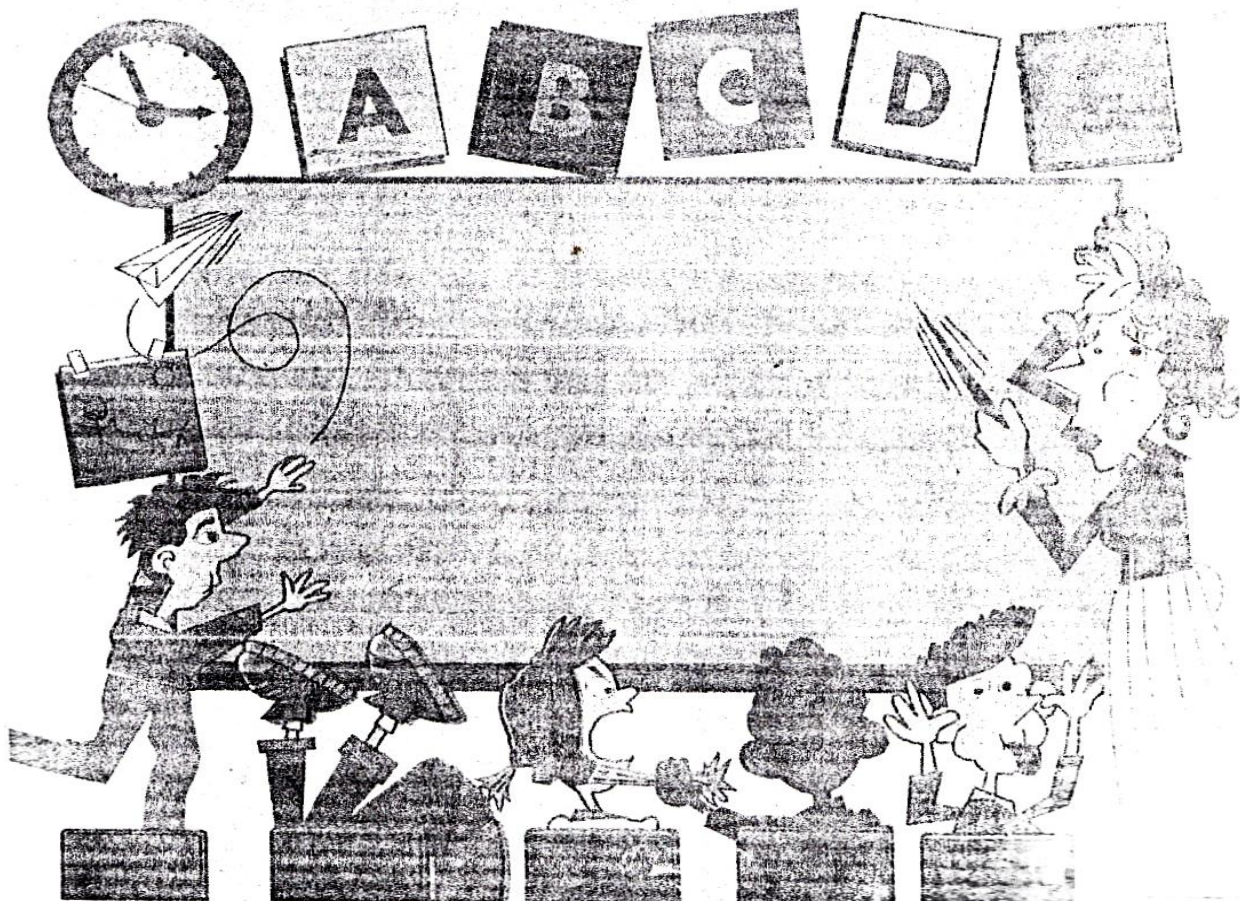
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CHAPTER FOURTEEN

EDUCATIONAL TECHNOLOGY FOR NIGERIAN PRIMARY EDUCATION SYSTEM: SOME POSSIBILITIES AND CHALLENGES

By

M. E. Inyang-Abia

*"Our progress as a nation cannot be faster than
our progress in education"*

- John F Kennedy

Introduction

Within the last fifteen years, about about 14% of Nigerians have enrolled annually for primary education throughout the federation (Akintoye, 1995). They are aged approximately between six and eleven years. Within this time frame too, there has also been increasing effort to improve literacy rate through adult and non-formal education programmes. Yet the literacy rate in Nigeria currently hovers around 50% (about 40% for female and 60% for male). This situation has serious implications for educational Technology in Nigeria. Consequently, this presentation is designed to

- *examine the concept of Education Technology and justify its role in primary education;
- *evaluate Nigeria primary education objectives and policy provisions as related to Educational Technology;
- *identify some possibilities for Educational Technology at the primary education level; and
- *propose feasible solutions to challenges facing Educational Technology at primary education level.

1.1 The Concept of Educational Technology

To different groups of people, Educational Technology means different things. To the Layman, for example, it is the same thing as the audiovisuals, apparatus, teaching aids, learning aids, equipment or resources (Inyang-Abia, 1988). It is even categorised in the National Policy on Education (Federal Republic of Nigeria (FRN), 1981) under the omnibus "Educational Services" as Section 10. All these refer to "technology in education" as opposed to "technology of education", both of which combine to form Educational Technology (Percival and Ellinton, 1984). This pedestrian definition is far from what the field of Educational Technology covers. At

best. it is a categorical mistake which equates the fields of Educational Technology with an important but tiny speck of the product component of the field. This is to the complete exclusion of the corresponding processes and the inevitable systems and settings which, to all intents and purposes, provide opportunities for the products to be functionally expressed and meaningful integrated into the field of education.

Educational Technology : to the initiate, is an eclectic field of study and practice (within Education) concerned with the systematic application of developments in sciences, culture and technology to identify, analyse and manage reliable and functional solutions to training and educational problems; evaluate, monitor, manage and control the quality and effectiveness of the solutions, replicate and disseminate the observed outcomes. It therefore involves contextual analysis, design, production and utilization of human and non-human resources, and the application of the psychology and methodology of human learning, the structure of learning experiences and the overall curriculum design, development and implementation processes, including evaluation and record keeping. Educational Technology therefore has to do with functional solutions of educational and training problems using people, procedures, structures, strategies, gadgets, things, settings and systems to derive meaningfully relevant learning experiences. It is described as eclectic because it is a melting pot of many discipline (see figure 1).

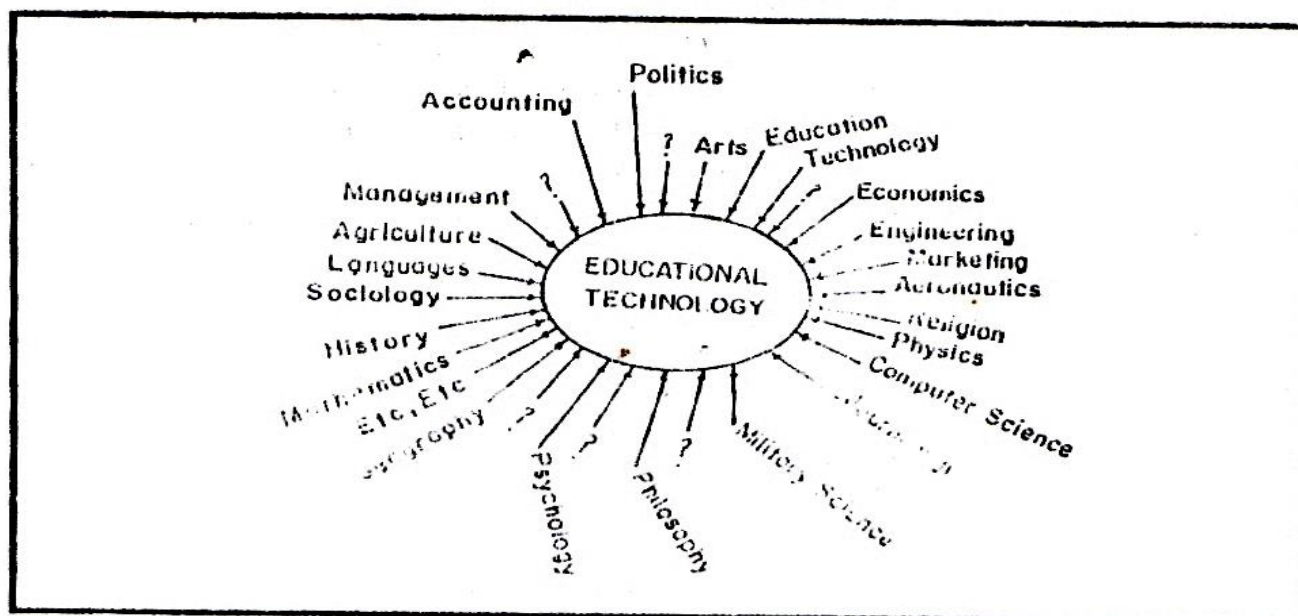


Fig. 1: Educational Technology as an Eclectic field

The major objectives of Educational Technology is to concretize learning experiences, increase degree of mastery, reduce educational and training cost (time, money energy, personnel, space, materials, etc) increase the capacity of teachers while constantly improving the quality, quantity and variety of learning so that learners can more effectively apply knowledge gained to improve their acquisition of new knowledge, functional skills and dependable positive attitudes.

The modern approach to the definition of Educational Technology emphasizes the behavioural concepts which review and adapt relevant techniques to suit given educational problems. Its flexibility and broad base nature make for easy

appreciation of its findings in all aspects of educational practices and procedures: planning, budgeting, work-space design, evaluation instruments and techniques, among others. Its role, through its products, includes efficiency, economy and quality-control. This is highly appreciated by the Federal Republic of Nigeria although appropriate terminologies are not adopted in that policy document. That appreciation is perhaps one reason why the desire for improved provision and use of facilities and resources for teaching and learning seems to dominate the policy proposals for all levels of education. For example, sub-sections 7(3, 7, 8, 9), 1(3, 4), 15(2(i),(ii), (iii), 3.5,6, 10(a), (d), and (e), 20, 27, 73, 74, 80-84, among others, clearly underline the importance of educational technology both as an area of study and practice and as a dependable requirement for teacher education programmes. The utilitarian, pragmatic, humanitarian and gestaltist philosophies form the foundation theories where the various psychological principles find their practical expressions through educational technology. all these re-emphasize the relevance of the field to Nigerian primary education.

III. Nigerian Primary Education Objectives and Educational Technology

A thorough understanding of the policy objectives and provisions made for relevant areas can be very instrumental in proper appreciation of the role of and challenges facing Educational Technology. That is one reason why it is necessary to highlight such policy objectives and provisions as done below. The seven general objectives for primary education in Nigeria as outlined by the Federal Republic of Nigeria (FRN, 1981), section 3(14) seem quite elaborate and comprehensive. These general objectives can however be viewed as the nation's desire for children aged between six and eleven plus. They are to:

- a) inculcate permanent literacy, numeracy and communicative ability;
- b) lay a sound basis for scientific and reflective thinking;
- c) provide citizenship education as a basis for effective social contribution;
- d) develop sound attitude;
- e) develop adaptability to changing environment;
- f) develop manipulative skills for maximum functioning in society; and
- g) provide basic tools for further education.

The objectives summarized from FRN (1981) above underscore the fact that "primary education is the basis of an educational developmental" (p. 38) and that "since the rest of the education system is built upon it, the primary level is the key to the success or failure of the whole system" (p.12). Therefore in order to execute the relevant curricular activities associated with the general objectives, thirteen major provisions have been documented under section 3(15) of the policy. Those closely associated with Educational Technology include the provision of:

- 1) junior libraries in primary schools;
- 2) materials and human resources for the teaching of primary science;
- 3) documentation, inter-state visits and excursion opportunities;
- 4) suitable curriculum and the training of teachers for moral and religious education;
- 5) staff and materials for cultural arts, craft and music;
- 6) teachers and facilities for agriculture, local craft and domestic science;
- 7) re-orientation for teachers to adopt teaching methods which de-emphasize memorization and regurgitation of facts;
- 8) suitable equipment, inexpensive textbooks and materials to promote effective teaching;
- 9) a national committee to advise on production of instructional materials and suitable textbooks;
- 10) audio-visual aids centre;
- 11) specialist teachers and adequate facilities in teacher Training Colleges; and
- 12) opportunities to correct the imbalance in educational facilities between the different parts of the country.

Section 10(83) of the FRD (1981) also lists the objectives of what it calls "Educational Services" but which fit neatly into Educational Technology. These objectives are to:

- a) develop, assess and improve educational programmes;
- b) enhance teaching and improve the competence of teachers;
- c) make learning more meaningful to children;
- d) reduce educational cost;
- e) promote in-service education; and
- f) develop and promote effective use of innovative materials in schools

Of the fourteen proposals in section 10(84) for fulfilling the specified objectives, the following ten are related to Educational Technology:

- 1) teacher resources centres at the state and local government levels;
- 2) curricula development centres;
- 3) educational resources centres at the state and local government levels;
- 4) audio-visual aids centres under the auspices of the federal and state governments to liaise with all educational institutions;
- 5) language centres at the Federal and State levels;
- 6) science and Mathematics centres and workshop for the training of laboratory assistants;
- 7) the development, production and distribution of books at all levels including encouragement of indigenous authors;
- 8) establishment of libraries in all educational institutions and training of library assistants;
- 9) using the radio and television broadcast as permanent features of the

- educational system to develop and improve education and expand instructional techniques while encouraging inter-ministerial co-operation; and
- 10) distance education through broadcast and correspondence strategies for in-service and on-the-job training and retraining for teachers.

The above policy objectives and provisions as related to primary education and Educational Technology are quite ambitious: but their practical translations into reality are woefully inadequate. The probable reason for the observed discrepancies are briefly identified and discussed under Section V which focuses on the "Challenges facing Educational Technology in Primary Schools". Meanwhile, focus is on some possibilities.

IV: Some Possibilities for Educational Technology in Nigeria Primary Schools

An objective analysis of the possibilities and functions of Educational Technology vis-a-vis the Nigerian primary educational system, (brief as it may be, given the current political, socio-economic, technological and cultural realities) can be very instructive. Educational Technology functions to promote economy, efficiency and quality control in education, translating the various educational theories into their practical applications for the benefit of the teacher, learner and the society. For example, the psychology of motivation which is crucial for the primary school learner emphasizes the need to make a course of study interesting, attractive and inviting to the learners. Educational Technology can do this through the strategic mix of its products (print and non-print instructional materials) with the process (such as content sequencing, response cuing, successive approximation, objective specification, contextual analysis, etc) and the settings (such as classroom seating structure, workplace organization, teacher body position and strategic movement on "stage").

It also emphasizes that attention-compelling devices and techniques including relevance, colour, movement, size, shape, form, position, voice modulation, among others, should be used to motivate, arrest, direct, channel and effectively utilize learner attention and interest for the desired and desirable behavioural changes. By so doing, it may be possible to get a firmer instructional grip on the primary learner. This can lead to a more meaningful learning (Ausubel, 1968) capable of satisfying the requirements for high level mastery, meeting some basic objectives of primary education, reducing its cost, improving its quality and attracting even the truant primary learner back to the class.

Educational Technology can also encourage improvisation of low-cost instructional media and materials for primary education using locally available inputs. For example the use of sandtrays among junior primary learners can provide opportunities for sandwriting, measurement and play. Pictorial-word-letter cubes or symbol-word-value-sign cubes can facilitate a wide variety of meaningful activities for the beginners. In reading for example, word-letter and picture-word associations can be facilitated. Simple sentences can also be constructed using the word-picture faces of the cubes. Pronunciation, reading and matching games could also be facilitated. In Mathematics too, each face of the cube with definite mathematical symbols, signs,

values or words could be creatively capitalized upon by the teacher for effective instruction. These can fully grip the attention of the learner, be enjoyable and satisfy the primary learners' desire for activity and variety.

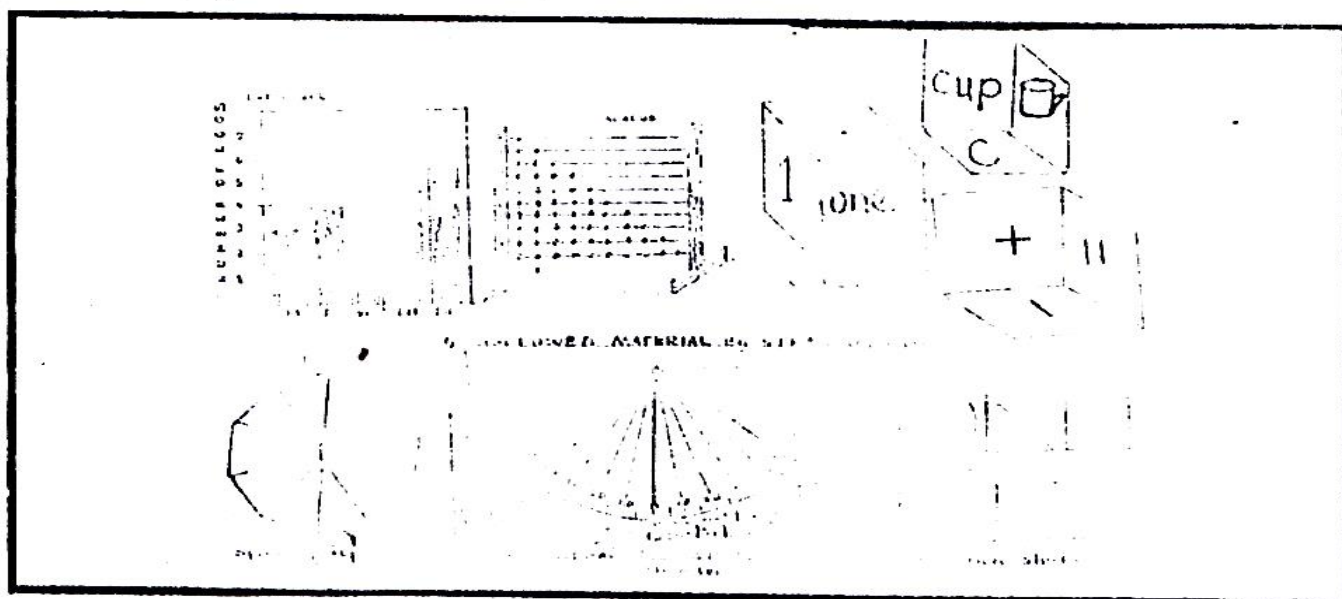


Figure 2: Some useful visuals

The chart, abacus, clinometer, geoboard, spinning top (dancing joe) (see figure two), all have their specific instructional values for the primary learner; so also do the metre rule, the litre measure, the clock face, cardinal compass points, the fractions board, the nature corner, shopping centre, mobiles and realia, among others which the resourceful visionary primary teacher can create from locally available inputs. From discarded almanac, newspapers, magazines and calendars, varied visuals and reading materials can be made. Dissolved packaging foam from electronic shops can yield high-quality glue and plasticine type of materials for moulding of various shapes either on their own or on flat surfaces such as wood. High quality vanisher and adhesives can equally be locally produced for use. Starch and paper-pulp can yield paper-maché for construction of shapes and models; so also can broken bottles form input for beautiful collage for teaching. Common shrubs can yield dyes from their barks, leaves and roots. Discarded polythene materials, plastics and cartons can also find functional uses in the classroom provided the teacher has the basic creative skills, functional attitudes and basic knowledge. The list of such creative possibilities can only be exhausted by the limitations of creativity and resourcefulness of those concerned.

Instructional accountability is also emphasized by Educational Technology. This implies that educators provide evidence regarding the relevance, quality, quantity, variety and functionality of educational outcomes vis-a-vis the expenditures. It implies that as accountable educators, we stand judged on the basis of our defensible evidence, generate and take responsibility for the demonstrable results produced for the society. Upon such unmistakable evidence our judges (the society) can then take appropriate action with respect to our products and as related to funding for curriculum reviews, improved job security, better conditions of service or accelerated advancement. All these imply better job-credentials, innovative teacher skills.

improved knowledge, more positive teacher attitude and selfless commitment to duty. Since instructional accountability emphasizes producing demonstrable desirable results, both teachers and learners must therefore be properly equipped for their various roles. Educational Technology emphasize not only that but more importantly outcome-oriented philosophies, effective use of clearly specified criterion-referenced materials and properly oriented measures. Perhaps that is one reason why effective use of behavioural objectives and objective-based management strategies are emphasized by Educational Technology.

V: Challenges Facing Educational Technology in Primary Education and their Remedies

Among the numerous problems in the primary education sector demanding urgent attention of the Educational Technologists, the following self-explicit ones are rather crucial:

a) **Inadequate teacher motivation:** This expresses itself in terms of poor conditions of service, inhuman working environment, lack of job-satisfaction, irregular payment of salaries and other entitlements. The obvious remedy is improving teachers' motivation in all respects. This is particularly important because teachers are the most important personnel in the instructional sub-sector.

b) **Highly structured classroom:** Formal classroom structures are highly teacher-centred whereas modern curriculum methodology proposed by Educational Technologists emphasizes learner-centred strategies. This discrepancy must be resolved through structural re-organization which may involve teacher re-orientation and less dependence on the compulsion of the time-table.

c) **Ambiguous objectives:** The primary education objectives provided for as a working guide for primary learners are too ambiguous and lacking in proper direction. These must therefore be re-designed to become more functional and society-oriented. Instead of "inculcating permanent literacy, numeracy and communicative ability" it could be more criterion-referenced and society-oriented, For example:

All primary four in Nigerian should be able to read the local newspaper in English (or their local language) with 90% accuracy and at least 85% comprehension.

Criterion-referenced behavioural objectives can compel teachers and learners towards the literacy, numeracy and communicative ability which are more functional and socially relevant especially if criterion-referenced instruments are also used.

d) **Teacher licence renewal:** Expired certificates should no longer be accepted for teaching purposes because the teacher's occupational requirements are very dynamic. Teachers need to up-date their knowledge very regularly. Unfortunately, most qualified and practising teachers in primary schools hardly do so. Teachers

should therefore be made to renew their teaching licence through some in-service orientations which should be compulsory for all serving teachers. Such courses should have adequate dosage of Educational Technology and subject matter. Teachers who do not participate in such courses or those who fail the teaching licence renewal examinations should either be flushed out or be made to forfeit their incremental steps until they prove worthy to renew their teaching licence. Five-year renewal periods could be reasonable.

e) **Recruitment by portfolio:** Teacher recruitment into the primary schools should not be based on mere certificate, some of which origin may be doubtful. A portfolio of teachers' instructional tools should henceforth form the major part of the recruitment requirement. Such instructional tools should be certified by the headteacher as having been handed over to the school to which the recruited teacher has been deployed. Effective record keeping and monitoring of the utilization of such instructional tools can then form major administrative function and supervisory behaviour of the headteacher.

f) **Funding:** Although fund is an important component, it should not be accepted as the over-riding factor in the provision and utilization of instructional media materials nor in the practice of Educational Technology. Non-governmental sources of funding should be fully explored and gainfully exploited. It is expedient that at least 5% of the school budget be expended solely on provision of instructional materials because they occupy the central position in curriculum implementation inputs. Sale of handicraft, creative arts work, farm produce, among others could also yield funds for expanding the school provision of instructional materials; so also can Parents-Teachers Associations (PTAs), Old Students Associations and philanthropists. Some fine arts and handicraft productions by the pupils can focus on instructional materials designed for the school. Improvisation using locally available inputs should also be vigorously pursued by the school.

g) **Cumulative Teacher Production:** Where it is mandatory that each teacher in a school should produce one relevant instructional material each term, three will be produced each year by each teacher. A primary school with twenty classroom teachers can therefore have up to sixty different instructional materials which may likely cover many curriculum topics. Where this involves rewards and elements of competition, definitely, the best could be derived from the teachers. Proper storage and careful utilization of such instructional materials can eliminate complaints of inadequate provision.

h) **Miscellaneous:** Media education for all teachers, involvement of learners in production and sourcing of inputs, political support, in-service education for teachers in Educational Technology, media-centre networking, relevant educational broadcasting, sustainable use of available instructional media and materials, systematic approach to training and education, improved storage, local production by industrialists and effective integration of Educational Technology principles into

general educational practices are among some important ways that the recommendations of Educational Technology can help to meet the challenges facing this field in Nigerian primary education system.

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