking place. Shortage of these in any form prevents thought provoking or initiating activities of learning, thereby creating poor learning environment. Okafor (2012) admitted that most Nigerian classrooms are virtually empty due to the failure of the learning environment. Okafor stressed that the action verb conversant in frequent usage are talk, listen and write due to increasing rate of school system dilapidation.

Improvisation and Attributes of Improvised Materials

The concept of improvisation in science teaching is invaluable and has come to stay. No Government or organization can provide all school instructional materials without shortage or lack, no matter how buoyant she appears. The reason being that some are consumable and do not last, obsolete and non-functioning, insufficient due to funding, can never be obtained in real nature due to danger of usage or difficulty in handling.

Improvisation deals with originating or modifying an existing material in the absence of the required materials to aid instruction. It is a means of making local provision of teaching aids/instructional materials to impact adequate and relevant knowledge, skills, facts and values to the learner for the achievement of stated objectives during teaching/learning instruction. Mboto (2011) defined improvisation as the act of providing teaching materials from the locality when there is shortage or lack of standard ones. In the same vein Eshiet (1996) in Mboto (2011) defined improvisation as stated that: *“the sourcing, selection, deployment of relevant instructional elements of teaching/learning processes in the absence or shortage of the accredited teaching/learning element for a meaningful realization of specified educational objectives”*

In science teaching, observation and demonstration are among the means through learners seek knowledge while the teaching aids are to complement teacher's explanation and learners visible experiences. Thus the need for improvised materials is paramount where there is none or shortage of accredited teaching aids. Teaching aids bring progress and success as it provides the learner with concrete experiences which are needed for intellectual development. Ubana (2009) confirmed this view that scientific concepts are retained better and learning tend to become more meaningful and interesting when learning materials are used.

Truly, much has been said about improvisation but the important question that comes to mind is what attributes make improvised materials unique and acceptable for usage. Some of these features are discussed below.

- It is simple in its form: This implies that it is not a complex form. Easy to construct and understand.

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- Ability to improve the lesson effectiveness: It is adequate and relevant to equip learner with proper knowledge, skills and character required for effective performance, to the best understanding of the learner.
- Harmless in nature: Improvised teaching aids must, possess minimal risk. There must be reduction in risk associated with the usage of the equipment. It will be easy for handling.
- It is time saving: It is less time consuming in both construction and usage. No matter how congested the school syllabi appear, the teacher must find out time to construct the instructional materials with ease and less energy is spent.
- Provides the expected desired result: It must enhance teaching and learning, it should be authentic, relevant, motivating, adequate to achieve the stated objectives.
- It is cheap, and abundant: Originating locally, the materials to construct it are available and in constant supply. Students and teacher should solve the problem of supply and may spend little or no money.

Implications for Improvisation of Science Teaching Aids/Instructional Materials

- Engaging the learner: During classroom instruction, the learner is busy with full interaction of teaching aids. Science is learnt by doing, engaging the learner prevent boring and onlooker gazing at science instead of learning science.
- Aid understanding and retention of knowledge: learners learn through senses. So, understanding is easier and retention becomes high when the learner is able to see, touch, feel the object being taught. The improvised teaching aids help the learner concretize learning.
- Prevents complexity of concepts: It helps illustrate the relevance of all aspects of the concepts. It makes understanding better by clear illustration of different aspects of the concept for the achievement of the desired instructional objectives. Agun and Imogie (1998), stated that teaching aids are information carriers designed specifically to fulfill objectives in teaching situation.
- Increase motivation and interest: There is joy in discovery. For instance, the constructing of oven from clay soil for baking snacks, breads in the locality is something of happiness. Believing that it happened is of interest which will motivate the learner to experiment it. Such have full potentials to motivate the learner with solid experience needed to develop intellect.
- Enhancement of learning: Learning occurs as a permanent change in behaviour due to practice. Learning can be reinforced with teaching aids since teaching aids stimulate, motivate and arrest learner's attention during the course of instruction.

Conclusion

Evidence have shown that Nigerian school system has poor learning environment. Also, it appears that teachers over-rely on accredited school supplied

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teaching aids and are not conversant with improvised instructional materials. However, there is no way Education authority could provide all teaching aids needed in science education. Therefore, improvisation must have its way in instructional processes. Improvised materials help learners remember conceptual ideas more than no material. Science teachers should make improvisation of teaching aids a reality in classroom instruction rather than continual waiting for accredited school supplied teaching materials.

Recommendations

Arising from the critical examination of this study, the following recommendation were made:

- Teachers should adopt the use of improvised materials to supplement the accredited school supplied materials in science teaching.
- Teachers should make local improvise that are standard and relevant to the concept being presented.
- Students especially in rural areas should be encouraged to assemble the materials within their locality.
- Students should also be encouraged and reinforced to construct after assembling the materials to keep them busy and prevent boring.
- Teachers should assist and supervise the student's work before use for effectiveness and relevancy.
- There should be workshop for construction, repairing and storing of the teaching aids. This will secure them from damage and lost.
- Regular workshop, seminar and conference should be organized for teachers and students too, to broaden their knowledge on improvisation. Such academic interaction should be able to explain how, where, why and what to source for easy improvisation.

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