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INTRODUCTION

Human resources development is an essential factor in economic and social development. 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 their citizens, governments of developing countries will keep education high on their agendas. National leaders will continue to argue for support of national educational 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.

In the current stage of its evolution, education is driven by scientific advancements and by the requirements of a fast growing population whose needs are increasing daily; whose problems are 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 emerged, grew and became one of the most remarkable and revolutionary advancements in the history of education. Distance Education is regarded as the most significant educational innovations in this century. It is no coincidence that the growth in Distance Education has occurred at the same time when there has been rapid advancements in communications technology.

The purpose of this paper is two fold: (1) to articulate the relevance of Distance Education with special reference to developing countries and (2) to describe the approach adopted by the Commonwealth of Learning (COL) in providing technical assistance in the selection and use of media in small scale Distance Education systems.

RELEVANCE OF DISTANCE EDUCATION

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 facing 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 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 skills 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.

There has been phenomenal growth in Distance Education programmes and institutions in the countries of Asia and the Pacific region in the last two decades. Over two million students are enrolled in formal and non-formal programmes offered through Distance Education mode in this region alone (Dhanrajan and Hodgkin et al. 1990). A number of factors have contributed to the rapid growth of Distance Education in the region.

Population Pressure

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 alternative is Distance Education.

Cost Effectiveness

The demand for education far outstrips resources. Given the limited human and financial resources available to Third World countries, 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 in 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 per cent lower at primary level and 38 per cent lower at the secondary level than the rates for males. Similarly, in Asia the female rates are 19 percent lower at the primary level and 30 percent 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 average, the 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 enables governments to democratise education.

Flexibility

Distance Education with its built-in flexibility meets a variety of educational needs that conventional system of education can not. 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 characterised by knowledge explosion and technological revolution. Individuals may require access to education and training several times during their working life. Because of rapid technological advancements, retraining and updating of skills and information are of vital importance in today's society. As the conventional system of education caters primarily to non-working population, a large working population can not benefit from the conventional system. Distance Education system is ideally suited to the educational needs of working population. It is also relatively far more flexible in terms of organisation, adaptation and multiplication. Distance Education is a user friendly system as the learner can study at her own pace and convenience. This attribute of Distance Education makes it an easily adaptable innovation.

Advancements 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 remoteness. 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- print material, radio and television broadcasts, audio cassettes, video cassettes, audio / video conferencing facilities, video disc, telephone, and computer based technologies.

MEDIA FOR SMALL SCALE DISTANCE EDUCATION SYSTEMS

Media is an integral part of Distance Education. By definition Distance Education relies on non-contiguous, i.e. mediated communication. The process of education is primarily a process of communication between the teacher and the learner and this process can be extended and multiplied by using mediated communication. The search for a balanced mix of media is a quintessential feature of systems of teaching and learning at a distance. Thus, whether one is interested in media as such or not, concern about media must be

central to distance educators. The field in general is developing from the original correspondence teaching methods through the stage of additional technical facilities towards an integrated multimedia approach in the setting of open learning.

Experience suggests that the students of distance teaching programmes 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 learners may have different preferences for the media they best learn from. Differences in the cognitive styles of individuals has long been recognised in the field of educational communication. Socio-economic and cultural background of a person influences 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 a number of factors (Bates, 1989) that need to be taken in to consideration for deciding on the " appropriate " media mix. These include:

- Access: where will the students learn-home, work, local centres?
- Cost: what will be the fixed and variable costs?
- Teaching Functions: what is the pedagogic objective?

- Interaction and user-friendliness: what kind of learning does this technology encourage? Do the students and teachers require a great deal of training to use this technology?
- Organisation: what changes in the organisation will be required to facilitate the use of a particular technology?
- Novelty: to what extent will the 'trendiness' of this technology stimulate funding and innovation?
- Speed: how quickly and easily will the material be up-dated and changed? How quickly can new courses be produced using this technology?

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 students, 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 scale of Distance Education system varies considerably depending upon the size of the country, educational infrastructure, type of institution and the nature of collaborative arrangements with national and international organisations.

Data assembled by the World Bank(1991) shows that 56 countries in the world have a population of less than a million. Thirty of these small states are members of the Commonwealth. Inevitably, several programmes of Commonwealth co-operation focus on these small states which constitute such a large proportion of its membership. These small states are quite heterogeneous. This aspect of small states was most dramatically

presented by Mathewson in her paper, "Distance Beyond Measure: A View from the Pacific", presented at the 1994 Conference of the Canadian Association for Distance Education (CADE). In spite of these differences they share a number of problems and challenges particularly in education. These include:

- the absence of economy of scale;
- the narrowness of the labour market;
- the significance of emigration;
- extreme dependence on the outside world;
- remoteness;
- territorial fragmentation (the case of archipelagos);
- finally, vulnerability to natural disasters.

Taking these challenges into account, some experts in education argue that Distance Education is an attractive option for small states and in some cases perhaps the only option available (Irvine and Maraj, 1994). On the face of it, small states and Distance Education may appear to be contradictory terms. But the notion of 'distance' in Distance Education does not refer merely to the physical distance between the teacher and the learner but to the process of teaching and learning at a distance. In a report prepared for the OECD Secretariat, Renewick (1993) argues that in any discussion of Distance Education it is important to unpack the meanings that have come to be associated with 'distance'. The essence of Distance Education is in its process of designing, producing and delivering educational material for guided self instruction and evaluation of learning outcomes.

Because of greater visibility and prestige of large open universities the general belief is that Distance Education is suitable only for large student populations. But contrary to this common belief, a number of Distance Education systems can be relatively quiet small in terms of their student population and the courses they offer. For example, Distance Education is seen as the only realistic option in small states where the choice is between

it or sending a selected few students overseas. Sending students overseas is not only expensive but many students after receiving their education in institutions in developed countries never return to their country. Another example of a small scale Distance Education system is to be found in dual mode conventional institutions.

Small states have used several approaches for providing Distance Education. Enrolment of students from St Vincent and the Grenadines in a small degree programme delivered at a distance by the University of Waterloo in Canada is an example of off-shore approach. This approach is also piloted by COL in Maldives and Seychelles using the Open Learning Agency of British Columbia as accrediting body. Those small states which have their own universities such as Brunei, Guyana, Malta, Macao, Mauritius, or have direct access to a university via a campus college, for example Barbados, Trinidad, and Fiji, provision of Distance Education programmes locally have considerable potential.

Two regional universities - the University of the South Pacific (USP) and the University of West Indies (UWI), run a number of Distance Education programmes in their respective regions. Incorporating Distance Education in conventional institutions is becoming a preferred option in many countries. This option is attractive not only because it enables men and women to have access to education in a flexible manner but also it allows more effective use of existing educational resources and helps improve the quality of face-to-face teaching.

The size of Distance Education system has implications for the design, development and delivery of courses. For example, use of radio and television broadcast may be cost effective and perhaps a necessary component of a large scale Distance Education system. But small Distance Education organisations cannot justify the use of this mode of delivery. The implications for production are obvious. If the production of materials is for non-broadcast use, the organisation does not require sophisticated and expensive production and post-production equipment and facilities.

COL, whose fundamental mission is the development of human resource through the application of Distance Education techniques and technologies, in response to the 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 systems.

Field-Base Audio Production-The Case of Ghana

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

Republic of Ghana has placed very high priority on the social sector in its programme of economic recovery and structural adjustment. Emphasis has been placed on human dimension by introducing major educational reform in 1987, launching the of Programme of Action to Mitigate the Social Cost of Adjustment. (PAMSAD) in 1988 and 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 and uses a combination of Distance Education and face-to-face methods. The learning materials consist of a primer and two basic readers in each of the 15 languages. Non-print media, namely radio, video cassettes, puppet's, and theatre are regarded as important components of the learning package.

Radio is the most important media of mass communication in Ghana and therefore a special emphasis has been accorded to the use of radio in the project. The Non-Formal ducation 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. Although GBC has agreed to allocate air time on its primary services (GBC 1 and GBC 2) as well as community and FM stations,. its production facilities are often not available for MASSLIP project. This was the main justification given by the Non-Formal Education Division in seeking COL's assistance in building a radio studio.

A project appraisal was carried out by COL to ascertain the desirablity of building a studio exclusively for MASSLIP. 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 a radio studio;
- the ultra portable equipment allows greater flexibility in producing more than one programme at the same time;
- the operation and maintenance of a Field Recording Unit does not require high level engineering staff and the cost 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 productions.

The field recording unit consists of professional grade portable reel-to-reel tape recorders, ultra portable cassette recorders, sound mixers, microphones, and accessories. The unit can be used for producing broadcast quality radio programmes. Materials for the programmes can be collected from different locations 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 the field functionaries in MASSLIP with a cassette recorder each in order to gather field based material. The materials thus gathered are assembled and edited to produce broadcast quality programmes in different Ghanaian languages. The materials are also used in cassette format at in the Functional Literacy Centres.

COL has adopted an integrated approach in providing technical assistance in the use of media and provision for training, regarded as an essential component in all its technical assistance programmes. A two-week training programme for Media Co-ordinators 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-ordinators and Training Officers now record their own programmes in their respective districts and regions and supply the materials 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.

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 education sector. The EMSU is responsible for designing, producing and distributing a variety of educational materials both, for face-to face and Distance Education.

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 course 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 on submitted a proposal on "Development of Educational Media Services" to COL 1993. The proposal included a list 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, 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 techniques. 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 cameraman and two technicians), were attached to the Communications Division of IGNOU for one month for intensive training in their respective trades.

Thus the search for an appropriate post-production equipment led 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 applications such as desktop publishing, wordprocessing, 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 systems becomes more sophisticated via software and not hardware upgrade. In this scenario, it is easier for a software disk to be shipped by air, mail, or downloaded 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 drawings generated through draw or paint programmes;
- titling is created through the array of fonts and sizes of fonts 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 digitization 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 into 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.

Of central issue is training. It is obvious that video production and especially editing will migrate towards the digital world in the next few years. Those with extensive video editing skills will be asked integrate their video editing skills into that of the skills in using 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.

COL 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 will there be a determination of whether further training will be needed. This would come 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 systems of this nature employed globally have shown that most skill requirements are more in the nature of principles of video editing rather than the skills in computer operation.

Solomon Island Distance Education Network

At the request of the Solomon Island College of Higher Education (SICHE) and the University of Southern 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 their population living in the vicinity of Provincial Capital Cities.

The Government of Solomon Islands has two main objectives in considering Distance Education. These educational objectives are:

- to provide direct access for the population living in the provincial capitals to the services 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 sites through a teleconference bridge. The locations on the network are Gizo, Munda, Auki, Kirakira, Lata, the USP Centre in Honiara, the Telekom Training Centre in Honiara and finally the network "Centre"-SICHE's Panatina campus in Honiara.

The communication network has two important features: (1) each site has been equipped with an audio graphics system which has a loud speaker and microphones so that a group of people can hear what is coming through as well as speak into it and (2) a teleconference bridge installed in Honiara allows the network controllers to link up more than one site at a time. By calling the bridge, a teleconference can be set up 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 network serves as an interactive communication system and a powerful educational tool.

The network serves Distance Education programmes of two educational institutions in the region-USP and SICHE. Although USP has a well established extension service, it was 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.

COL has carried out a feasibility study (Matyas 1993) for a regional telecommunications 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 networks could be developed for distance education in other regions as well.

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, advancements in the 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 media or technology can meet all the learning needs of diverse student population. The interests 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, ACTIONS model, (Access Cost Teaching Interaction Organisation Novelty Speed), can serve as 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 an 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 integrated approach are: feasibility study, project appraisal; advisory service in media selection; training; and evaluation. This is distinct from the technical assistance provided by the bilateral agencies where promoting the goods and services of donor countries is one of the primary considerations. By virtue of its mandate COL, represents the interests of its clients namely the developing Commonwealth. This aspect of COL is particularly important in the context of small states who may lack the resources and expertise to adequately represent their cause.

References

- Bates, A.W. (1986). *Media in Distance Education* in Higher Level Distance Education. UNESCO, Paris.
- Bates (1990). *Interactivity as a Criterion for Media Selection in Distance Education*. in Interactive Communication in Distance Education. Asian Association of the Open University.
- Dhanarajan, G.T.E., Halgin S. Timmers, K.S. Yuen and C. Brahmawong (1990). *Staff Development for the Applications of Interactive Technologies in Distance Education* in Interactive Communications in Distance Education. Asian Association of Open Universities.
- Irvine, D., Maraj, J., (1994). *Higher Education and Small Island States: Challenges and Response: A paper presented at the UNESCO International Experts' Meeting on Higher Education in the Small Island States, Praia, Cape Verde.*
- Khan, A.W. (1990). *Changing Face of Education: Impact of Educational Technology*. Research Paper, National Institute of Multimedia Education, Japan.
- Loubser, Jan (1993). *Capacity Development*. Paper presented to the ACCC International Conference.
- Matyas, R. (1993), *Study of Educational Telecommunications Requirements for the South Pacific*. The Commonwealth of Learning, Vancouver, Canada.
- Mathewson, C (1994). *Distance Beyond Measure: A View from and of the Pacific*. A paper presented at the CADE Conference, Vancouver
- Renwick, W. (1993). *The Future of Face-to-Face and Distance Teaching in Post-Secondary Education*. A paper submitted to OECD.
- United Nations Development Programme (1989). *Educational and Training in the 1990's: Developing Countries' Needs and Strategies*. United Nations, New York.

World Bank. 1991. *World Development Report 1991*. New York (N.Y.): Oxford University Press.