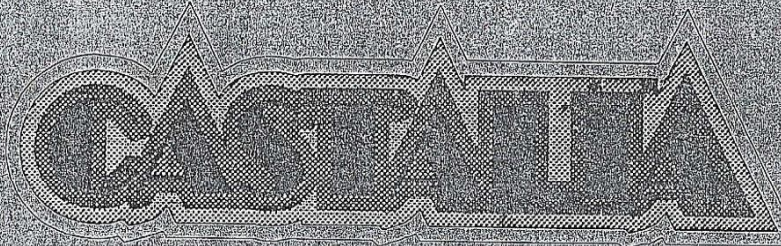


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EDUCATIONAL TECHNOLOGY IN TEACHING AND
LEARNING PROCESS IN THE COLLEGES OF EDUCATION
IN NIGERIA: PROSPECTS AND PROBLEMS

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Abstract

The historically significant giant stride in education is not unconnected with the introduction of educational technology. Instructional technology as a vital force in modern education was born during the period 1918-1924.

It is often expressed in terms of machinery or hardware of education or a highly structured approach to teaching like programmed instruction. Educational technology comprehends a number of distinguishable areas of activities, the most familiar is the use of technical devices to support the process of teaching and learning. In colleges of education in Nigeria, these devices stimulate teaching and learning, interest and motivation of students, provide vividness, solve the problem of infrastructure, make students experience what they otherwise would not have experienced, improve the relationship between students and teachers, and provide for individualized learning.

However, the use of these technical aids in colleges of education in Nigeria is not self-sufficient. They are devices for conveying learning materials, which have to be supplied. The devices will require regular power supply, skilled and experienced staff to operate and maintain them, spare parts, environmental support etc. These have obviously affected the optimal use of educational technology for maximum result by students and teachers in the colleges of education in Nigeria.

What is Educational Technology?

The term, "educational technology", has been variously defined. Educational Technology is a "systematic way of designing, carrying out, and evaluating the total process of learning and teaching in terms of specific objectives, based on research in human learning and communication, and employing a combination of human and non-human resources to bring about effective instruction". According to Fairfax, Olivia 1974, Educational Technology is often expressed in terms of machinery or hardware of education or a highly structured approach to teaching like programmed instruction. The concept of

educational technology has been properly articulated in a report of a working committee for the promotion of educational technology in the United Kingdom.

Educational technology comprehends a number of distinguishable areas of activity. The most familiar is the use of technical devices to support the process of teaching and learning. These include visual apparatus, radio and television systems, tape recorders for sound and vision, duplication, photographing and other reprographic equipment, language laboratories and teaching machines, from the very simple to the highly elaborate, some of which require staff with special training or experience to operate and maintain them.

However, the use of technical aids is not self sufficient. They are devices for conveying learning material which has to be supplied either by the individual teacher or by some other teachers or author on his behalf. Other aspects of educational technology relate, therefore, to the production of this material. Sometimes it stems from the general interaction of teacher and students with a range of problems and situations. At other times, it is necessary to construct the material more systematically in the light of research into the processes of learning, particularly of learning by a carefully designed sequence of steps. This process is characterised by what has become known as programmed learning, although even here, current practices frequently embrace course structures considerably broader than those originally conceived. Thus, the teacher constantly requires facilities to make resource materials for himself, or to adopt to his own needs materials supplied from other sources. These needs will vary from time to time, perhaps in response to changing local circumstances, or to the evolution of new attitudes and approaches to learning.

Moreover, in responding to his day-to-day problems, the teacher who decides to integrate new systems and techniques into his work will find that his innovation has implications beyond the confines of his own classroom, it may impinge on the work of his colleagues, or create new demands on his time, accommodation and financial resources. The more obvious material aspects of educational technology cannot sensibly be dissociated from consideration of organizing and management, or curriculum content, innovation and development.

It is an important aim in educational technology to promote an educational constructive interaction between the new facilities it can offer and other elements in educational theory and practice. Its present prominence stems largely from the emergence of new technical aids and of new knowledge about learning and about the processes of communication, and it embraces not simply the use of new equipment and techniques but also their adoption and co-ordination to serve new patterns and systems of learning. This involves a shift from a predominantly intuitive attitude to teaching and learning towards a

more systematic and analytical approach. The practical consequences of this change in attitude include a closer attention to the definition of objectives, selection and systematic use of the most appropriate and effective techniques and devices, and attention to evaluation of results for the purpose of assessing or modifying the learning programme. Implicit in this picture of educational technology is the view that teachers are the essential intermediaries or catalyst between the available learning resources and the pupils, students or trainees. Educational technology is something which may be perceived as developing within the educating system.

The Origin of Educational Technology

Educational technology or Instructional technology as a vital force in modern education was born during the period of 1891 to 1924. In a work by John W. Stacey, the birth of visual instruction was heralded by four occurrences during this six-year period. The first professional organizations developed, as did the first professional journals. The first systematic visual instruction research studies were conducted and reported. The first administrative units of visual instruction were organized by public schools, colleges, universities and state departments of education.

Using Education Technology for Instruction

Essentially the aim of technology is to provide teachers and students with alternative methods of instruction to deal effectively with the challenges of teaching and learning many diverse subjects about the ever increasing tasks.

While appreciating the effectiveness of graphic materials, educational technology in instructional/learning process, it is important to point out here that a faulty procedure in presenting graphic can be detrimental to the achievement of its set main purpose of communication. Therefore it is important to examine the proper procedures for the presentation of graphic materials using educational technology for instruction. These include:-

(1) Objectives

The first thing one puts into consideration when presenting graphics is the objectives or the purpose one intends to achieve from the presentation. For instance, a teacher who wants the students to learn such topic as health education must state what the students stand to achieve and benefit from the topic.

(2) Audience

Another consideration in the use of educational technology for instruction is the audience. Since every presentation must have

audience, in most cases the students, it is necessary to put into consideration the audience value system, brief, life style needs, motivations, religion and above all their media habit. Also to be determined in the audience are:

- (a) age;
- (b) background/interest;
- (c) level of experience;
- (d) vocabulary;

(3) Environment

Closely related to the above is the environment the audience come from. The environment here will include the institution of learning, whether it is primary school, secondary school, college of education, or university. This will inform the level of presentation.

(4) Finance

Another very important consideration in the use of educational technology in school is money. Since most technical aids will require software or materials to use on them, the need for sufficient fund is necessary. When an artist sets to produce or prepare graphics, money is required for the purchase of drawing paper/cardboards, pencils, compass, various colours of ink and felt pens, gum blades. All these are necessary for a successful production of graphics for instruction.

Values of Educational Technology

Educational Technology has already been defined as a form of device or equipment or technical aid which is normally used to transmit information and instruction. It could also be instrument used to convey ideas and information. Examples of educational technology are: television, slide projector, filmstrip projector, overhead projector, film projector, computers etc. They are generally used in instructional and learning process. The following values may be mentioned:

- (1) They are used for easy recognition and identification of a place, person, or object. As it were, with the visual on the screen it is easy for students to see a person like the president of one's country and recognize him or her. Also a picture of a building, the twenty-five multi-storey Cocoa House at Ibadan can be easily identified and recognized with the use of audio-visual media. Studies by (Madu, 2000) have shown that students learn faster when they hear and see what they are being taught.
- (2) Educational Technology helps to individualize learning whereby making it possible for students to learn at their own pace. What this implies is that with the use of a medium like tape recording, it is possible for a student to record a lecture, take the cassette home and play it, at his or her own time and pace.

- (3) Educational Technology could be used to solve the problem of infrastructure; like space as it could be used to reach many students in various location at any point in time. A good example is the convocation ceremony of the University of Ibadan. While it is obvious that the Trenchard Hall cannot take up to forty percent of the people expected at the ceremony, the organizer of the ceremony could rely on the use of audio-visual media. The use of television monitor is consequently employed. This solves the problem of space as those who can not enter the hall can see what is happening inside the hall.
- (4) The use of Educational Technology for instruction increases the motivation of both teachers and students, add clarity to topics taught and make lectures more interesting. Studies have shown that students tend to be motivated more when they see the visual of what they are learning. They also understand more because of the clarity and interest the use of Educational Technology brings; the use of educational technology in learning process, makes learning more realistic and attractive.
- (5) Educational Technology can be used to allow people to "experience" what they normally would not have understood or felt without the media. For instance, with the use of educational technology those in tropical Africa can recognize and identify snow. This would not have been possible without educational technology. Also, it is possible to know what erosion looks like with the use of educational technology.
- (6) With the use of still visuals and related projectiles, it is easy to focus on a particular item being studied. This makes for proper understanding.

Disadvantages of the Use of Educational Technology

The use of Educational technology in developing countries like Nigeria, Ghana and Cameroon possesses fundamental problems, which tends to discourage people from their use especially in teaching and learning process. Some of the major problem include:

- (1) Power outage has been identified as a major problem in the use of Educational Technology in a country like Nigeria. The safety of equipment can not be guaranteed. Apart from the power failure which disrupts work, and activities in the factories or schools that make use of these equipment, it causes the damage of these equipment.
- (2) Lack of skilled manpower is another problem that militate against the use of most of these equipment for instruction. While it is true that some of these equipment are easy to operate, some of them are complicated and require skilled manpower, which is not readily available, thus posing a problem for the operation of the equipment.
- (3) Closely related to the above is the problem of repair and spare parts. One of the conditions a teacher in charge of the equipment must consider before acquiring any of the media equipment is to ensure that the spare parts are readily available and that the equipment can be easily repaired. However, it is unfortunate to note that this is not

strictly followed. The consequence of this is enormous. In Nigeria today, there are many cases of abandoned equipment. It is either there is no person to repair them, or that the spare parts are not available a situation which often disrupts smooth teaching and learning process.

- (4) These equipment also require a separate room for their use. In most schools that have these equipment, there arises the need to create a room designed for their use as in the case of microfilm reader, which will protect the equipment from misuse.
- (5) Another problem in the use of these equipment is their maintenance and storage. In Nigeria, high temperatures a problem which can be avoided if only the room so fully equipped with an air-conditioner (A/C). The provision of an air-conditioner to the room or laboratory makes the use of these equipment rather expensive.

Conclusion

Educational Technology has come to be accepted all over the world as a vital force in the educational system. If this concept is to become a reality, educational technology must play a very important part. A systematic approach to teaching and learning, the design of systems, and the planning and provision of their components and processes encompass the real nature of educational technology. The use of educational technology in our colleges of education should ensure the provision of re-orientation, recycling and retraining which are increasingly assuming prominence if we are to develop as individuals in our rapidly changing society. Nigeria cannot afford to lag behind in this vital force in modern education.

The colleges of education in Nigeria must be ready to benefit from the value of educational technology which is the extension of the scale and improvement of the quality of learning. This value has been summarized as bearing on "four key objectives" – the need to reach more students, to reach them with an improved range of learning materials, to offer greater opportunity for independent study, and to permit at least a limited students' response".

However, we must appreciate the fact that the use of these technical aids in colleges of education in Nigeria or anywhere in the world is not self-sufficient. For the devices to properly perform their role of conveying information for instruction, they will require power supply, skilled and experienced staff to operate and maintain them, spare parts and enabling environment. Failure to have the aforementioned requirements in place will obviously affect the optimal use of educational technology for maximum results by teachers and students in colleges of education in Nigeria.

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