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APPROPRIATE MEDIA FOR MULTI-CHANNEL LEARNING

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1. INTRODUCTION

National and international policy makers seem to have rediscovered that "people" are at the heart of development. In its report the Commonwealth Working Group on Human Resources Development Strategies (1993) quotes extensively from world Bank and UNDP reports to re-emphasise the importance of human factor in the development equation. Development specialists have come to the conclusion that the progress of a nation depends first and foremost on the progress of its people. Unless it develops their spirit and human potentialities, it cannot develop much else'materially, economically, politically or culturally. UNDP has introduced human development index, a composite of life expectancy, adult literacy, mean year of schooling and an adjusted real GDP per capita.

No matter how you define human resource development, education in its broadest sense is the principal vehicle for improving the "quality" of human resources in a society (Loubser, 1993). There is direct correlation between the state of development of a country and the general level of education of its people. In spite of continued debate over theories of development, the demand for education will continue to be high in the coming decades. Individual expectations of the benefits and rewards for education are likely to remain high and will typically include higher income, social mobility and enhanced social status.

Because of the perceived importance of education among its citizens, governments of developing countries will keep education high on their agendas. National leaders will continue for support of national policies based on education's perceived contribution to a variety of national goals, including national integration, lower fertility rates, promotion of ideological commitments, achievement of quality of social and economic opportunity and realisation of individual basic rights. It is imperative that various options for extending the benefit of education must be examined.

2. MULTI-CHANNEL LEARNING A VIABLE OPTION

In the current stage of its evolution, multi-channel learning is driven by scientific advancements in communications and information technologies and by the requirement of a fast growing population whose educational needs are increasing daily; whose search for solutions is becoming more evident and strongly felt; and whose search for solutions is becoming more urgent. Throughout the world, various regions and countries are taking a close look at the structure, content, and methods of education, and pressure for change is mounting. It is in this context that distance education - a form of multi channel learning emerged, grew and became one of the most remarkable revolutionary advancements in the history of education. Distance education is regarded as the most significant educational innovation in this century. It is no coincidence that growth in distance education has occurred at the same time when there has been rapid advancement in media of communication.

In a study (UNDP, 1989) carried out by the United Nations Development Programme (UNDP), access, cost and quality were identified as the main educational challenges in the developing countries. Many countries throughout the world have turned to distance education to meet these challenges. The purpose and motivation for establishing distance education programmes and institutions vary from one country to another country but some of the most commonly stated objectives are :

- to satisfy egalitarian ideals of bringing education to all who possess talent and ambition but lack opportunity;
- to enable people to upgrade their knowledge and skill in specific areas of their interest;
- to develop human resources for socio-economic growth and development;
- to retrain workers who may be rendered obsolete or redundant in the face of rapid technological advancements;
- to serve as a channel for life long education where knowledge is imparted to all regardless of age or profession for the purpose of enriching the quality of life; and
- to serve as a cost effective, flexible and dynamic system of education to meet the growing educational needs of the society.

A number of factors have contributed to the growing acceptance of distance education. These include :

Demographic Factor

The pressure of rapid population growth coupled with a growing awareness of the role of education as an instrument of socio-economic development are leading governments to explore the possibility of using alternative means to provide education on a large scale, particularly as conventional educational methods are becoming increasingly expensive. One such alternatives is distance education.

Cost Factor

The demand for education far outstrips resources. Given the limited hu-

man and financial resources available to Third World, distance education becomes an attractive option. Because of economies of scale, the cost of distance education can be a fraction of that of conventional formal education, thus enabling limited resources to reach a larger population. This factor is applicable at all levels of education but particularly so in the case of tertiary education which is notoriously expensive.

Equality of Educational Opportunities

Most developing countries share a common educational problem, namely inequality of educational opportunities. Education in general, (and higher education in particular), has benefited primarily the well - to - do in society. For example, in sub-Saharan Africa female gross enrolment rates are 17 % lower at primary level and 38% lower at the secondary level than the rates for males. Similarly in Asia the female rates are 19% lower at the primary level and 30% lower at the secondary level (UNDP, 1989). The disparities in access to education between urban and rural regions within a country are reflected in the illiteracy rates of urban and rural populations. On an average percentage of illiterates in rural population is twice that of urban population and can be as high as three or four times the urban illiteracy rate. The existing education system has been producing and perpetuating a powerful class of elites on the one hand, and a growing army of unemployed and disillusioned school leavers on the other. The higher up the educational ladder one goes, the fewer the opportunities for further study. Distance education is seen as a means to democratise education.

Flexibility

Distance education with its built-in flexibility meets a variety of educational needs that conventional system of education can not. A "front-ended" model of education (concentrating on the education of the 5-21 age group) can not equip a person for life, particularly in today's fast changing world characterized by knowledge explosion and technological revolution. Individuals may require access to education and training several times during their working life. Because of rapid technological advancement, retraining and updating of skills and information are of vital importance in todays society. As the conventional system of education caters primarily to the non-working population, a large working population can not benefit from the conventional system. Distance education system is ideally suited to the education needs of working population. It is also relatively more flexible in terms of organisation, adaptation and multiplication. Distance education is user friendly system since the learner can study at his/her own pace and convenience. This attribute of distance education makes it an easily adaptable innovation.

Advances in Communication Technology

The revolution in communication and information technology is perhaps the single most important factor which has contributed to the rapid growth of distance education. Communication technology enables educational planners to expand educational opportunities by overcoming barriers of distance and re-

moteness. Education which was hitherto confined largely to face-to-face communication between the teacher and the learners, has now at its disposal a whole array of communication resources. Today's learners have available to them a great variety of learning resources such as print material, radio and television broadcast, audio cassettes, video cassettes, audio-video conferencing facilities, video disc, telephone and computer based technologies.

3. APPROPRIATE MEDIA

The process of teaching and learning is essentially a process of communication between the teacher and the learner and this process can be extended and multiplied by using mediated communication. Thus, the use of appropriate media is an integral part of multi channel learning system. By definition multi channel learning relies on a variety of mediated communication - connecting learners to sources of knowledge skill and information. The search for a balanced mix of media is a quintessential feature of multi channel learning approach.

Experience suggests that the learners are best served where a whole battery of media, old and new, are used, (Khan, 1990). This is because one medium may serve a teaching function better than another in a particular area and learner may have different preferences for media they best learn from. Differences in the cognitive styles of individuals have long been recognised in the field of educational communication. The socio-economic and cultural background of a person also influence his ability to learn from different media. Summarising the analysis of a large number of studies on the use of media for instructional purposes Schramm (1967) observed that :

"From the experimental studies we have plentiful evidence that people learn from the media, but very little evidence as to which medium, in a given situation can bring about most learning. We have hints that one medium may be more effective than other for a given learning task or a given kind of learner, but little systematic proof. Thus we can use the media with considerable confidence that students will learn from them, but if we rely only on the experimental evidence not with much discrimination".

It is now widely recognised that no single medium can be effective for all kinds of learning needs. Each medium has its own strengths and weaknesses. Finding an appropriate media mix is one of the major tasks of distance education providers. But there is no scientific procedure for deciding on the "best" media configuration (Bates, 1986). **Planners of distance education systems have to custom design their media mix to suit the circumstances in which they operate.** There are number of factors (Bates, 1989) that need to be taken in to consideration for deciding on the "appropriate" media mix. These include access, cost, teaching function, interactivity and user - friendliness, organisation, novelty, speed and number of learners.

Media configuration in any given situation will change as new information and communication technologies become more easily accessible to distance education planners. The use of more

advanced technology can be justified only if it increases accessibility to student, enhances teaching effectiveness and lowers the cost.

While these factors are important, in practice, media selection and use is determined by a number of macro-level and micro-level factors. Some of the most important macro-level factors are : country size (area and population), wealth and resources, extent of industrialisation, education and training system infrastructure and capabilities, political support for education and educational technology, and information dissemination infrastructure. These factors can suggest the kinds of technology that best fit a country's economic and socio-political circumstances. Micro - level factors include income levels, access to media and gender implications.

The Commonwealth of Learning, whose fundamental mission is the development of human resource through the application of distance education techniques and technologies, in response to development needs of member countries, has been actively engaged in providing technical assistance in the selection and use of media for distance education in different contexts. The three case studies described below are examples of COL's technical assistance to member countries in the use of appropriate media for relatively small scale distance education system.

4. FIELD BASED AUDIO PRODUCTION - THE CASE OF GHANA

COL received a proposal in 1992 from Republic of Ghana to build a radio studio to support the Mass Literacy Programme (MASSLIP). The proposal was to build radio studio for the exclusive use of MASSLIP as the studio facilities of Ghana Broadcasting Corporation (GBC) were not readily available for this project.

The Republic of Ghana has placed a very high priority on the social sector in its programme of economic recovery and structural adjustment. Emphasis has been placed on the human dimension by introducing : first, major educational reform in 1987; second, launching of the Programme of Action to Mitigate the Social Cost of Adjustment (PAMSAD) in 1988; and third, by increasing dramatically its allocation to the education sector.

Although adult literacy initiatives have a long history in Ghana the government demonstrated its resolve to significantly reduce illiteracy especially among women by launching MASSLIP in 1991. MASSLIP is basically a non formal education programme that uses a combination of distance education and face-to-face methods. The learning material consist of a primer and two basic readers in each of the 15 languages. Non print media, namely radio, video cassettes, puppets and theatre are regarded as crucial components of the learning package.

Radio is the most important medium of mass communication in Ghana and therefore a special emphasis has been accorded to using radio in the project. The Non- Formal Education Division of the Ministry of Education has entered into an agreement with the GBC to ensure regular use of radio for the functional literacy programme. Al-

though GBC has agreed to allocate air time on its primary services (GBC 1 and GBC 2) as well as on community and FM stations, its production facilities are often not available for the MASSLIP project. This was the main justification given by the Non- Formal Education Division in seeking COL's assistance to build a radio studio exclusively for the MASSLIP project.

A project appraisal was carried out by COL to ascertain the desirability of building a studio. The appraisal report recommended that instead of building a radio studio, a Field Recording Unit would be a more appropriate option. The recommendation was based on the following considerations:

- a Field Recording Unit can be used to produce functionally relevant programmes in local languages based on the materials recorded in the field;
- the cost of Field Recording Unit is only a fraction of the cost of the radio studio;
- the ultra portable equipment allows greater flexibility in producing more than one programme at the same time;
- the operation and the maintenance of a Field Recording Unit do not require high level engineering staff and the cost of operation and maintenance is nominal; and
- the experience of using radio in rural development programmes shows that, given the choice, rural audiences prefer field-based programmes over studio production.

The Field Recording Unit consists of professional grade portable reel-to - reel tape recorders, ultra portable cassette recorder, sound mixer, micro phones and accessories. The unit can be used for producing broadcast quality radio programmes. Materials for the programme can be collected from different location and assembled and edited at the Centre. The Unit itself is portable and can be easily transported from one location to another; it is virtually an open air studio. Convinced of the usefulness of the Field Recording Unit, the Government of Ghana has equipped each of the field functionaries in MASSLIP with a cassette recorder in order to gather field -based material. The material thus gathered are assembled and edited to produce broadcast quality programmes in different Ghanaian languages. The materials are also used in cassette format at the Functional Literacy Centres.

COL has adopted an integrated approach in providing technical assistance in the use of media and provision for training is regarded as an essential component in all its technical assistance programmes. A two - week training programme for Media Co-ordinaters and Training Officer working in MASSLIP was conducted soon after the equipment arrived in Ghana. The training included programme planning, production techniques, and practical exercises in recording programmes in rural areas, editing, and presentation techniques. As part of the training programme, each participant was required to produce one complete programme of 15 minutes duration. The

Media Co-ordinaters and Training Officers now record their own programme in their respective district and region and supply the material to the Centre where it is assembled and edited. Apart from broadcast use some of the material is distributed to the Functional Literacy Centres in cassette format.

5. LOW-COST VIDEO PRODUCTION - THE MALDIVES EXAMPLE

The Republic of Maldives has established an Educational Media Services Unit (EMSU) in its Educational Development Centre (EDC) to provide audio - visual support to the educational sector. The EMSU is responsible for designing, producing and distributing a variety of educational materials both for face-to-face teaching and for distance education delivery.

Distance education in Maldives began in 1989 as an alternative delivery mechanism for those in the islands who are unable to access educational opportunities in the conventional face-to-face system. Teaching of English language was the first distance education programme in the Maldives. At present twelve atolls have access to a basic English language under this programme. The responsibility for administering the distance education programme lies with the Non-Formal Education Unit, but the materials are produced by the EMSU.

The Government of Maldives submitted a proposal on "Development of Education Media Services" to COL in 1993. The proposal included a list of sophisticated and costly production and post-production video equipment. Project appraisal carried out by COL revealed that EMSU had the basic production equipment but it lacked post -production facilities and that with the exception of one person, the technical staff had received no training in video production and the operation of equipment. Training was, therefore, identified as the major input required for improving the productivity of EMSU. A two pronged approach to training was adapted. An experienced educational television expert from the Indira Gandhi National Open University (IGNOU) was sent to Maldives to conduct a three-week workshop in script writing and video production technique. Apart from the staff of EMSU, a number of voluntary agencies involved in education and development media work availed themselves of the training opportunity. Three technical staff (one camera man and two technician) were attached to the Communications Division of IGNOU for one month for intensive training in their respective areas.

Thus, the search for appropriate post-production equipment laid to the development of an innovative system which combines video production technology and computer technology. The on-site needs included video editing, animation, still frame capture, along with the conventional forms of computer application such as desktop publishing, word processing, spreadsheets, data communications and CD-ROM.

To address the video editing needs, a desktop video editing system, in the form of a microcomputer and accompanying software, was decided upon. This form of video editing requires that the computer becomes a controller for the

video editing decks. For example, the video editing decks used for input or output are not a consideration for the computer. S-VHS editing decks could, if budget permitted be easily replaced with Betacam. The only stipulation is that the equipment be controllable via computer interface.

Besides overall cost, a computer - based system has specific advantages over the traditional forms of video editing, in that :

- the emphasis through a computer based system would be on software and not the video hardware. This would allow for future upgrades in the form of computer software in the system without the replacement of the expensive video hardware elements- in effect the system becomes more sophisticated via software and not hardware upgrade. In this scenario, it is easier for software disk to be shipped by air, mail, or down loaded via computer modem, to a remote location rather than dealing with the specifics of an expensive hardware purchase;
- the system would also allow ease of integration of software elements such as computer clip art, or drawing generated through draw or paint programmes;
- titling is created through a variety of font sizes which are generated in the word processor. In essence the word processor with its many sophisticated elements such as spell checker, cut, copy and paste, becomes the titler for the video producer;
- the digitisation of still images through computer frame capture has also an element of the computer- based desktop video editing system, allowing still images to be manipulated in the draw-and-paint computer software applications. These captured images can be easily integrated in to a computer-based video production;
- it is also important to note that the input of the computer-based video editing system could be in PAL or NTSC, and the output in PAL or NTSC. The computer in this case becomes a standards converter. A PAL signal in real time can be converted into an NTSC or vice versa;
- the video editing software, although displayed on a computer monitor, retains the basic principles of video editing. The top half of the screen is the graphical timeline in which video clips, graphics, effects, etc. are arranged like building blocks. All of the objects in the timeline can be edited and moved to any position. The bottom half of the screen organises the editing projects. Every project can be stored, loaded and re-edited at any given time and;
- because desktop video editing is software based, the system includes an extensive (over 300) digital video effects library which includes: dissolves, pans moves, wipes, tumbles, flips, "picture in picture", fly-ins, fly-outs, colour effects, zoom and shrink, to name a few.

A central requirement for the effective use of this equipment is the training both in the techniques of production and the computer skills. It is obvious that video production, especially editing, will move towards the digital world in the next few years. Those with extensive video editing skills will be asked to integrate their video editing skills into those skills used on microcomputers. In most cases the video editing expertise requires that dial and shuttle controls be translated to click and drag mouse skills on the computer.

The Commonwealth of Learning has provided video editing software documentation for self-instruction and video training tapes to EMSU. Only after several months of in-house operation in the Maldives and a proper needs analysis can there be evaluation as to whether further training will be needed. The training would be in the form of a visit to the site by an expert in the system.

As described above, the actual operation of the desktop video editing software will in principle replicate the operation of a hardware-based system. Computer-based desktop video editing system of this nature used around the world have shown that most skill requirements are more related to video editing rather than to skills needed for computer operations.

6. SOLOMON ISLANDS : DISTANCE EDUCATION NETWORK

At the request of the Soloman Islands College of Higher Education (SICHE) and the University of South Pacific (USP), The Commonwealth of Learning carried out a feasibility study in 1990 to explore the possibility of establishing a distance education network to serve the people living in the vicinity of Provincial Capital Cities.

The Government of Soloman Islands had two main objective in considering distance education. These educational objective were :

- to provide direct access for the population living in the provincial capital to the service of SICHE, which is based in Honiara; and
- to provide students access to the University of the South Pacific (USP) student support services available through the USP Satellite Network (USPNET).

To meet these objectives, The Commonwealth of Learning (COL) established a communication network which links a group of sides through a teleconference bridge. The locations on the network are Gizo, Munda, Auki, Kirakira, Lata, the USP Centre in Honiara, the Telecom Training Centre in Honiara and finally the network "Centre" - SICHE's Panatina campus in Honiara, the capital.

The communication network has two important features :

(1) Each site has been equipped with an audio graphics system which has a loud speaker and micro phones so that a group of people can here what is coming as well as speak in to it, and

(2) A teleconference bridge installed in Honiara which allows the network controllers to link up more than one site at a time. By calling the bridge, a teleconference can be setup between all or some of the sites. This means that all the people linked through the bridge can speak to each other using their AGS

Units. The net work serves as an interactive communication system and a powerful education tool.

The net work serves distance education programmes of two educational institutions in the region - USP and SICHE. Although USP has a well established extension service, it had not been able to provide tutorial support to the students in the provinces. Solomon Islands Distance Education Network (SIDEN) has now made it possible for the USP staff in Honiara to communicate with the students residing in the provinces. The distance education programme of SICHE is of relatively recent origin. The first course, the Adult Education Proficiency Award, includes teletutorials using SIDEN.

The Commonwealth of Learning has also carried out a feasibility study (Matyas 1993) for a regional telecommunication network for distance education in the Asia - Pacific region. The network envisages a shared multi-user system which is ideally suited for the region where there is a high proportion of small states and institutions and where "customised" networks could usefully supplement conventional networks and service. A similar network could also be developed for distance education in other regions.

7. CONCLUSIONS

- Distance education has emerged as a cost effective alternative to provide quality education, at all levels, to a larger segment of the population both in the developed and developing world, bypassing the barriers of remoteness, socio -economic background and gender.
- Contrary to the common belief, a number of distance education systems, particularly those in small states and in dual mode institutions, are relatively quite small.
- Use of media and other communications technologies is an integral component of distance education system. In fact, advancement in information and communications technology is one of the main factors responsible for the exponential growth of distance education in recent years.
- Experience shows that no single medium or technology can meet all the learning needs of diverse student population. The interest of distance learners are best served by using a battery of media.
- Although there is no set formula for selecting appropriate media for distance education, the ACTIONs model (Access Cost Teaching Interaction Organisation Novelty Speed) can serve as a useful guide. A number of macro and micro-level factors must be taken into account in selecting appropriate media.
- The size of distance education system is an important factor that needs to be taken into consideration in selecting media.
- COL, as a multilateral inter-governmental organisation responsible for promoting distance education techniques and technology, has adopted an integrated approach in providing technical assistance in the selection and use of appropriate

media for distance education. The main components of an integrated approach are : feasibility study, project appraisal, advisory service in media selection; training; and evaluation.

It does not seek to foster any particular brand of technology nor advocate the use of services from any particular source. By virtue of its mandate COL represents the interests of its client who are primarily the developing countries in the Commonwealth for many of whom it can genuinely serve as an honest broker. This is an important role in the context of increasing welter of technological goods and services becoming available.

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