

Teaching Aids: A Panacea for Effective Instructional Delivery in Biology

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Abstract: The paper examines the role of teaching aids in effective instructional delivery. Teaching aids are those relevant materials utilized by the teacher during instructional process and they in turn affect the behaviour of the learner. To effectively utilize instructional materials in the teaching-learning process the following principles and requirements should be adhered to in the selection of teaching aids: Instructional tasks, target audience attributes, the economy, dynamic variables and environmental factors. The use of instructional materials should follow the following guidelines: specification of objectives, preparation and preview, maximal fit with instructional task, environmental situations and measure of outcome. The problems associated with the use of teaching aids include the following; teachers professional knowledge and technical know-how, time, finance and poor maintenance culture. In line with the above it is recommended that teachers should endeavor to commit themselves to effective use of teaching aids in all their instructional delivery. A forum should be created where teachers will endeavor to update their knowledge in the area of educational technology in order to expose themselves to modern technological apparatus and how to manipulate their functions amongst others.

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Introduction

Teaching aids are important catalysts of social re-engineering and change in learners. The role of instructional materials or teaching aids to enhance teaching for desired social and behavioral changes can not be over-emphasized since it is a pre requisite in affecting behaviour of learners of every field. Effective instruction cannot be fully accomplished without the use of instructional materials. The reason for this can not be far fetched; they include advances in technology which ushered in instructional materials especially the projected and electronic materials as the most radical tools of globalization and social development. This has affected the classroom teaching-learning process positively. The technological breakthroughs include projected and non projected, auditory, audio-visual and visual electronic materials which are important landmarks in knowledge transfer. (Iwu, 2006).

Teaching aids provide the teacher with interesting and compelling platforms for conveying information since they motivate learners to learn more and more. Also it provides opportunities for private study and at the same time stimulate learners' interest and curiosity. It goes further in helping the teacher to overcome physical difficulties that could have hindered his effective presentation of a given topic.

Relationship between Effective Teaching and use of Instructional Materials.

Many educators have been fascinated by the potentials of instructional materials to enhance teaching

and learning but teachers lag behind in using instructional materials during teaching and learning.

Bolick (2003) maintained that teaching aids are integral components of teaching-learning situations and not just a supplement but a complement to the teaching-learning process. Thus, if there must be an effective teaching-learning activity, the utilization of instructional materials will be necessary.

According to Ema & Ajayi (2004) teaching equipment and materials have changed over the years not only to facilitate teaching-learning situation but also to address the instructional needs of individuals and groups. Instructional materials are therefore objects or things the teacher uses in the classroom while teaching to ease off his teaching activities. Though not all the problems in teaching-learning are solved but it goes a long way in influencing the reality of teaching and learning activities. Teaching aids eliminate the abstract nature of science by concretizing the facts in the lesson content.

Concept of Teaching Aids

The concepts of teaching aids have gone beyond simple aids, instructional technology, and media to communication and educational technology. Instructional aids include those objects that are commercially acquired or improvised by the teacher to make conceptual abstraction more concrete and practical to the learner hence the relevant materials utilized by the teacher during an instructional process for the purpose of making the contents of the instructions more practical and less vague.

Orakwe (2000) asserts that instructional media are gradually finding their ways into the classroom where modern and versatile teachers are exploiting new ways of transferring learning to the younger generation through the use of prints, visuals and audios or the various combinations of these trios which make up all we have in instructional media. Thus instructional media are the information dissemination devices used in the classroom for easy transfer of learning.

Ema & Ajayi (2004). Opined that instructional materials creates change and progress only when the teacher is knowledgeable and knows how to make use of it thus portraying the professional attributes of the teacher and the general knowledge or his creativity in selecting, developing and using instructional materials effectively. Effective communication is the outcome of careful selection of appropriate medium or combination of media available by an effective teacher. Hence an instrument for accelerating the pace of all human transformation, to shake – off inertia in people, achieve mobilization and direct their productive forces in improving their living condition. This shows the impact of the teacher in influencing the future development and growth of a learner. The success of using teaching aids to meet the teaching objectives demands effective use and communication skills of the teacher to satisfy instructional delivery.

Kinds and Categories of Teaching Aids

Different instructional materials are available to be used in teaching any subject effectively, but not all topics require the same type and quality of materials. These materials can be purchased, locally made, or improvised or even imported when necessary for effective instructional delivery. Adekeye (2008) listed four major categories of instructional materials; visual aid, Audio-visual aids, auditory aids and printed materials. The criteria for classifying instructional materials or teaching aids include the degree of expertise/technical skills needed for production, nature of the material, physiological parameter or sensory modality, the place the material is produced and miscellaneous characteristics. For effective instructional delivery, instructional materials are summarized under the following categories:

- Projected and electronic materials
- Non-projected materials
- Phenomenal and manipulative materials.

PROJECTED AND ELECTRONIC MATERIALS

Projected and electronic materials are forms of media which could be visual, audio and audio-visual in nature that requires projection and electricity in their use for teaching and learning situation. This can be categorized into tape recorders/recording, radio, slide projectors, over head projectors, Episcopo video

cassette/video disc machine and computer instructional system. The computer has been found to be the most suitable and versatile medium for individualized learning because of its immense capacity as a data processor used for different games by children. Nwoji (2002) acknowledge three broad ways by which computer contributes to teaching and learning situation, these are mass instruction, individualized information and group learning. More so, the computer technology has made it possible for teachers and students to avail themselves of interest facilities where they can obtain needed information.

NON PROJECTED MATERIALS

Anyawu (2003) asserted that non-projected materials are those materials that do not require any form of projection before they can be utilized. They include chalkboard/board flip chart, specimen, model, textual and non textual materials. Textual materials are the print materials such as textbooks, journals, periodicals, newspaper among others while the non-textual materials include charts, chalkboards, films, videotapes, audiotapes, relia, festivals and games. Esu (2004) expressed that textual and non-textual materials together assist the students in acquiring clear concepts of subject matters as well as provides security for the unprepared teacher and an escape hatch fro a teacher who is instructing outside his field of specialization. While specimens are the real objects or things a teacher can use for effective teaching of science concepts; it makes the science teachers work easier and more participatory.

Phenomenal and Manipulative Materials

These are the community based resources that promote teaching-learning of moral values and cultural activities of the learners. Phenomena are instructional situations such as features, resource persons and other community resources that are directly apprehended by the learner in direct contact with experiences that far transcends volumes of recorded literature. Phenomena are under-utilized because of time, finance, knowledge of the teacher, inflexibility of the school time table and other infrastructural problems. This class of teaching aids or instructional materials deals mostly with the affective domain but do not preclude the psychomotor and cognitive domains. Manipulate materials are those instructional materials which the learner handles skillfully and expertly to bring about the desired behavioral changes. They are very important in the development of skills in professional training (Esu 2004). Manipulative materials promote complete mastery of the content materials and the specific objectives. They form part of instructional and performance evaluation. The greatest significance of these materials is that they express the channel through

which the required learning takes place, hence cutting across all aspects of skills development and mastery learning. They are also vital for effective instructional delivery because skills such as communication patience's and assertiveness are easily demonstrated, learnt and observed through instructional games.

Principles and Requirement for the Selection of Teaching Aids

Teaching aids are derived from various sources; the professional teacher needs to note that every instructional material has its definite unique strength in teaching-learning situation. Furthermore through effective communication, better teaching and faster learning can be facilitated by careful selection and skillful utilization of appropriate instructional materials by the users. The availability of instructional materials, teacher's experience, and terms of preference and volume of instructional should constitute intrinsic consideration in selection of teaching aids. In spite of these the following principles are guide in the selection of teaching aids.

- I. Instructional task: the behavioural objectives, content learning activities and evaluation instruments should be taken into consideration by the teacher in the selection and development of teaching aids.
- II. Target audience attributes: these include the learners' features, level of understanding, age, physical skills, learner's experiences and socio-economic background.
- III. The economy: the available resources, technological advancement, degree of urbanization, economic climate of the society where the materials will be utilized, feasibility and acceptability of the selected teaching aids are amongst the things considered in selection of teaching aids.
- IV. Environmental factors: This consists of available educational infrastructure and educational community such as people, equipped library, laboratories, workshops, water supply, electricity and personnel.
- V. Dynamic Variables: This includes the size of the target audience, the classroom social climate, sitting, viewing and listening arrangement, available time space, teachers' competence and the desired level of learners' response and participation are to be seriously considered in the decision, selection and development.

Bozimo (2002) advocated the following criteria in the selection of teaching aids:

- I Appropriateness of the materials to instructional objectives,

- II Freedom of the content from bias,
- III Quality of the format, print, sound or photography,
- IV Degree of the quality and variety of the materials,
- V Availability of the materials and how to operate the materials,
- VI How reasonable the time and effort are for both the students and the teachers.

Guidelines and Requirement for the use of Instructional Materials

Utilization to a large extent judges the value of teaching aids by the degree in which it singly or collectively satisfies the derived instructional needs. Teaching aids are not ends in themselves but means of attaining specific instructional functions. The ability of the teacher to effectively utilize the available media optimizes the attainments of instructional situation; this varies with the level of utilization.

Anyawu (2003) identify three ways by which the teacher should prepare for the use of teaching aids; by previewing the material before they are brought to the class, the operational level of the intended materials and actual presentation. Thus, the basic guidelines and requirements for utilization and use of instructional materials in effective instructional delivery include the following: Specification of objectives, Maximal fit with instructional tasks, Preparation and preview, Multidimensional presentation, Environmental situation and Measure of outcomes.

Problems Associated with the use of teaching Aids

The use of teaching aids to facilitate learning or instruction is not always the issue but how to use it and its availability is the major problem. Teaching aids are available in large quantity but how to make the best instructional use of those available with the modern innovation are grossly lacking and faced with a lot of problems in its use by teachers. Some of the revealing problems in the foregoing include: the teachers' professional knowledge and technical know-how, time constraints, financial constraints, poor maintenance culture, environmental factors, unavailability of the teaching aids.

Prospects of Teaching Aids

The importance of instructional materials lies in the fact that abstract ideas and information expressed in printed pages become tangible and concrete when they are translated or reflected in forms of instructional materials and resources.

The implications of using teaching aids can be summarized as follows:

They are used to explain points, create reality and supply events, encourage active participation,

saves the teachers time, enables students to visualize or experience something, facilitate different learning styles, arouse learners interest, provides meaningful and useful sources of information to teachers and learners, development of continuity of reasoning and coherence of thoughts, reduces verbalism or repetition of words, promotes closer and effective communication between the teacher and the learners.

Conclusion

The professional teacher who is curious of effective instructional delivery sees teaching aids not as a gadgets like textbooks, chalks, chalkboard but as every necessary resources and objects which the teacher develops and improvises for use in the process of instructional delivery to concretize his lesson for effective and more reliable understanding by the learner about abstract concepts of his content.

Recommendation

In the view of the above the following recommendation are made:

- I. Teachers should endeavour to make effective use of teaching aids in all instructional delivery.
 - II. The teachers should realize the need for improvisation if the cost of purchasing is high.
 - III. The teacher should be conscious of the sustainability of the kinds of resources used for a particular subject area, topic, methodology and the learner in question.
 - IV. Teachers should incorporate modern, technological and local materials such as computers, projectors, video recorder, visual specimens and audiovisuals in teaching.
 - V. Development and selection or improvisation of teaching aids could also be done concurrently with the students such as project or group assignment in designing some gadgets of learning.
- VI. The use of resources should reflect aspect of lifelong learning in order to ensure effective application of knowledge in a holistic manner.
 - VII. Schools should appeal to private sectors, individuals, co-operate organizations and the non governmental organizations to assist in supplementing and substituting obsolete education materials and learning aids like projected and other software packages.
 - VIII. Teachers should develop positive attitude towards the use and maintenance of the materials available in their schools.
 - IX. Finally, school administrators should make efforts in providing teaching aids or instructional materials and monitor teachers in the process of teaching and learning.

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