

Open and Distance Learning

Prospects and Policy Considerations



UNESCO, 1997

OPEN AND DISTANCE LEARNING

Prospects and Policy Considerations

UNESCO

1997

FOREWORD

The increasing international interest in open and distance learning and the subsequent expansion of the respective institutions and programmes is a most remarkable development in the field of education and training of recent years. There seems to be no doubt that open and distance learning is in a process of establishing itself as an integral part of educational delivery systems.

UNESCO, which since its foundation is committed to the provision of both formal and non-formal learning opportunities within the framework of the principle of lifelong education, has continuously encouraged and supported the use of distance education from its early initiatives of correspondence studies. Thereafter dramatic acceleration in the development of information and communication technologies has come to challenge and even to question the adequacy of traditional systems of educational delivery, but also to offer partnership in the creation of a wide range of new learning opportunities freed from the constraints of time and space.

The present paper, 'Open and Distance Learning: Prospects and Policy Consideration', has been prepared by Unesco as a contribution to the on-going discussion on the ever wider role that open and distance learning is expected to assume in the educational landscape of tomorrow. While the paper is not intended to impose any particular policy or model, it is hoped, as it was the wish of the Director-General, Mr. Federico Mayor, to contribute to national reflections on the use of open and distance learning, including its policies and priorities, and to inspire cooperation at the national, regional and sub-regional levels that, in the final analysis, will help strengthen the chances of providing lifelong education for all.

For the preparation of the paper, the Division of Higher Education of UNESCO has collaborated closely with all UNESCO's Units dealing with distance education and new technologies, the International Council for Distance Education (ICDE), and other organizations, specialized institutions, associations and international experts. We would like to extend our sincere thanks for their comments and suggestions on the draft version of this paper. We would also like to express our thanks to Mr. Heimo Mantynen, former Chief of the Section for Educational Sciences of the Division of Higher Education, who conducted the whole preparation of this document before his retirement.

Marco Antonio R. Dias
Director of the Division of Higher Education
Education Sector
UNESCO

EXECUTIVE SUMMARY

I. The terms **open learning and distance education** represent approaches that focus on opening access to education and training provision, freeing learners from the constraints of time and place, and offering flexible learning opportunities to individuals and groups of learners. Open and distance learning is one of the most rapidly growing fields of education, and its potential impact on all education delivery systems has been greatly accentuated through new developments in information and communication technologies. The **objective** of this paper is to review open and distance learning in the context of present challenges and opportunities, examine relevant concepts and contributions, outline current global and regional trends, suggest policy and strategy considerations, and identify UNESCO's policies on open and distance learning, including its role in capacity-building and international co-operation. It is addressed to a wide range of potential partners, governments, intergovernmental and non-governmental organizations, specialized institutions, associations, industrial corporations, telecommunication companies, and others interested in this field, to seek their cooperation in meeting today's urgent education and training needs, through open and distance learning.

Challenges and opportunities

II. The last two decades have seen considerable growth in education and training. But the world still suffers from intolerable inequalities at the international level and sometimes within nations. Many countries are struggling with **limited** access to education and training for children and young people, and at the same time have to address the **basic needs** of an older generation. Low **quality** and insufficient relevance are other concerns. At the root is often the problem of **financing** adequate provision of education and training. The rapid development of information and communication technologies and the move towards a more knowledge-intensive, interdependent society create new challenges and opportunities for the design and delivery of education.

III. For the **student/learner** open and distance learning means increased access and flexibility, as well as the combination of work and education. It may also mean a more learner-centred approach, enrichment, higher quality and new ways of interaction. For **employers** it offers high quality and often cost-effective professional development in the workplace. It allows upgrading of skills, increased productivity and development of a new learning culture. In addition, it means sharing of costs, of training time, and increased portability of training. For **governments** the main potential is to increase the capacity of education and training systems, to reach target groups with limited access to conventional education and training, to support and enhance the quality and relevance of existing educational structures, to achieve more cost effective education and training, and to promote innovation and opportunities for lifelong learning.

Concept and contributions

IV. Open and distance learning systems can usually be described as made up of a range of **components** such as: the mission or goal of a particular system, programmes and curricula, teaching/learning strategies and techniques, learning material and resources, communication and interaction, support and delivery systems, students, tutors, staff and other experts evaluation procedures, management, housing and equipment. There are both success stories and failures in open and distance learning, and many systems are struggling with problems and barriers to effective implementation. Some of the more common problems are: inadequate technological infrastructure, planning and programme deficiencies, lack of human capacity and expertise, inadequate financial resources: and lack of recognition of educational equivalence.

V. Sometimes open and distance learning is used for **school-age children and youth** who are unable to attend ordinary schools, or to support teaching in schools both at primary and secondary level. However, most courses and programmes are targeted at **the adult population**. In developing

countries, distance education for school equivalency is an important way of expanding educational opportunities to the adult population. In developed countries, there is still a need for these types of programmes for those who dropped out of the conventional system.

VI. **Teacher training** is an important area where open and distance learning has made a major contribution. This includes initial training for formal qualifications, in-service supplementary training for formal up grading, and continuing in-service training in particular subjects and topics. Many examples, particularly from developing countries, show that teacher training at a distance may reach large groups of teachers and have profound impact on the development of national education systems. Both private and public providers have made important contributions to the development of industry and trade through programmes for **technical and vocational education**. In addition to business studies and technician training, agricultural training and training for public administration and health services may also be mentioned.

VII. **Non-formal education** and community development represent other sectors where open and distance learning is used. Programmes at a distance often reach substantial numbers of women, in societies where women lack equal opportunities for participation in conventional forms of education and training. Open and distance learning approaches lend themselves to the teaching of many of the complex issues of the modern world, in which **input from a variety of disciplines** is necessary. There is also a wide range of projects involving school children and youth in cross-cultural electronic communication. Some of these are good examples of promotion of international understanding across ethnic and cultural borders.

VIII. Distance education **at the tertiary level shows a two-fold development pattern**. On the one hand, numerous single mode open universities have emerged to absorb large numbers of new learners, while, on the other hand, increasing numbers of traditional universities have begun to offer their programmes also through distance education. This tends to diminish the earlier distinction between the two types of universities.

IX. Open and distance learning has the potential to generate **new patterns of teaching and learning**. Linked as it is with developments in information and communication technologies, it is close to the development of new learning needs and new patterns of information access and application. There is evidence that it can lead to innovation in mainstream education, and may even have effects beyond the realm of education itself. Open and distance learning will therefore play an especially decisive role in the creation of the global information society.

Present trends in open and distance learning

X. Obviously, open and distance learning will be an important element of future education and training systems. It is approaching **acceptance** within mainstream education and training in such a way that it will make up part of the repertoire of most educational institutions in the future. This will also mean that the present distinction between 'conventional' education and open and distance learning will become less meaningful. One of the technological trends is the emergence of new forms of distance learning based on more **interactive telecommunication technologies**, with pedagogical, economic and organizational implications. Furthermore, there is a significant trend towards **internationalization**. Institutional and inter-governmental cooperation is increasing, and the 'global classroom' has been realized in quite a number of projects, particularly in connection with emerging global communication networks.

XI. The regional overview shows great differences between all regions of the world, although there are also a number of similarities. Open and distance learning has existed for about one hundred years in the more developed regions and for one or two generations in the developing regions. In **the developing world**, open and distance learning suffers from many of the problems faced by conventional education. Additionally, lack of infrastructure and professional competence in open and distance learning are important barriers. Nevertheless, these forms of educational delivery have come

to stay, and many countries are looking at open and distance learning as a major strategy for expanding access and raising quality.

XII. In **industrialized countries** present trends are linked both to structural problems of education in modern society, and to technological development. The need to extend learning opportunities over the whole life span and the changing demands concerning mass education and the need for new skills represent challenges, which are not easily met by conventional structures and institutions. Information and communication technologies have great potential impact on education, and may help in creating new patterns of education and training. Governments, industry and educational institutions are eager to develop effective applications of new technologies and at the same time meet the needs of learners. However, conventional ways of teaching continue to thrive, and the field shows a great variety of approaches to the implementation of new strategies, with varying success.

Policy and strategy considerations

XIII. **National policy documents** on education and training should include statements on the role of open and distance learning. National policies and planning should address fundamental questions concerning purpose, target groups, resources and infrastructure, relation to the conventional system, measures for implementation, coordination, funding, quality assessment and recognition. All stakeholders should as far as possible be included in consultation, and planning should be intersectoral. The question of scale has to be addressed, as does private sector involvement.

XIV. A successful national launch or reform of open and distance learning requires visible and strong leadership and high-level government backing. Careful **planning** is essential. To help ensure effective **implementation**, evaluation procedures need to be built in at the planning stage. Planners should take into account the training needs of staff involved. New initiatives and institutions need substantial funding to cover start-up. A cost effective operation is one that makes good use of all available resources -it is not necessarily low cost. A distance teaching institution needs sufficient resources to be able to react promptly to new demands and situations. There needs to be a planned, continuing interface between all the national stakeholders in order to secure coordination. International and regional bodies may have a role supporting and guiding developments at national level.

XV. In **developing countries** there are some common **barriers** to the effective implementation of open and distance learning. Lack of funding, problems of allocation of resources and sustained support are perhaps the most important ones, having detrimental effects on quality and achievement. Another problem is lack of human resources with sufficient competence and motivation. The third major problem is technological infrastructure, which prevents the effective use of appropriate technologies. Finally, lack of strategic planning and coordination as well as varying donor perceptions and interests may reduce the level of achievement. Important strategies for future development should include harmonization of goals, policy clarification and coordination at national level, as well as regional coordination and collaboration. Capacity building is important, including increased professionalism in planning and management of open and distance learning systems. Other aspects are networking between national stakeholders, better integration between education and training systems and the productive sector, and progressive autonomy and capacity for continuing operation after aid has ceased.

XVI. Although the education community has often expressed reluctance towards the application of **new technologies** in education, the dramatic changes we see in the technological environment of society cannot leave education unaffected. There is already a variety of technologies available at different levels of sophistication, which may fit most educational requirements reasonably well. There is great potential for new, advanced technologies with the capacity of storing, retrieving, manipulating and distributing large amounts of information, and of speeding up and facilitating communication. All this is achieved in an increasingly integrated way and at decreasing costs. The challenge will be to

utilize this potential in accordance with clear educational and instructional strategies, and to integrate the cultural and intellectual developments caused by the new technologies in the global information society.

XVII. **Interactivity** is a key element in most of the new services that are foreseen. The technologies are particularly adaptable to the communication needs of dispersed users, but on the other hand need reliable networks. For electronic information technologies to be successfully employed in education on a wide scale, major changes will have to be introduced into education systems. New technologies in education imply **new approaches** to the available information as the learners acquire knowledge and build knowledge structures. The education sector should organize itself as a major technology customer and partner in service development. The integration and convergence of open and distance learning systems with conventional educational structures should become part of the strategy in this context. For this to be achieved, the roles of different key actors should be reconsidered and redefined.

XVIII. There is no simple answer to the question of what **models and structures** open and distance learning institutions will adopt in the future. There is an increasing tendency to use open and distance learning in traditional universities, and this will almost certainly be extended to all levels and all sectors. On the other hand, there will also be room for other types of institutions, both public and private. New markets and technologies will impose changes in all existing institutions, and new types of services and institutions will emerge. Nevertheless, there will be a continuous need for dedicated distance learning institutions (open universities, open schools, etc.) or departments with a capacity for serving very large target groups. All institutions will need to develop new **partnerships** and alliances in order to meet the needs of society in more effective ways than most of them do today. The wealth of experience and competence in open and distance learning institutions must be capitalized on in future structures.

XIX. The **cost structures** in open and distance learning are quite different from cost structures in conventional types of education. Capital investments usually substitute for high recurrent costs, making economies of scale a decisive factor. Large distance learning programmes may produce graduates at considerably lower costs than conventional institutions. This depends, however, also on a number of other factors. The costs of open and distance learning vary a great deal according to the use of learning materials, media and technologies, and types and organization of student support services. In order to evaluate costs it is also necessary to consider the rate of completion of studies.

XX. There is a need for **cost studies** of open and distance learning to be increased in both scope and number. Most previous studies compare the costs of single mode distance learning systems with that of conventional systems, while cost studies of open and distance learning used by conventional or dual mode institutions are scarce. The introduction of open and distance learning technologies should lead to reallocation of other resources, to avoid increased costs. Simple cost efficiency studies do not take into account broader qualitative and social aspects. Open and distance learning systems are often targeted towards other groups, without easy access to conventional institutions. There are other benefits that are not easily quantified and calculated. Opportunity costs and productivity effects of upgrading the workforce through in-service training should also be taken into account.

XXI. **Funding** of open and distance learning institutions is often different from that of conventional institutions, and there are many arguments in favour of this. On the other hand, if open and distance learning is to be used increasingly by conventional institutions, funding for programmes of this type needs some harmonization with funding mechanisms for conventional programmes. It is widely assumed that students in open and distance learning, who are often working adults, should pay a higher proportion of the costs than conventional students. However, this assumption should be modified according to the mission of programmes, target groups and local circumstances. The balance of funding from government, employers and individual students should be carefully considered, in the knowledge of the fact that under funding may have negative qualitative and social effects. Care

should be taken to remedy any unjustified economic discrimination between students in open and distance learning and other students.

UNESCO policies on open and distance learning

XXII. UNESCO's policy on open and distance learning is based on its **overall priority to foster access to lifelong education for all**. While the use of distance education was given early support by the Organization, new developments in information and communication technologies have radically increased the demand for lifelong education but also provided new means to meet the demand. Facing the educational challenges of the 21st century, UNESCO continues, through open and distance learning, to contribute to the creation of a unique learning society in a lifelong learning context.

XXIII. Within its overall priority, UNESCO focuses on **fostering basic education for all** encouraging and supporting action in its Member States with special emphasis on co-operative efforts to develop open and distance learning systems and programmes to the benefit of those deprived of basic learning skills.

XXIV. Great attention is given to open and distance learning to meet the **educational needs of the adult population**, with a view of providing new and alternative learning opportunities for those who were initially deprived of them, or who, for one reason or another, did not make use of them.

XXV. UNESCO continues to strengthen the role of open and distance learning in the **diversification of educational delivery systems**, notably, for technical and vocational education, encouraging cooperation and partnership between enterprises, professional bodies and distance teaching institutions. Support is also given to open and distance learning to meet the **special needs of the disabled, migrants, cultural and linguistic minorities** and others who cannot be efficiently reached by traditional delivery systems.

XXVI. Great importance is attached to open and distance learning in **teacher education**, notably, for in-service teacher training but also for training of trainers. National and sub-regional initiatives are encouraged and supported also through UNESCO Chairs and inter-university co-operation.

XXVII. The potential contribution of open and distance learning to the development of **higher education** is fully recognized and supported by UNESCO. In their efforts to make wider use of distance education to expand access to advanced learning and improve its efficiency, Member States are assisted, among other things, by providing them with support in the initiation and development of open university schemes and other higher education programmes making use of distance education

XXVIII. In its efforts to support its Member States to make wider use of open and distance learning, UNESCO gives a priority to national **capacity-building**, including activities to enhance policies, planning, administration, financing, personnel, production. Technologies and other capacities essential to the establishment and management of efficient open and distance learning systems.

XXIX. In line with its mission to serve its Member States, UNESCO gives great importance to international, interregional and regional co-operation for the promotion of open and distance learning. Co-operation is pursued with intergovernmental organizations such as other UN Agencies, the Commonwealth of Learning, the World Bank, the Commission of the European Union, OECD, regional development banks, the Organization of American States, the South East Asian Ministers of Education Organization and others. Close co-operation is also pursued with non-governmental organizations, notably, with the International Council for Distance Education (ICDE), and several other NGOs, bi-lateral agencies, specialized organizations, institutes and associations.

I. INTRODUCTION

1. Open and distance learning is today one of the most rapidly growing fields of education and training in the world. In developing countries it is seen as an important instrument for reaching young and adult people whose learning needs, for financial, geographical or other reasons, have not been efficiently met by the conventional education and training system. In more developed countries, open and distance learning is recognized as an important strategy and integrated into the overall educational landscape. Widely used as a complementary form of educational and training, it is serving a variety of learning needs of the general population as well as particular needs of sparsely populated regions and other disadvantaged target groups.

2. The potential impact of open and distance learning on all education delivery systems, from primary to tertiary level, has been greatly accentuated through new developments in information and communication technologies, which increasingly free the learners from the constraints of time and space. As these technologies are expected to widen people's access to learning, it is a matter of national, regional and international importance to make use of them in a manner that ensures lifelong learning for all.

3. As Member States and their governments are becoming more and more aware of the potential of open and distance learning to help meet their urgent education and training needs, it is essential for their educational planning that the opportunities offered by open and distance learning be realistically examined within the framework of national development plans in general and educational policies and priorities in particular.

4. The aim of the present paper, which was prepared in accordance with the Approved Programme and Budget for 1994-1995, is to contribute to general discussion on the role of open and distance learning in the national education delivery systems and to facilitate decision-making in this respect. The paper also presents an overview of UNESCO's policies and priorities in the field of open and distance learning, as expressed in the Resolutions of its General Conference and Executive Board, the respective Medium-Term Strategy, and recommendations of specific commissions and major international conferences.

5. The objective of the paper is to review open and distance learning in the context of present challenges and opportunities, examine relevant concepts and contributions, outline current global and regional trends, suggest policy and strategy considerations, and identify UNESCO's policies on open and distance learning, including its role in capacity-building and international cooperation.

6. The paper is addressed, as an open invitation, to a wide range of potential partners, governments, inter-governmental and non-governmental organizations, specialized institutions, associations, industrial corporations, telecommunication companies, and others interested in this field, to examine how open and distance learning can effectively help meet today's urgent education and training needs in the world, and how this can be accomplished through international co-operation to which UNESCO is committed.

II. CHALLENGES AND OPPORTUNITIES

Global challenges to education

7. Education has to be considered in its relation to global economic, social and cultural development. The importance of human capital as an essential component of the economy has been recognized by most economic analysts. This has influenced the increasing interest of governments in human resource development over several decades. The tendency has been evident in developing as well as developed countries, although the circumstances, priorities and challenges are different. Human resource development through initial, extended and continuing education is seen as crucial for development, growth and competitiveness. Education is seen to influence the birth rate, increase the independence of women, improve standards of health and agriculture, and to be a basis for job creation, social development, etc. Individual access to adequate education should be considered a fundamental right, which may contribute decisively to personal dignity, survival and welfare of the individual and his/her family, and to the social and cultural development of local communities.

8. Although the world has in recent decades seen a considerable quantitative growth in education and training, there are still intolerable inequalities both at international level and within nations. There are about 900 million illiterate adults in the world and some 130 million children between 6 and 11 deprived of any schooling at all. Inequality in opportunities for higher education is also expected to continue, especially in view of the projected population growth (UNESCO, 1995d).

9. Mere quantitative measures of education are of course not sufficient indicators of outcome. Many countries still suffer from limited access and high dropout rates. Low or insufficient quality is a major concern, and relevance is another serious problem. Rapid changes in the workforce, unemployment and uncertainty now demand lifelong education. Linked to most of these problems is the problem of financing education according to present and future needs. Lack of resources in developing countries is obvious, and at the same time demographic trends increase the need to expand educational provision. The 'knowledge gap' is, however, increasingly connected with the serious situation in certain regions, and particularly with Sub-Saharan Africa. In this region, the achievement of education systems is often threatened by a series of other problems. In some African countries the capacity and achievements of education systems have remained stable or even declined.

10. Different strategies are used to cope with the financial challenges in education: one strategy is to diversify the resource base through the privatization of some educational functions, donations from private sources, the recovery of costs from users and participants. Another strategy is to increase efficiency within the system. A common trend in education in the future will probably involve structural reform and the limitation of expenditure in the public sector. It is therefore relevant to look at alternative systemic and technological approaches in order to increase access, improve cost-effectiveness and quality, as well as learning outcomes.

11. The rapid development of information and communication technologies is certain to affect education even more in the future. Its main channel of impact in all likelihood will derive from the penetration of technologies in the society in general. A range of technological systems and devices is now widely available and relatively cheaply (e.g. CD-ROM, various Internet services). They are accepted and often available for domestic use as well as for use in the workplace, although regions may vary greatly in this respect. Considerable changes are taking place in our attitudes and ways of using information. We are rapidly moving towards a more knowledge-intensive society based to a large extent on a new techno-economic paradigm. This trend has important consequences for educational and labour market policies, as well as for coordination between them. One of the main bottlenecks to further sustainable growth and increased productivity is severe shortages in appropriately qualified human resources. This implies that adult education, training and retraining will have high priority and that resource allocation for education ought in future to change to give greater support to adult and continuing education including open and distance learning.

12. The direct impact of technologies on education and training is of course also important. Governments are concerned that educational institutions become connected to the emerging networks and 'Information Super Highways', that curricula include the knowledge of and acquaintance with new technologies, and that teachers are prepared and trained to use these new resources. Hancock (1993) summarizes the opportunities offered by information and communication technologies to sustain educational processes such as: outreach, economies of scale, richness of illustration and visualization, individualization, access to information, and simulation. In addition, the use of new forms of technology has an important impact, both positive and negative, on the cognitive functions of children and youth.

13. The development of a more knowledge-based and service-oriented economy leads to important changes in the organization of work and the structure of skills needed. New jobs tend to demand new and higher levels of skills, customer-oriented communication, problem solving and entrepreneurial skills. The emergence of more flexible work organization is clearly linked to the development of technology. One of the new challenges for education is that high-level skills are needed not only by an elite, but by the population in general (IRDAC, 1990, Bengtsson, 1991).

14. Political, economic and technological developments make up a strong movement towards internationalization. Increasing integration and interdependence of national economies is followed by attempts towards economic integration at regional levels, e.g. in Europe, South East Asia, North and Central America and East and Southern Africa. International and regional cooperation in education and training is often included in such efforts. Internationalization is enhanced by the development of information and communication technologies. Thus, international and regional markets for education and training are emerging. This leads not only to increased international awareness and orientation in curricula, but also facilitates the exchange and sharing of expertise and human resources.

15. Major obstacles to internationalization are found in the increasing official barriers on migration and the limited recognition of diplomas and qualifications across national borders. There are also cultural aspects connected with internationalization. Increased communication underlines the needs for mutual information and understanding of cultural and social contexts. Sometimes cultural and ethnic forces oppose internationalization, leading to an increase in national, ethnic and regional consciousness and in the extreme to polarization and fragmentation. The challenge to education is to prepare citizens for a truly international community, without neglecting the richness and the value of cultural variation.

The potential of open and distance learning

16. In efforts to meet the new demands, open and distance learning may be seen as a complementary but also as an alternative method of providing education and training, compared with the 'conventional' face-to-face method of most educational systems. Its benefits can be evaluated based on mainly technical, social and economic criteria. But open learning approaches and distance learning methods may also have their own educational impact, being particularly appropriate or efficient and leading to different ways of conceiving knowledge generation, delivery and acquisition. In these circumstances open and distance learning should be considered more as a complement to and less as a substitute for other approaches.

17. To the learner open and distance learning means more open access and thereby a wider range of opportunities for learning and qualification. The barriers that may be overcome by distance learning include not only geographical distance, but also other confining circumstances, such as personal constraints, cultural and social barriers and lack of educational infrastructure. It is often cheaper to the student as an alternative to pursuing a course through conventional methods. It is important that education and training may be combined with work, since many people cannot afford to leave their work. Open learning also means a more learner-centred approach, allowing greater flexibility and choice of content as well as organization of the learning programme.

18. For employers, open and distance learning has several advantages. It offers the possibility of organizing learning and professional development in the workplace, which is often more flexible and saves costs of travel, subsistence etc. The use of distance learning often puts both the firm and employees in a position of co-investment (of money and time) in order to pursue common goals, based on shared values and culture. It increases productivity and supports the development of communication and other work-related skills. With sufficient numbers of employees being trained, open and distance learning is usually cost effective. Other advantages for the employer include the increased availability of the employee during the course of the training programme and the portability of training programmes and processes.

19. The advantages to learners and employers are important features from the perspective of governments. Traditionally, governments have introduced distance education provision in order to:

- increase access to learning and training opportunity;
- provide increased opportunities for updating, retraining and personal enrichment;
- improve cost effectiveness;
- support the quality and variety of existing educational structures;
- enhance and consolidate capacity.

Today there is an increasing recognition of the place and role of open and distance learning as an element in any national system of education and training. Some of the potential roles are seen as: balancing inequalities between age groups, extending geographical access to education, dealing with educational campaigns and regular education for large audiences, providing speedy and efficient training for key target groups, providing education for otherwise neglected populations, expanding the capacity for education in new and multidisciplinary subject areas, offering the combination of education with work and family life, developing multiple competencies through recurrent and continuing education, enhancing the international dimension of educational experience, and improving the quality of existing education services (Rumble, 1989; Ljosa, 1992).

III. CONCEPT AND CONTRIBUTIONS

The concept of open and distance learning

20. Open learning is a term with no universally agreed definition. To some 'open' will indicate open entry and access to learning opportunities, and the focus will be on the removal of barriers to learning opportunities. To others it may include aspects of methods and organization, with the consequence that 'open learning' may sometimes be substituted by *flexible learning*. Jeffries et al (1990) define open learning as: "Any form of learning in which the provider (e.g. an institution or organization running a training scheme) enables individual learners to exercise choice over any one or more of a number of aspects of learning. Typically this involves helping learners take responsibility for aspects such as what they learn, how they learn, where they learn, how quickly they learn, who to turn to for help and whether, when and where to have their learning assessed."

21. *Distance education* in most cases shares the concern for openness and flexibility, but definitions tend to focus on the possibility of communication between participants in the learning process across time and/or space, particularly as brought about by new (and some old) technologies. Perraton (1993a) describes distance education as "an educational process in which a significant proportion of the teaching is conducted by someone removed in space and/or time from the learner". This definition covers most of the traditional approaches to distance teaching, although it does not reflect the fact that the learners are also usually dispersed in space and/or time. This may be quite important in view of the evolving variation of learning environments and patterns of communication. Distance education may involve the use of a range of media, such as print, written correspondence, audio, video and computer based media and networks as well as multimedia, both for presentation of information and for communication between participants.

22. *Open and distance learning* is often used when one wants to address a whole range of related forms of teaching and learning, without concentrating too much on exact delineation and definition. It stresses at the same time openness concerning access, organization and methods, flexibility in delivery and communication patterns, and the use of various technologies in support of learning. Although most of this paper addresses distance education and distance learning in particular, the broader term is chosen in order to stress policy aspects rather than technicalities.

23. Open and distance learning is usually contrasted with 'conventional' or 'face-to-face' education, which may be described as the form of education which takes place in a classroom or an auditorium. However, both 'distance' and 'face-to-face' education are labels covering a wide range of variations and methods. Face-to-face education in its pure form may vary along a continuum from one-to-one tutorials, group activities, seminars and classroom teaching to lectures for large audiences. In each case different educational approaches and methods may be used. A range of media may also support face-to-face education, and it is usually combined with periods of independent study, with more or less direction from the teacher and dependence on specific learning materials. In a similar way, distance education has a variety of forms, according to the choice of media, methods and organizational approaches. The original, and still most widespread form is correspondence education. Print is used as the dominant learning material, with the usual medium of communication being by correspondence. Other forms are radio schools, educational television, telephone teaching, audio and video teleconferences, and computer-mediated communication. Very often the media bridging the distance are combined with face-to-face interaction in working groups, seminars or lectures.

24. This means that although there is a clear distinction in theory between distance education and conventional or face-to-face education, the distinction in practice is far from clear. This is also underlined by the fact that an increasing number of educational institutions use both conventional and distance types of methods when designing education programmes -either as

alternative forms (cf. the term 'dual mode' institution) or in a mix of the two types within the same programme (sometimes called 'hybrid' forms). The perspective on distance education chosen in this paper is a practical one where all forms with a significant distance-learning element are included.

Components of distance learning systems

25. So far, various forms of distance education have been described mainly as a function of different media. However, media represent only one aspect of distance learning systems and there is considerable variation between them concerning other aspects. The most common distinction is perhaps between 'single mode' and 'dual mode' institutions. Single mode institutions are established and organized with the single purpose of offering distance education, while dual mode institutions offer both distance education and conventional forms of education within the same institution. In many cases distance learning is provided in partnership between several institutions of the same kind or by different types of institutions with different roles. The private sector is also active, often in competition with traditional educational institutions. The focus of each system will lead to significant differences as to how the various components and sub-systems are designed, organized and managed. This is not the place to consider the structures of different systems, but it is important to be aware of the main components common to the majority of actual systems.

26. The *mission* of a distance learning system defines the role of the system within the specific context of education policy. It may be directed towards particular purposes, target groups, regions, sectors or levels of education and training, and led by particular values and philosophies of learning and education. The mission statement of a governmental institution will be part of a long-term national policy in a sector of public education, while private organizations may fulfill subsidiary functions in relation to public institutions. On the other hand, private organizations must respond to the needs of particular market segments, especially of the labour market, both quickly and efficiently.

27. *Programmes and curricula* make up important components, which define the profile of a system or an institution. They should be related to the mission and to defined needs or markets, and should be classified according to relevant criteria for the overall education system. Many distance education systems provide courses in preparation for examinations and degrees which are equivalent or similar to those offered by conventional institutions, and subject to similar regulations as regards content, admission and assessment.

28. *Teaching and learning strategies and techniques* depend partly on the type of programme and the needs they are designed to meet. But they also depend on the educational philosophy and values of the particular system, and the educational characteristics and potential of the technologies used. There may be a connection between teaching strategies, economy and the choice of technology.

29. *Learning materials and resources* make up necessary components in all distance-learning systems. Comprehensive, well-developed materials may greatly stimulate self-learning and influence the quality of the system as a whole. Development and production of materials is often considered as a sub-system in distance teaching organizations. Existing materials, textbooks, software etc. may be used to some extent, but in most cases specifically designed learning materials are developed for each particular programme.

30. *Communication* between teachers and learners is seen as a necessary component in distance education, as in all other forms of education. Thus, self-study without any communication and support is not usually considered to fall within the concept of distance education. Open learning systems on the other hand are often heavily based on self-study. The importance attached to student-teacher interaction may vary considerably between different systems, and is closely linked to educational strategies.

31. Another crucial component is the *interaction between learners*. In some forms of distance education this is practically non-existent, but in most cases it is considered important. Learner-learner interaction may be provided in different ways. Often students meet together physically in groups, some times connected with other forms of local support. Some technologies allow the organization of 'virtual groups', where the students may interact at a distance, for example by computer-mediated communication.

32. *Support delivered locally* is a common component. A letter, a telephone call or an e-mail message is of course delivered locally. What is meant here is, however, support in a form that allows some kind of direct (face-to-face) interaction between the learner and a teacher or a mentor/facilitator. This component may be organized completely as face-to-face events, or in combination with communication at a distance (teleconferences etc.). Local support is usually given in a study centre or resource centre. The centre may also offer access to other learning resources, equipment etc.

33. The *delivery system* may comprise both distribution of pre-packaged material, transmission of programmes, lectures etc., and systems of communication/interaction and local support.

34. The *student and tutor sub-system* is often distinguished from the course materials subsystem. From an administrative perspective the students and tutors sub-system comprises admission, allocation to courses and student services, the learning and teaching procedures, assignments and assessment, drop-out and completion, and examinations. Tutors are contracted on a part-time basis, and they have to be recruited, trained and monitored.

35. *Staff and other experts* in a distance learning system need a range of different competencies. Tutors have already been mentioned. A range of other experts with different qualifications is also needed, either as full-time staff or as external consultants: planners, instructional designers, developers and producers, researchers, media experts, marketing experts and administrative staff.

36. Effective *management and administration* needs not only competent staff, but also well designed, efficient administrative systems and routines, planning and monitoring systems, budgetary and accounting systems etc. Many of these will be quite different from the corresponding systems needed in the management of other forms of education.

37. The requirements of *housing and equipment* may be very different from conventional education institutions. A single mode distance learning system has no residential students, and thus there is no need for classrooms, lecture theatres etc. at the central location. Such facilities may be needed locally, and are often provided in cooperation with local institutions. At the central location there will be need for production facilities and storage capacity, although some decentralized production is also possible.

38. Finally, *evaluation* should be a component, in order to provide information relevant to the adjustment of the roles and operation of system components, and in order to secure their optimal contribution and development.

Major contributions of open and distance learning

39. Open and distance learning is used for a wide range of purposes. This section will summarize some of the main areas and sectors where open and distance learning has made major contributions. The scope of the paper limits the range of particular case and examples that can be cited.

General education

40. Sometimes distance education is used for school-age children and youth who are unable to attend ordinary schools, both at primary and secondary level. At primary level, some monitoring and tutoring by parents or teachers/teaching assistants is generally necessary. Provision may serve geographically remote areas where ordinary school provision is almost impossible. Pupils who are disabled or suffer from long-term illness, and those who are displaced or located outside their home country are other examples.

41. Distance education is also used to support teaching when learning materials are lacking or teachers do not have formal qualifications (through interactive radio, educational television, satellite networks etc), or for specializations where the number of pupils is too small to be able to organize conventional teaching. Distance education for school-age children and youth is relevant for developing as well as developed countries, although the purposes and range of media may vary with the different situations and the available resources. While it is often used to solve concrete problems in conventional schooling opportunities, there is now a tendency in many developed countries to include distance learning as a new form of enrichment, made attractive by new communication technologies (Evans T. et al, 1993b).

42. Many institutions and programmes which offer school equivalent courses and programmes have youth, adolescents and adults as the main target groups. In all parts of the world there are large groups of youth and adults who dropped out of initial formal education and for whom distance education represents a convenient opportunity at a later stage of their life. Millions of adult students are engaged in this kind of education thus increasing their level of education and their quality of life. School equivalent programmes are more effective where modularized curricula exist and students are allowed to present themselves for examinations without enrolling conventional classes.

Teacher training

43. Teacher training is a particularly important area where distance education has been used extensively. This includes pre-service training, upgrading of academic qualifications, professional upgrading and in-service continuing training in particular subjects and topics. In addition to dedicated institutions and programmes for teacher training, teachers very often use general distance education programmes and courses from universities to upgrade their qualifications. Many examples, particularly from developing countries, show that teacher training at a distance may reach large groups of teachers and may have profound impact on the development of national education systems. The use of open and distance learning for teacher education is therefore a crucial strategy when expansion or quality improvement is needed in the public education system. (For a broader discussion, see Perraton, 1993b.)

44. A common need in many countries is to upgrade teachers' knowledge and competence in using new information and communication technologies in school contexts. In this case it is also very appropriate to use the technologies in the training programmes for teachers.

Vocational and continuing education

45. Technical and vocational education have in recent years played important roles not only in contributing to the improvement of productivity of a national labour market but also in assisting individuals to improve their employment prospects in rapidly changing socio-economic conditions. In this regard, the role of open and distance learning in the field of technical and vocational education is significant:

- to respond effectively to the growing demand of working adults or any others who have difficulties in getting training in conventional education because of lack of flexibility in the timing and location of courses;
- to provide an opportunity for empowerment of those most disadvantaged by existing provision -the unemployed, the disabled, women and ethnic minorities.

46. Although open and distance learning in the field of technical and vocational education is part of a mixed and complex picture, due to experimental work and hands-on training making up an integral element, it has in fact often been developed by private institutions and enterprises, and makes an important contribution to human development. It is often necessary to supplement distance learning with intensive experimental work and hands-on training through residential schools, home experiment kits, etc. Examples could also be mentioned from within the public sector. Many countries have developed vocational, polytechnic and other types of short-cycle colleges, sometimes spanning both secondary and post-secondary levels. In this sector there are many examples of distance education and open learning programmes (the Australian TAFE colleges and the US Community Colleges being just two examples). In addition to business studies and technician training one may also mention training for agriculture and for public administration and health services as important areas.

47. Continuing education and training is an expanding field in which distance education is used to a great extent. The need for recurrent and continuous updating of knowledge and skills is recognized as a fundamental demand in society today, and distance education with its decentralized and flexible delivery and its modular structure of courses and curricula has become an obvious way of meeting this need. Distance education institutions offer their courses and programmes for this purpose, and they are developing particular courses for particular needs. Cooperation and partnerships between enterprises, professional bodies and distance teaching institutions are growing, and consortia and special training institutions have been established in order to serve particular trades and professions with continuing education courses. The National Technological University in USA is one example, providing continuing education for engineers through satellite broadcasts from about 50 universities. The medical profession is another example of a profession which often uses distance education for continuing education purposes. Many large corporations also provide in-service training at a distance for their employees.

Non-formal education

48. Non-formal education and community development are sectors where distance education is used to a considerable extent. It is offered for instance by public community development services, popular movements and organizations, churches and religious organizations, charitable foundations and organizations, private institutions and government funded schools, colleges and universities. Its success is often based on its capacity to mobilize and use local, community-based networks of various kinds.

49. Girls and women are important target groups in development programmes. One aspect of the world's education gap is the discrepancy as regards equal opportunities in education for girls and women. It is often reported that both formal and non-formal education programmes at a distance reach substantial numbers of women, including societies where women lack equal opportunities of participation in conventional forms of education and training. Efforts to tailor programmes particularly towards women as a target group are bound to increase in the future.

50. Distance education lends itself to the teaching of many of the complex issues of the modern world, in which input from a variety of disciplines is necessary. A range of experts can be engaged in the development of learning materials, which is often more difficult in face-to-face teaching. Environmental studies is one example of a topic of this nature, and a considerable number

of distance teaching institutions have introduced the topic -in schools in degree studies, for teacher training and for public awareness raising. The Rio Conference (UNCED, 1992) stressed the challenge of promoting education, public awareness and training as crucial for the achievement of sustainable development, and counted open universities and distance 'teaching among important means of implementing the global vision. There are many examples of programmes that have been implemented or are under way, but there is also an obvious need for more systematic and concerted action-oriented programmes in this area.

51. Another topic of similar character is international and peace education. An experimental project in teaching peace studies at a distance has been implemented at Sukhothai Thammathirat Open University, Thailand. There is also a wide range of projects involving thousands of school children and youth in cross-cultural electronic communication. Some of these are very good examples of how to promote international understanding across ethnic and cultural borders. Many practical and technical issues remain to be solved in order to expand such projects and increase their impact. Dohmen (1993), in light of the recent transition period in Central and Eastern Europe, advocates new forms of adult and distance learning as a response to the need of their more open, pluralistic and democratic societies,

Higher education

52. Distance education is widely used at the tertiary level within the framework of open and distance-teaching universities which provide programmes and degrees equivalent to conventional university and college education. Traditional universities often use the same curricula for distance and residential students, and the students are often but not always subject to the same entrance requirements and examinations. Single mode open universities generally have their own degrees and curricula, but they are often similar to the curricula and degrees of a conventional university. Degree studies in distance teaching universities thus increase the capacity of higher education systems, mainly catering for the adult population. The similarity of curricula and degree structures may be seen as a demonstration of equal quality, and makes the recognition of distance education at the tertiary level easier.

53. The expansion of single mode open universities, many of which have developed to 'mega-universities' with more than 100.000 students (ICDL, 1995) on one hand, and the transformation of traditional universities to dual mode universities on the other, are important contributions to the diversification and development of higher education systems. The increasing tendency of traditional universities to deliver their programmes also through distance education appears to diminish the earlier distinction between the two types of universities.

The role of open and distance learning in educational innovation

54. As increasing acceptance within conventional education institutions and among educational planners is gained, open and distance learning has the potential to generate new patterns of teaching and learning that may influence the way education in general is provided. By reaching new target groups distance education makes the actual needs of education in society more visible. Distance education and open learning are part of the economic and educational response to popular demand and to economic and political objectives concerning the provision of appropriate learning opportunities from the perspective of lifelong learning. It may therefore enhance a more student and consumer-oriented approach and more extensive contact between educational institutions on the one hand and community-based organizations, business and industry on the other.

55. By developing and producing high quality learning materials open and distance learning systems often make new and better learning resources available. This may have a particular influence when teachers and professors of conventional institutions become involved in the

development or use of these materials, for instance on contract with a distance teaching institution. The introduction of a distance programme at a conventional university may also lead to curriculum reform and new learning materials for resident students in the same subjects. In some projects distance learning is used systematically to support conventional systems at basic and secondary levels.

56. The potential of distance learning to increase innovation and creativity in conventional education depends on the degree of interaction between distance learning systems and conventional systems. In this connection one should not forget the role of dedicated and specialized institutions in the development of knowledge and practice. Ideally, there ought to be effective links between such institutions and the conventional system, in order that they may serve as national resource centres.

57. The need for education for the entire population, in both developing and developed countries, generates a significant interest in the application of more technology-based educational programmes. Open and distance learning is closely linked to the development of information and communication technologies, to the emergence of new learning needs and new patterns of information access and application in the information society. The development of open and distance learning often provides a propitious environment for the introduction of and experimentation with technologies in education, and will therefore influence mainstream education. It generates new insights and knowledge about learning conditions and processes, and may even have effects beyond the realm of education itself, affecting the individual and society both economically and culturally.

IV. PRESENT TRENDS IN OPEN AND DISTANCE LEARNING

Global trends

58. Most of the discernible present trends in open and distance learning are linked to the general background described in part II of this paper. Considering the challenges of education and development, both in developing and developed countries, it is not surprising that open and distance learning is often seen as an important new approach and strategy which could make a significant contribution towards resolving problems of access, quality and equity. When conventional systems and approaches cannot meet the needs, one has to look for new strategies. There may be uncertainty about the previous performance of some distance learning systems, but nevertheless confidence seems to be growing that open and distance learning will be important in future education and training systems. Examples of this growing confidence can be found in many countries. The nine high population countries (Bangladesh, Brazil, China, Egypt, India, Indonesia, Mexico, Nigeria and Pakistan) have recently decided to launch a joint initiative on distance education. The European Union has in recent years consistently increased distance education components of its educational programmes, and has included open and distance learning explicitly in its Maastricht Treaty. In Central and Eastern Europe, distance education is seen as an important means of supporting the transformation process towards democratic and market-oriented societies. Similar initiatives and statements are forthcoming from a wide range of individual countries as well as from regional and international organizations and agencies.

59. This does not mean that distance-teaching institutions escape all financial constraints and cutbacks. In developing countries the lack of resources often prevents distance education programmes from being sustained, developed and extended (Jenkins, 1989). In developed countries also distance-teaching institutions quite often have their resources cut back. In addition to the general objective of increased productivity, governments want to have an increasing proportion of expenditure for open and distance learning to be paid by the customers through fees, and thus distance education is one of the sectors where privatization and diversification of funding is sought (Dewaan, 1993). When distance-teaching institutions are exposed to market mechanisms, they are forced to become more customer-oriented. Given the impact of information technologies they are under pressure to make use of new technological opportunities and to adapt and restructure the organization of their own operations. A discussion has emerged concerning the traditional ways of thinking about institutions and economies of scale in distance education (Rumble, 1992a; Evans and Nation, 1993a).

60. At the same time, conventional institutions are increasingly using open and distance learning as an instrument for innovation and diversification, and consortia are being established between such institutions in order to achieve economies of scale in materials production and delivery. This means that open and distance learning no longer represents a specialized methodology for a marginal number of educational institutions, but a part of the general repertoire of education and training institutions. Open and distance learning is approaching a state of acceptance within mainstream education and training which has never been achieved before, and conventional institutions are beginning to seek strategic positions through the development of distance education programmes. Strategic alliances are being formed between educational institutions and private sector institutions of various kinds. This means that the traditional distinctions between various types of providers (distance -conventional, public -private) are being blurred in parts of the market, particularly within vocational and continuing education and training.

61. Technological development itself allows for new paradigms of access and delivery systems in education linked to new types of demand (Bates, 1993; Perriault, 1993). Continuous miniaturization of equipment, reduced costs, increased user flexibility; portability and integration will give a whole range of new opportunities. This can either lead to more centralized systems of development and distribution of educational services and software or to a more open "networked

society” with greater variation and more equitable access to educational resources and network infrastructure. The direction of this development will be strongly influenced by the willingness of governments to provide leadership in the development of coordinated policies concerning network development and access. One of the trends we can see today is the emergence of new forms of distance education based on more interactive telecommunications (teleconferencing, computer mediated communication etc.). These forms are not to the same extent based on pre-produced packages of course materials or programmes as were many of the previous forms. On the other hand, they sometimes allow more communication and dialogue.

62. Finally, the trend towards internationalization is clear. In addition to the political and economic driving forces the internationalization of distance education is enhanced by its links to information and communication technology. For instance, educational software is often international, and satellites and electronic networks allow transmission and communication across national borders. The “global classroom” is no longer a concept only of our imagination or of the future. There are of course limitations of access for a range of reasons, but international projects and programmes are already quite common.

Regional trends

Africa

63. Sub-Saharan Africa is one of the regions where the “knowledge gap” between North and South takes on the most dramatic character. There is a tradition of distance education in many of the countries, where governmental institutions were often established after the former colonies became independent. Distance education has mainly been used to improve access to basic education for an increasing proportion of the population through open programmes, and to maintain and improve quality in the conventional education system -through in-service training of teachers and support for teaching in schools. For example, UNESCO was involved in the in-service training of all of Botswana’s unqualified teachers in the late sixties and seventies. But distance education has also been used in non-formal education and community development by national and international organizations. One example is the pan-African INADES Formation, established in 1962 in the Ivory Coast, with national offices in 10 countries (UNESCO, 1991a). Correspondence education is usually the main medium of instruction in the region. Radio is used to some extent, and in some cases local study groups are organized.

64. In spite of the established tradition and a number of successful projects and programmes, distance education generally has had a rather low impact on education in the region. The main reason is probably under funding and lack of support (Jenkins, 1989). Insufficient funding often leads to low standards of materials and inferior student support. This is usually connected with lack of human resources, capacity and infrastructure. As a result, distance education is often considered a low status option with low commitment from governments. The Arusha seminar on distance education and its follow-up seminars at sub-regional level revealed that in many African countries there is an absence of any distance education policy, inadequate or even non-existent investment in the production of instructional materials, lack of material and moral incentive given to personnel, inadequate research and evaluation, lack of confidence and lack of regional or sub-regional collaboration and cooperation (UNESCO, 1990b; UNESCO, 1994e; UNESCO, 1995e).

65. Nevertheless, distance education has shown persistence and there are signs that it is becoming more central to the education policy of some countries. Distance education is seen as a low-cost alternative for the expansion of educational opportunities at all levels. For instance, Zimbabwe’s expansion of secondary education from 66,000 pupils in 1979 to 700,000 in 1989, was only possible by using a system of school-based distance education, supported by short in-service training courses

for teachers (Chung, 1990). Recently, South Africa has reinforced its strategy of making extensive use of open and distance learning, and the PALOP countries have taken initiatives to work on the development of interactive radio instruction. The main challenge for distance education in the region is to secure continued national commitment on policies and funding at a level needed to secure quality and economy of scale. Distance education should play a significant role as a supplement and a backup to conventional systems. Secondary school opportunities, vocational and non-formal education need to be expanded, and gender equality should be strengthened. Also tertiary education lends itself to increased use of distance education. The range of media should normally include radio and audio technology, and local support is necessary.

66. At the Arusha seminar on distance education in Africa, three crucial recommendations for the development of distance education in Africa were identified (UNESCO, 1990b):

- a. exchange of information and research on resources and approaches;
- b. training of senior personnel and specialists necessary for the operation of distance learning systems;
- c. preparation and production, in Africa itself, of educational materials derived from African socio-cultural contexts, coordinated with school curricula, and targeted in the light of the population groups to be reached and the needs of development.

In Africa, there is much to be gained from enhanced regional collaboration -on policy issues, development of methodologies and sharing of materials. There are now many initiatives to establish networking through national and regional associations, and also to establish, in cooperation with UNESCO, ICDE, NORAD and several governments in Eastern and Southern Africa, a permanent facility for cooperation in order to strengthen and improve capacities for open and distance learning in the region.

Arab States

67. Open and distance learning in the Arab states is generally more recent, but there is a rapidly increasing interest in it in the region as a whole and in some of its countries in particular, Algeria, for example, has developed extensive programmes with a large number of students (UNESCO, 1991a). Sporadic initiatives have occurred in a number of other states, and university programmes at a distance have been established, among them the Palestinian al-Quds Open University. After the peace treaty with Israel, the PLO has declared its interest in developing distance education opportunities for the Palestinian people. In Somalia and Sudan distance education systems for the education of refugees have been established. Egypt has recently identified in-service upgrading of teacher competencies by distance education as a priority concern and has played a lead role in the launching of the Joint Distance Education Initiative of the Nine High Population Countries (Visser, 1994).

68. Open and distance learning was given considerable attention by the Fifth Conference of Ministers of Education and those Responsible for Economic Planning in the Arab States (MINEDARAB V, 1994). The Conference recommended that the Arab States “use the distance learning approach in all types and fields of education, and in particular in order to universalize, enhance and renew basic education for children and adults” (UNESCO, 1994). With an increasing involvement of ALECSO and other Arab organizations, it is expected that new open and distance learning schemes, both governmental and non-governmental, will be initiated in the Arab region in the foreseeable future.

Latin America and the Caribbean

69. There is a relatively rich and varied tradition of distance education in Latin America deriving mostly from the period after the Second World War. Most commonly, distance education has been used for rural community education and development programmes, school-equivalency programmes at primary and secondary levels, post-secondary teacher education, university extension, and higher education. Distance education technologies have also been used to boost the quality of school education (Oliveira and Rumble, 1991), and several big companies use open and distance learning for professional training of employees, sometimes integrating the teaching of wives and children. A genuine Latin American model was developed with the so-called radio phonic schools, starting with Action Cultural Popular in Colombia in 1947. Similar programmes have been developed in a number of countries in the region.

70. Print, radio and audio are the most commonly used media, but there are also a number of projects using television, video and other media. One example is the Mexican Telesecundaria Programme, using television and video cassettes for students in secondary schools in rural areas, whose learning experience is guided by less qualified teachers. Similar programmes exist in Brazil. Open Universities were established in Venezuela and Costa Rica in 1977. A wider range of tertiary level programmes has been established by conventional universities in the last decade. There is in the region a growing amount of research-based knowledge on distance education, although competent human resources still constitute a scarce but crucial element for further development.

71. Oliveira and Rumble (1991) summarize the situation in the following way: "The regional experience of distance education is marked by projects which have never begun and those which, having started, have collapsed. Yet this underlying fragility, which stems in part from the dubious status, chronic under funding and small size of many of the projects, hides the fact that some projects have now survived for a number of years and have achieved, if not pre-eminence on the world stage, considerable respectability. Nevertheless, too many projects in the region are of poor quality, and are doing little or nothing to improve the situation; far too many are trying, from the best of motives, to offer educational opportunities to socially, economically and politically deprived sectors of the population, and yet only manage to provide poor education for the poor, and far too many are ineffective."

72. There are reasons for optimism for the future of open and distance learning in the region. Open and distance learning has come to stay, and there is a firm basis of knowledge and experience to build on. The challenge is to use it more systematically as part of the educational provision in the region: to improve the quality, effectiveness and efficiency of education and training, to expand provision, particularly at secondary level, to make education more socially relevant, and to provide wider and more varied opportunities. Mechanisms are available for regional co-operation, as well as for inter-regional co-operation with North America, Spain and Portugal, and such mechanisms should be developed further.

73. The small countries of the Caribbean are very different from the rest of the region. They use open and distance learning to enhance choice and access, as well as compensate for the shortage of high level manpower. Several programmes for upgrading and in-service training of teachers have been launched recently. The federal University of the West Indies serves many of the island nations with non-campus higher education opportunities.

Asia and the Pacific

74. Asia is a vast region with a number of high population countries. The region includes some of the least developed countries of the world, but also countries with the fastest growing economies and some developed countries. The situation regarding open and distance learning varies considerably between sub-regions and individual countries. Most of the existing forms of distance

education are represented within the region. Asia has some of the largest institutions in the world, and the high population in many countries allows for considerable economies of scale.

75. Several countries in Asia have made serious efforts to meet the basic learning needs of those who have not yet been reached through conventional means. The National Open School in India is a major initiative, offering academic, vocational and life enrichment courses for adolescents and adults, and particularly for women and marginalized groups. It also co-operates with the existing conventional schools to provide local support to students. Also Japan, the Republic of Korea and Indonesia have open schools or similar programmes. Indonesia's "Packet A" project concentrates on out-of-school learners and offers literacy training and relevant life skills issues.

76. Another important area is teacher training through distance education. Teacher training is by far the largest programme of the Allama Iqbal Open University in Pakistan, and is also at the basis of the activities of the Open University of Sri Lanka. Nepal uses interactive radio for teacher training. In China, about 1.5 million schoolteachers, out of a total of about five million, did not meet qualification requirements in 1989. Consequently, a large project was launched to train local teachers through distance education via one of China's two educational satellites. The present enrolment of China TV Teachers College is reported to be 1.2 million, apart from non-degree and in-service programmes (Wei and Tong, 1994).

77. There has been a remarkable development of distance education in higher education in Asia. The first stage was the development of correspondence based university teaching in a range of countries: India, Japan, China, the Republic of Korea and others. The target groups were not only adults, but also youth who were not admitted to conventional forms of study. In the next stage, radio and television were added to the range of media, and many Asian countries established open universities, some inspired by the UK model and some based on other ideas and adapted to national circumstances. Some of the major institutions of this kind are found in Japan, the Republic of Korea, China, Hong Kong, Thailand, Indonesia, India, Pakistan, Iran and Israel. In large countries, like India and China, not only single institutions but also networks of open universities have been established. The largest of them all is the network of Chinese Radio and Television Universities, which now incorporates 44 individual institutions. Since 1979 this network has produced more than 15 million degree and non-degree graduates (Wei and Tong, 1994). Many of the universities have also developed programmes for professional and continuing education, often in intersectoral cooperation with various ministries.

78. The most characteristic feature of the Asian scene of open and distance learning is the sheer magnitude of the operations. In size, scale, range of programmes, graduate output, and use of technologies all demonstrate future promise and growth. The Asian nations face tremendous challenges in their response to the demand for more and more education and training from their peoples. Open and distance learning will be a necessary element in this response. The organization of large distance education systems is a particular challenge in this context. This includes the application of the new technologies to develop, deliver and support open education. The Asian Association of Open Universities has addressed these issues in several conferences and publications (AAOU, 1993).

79. Australia and New Zealand are countries where open and distance learning is well established and recognized at all levels of education. It has been used for a long time in primary and secondary education for sparsely populated areas and for other groups with particular needs. Parents are often involved actively, particularly at the primary level. Printed material was the first medium to be used. Radio was added as a means of communication especially from the 1950s using the radio provided for the Royal Flying Doctor Service. Today a range of technologies is used to enhance communication, and distance education seems to be developed as an integral part of educational services to school age children as well as to the adult population. Vocational, technical and further education is another strong sector in distance education, both in Australia and in New Zealand. Open learning packages are used in flexible ways, often for self-study with conventional and/or distance support.

80. In higher education, Australia is known for its tradition of providing distance education programmes from conventional universities and colleges, often called “dual mode” institutions. The courses usually had the same curricula in conventional and distance versions and even the same teachers are often involved. As part of a rationalization of the structure of higher education the number of higher distance teaching institutions was reduced to eight Distance Education Centres becoming operative in 1991. However, this policy has also been revised, and the government launched a new initiative in 1992, establishing Open Learning Australia based on a consortium model. The number of government reports and initiatives concerning higher open and distance learning in Australia shows that distance education is a central element in the efforts to achieve change in higher education. A range of issues are involved, among them the need to provide higher education to mass populations, the introduction of new technologies for learning, and considerations about costing and costing mechanisms.

81. In contrast with Australia and New Zealand, the Pacific region is a developing region. With only 1.5 million inhabitants, it spans 33 million km², 265 distinct languages and 60 cultures. The main provider of distance education in the region is the dual mode University of the South Pacific, owned by twelve Pacific countries and using audio conferencing quite extensively. Papua New Guinea has both school level distance education and dual mode university education at a distance. Despite 25 years of great effort and considerable external aid, the situation concerning human resource development in the region has not improved much. Matthewson (1992) discusses some of the reasons for this. She claims that much of what has been done by external donors has been counterproductive for development within the region, serving needs in donor countries rather than in the region. According to her, some of the overseas funding should be redirected and more local expertise should be used. Governments in the region should also advocate more firmly a shift in the use of available resources.

North America

82. The history of distance education goes back more than one hundred years in North America and it is now firmly rooted in the education systems of both Canada and the USA. There is a rich variety of programmes and institutions in a range of areas, and there are examples of the use of almost every conceivable technology. Distance education is used for outreach to remote population groups, support of school education, provision of education and training opportunities for adults, vocational courses, corporate and military training, higher and continuing education, life enrichment courses, etc. Modalities in frequent use are correspondence education, television and video courses, audio and video teleconferencing, satellite transmission and computer-mediated communication.

83. Both in the USA and in Canada, education is under the responsibility of individual states/provinces. This makes the provision of distance education more fragmented than it could be and it has been difficult to organize a real national provision, particularly from public institutions. Another reason for fragmentation, particularly in the USA, is the division between programmes based on different technologies of delivery and support. Among the prominent providers of distance education in the USA one may mention several conventional universities, private distance teaching institutions, military training institutions, broadcasting services, some private corporations and lately a range of various consortia. One of them is the National Technological University. In Canada, there are some strong provincial institutions at secondary as well as university level, and also educational television services. There are for instance specialized distance teaching universities in Quebec, Alberta and British Columbia. Consortia models have also been developed in many provinces.

84. North America has more extensive experience than most other parts of the world in the application of advanced technologies of telecommunication in distance education. Increasingly, a mix of different technologies is used in the same programmes. Electronic services and networks

are available to a considerable proportion of the population, and governments see a future in expanding capacity and access through 'information super highways'. However, there is a pressing need for North American Colleges and Universities to make capital investments to provide the technological infrastructure to link the programmes and services on the 'information super highway'. Many institutions lack the necessary networking capacity and internal expertise to fully utilize the opportunities. There is thus a need for continued public investment in the technology infrastructure.

85. Miller (1993) identifies four long-term trends in American higher distance education (these are, however, not confined to the region):

- a the simultaneous diversification and convergence of technologies, with consequences for course design, curriculum planning, organization of resources, investment policies etc;
- b changing relationships with students with more weight on group and student-student interaction, shift of control over time, place and pace of study;
- c changing relationships between institutions, with the development of consortia for sharing resources, provision of national degrees and programmes, and even specialized national universities or university programmes;
- d the emerging mainstream, meaning that distance education is a symptom of broader changes in the educational paradigm, where educational institutions are adapting to currents of social change, new technological infrastructures and shifts in basic teaching-learning relationships.

86. North American institutions are often driving forces in the emergence of international and global cooperation. The recent agreement on economic cooperation between North American countries in NAFTA includes increased cooperation in distance education between Canada, USA and Mexico. The CREAD network covers both North America and Latin America and the Caribbean. It is perhaps not a coincidence that the headquarters of the Commonwealth of Learning is situated in Vancouver, Canada.

Europe

87. In Europe distance education is a well-established form of education, although the status and tradition varies considerably within the region. In Western Europe there is a strong private sector in distance education serving the adult population, mainly through general education programmes at the secondary level, through various forms of vocational and professional training and through non-formal education. A number of countries have implemented particular legislative measures to ensure quality control of private provision. Some countries have also established major government-funded institutions (France, Spain, Sweden). Some of these operate mainly at the secondary level, others also have tertiary level programmes. The UK Open University has set the standards for a particular type of university institution, the open universities. Similar institutions have been established in four other European countries (Spain, Germany, The Netherlands and Portugal). In other countries the dual mode type of universities is the dominant model, and in recent years various consortia models have been introduced.

88. In Central and Eastern Europe and the former USSR the political and economic transformation has important implications for education, and has already led to fundamental reforms and restructuring of national education systems. In most of the countries distance education based on correspondence studies combined with face-to-face 'consultations' was developed and served large populations. However, student numbers have decreased very much after the political transformation, partly due to lack of support from employers. The model is now often met with some reserve regarding both status and quality. Distance education is still a priority of most of the governments in this sub-region, but it is in need of fundamental reform and upgrading, as is the education system as

a whole. Undoubtedly, distance education and training has an important role to play in the modernization and expansion of access to education in Central and Eastern Europe and the former USSR. The development of new structures will need support in forms of funding and regional collaboration in order to be effective.

89. Cultural diversity, the range of languages in use, and differences in educational tradition have made educational provision a matter for the individual country, and there are still few examples in Europe of successful international provision of distance education. However, efforts towards economic and political integration are changing this picture. The UK Open University is now enrolling considerable numbers of students, particularly within business education from all over Europe, including the former USSR. The European Union has for many years been promoting distance education, particularly with a European dimension and in cooperation between institutions in the member states. Open and distance learning features strongly in policy documents from the Commission of the European Communities, and was mentioned particularly in the 1992 Maastricht Treaty. Support for distance education is also given within the framework of programmes of economic assistance to Central and Eastern Europe and the former USSR. This continuous interest of the European Union has probably influenced national governments in their revision of policy concerning open and distance learning. Several regional networks have been formed in the second half of the 1980s and early 1990s (among them the European Association of Distance Teaching Universities -EADTU, and the European Network of Distance Education -EDEN), and they are active in promoting and implementing collaborative projects in various sectors and at different levels.

90. Diversity and fragmentation in Europe goes beyond the structure and traditions of the education system. Severe obstacles for development are national telecommunication monopolies, lack of standardization, varying and insufficient copyright legislation and weaknesses in the European software industry. Proper regulatory frameworks, tariff structures and the seamless interconnection of networks, as well as the development of services and applications, are crucial for further utilization of new technologies. The European Union is preparing actions in this area. Including open and distance learning, based on recommendations from a group chaired by Commissioner Martin Bangemann (Bangemann, 1994; CEC, 199 1a; CEC, 199 1b),

91. Some of the emerging issues in European distance education may be summarized as follows:

- a The problem of matching open learning and distance education provision to the needs of human resource development at national and sub-regional levels and of integrating future development with human resource and education politics and strategies;
- b The challenge of mobilizing conventional institutions of education in the implementation of open and distance learning strategies, and at the same time capitalizing on the experience and resources of the many specialized distance teaching institutions;
- c The need for innovation by both conventional and distance teaching institutions concerning the effective use of new information and communication technologies for education and training purposes, based on sound educational strategies and research;
- d The need for appropriate balance and synergy between national and European development concerning policies, infrastructure, quality standards and equivalence, joint development projects and delivery and support systems.
- e The challenge of assisting the development of distance education programmes and infrastructure in sub-regions where it is not sufficiently developed.

V. POLICY AND STRATEGY CONSIDERATIONS

Planning for open and distance learning

The framework

92. An increasing number of Member States have developed national policies for open and distance learning or have integrated distance-learning strategies in recent policy documents on education and training. Inclusion in policy documents is a prerequisite for effective national planning and utilization of open and distance learning as part of a consistent education and training strategy. In many cases a review of the legislative basis may also be useful. Consequences of recognition at this level include: greater credibility for open and distance learning and for the qualifications obtained through it, a legitimate presence on agendas of all relevant committees, and enhanced possibilities for funding. More importantly, many now believe that open and distance learning is a potential trigger for educational expansion and renewal. Without recognition in national policy, action is difficult.

93. Some models and examples of plans for open and distance learning are available to inform planners. Policy statements that make significant reference to open and distance learning and that are available as public documents include, for example, the National Policy on Education (1986) of the Government of India, the Education Master Plan (1990) of the Republic of Mauritius, and the White Paper on Education and Training of the Republic of South Africa (1995). Feasibility studies are not normally public documents and are thus harder to come by.

94. Statements on open and distance learning in national policies should address fundamental questions, such as:

- Why use open and distance learning? In relation to what national goals? For what purposes, sectors and target groups?
- What types of open and distance learning systems are available and suitable? What are the resource and infrastructure requirements? How will open and distance learning relate to the conventional system?
- What are the future prospects for open and distance learning? How will it be developed? What are the roles of existing systems and structures, including the private sector? What will be the mechanisms for coordination, funding, and quality assessment? What measures are necessary for recognition of equivalence, legislative change, and the development of technological infrastructure?
- What should the potential role of open and distance learning be in the internationalization of learning processes and of the educational market?

Care should be taken to present open and distance learning as an integral part of national education and training, and it should no longer be treated as a separate, alternative option.

95. Situational analysis benefits from an integrated approach, relating for example technological planning to the needs and nature of different target groups on the one hand, and to national academic frameworks and qualifications structures on the other. At the same time planning should take into account the requirements of different sectors (for example, health and agriculture as well as education) and needs at different educational levels. Before launching new technology supported systems, one should examine how these modified learning and teaching conditions will influence the various education activities as well as the different target groups in their respective socio-cultural and economic environments. The planning of open and distance learning should also be linked to the planning of technological infrastructure. Infrastructural projects should be analyzed in order to examine their suitability for educational purposes. Open and distance learning can be complementary

to traditional educational approaches, it may be included within and adapted to given structures, and it can create added value. By taking this into account, the full potential of technological infrastructure can be realized.

96. The introduction of open and distance learning involves substantial change to existing arrangements for education and training. Three main strands of change can be identified in regard to the implementation of learning technology applications:

- Modernization of training supply: the integration of learning technologies within the activity of existing education and training institutions;
- The consumers market: the creation of a mass market of individuals and small and medium sized enterprises for learning materials and services;
- Electronic 'highways' for education and training: the creation by telecom operators of a network infrastructure with delivery of learning products and services as one element.

These three strands of change should be seen as leading orientations for the implementation of open and distance learning, and characteristics of each of them will be integrated in various degrees according to circumstances and political strategies.

97. Who should be involved in planning? All stakeholders should in principle be included in consultation, and planning should as far as possible be intersectoral. Politicians, educational administrators and planners, distance education experts, information and communication technology specialists, media experts, economists, teachers, potential students -all these should be listened to and if possible involved at appropriate stages. Organizations operating locally and regionally with networks linked to important target groups should also be consulted. Distance learning should be based on local, national and international cooperation and coordination. There needs also to be a planned and continuing interface between all the national stakeholders in open and distance learning, with mechanisms for coordination.

98. International and regional bodies may have a role in planning. Often they are an important source of information on policies, existing institutions and structures, methodologies, technologies, learning material and other resources, research findings and experience, sources of funding and possibilities of international cooperation. Policy statements and regional/international programmes of action can help support and guide developments at national level. For example, the Treaty of the European Union (Maastricht Treaty) makes specific mention of open and distance learning, and the Union funds open and distance learning activities in several action programmes. There are also several regional and international databases and other resource centres, organized and funded by various international organizations.

Structures and institutions

99. A wide range of different types of organizations may be involved in open and distance learning:

- private distance teaching institutions (correspondence schools and their modern counterparts);
- state owned institutions of similar type (correspondence schools, 'open schools', colleges, etc.);
- open universities (dedicated, usually large distance teaching universities);
- dual mode and conventional universities and colleges;
- educational broadcasters, video production centers, etc.
- satellite transmission and programming services:

- community-based institutions and organizations;
- professional organizations;
- human resource development and training departments in businesses/industries;
- software industries (publishers, computer and multimedia software companies);
- network operators and providers of network services (telecom services, information brokers, databases, etc.);
- national consortia and networks of institutions
- international consortia and programmes.

Institutions vary with regard to ownership, size, technology base, integration (of open and distance learning with other methods) collaborative relationships. The range of institutions and institutional resources also varies considerably between different communities and countries. The roles and strengths of institutions in society are rooted in history and culture as well as socio-economic factors. This also means that there is no common solution, adaptable to all societies, for the establishment and development of institutional structures in open and distance learning.

100. There are clear indicators that open and distance learning will be adopted and integrated by 'conventional' institutions, probably at all levels of education and in all sectors. Some governments are pushing this development in various ways. This will necessarily change the 'conventional' educational sector itself. The use of new information technologies, and particularly open and distance learning, has already been seen for some time in university education and is increasing in speed and impact. In school level education and training the path to the future shows slightly different characteristics, but the general direction, to integrate open and distance learning in 'conventional' schooling, is the same. On the other hand, other types of institutions, both public and private, are seeking and finding their roles in the educational market, usually based primarily on consumer interests and professional needs that are less easily met by public institutions.

101. The question of scale has to be carefully addressed by national planners. A large target group is not always a prerequisite for introducing open and distance learning, although there should be a connection between resource input and expected number of students. Planners will need to determine criteria that are appropriate to the country, including considerations of language and cultural identity.

102. There is presently considerable discussion about whether the best option for open and distance learning, particularly in higher education, will be to establish separate, single mode institutions, or to develop open and distance learning in networks or consortia of conventional or dual mode institutions. There are arguments in favour of both solutions, and the answer must be based on prevailing needs and circumstances. The question of scale is in many cases fundamental. The general tendency seems to be that consortia and network models are growing. In some countries a network is seen as a clear alternative to a single mode institution, but both models may also be applied in the same country. Some try deliberately to develop networks where both single mode and conventional institutions are involved, in order to make the most of both types of resources.

103. Existing institutions will need to develop new types of partnerships and alliances in order to meet the needs of society in more effective ways than most of them do today. They may for example liaise with similar institutions beyond their own sphere of influence, in order to share resources and utilize products in a bigger market. They may also form alliances with quite different types of institutions, in order to broaden their range of services and achieve synergy and increased impact in the market. One example would be for open and distance-learning institutions to cooperate with transnational companies with efficient and advanced private communication networks, which might create added value for education and training purposes. This could be particularly useful for developing countries with weak communications infrastructure.

104. There will be a continued need for dedicated open and distance learning institutions (open universities, open schools, etc.) with a capacity for serving large target groups. But new market conditions and new technologies will impose changes in these institutions as well. For most of them, change will be a necessary prerequisite for survival. The wealth of experience and competence in existing open and distance learning institutions must be capitalized on in new alliances and structures. This is a challenge not only to institutional leadership in these institutions, but also to political awareness, policy development and political leadership at national and international levels.

105. The question of private sector involvement in open and distance learning needs attention. It is acknowledged that IGOs and public sector education institutions need to work in close partnership with the private sector. This will become even more important in the future. There is a growing need for the realization of harmonized and common projects between public, private and non-governmental organizations. However, the modalities need investigation. Where the private sector operates independently, issues of regulation and safeguards arise: profiteering can lead on the one hand to low quality and thus damage the good name of open and distance learning, and on the other hand to high fees which prevent those with a low income from benefiting. Governments therefore should take steps to ensure that regulations and an effective monitoring system are in place. This can often be achieved through collaboration. Funding of some public sector programmes by the private sector is to be encouraged, but also has its down side: politicians may see an institution's success in raising funds from private sources as a signal that public funds are no longer needed and private sector sources are not always easily persuaded that education and training are profitable markets. Thus a clear framework for collaboration is always needed.

Implementation

106. The successful launching of open and distance learning on a national basis requires visible and strong leadership. History shows this to be a necessary though not sufficient factor. High-level government backing is vital but it does not necessarily have to come from the department of education, and the launch does not have to be focused on a single providing institution. However, careful planning, including forward planning after the launch, is essential. Ad hoc approaches usually lead to confusion and questionable quality. To help ensure effective implementation, evaluation procedures need to be built in at the planning stage. Continuous evaluation will help to identify difficulties as they arise. There should be sufficient flexibility to allow for change and adaptation as necessary. Planners should also take into account the training needs of staff newly involved in open and distance learning, and their professional development should be a planned component of national implementation (Dodd and Rumble, 1984).

107. There is a variety of different ways in which open and distance learning is funded. New institutions need substantial funding to meet start-up operations. In France, the CNEE receives funds from the ministry both directly and through salaries paid to teachers, and this is supplemented by self-financing. In many countries, universities bid for government funds for projects. In Denmark they can obtain loans to fund development costs, In Indonesia, the Indonesian Distance Learning Network is resourced by funds from six participating ministries. In Tanzania there is a combination of state grant, student fees and international assistance. In China, work units also contribute to cover costs of employers and local class support. These various arrangements have in common government commitment to provide funds. Purely private funding seems to be viable mainly for programmes covering broad sectors of business and consumer interests. The level of funding varies from country to country, but two factors need to be taken into account in determining the level: a cost effective operation is one that makes good use of resources -it is not necessarily low cost; and a distance teaching institution needs to have sufficient resource to be able to react quickly to meet new demands.

Open and distance learning for social and economic development

Contributions

108. There are many examples of successful open and distance learning programmes for social and economic development in developing countries. As described in Part III, some of the major contributions are within teacher training, where distance education has been crucial for the qualification and upgrading of the teacher force in many countries. Thus, distance learning is used as a means of improving the quality and performance of existing education systems, particularly at primary and secondary levels. In addition to targeting the teachers, conventional education has been supported by programmes aimed at students, for example by interactive radio, and by the development of learning material for use in schools.

109. Open and distance learning plays an important role in providing basic education for all. School equivalent education for youth and adults has for a long time been provided through various forms of open and distance learning. Several recent initiatives have provided new momentum to the task of increasing access to education for wider groups by non-traditional methods. One example is the National Open School, set up by the Government in India in 1989, based on experiments conducted since 1978. Its mission is to achieve the universalization of education, social equity, and justice, and to create a learning society. Similar initiatives in other countries were strongly endorsed by the Jomtien Declaration on Education for All.

110. In many developing countries distance teaching is a very important means of providing higher education. Open universities and other distance teaching universities are major institutions and an important supplement to conventional universities, particularly in many Asian countries, but also in some countries in Africa, Latin America and the Arab World. They contribute decisively to the expansion of educational opportunities as well as to equity and regional development.

111. The role of open and distance learning in non formal education and mass media programmes for the general public is also well known, for instance in radio schools for farmers. Nonformal and vocationally oriented education is often crucial for social and economic development. Open and distance learning plays an important role in qualifying and upgrading key personnel in various fields, such as medical staff and health workers, farmers and agricultural staff, accountants in small enterprises, national and local administrators, etc. This is organized in different ways, but open schools and open universities are often valuable resources in providing non-formal, vocational and professional education. They also provide an important infrastructure for the production and distribution of learning material.

Barriers

112. There are various common barriers to the effective implementation of open and distance learning in developing countries. Lack of funding and problems of sustained support are perhaps the most important ones. The assumption that distance education is a low cost alternative and the lack of sufficient funds for recurrent costs often have detrimental effects on quality and therefore on learning outcomes. Another common problem is lack of human resources with sufficient competence and motivation, particularly concerning distance learning methodology and technology. The third major problem is technological infrastructure, which prevents the effective use of appropriate technologies. Finally, lack of strategic planning and coordination, including full specification of goals and priorities, may adversely affect quality and cost effectiveness of open and distance learning programmes.

113. A particular problem in some countries is the lack of credibility, parity of esteem and recognition of qualifications achieved through distance learning. Historically speaking, most countries have historically experienced distance education programmes and institutions of inferior quality, leading to the lowering of the reputation of this form of study. In some countries a conservative climate regarding the conceived superiority of conventional education systems constitutes a severe obstacle. When distance-learning systems are under funded and left with less competent staff, negative attitudes may become confirmed by practice. There is, on the other hand, evidence that students in well-designed distance learning systems often achieve at least as well as conventional students.

Strategies

114. A strategy for the development of open and distance learning ideally forms part of any national strategy for education and training. It should include the harmonization of goals, policy clarification and coordination at the national level. Open and distance learning should assist in the implementation of national policies on social and economic development within an overall strategy for development. An integrated and intersectoral approach is thus very important. Deficiencies of the planning process and lack of understanding of the requirements may cause serious problems later on. The needs of society and the learners must be kept in focus. The components that are needed have to be put together, organized and managed efficiently. In the planning stage it is also necessary to consider infrastructure, cultural backgrounds and requirements, social factors, economic circumstances, access to and acquaintance with technologies, language of instruction and attitudes to and styles of learning.

115. National policy and planning should take into account possibilities for regional and international collaboration and coordination. Development banks, regional IGOs, resource centres and other joint initiatives may support and strengthen national programmes. Private fund-raising may also be a possibility. Common policy design, at the regional level, followed by collaboration concerning implementation as well as pooling of expertise and resources, can provide considerable support and have the necessary impact on national goals and objectives. National programmes can be further consolidated and improved when bilateral and international donors harmonize their support with national and regional priorities.

116. Appropriate funding and distribution of resources must be secured, both for initial development and for long-term implementation. This is often a problem, particularly when new systems are introduced with external funding. If new technology is introduced, it is vital also to provide for support and maintenance. Distance learning systems often need strong political backing, particularly in the initial stage when investments for the future are made. If the support is weak, funds may be cut before there are substantial and visible results.

117. Lack of technological infrastructure is one of the common problems for open and distance learning in developing countries. This may lead to a concentration on very simple technologies in the planning of open and distance learning. It is, however, necessary to have a more balanced view. Availability of technology may vary considerably in developing countries. Some new technologies that are suitable for training and information exchange are less expensive than previous generations of technologies, and infrastructure projects therefore have become more realistic. Thus, trends in broadcasting and audio teleconferencing technology, including satellite, may now be affordable for developing countries. This applies also to the possible interconnection between countries through telecommunication networks, which may have considerable implications for the education and training of human resources in developing countries and for access to external resources. In some cases, therefore, countries may have the opportunity to leapfrog into new technological environments suitable for training.

118. It is important to achieve appropriate networking between national stakeholders, education and training institutions, the private sector, mass media, telecom operators etc. Better integration between the education and training systems and the productive sector itself is another crucial issue in many countries. Finally, when an open or distance learning initiative has been launched in a country, it must be followed by substantial and long-term commitment. Even at the planning stage one should look beyond the main installation and operation phase, to ensure sustainability. This is essential for the lasting success of any technological support project. Commitment and maintenance does not apply only to technology and equipment. Equally important is progressive autonomy, capacity building and human resource development, including increased professionalism in planning and management of open and distance learning systems.

Technology in open and distance learning

Current experience

119. The history of the development of open and distance learning is linked to the development of information and communication technologies. Various new technologies have been used for education, and some of them have helped bridge barriers of access and enhanced communication. Important new stages of technology development have brought forward new types and structures of open and distance learning systems. Such stages are for example the emergence of efficient mail systems, the development of telephone services, radio and television broadcasting, audio and videocassettes, the microcomputer, and satellite transmission. New devices, services and networks are continually being introduced. Future developments in open and distance learning will be linked to the penetration, development and combination of existing and new technologies and infrastructure. Technology is in itself a driving force, and this driving force should be used for the benefit of education.

120. Technologies used for education and training are obviously not ends in themselves. They are used to extend opportunities of learning to new groups, to make learning more efficient and flexible, and to enrich the learning processes. Different technologies may serve the same purpose, or they may serve quite different purposes in this context. When a range of technologies is available, it is not usually a question of choosing just one technology, but of selecting an appropriate mix of technologies to serve the overall objective in question.

121. There are great differences in the richness of the technological environment and infrastructure between regions and target groups within a country, as well as between countries. The same range of technologies may not be available but also may not be necessary in every context. It is necessary to consider and to be realistic about the actual technological environment in which open and distance learning will be used, in order to design effective systems.

122. Technologies are available at different levels of sophistication, which may fit most kinds of requirements well. Even simple technologies can be used effectively for learning purposes. Very few situations actually require multimedia and interactive broadband services. Correspondence education, based on printed materials and mail only, is still widely used. Many systems employ traditional audiovisual technologies (radio, audio cassettes, TV, video) in combination with print, and are operational in both developed and developing countries. There are also many successful examples of using simple telecommunication technologies, such as telephone, audio conferencing and slow-scan videoconferencing, at relatively low cost. For large-scale projects satellite transmission has proved to be effective.

123. There is a wide range of technologies that can be used in students' homes. This gives of course the maximum of flexibility and accessibility for each individual. However, in order to foster dialogue in an interactive situation it is often preferred to organize group meetings of students in local

study centres, which may have more expensive technologies available. This allows the use of technologies which are not usually to be found in students' homes, particularly technologies which can be easily integrated in a group context (video player, audio conferencing equipment, satellite receiver, etc.). Thus, study centres are often equipped to serve as technological resource centres. If located in schools, community centres etc., they may also serve complementary purposes in the community.

Prospects for the future

124. The potential of more advanced electronic information technologies in open and distance learning offers the capacity for storing, retrieving, manipulating and distributing large amounts of information, and of speeding up and facilitating communication. All this is now being achieved in an increasingly integrated way and at decreasing costs, The pace of development is enormous, as illustrated by the estimate that 80% of computer programmes used today were not designed five years ago. We are witnessing a revolution in the production and diffusion of knowledge. The introduction of digitalization as the basis for all techniques and applications constitutes a break with the past, and paves the way for technological convergence and integration of previously separate technologies. Modernization of infrastructure, enormous increase of access and capacity, greatly increased portability and development of a wide range of new tools and applications are important features of the new situation, often characterized by the term "information superhighways".

125. The education community cannot ignore the revolutionary changes brought about by technological developments and infrastructure now shaping the new information society. Present political and commercial interest in and commitment to the reinforcement of a world-wide electronic communication infrastructure (Internet, information superhighways, World Wide Web, etc.) should be of great interest to education, and particularly to open and distance learning. Technological developments have dramatically changed the options open to decision-makers and educators. Interactivity is a key element of most of the new services, be it in dialogue between student and teacher, in group interaction and collaboration, or in interaction with databases and educational software. The services are therefore particularly relevant to education and to the communication needs of dispersed users. The education and training sector should not only take advantage of the new tools, but also ensure that children, youth and adults master the skills needed in the information society.

126. Previous experience of technology based open and distance learning is an important asset, although one must be aware that it may quickly become obsolete. Most of the successes of electronic information technologies so far have been in specialized, in-service training or in higher education -where students are likely to be motivated, to possess information handling skills and to have prior computer experience. One of the major weaknesses of these technologies has been in facilitating basic education, although this situation is starting to change. Developing countries have benefited the least from these advanced educational technologies, although the long term potential ought to be real and considerable even for the Third World. The challenge for the future will be to utilize the full potential of new technologies according to clear educational and instructional strategies. Information and, exchange of experience (utilizing some of the new possibilities) will be a basic component of international cooperation in this field, and will help to avoid repeating previous errors and to take full advantage of the new developments.

127. For electronic information technologies to be successfully employed in education on a wide scale, major changes will have to be introduced into education systems. The education sector should organize itself as a major technology customer and become a proactive partner in service development, although not necessarily in the role as producer of learning materials. For this to be achieved, the socially oriented education community needs a new dialogue and collaboration with the more market-oriented telecommunication and software industries. Cooperation and integration of open and distance learning systems with traditional educational structures should be an important element of the strategy in this context. However, a strong political push is necessary to accomplish dialogue

and coordination. The roles of different key actors should be reconsidered and redistributed in this process: public authorities, manufacturers, software houses, public and private broadcasting companies, telecommunication and satellite network operators, schools, universities, large and small scale open and distance learning institutions, publishers, training providers, libraries and documentation centres and research institutions.

128. New technologies in education imply new relationships between learners and the available information as learners acquire knowledge and build knowledge structures. Such relations include the need to evaluate information sources, mastery of documentation and communication techniques, new ways of information access, and new communication skills related to interaction in dispersed groups. The increased availability of knowledge not usually taught in schools will influence the way of thinking concerning the acquisition and diffusion of knowledge in society. The building of individual knowledge structures are influenced by the way information is presented and manipulated. For example, extensive use of video and computer games seems to influence children's conceptual development. A considerable amount of research is needed in order to study these relationships and offer guidance for future development of policy and practical implementation.

Economics of open and distance learning

Cost structures and comparative cost studies

129. It is often stated that open and distance learning is cheaper than other forms of education and training. A substantial number of studies do show that in many circumstances this is true. However, as a general statement it is far too simple. Usually, the cost structure in open and distance learning is quite different from cost structures in conventional types of education. This complicates the comparison. Different types of costs ought to be accurately measured against each other. The results will therefore depend on the circumstances, on the choice of appropriate costing methods, and on whether all relevant costs are looked at. The costs should always be considered in relation to clearly defined educational goals, and compared with alternative ways of achieving the same goal. An overview of some of these aspects are given by Orivel (1987 -see also Heyneman, 1993; Perraton, 1993).

130. The balance between capital and recurrent costs is different when comparing open and distance learning with conventional education. In open and distance learning there is usually considerably less need for buildings and classrooms, and when such facilities are needed, one may be able to use existing facilities at times when they are not in use. On the other hand, open and distance learning systems will usually invest more in course development before any students are enrolled, and will often need to invest in various equipment, studios, etc. Also recurrent costs are different. Staff salaries, housing etc. usually represent a much lower proportion of recurrent costs in open and distance learning. Conventional education is in most cases more labour intensive than open and distance learning. On the other hand, there may be production, maintenance and delivery costs that are not found at all in conventional systems.

131. Distance education enables a limited number of teachers to reach a very large number of students. Clearly, when capital investments (course development etc.) substitute high recurrent costs (teacher salaries etc.), as is often the case in open and distance learning, there is an important factor in the economy of scale. It has been demonstrated in a number of cases that large distance learning programmes may produce graduates at considerably lower per capita costs than conventional institutions. The main explanation is that the cost per student or graduate decreases significantly as the number of students increases. An example of a thorough study of cost-effectiveness is Ding (1994), which demonstrates convincingly the cost-effectiveness of a large-scale system, namely the Chinese Radio and TV Universities.

132. This general picture may need modification according to particular circumstances. There are many factors that influence the level of costs other than the total number of students. Many case studies simply compare recurrent costs, without estimating differences in capital costs. The way of looking at capital costs may also differ when one compares institutions and when one considers the establishment of a particular programme, be it in open and distance learning institutions or in conventional education. Another aspect, particularly in higher education, is the responsibility of universities for research. Academic staff divide their time between teaching and research. This is not always fully reflected in the calculations of personnel costs in higher distance education.

133. The costs of an institution vary with the areas of study and the composition of course programmes. Thus, the costs of students in different programmes and courses are not equal. In open and distance learning the number of students in each course and the number of courses are important. With a wide range of courses in different areas and at various levels, cost structures may become less favourable than one would believe from the total number of students.

134. While conventional education and training shows great variation in costs according to subject area and type of programme, open and distance learning also varies very much according to the use of learning materials, the choice of media and technologies, and the types and organization of student support services. Traditional distance learning, based on print material and mail, audiocassettes or radio, is comparatively cheap, even if the student numbers are fairly low. More capital-intensive media, such as television and video, satellite transmission, CD-ROM and computer-based training need large numbers of students in order to be cost efficient. Extensive interaction and student support is also expensive. The costs of such services are variable and per capita costs cannot be reduced by dividing costs by large student numbers. These differences between services often (though not necessarily) imply that there is a relationship between cost effectiveness and the standard and quality of the programmes. High quality open and distance learning is not always a cheap solution. The cost elements related to the use of technologies should be looked at in a dynamic perspective. The assumption that distance education is a cheap option becomes less valid as the technological environments tend to become richer. On the other hand, relative to labour costs, both capital and recurrent costs of technology tend to decrease.

135. A very relevant element in cost comparisons is the rate of graduate production or completion of studies. Many cost studies fail to take this into account, both in conventional education and in open and distance learning. We know that completion and graduation rates vary considerably between institutions, subject areas, levels and target groups. While we know that course design, choice of media and student support may have significant influence on completion, it is also clear that completion rates must be included in cost comparisons.

136. When open and distance learning is used in combination with face-to-face instruction, and when the same institution offers both conventional and distance-learning programmes, the analysis of costs becomes even more complex. Most cost studies compare the costs of single mode distance learning systems with that of conventional systems, while cost studies of open and distance learning programmes in conventional or dual mode institutions are scarce. Some institutions deliberately allocate the same teaching loads etc. to both conventional and distance students, and then add teaching material, media and communication costs. This obviously increases costs, rather than achieving any economies.

Qualitative considerations

137. It needs to be stressed, however, that while most cost study models use methods derived from the production of goods, education is part of the service sector. Students should not be looked upon as consumers only, but as active participants in the production of the service -in this case learning. To look at input of resources and outcome of graduates only from the perspective of the educational institution, does not give a full picture of the actual process. Thus, the economic analysis of education should have a wider perspective than traditional cost studies.

138. Most cost studies of open and distance learning systems are simple cost efficiency studies from the institution's perspective, and they do not usually take into account broader qualitative and social aspects. When comparing open and distance learning with conventional education and training, one simply assumes that the content and the quality of output is the same. But open and distance learning systems are often targeted towards other groups without easy access to conventional institutions. The students are often older, and in many instances are established with jobs and families. The conditions and processes of learning are also quite different. There is no need to move and stay at a campus, or to give up earning a living while studying. On the other hand, distance study may demand or develop different skills and competencies than conventional education. There is the possibility of drawing on wider experience and of applying new knowledge more immediately to actual work or life situations. These are aspects that are not easily quantified and calculated. To some students open and distance learning is the only option, and how do we compare costs when there is no alternative?

139. A different perspective is that of the students. What are their costs and their outcomes? What are the relevant comparisons? Very few studies have chosen this perspective. (One exception is Yenbamrung, 1993.) One element is the opportunity costs of their study time. This has to be weighed against the costs and the loss of income they might have had if they were studying full time. The possibility of increased income after study varies between study programmes and also depends on labour market, age, etc. And, furthermore, the qualitative aspects of learning and acquiring new knowledge and skills are difficult to calculate.

140. At the macro level it is relevant to consider the effects for society of providing education and training to different target groups. Human capital theory puts considerable weight on education and training as a factor in social and economic development, and for the competitiveness of nations. In this context the relevance of curricula and programmes for various target groups is important, and so are the possibilities of increased productivity. The scale and speed of reaching training goals may also be as important as cost efficiency. Another important aspect is the possibility of sharing costs between the government, employers and students. Open and distance learning lends itself to such cost sharing, because it may be combined with work and may increase productivity, and can to some extent utilize time outside working hours or in some cases working time that would otherwise have low productivity value. Finally, it is relevant, both for society and for employers, to consider possibilities of using technological infrastructure which is already available or being planned, for open and distance learning. This may create added value by multiple use of existing organizations and infrastructure.

Funding

141. Funding traditions and methods considerably with open and distance learning. In most cases funding of open and distance learning institutions is different from that of conventional institutions. The main argument in favour of this is that the funding mechanisms should reflect actual cost structures. A Commonwealth of Learning symposium in 1993 concluded that work ought to be undertaken to develop better cost models for open universities, models which could be used as a basis for reviewing their funding (Mugridge, 1994). On the other hand, if open and distance learning is to be used increasingly by conventional institutions, funding for open and distance learning programmes in these types of institutions may need some harmonization with funding mechanisms for conventional programmes. The problem with this is that these mechanisms will not necessarily stimulate cost efficiency in open and distance learning.

142. It is frequently assumed that students in open and distance learning, particularly when they are working adults, should pay a higher proportion of the costs of their studies than conventional students. However, this assumption should be modified according to the differing missions, target groups, economic situations and other local circumstances. The balance of funding from government, employers and individual students should be carefully considered, in the awareness that under funding

of open and distance learning may easily have negative qualitative effects on programmes and socially on patterns of recruitment, study progress and issues of equality. Those who are willing to learn but are prevented from doing so for financial reasons should be offered help from governments if they demonstrate their potential with good results in a consistent way. Systems of financial support for students in conventional education should therefore be expanded to include students in open and distance learning, as far as this is relevant. As open and distance learning becomes a regular feature in the education system, care should be taken to remedy any forms of unjustified economic discrimination between groups of students.

VI. UNESCO POLICIES ON OPEN AND DISTANCE LEARNING

Policy sources

143. An educational policy constitutes the guiding principles for, and indicators of, a course of action selected from among alternatives, to guide development in a given field of education. UNESCO's policies and priorities in the field of open and distance learning, as expressed in the Resolutions of its General Conference and Executive Board, the respective Medium-Term Strategy, and the Approved Programme and Budget, recommendations of specific commissions and major international conferences and statements of its Director-General, are presented here below as related to the Organization's major educational programmes.

Lifelong Education for All

144. UNESCO's primary policy on open and distance learning is based on its overall priority to foster access to lifelong education for all. While this policy concerns all forms, levels and types of education in general, it finds its expression in some educational programmes in particular such as the "Learning Without Frontiers" programme (LWF) initially proposed by the Ad hoc Forum of Reflection in 1993, which called upon the international community and UNESCO to create a world network of centres for distance education and training which would 'span spatial, geographical, financial, social, family and psychological distances' (UNESCO, 1993). 'The new information technologies that have increased the demand for lifelong learning', as UNESCO's Director-General pointed out, 'have also dramatically expanded the means available for delivering it to those who need it, as and when they need it. CD-Rom, interactive multimedia systems, television and radio satellite broadcasting, computer networks, the information highways and virtual reality applications -all these new or prospective technologies open up fantastic vistas for the promotion of continuous learning.' (UNESCO, 1994).

145. In pursuance of its policy and priority for lifelong education for all, UNESCO encourages and assists its Member States to make greater use of open and distance learning for expanding access to education and enhancing its effectiveness in all forms, types and levels of education, including the potential of alternative systems of educational delivery, using modern information and communication technologies.

Basic Education

146. The first thrust of UNESCO's priority for 'Lifelong Education for All' focuses on fostering basic education for all. The important contribution of open and distance learning was clearly recognized by the World Conference on Education for All (Jomtien, 1990), which endorsed a Framework for Action to Meet Basic Needs, with a specific reference to instructional technology and distance education (Haddad, W. et al, 1990). UNESCO's Regional Seminar on Distance Education in Africa (Arusha, 1990), convened as a follow-up of the Jomtien Conference, also placed considerable trust on the role of communication technologies in meeting the educational needs of Africa (UNESCO, 1990b). Another significant thrust on open and distance learning for basic education was the 'joint initiative on distance education' launched (1993), with the support of UNESCO, UNICEF and UNFPA, by nine most populous nations (Bangladesh, Brazil, China, Egypt, India, Indonesia, Mexico, Nigeria and Pakistan), in the context of the summit meeting on Education for All held in New Delhi, India (UNESCO, 1994b).

147. In line with the above commitments to basic education, UNESCO encourages and supports action at national and provincial levels with special emphasis on co-operative efforts to develop open and distance learning systems, and programmes, to the benefit of those deprived of basic learning skills, making use of untapped information sources and media channels, written press, community radio, television libraries, multimedia channels and others to increase the outreach of basic education programmes.

Adult Education

148. Within the framework of its politics for lifelong education for all, UNESCO continues to give an important priority to adult education through open and distance learning. The great potential of information and communication technologies to reach large numbers of new adult learners is recognized as an important source towards lifelong learning. To this effect, the 4th UNESCO World Conference on Adult Education (Paris, 1985) stressed the responsibility of colleges 'to allow adults access to higher education, by extending distance learning to include distance courses, radio programmes and others' (UNESCO, 1985). Similarly, the International Commission on Education for the 21st Century called for greater use of new information and communication technologies in adult education (UNESCO, 1996a).

149. Within the framework of its activities to meet the educational needs of the adult population, UNESCO encourages and promotes the establishment of open and distance learning institutes and programmes, including those of open universities, with a view of giving new opportunities for further studies for adults who were initially deprived of them, or who, for one reason or another, did not make use of them.

Renewing and diversifying education systems

150. In line with UNESCO's Medium-Term Strategy (1996-2001), the second thrust of the overall priority for education for all focuses on renewing and diversifying education systems as a whole, which involves the diversification and expansion of structures and a better linkage between general and vocational education. As it also implies the development of alternative educational opportunities and delivery systems, both formal and non-formal (UNESCO, 1995a), it calls for a wider use of open and distance learning.

151. Consequently, UNESCO promotes and strengthens the role of open and distance learning in the diversification of delivery systems for extending and complementing conventional forms of education. In technical and vocational education, attention is given to alternative delivery systems, including programmes using new information and communication technologies, media channels and multimedia modules, to facilitate learning at the workplace, at home and elsewhere. Cooperation and partnership between enterprises, professional bodies and distance reaching institutions are encouraged and promoted. Support is also given to the use of open and distance learning to meet the special needs of the disabled, migrants, cultural and linguistic minorities and others who cannot be efficiently reached by traditional delivery systems.

Teacher Training

152. Great importance is given to open and distance learning in teacher training. UNESCO's Medium-Term Strategy (1996-2001) stresses the need to train, upgrade and motivate teachers and other education agents, using innovative approaches, including open and distance education (UNESCO, 1995a). The International Commission on Education for the 21st Century, called for the use of distance education techniques especially in in-service training (UNESCO, 1996a)

Also UNESCO's Second International Congress on Education and Informatics (Moscow, 1996) encouraged disseminating programmes that assist teachers in the proficient use of distance education (UNESCO, 1996b).

153. In order to strengthen teacher education, notably in-service teacher training, but also the training of trainers, UNESCO encourages and assists its Member States to make wider use of open and distance learning techniques including new technologies such as CD-ROM, interactive multimedia systems, television and radio satellite broadcasting, computer networks and others. UNESCO gives support to the use of open and distance learning in teacher education also through UNESCO Chairs and inter-university co-operation.

Higher Education

154. The provision of higher education through open and distance learning is recognized as an effective step towards the democratization of education. It is also an important contribution to the development of higher education, notably in its modernization and diversification, as expressed in the Third Medium-Term Plan for 1990-1995 (UNESCO, 1990a), and further reinforced in the Medium-Term Strategy for 1996-2001, encouraging to search for alternative delivery systems, including ways of updating knowledge and of providing advanced training so that institutions of higher education may serve as centres of lifelong learning permanently accessible to all (UNESCO, 1995a). In this respect, 'modern technology', as UNESCO's Director-General pointed out, 'allows us to conceive of academic mobility in reverse, i.e. placing an institution with all its potential (the best teachers, the most complete data bases, the newest research experiments, etc.) at the disposal of the students, teachers and researchers of institutions situated in far away places.' (UNESCO, 1991). UNESCO's 'Policy Paper for Change and Development in Higher Education' also stressed this perspective and urged higher education institutions to make greater use of the advantages offered by the advancement of communication technologies, noting further that 'the distinction between distance and traditional education is becoming blurred as alternative delivering systems are an increasingly viable element in a forward-looking blueprint for higher education' (UNESCO, 1995b). This view was further enhanced by the International Commission on Education for the 21st Century, which noted that 'each university should become an 'open' university, offering possibilities for distance learning and learning at various points in time' (UNESCO, 1996a).

155. UNESCO encourages and assists its Member States in their efforts, through the above open and distance learning delivery systems, to expand the access to advanced learning and to improve its efficiency by providing support in the initiation and development of open university schemes and by giving assistance to traditional universities wishing to deliver their programmes through distance education. Support is also given through the UNITWIN/UNESCO Chairs programme as a principal modality for inter-university co-operation.

Capacity-building for open and distance learning

156. In its efforts to assist its Member States in the field of open and distance learning, UNESCO gives a priority to various forms of capacity-building, especially in developing countries. Reference is here made to the Director-General's statement 'that inequalities in access to education, information and the new technologies coincide, and that we have to address these inequities as a whole' (UNESCO, 1994). The 28th Session of the General Conference (1995) drew attention to capacity-building in communication, information and informatics, urging to carry out pilot projects involving new application of information and communication technologies with a view to facilitating access to telematics services in developing countries, and in particular, to promote the use of these technologies for open learning and diversified lifelong education in support of 'Learning Without Frontiers' (UNESCO, 1995).

157. Within the framework of its policies, priorities and programmes, UNESCO contributes to the development of capacity-building in open and distance learning, among other things, by generating public interest in its use; sensitizing policy and decision-makers to its potential; assisting in drafting respective policies; supporting the establishment of delivery systems, institutes and programmes; improving their management, administration and student support systems, material and course production and the training of personnel; advising in the choice of information and communication technologies; supporting the establishment of regional and national distance education associations; facilitating the collaboration with international, regional and sub-regional networks, and enhancing their partnership with information, communication, industrial and other related sectors; serving as an international clearing house, monitoring present and future open and distance learning activities, collecting, processing and disseminating relevant information and experience, and mobilizing internal and external resources to support capacity-building activities.

International co-operation

158. UNESCO's role in international co-operation for open and distance learning, which is part of its overall policy to face the challenge of the information age and 'information highways', consists of both intellectual co-operation and technical assistance (UNESCO, 1996). Great importance is given to international, interregional and regional co-operation for the promotion of open and distance learning, including the urgent needs for co-operation such as awareness, confidence and capacity-building; mapping of relevant experience, success and failures; networking between key players in distance education and educational technology; piloting and adapting educational technologies in different settings; shared development of learning systems, programmes, and learning materials involving inter-country and industry-country exchanges and joint ventures; technology assessment examining the actual costs and impact of alternative delivery systems; and support for the development of system-wide policy and planning on new technology in education (UNESCO, 1994d).

159. UNESCO places great emphasis on close co-operation with intergovernmental organizations such as other UN agencies, the Commonwealth of Learning, the World Bank, the Commission of the European Union, OECD, regional development banks, the Organization of American States, the South East Asian Ministers of Education Organization and others. Close cooperation is also pursued with non-governmental organizations, notably with the International Council for Distance Education (ICDE), and numerous other NGOs, bi-lateral agencies, specialized organizations, institutes and associations.

BIBLIOGRAPHY

- Asian Association of Open Universities (1993): *Economics of distance education; Conference book*. Hong Kong: Open Learning Institute of Hong Kong
- Bangemann, M et al (1994): *Europe and the global information society. Recommendations to the European Council*. Brussels: The European Council
- Bates, A W (1993): Educational aspects of the telecommunications revolution. In Davies, G and Samways, B (eds): *Teleteaching (IFIP Transactions A-29)*. Amsterdam: North-Holland
- Bengtsson, J (1991): Labour markets of the future: the challenge to education policy makers. In *Futures*, vol. 23
- Chung, F (1990): Strategies for developing distance education. In Croft, M, Mugridge, I, Daniel, J S and Hershfield, A (eds): *Distance education: Development and access*. Caracas: ICDE/Universidad Nacional Abierta
- Commission of the European Communities (1991a): *Memorandum on higher education in the European Community (COM (91) 349 final)*
- Commission of the European Communities (1991b): *Open distance learning in the European Community (COM (91) 388 final & SEC (91) 897 final)*
- Ding, Xingfu (1994): Economic analysis of the Radio and Television Universities in China. *Open Praxis*, vol. 2
- Dodd, J and Rumble, G (1984): Planning new distance teaching universities. *Higher Education 13*, pp 23 -54
- Dohmen, G (1993): Adult education in a changing world - consequences for adult and distance education. In Kirkwood, A, Lefrere, P and Mann, K (eds): *East/West dialogue in distance education: Changing societies, technology and quality*. Milton Keynes: EDEN
- Evans, T and Nation, D (1993a): Distance education, educational technology and open learning: Converging futures and closer integration with conventional education. In Nunan, T (ed): *Distance education futures*. Adelaide: University of South Australia
- Evans, T and Nation, D (1993b): Education within and without classrooms: Sustaining quality through technological change. In Tait, A (ed): *Quality assurance in open and distance learning: European and international perspectives*. Cambridge: The Open University
- Haddad, W et al (1990): *Final report: World Conference on Education for All: Meeting basic learning needs*. New York: Inter-Agency Commission, WCEFA
- Hancock, A (1993): *Contemporary information and communication technologies and education*. Report to the International Commission on Education for the Twenty-first Century. Paris: UNESCO
- Heyneman, S (1993): *The financing of education*. Report to the Council of Europe Seminar on "Education: Structures, Policies and Strategies", Strasbourg, 7-10 December 1993
- ICDL (1995): *Mega-universities of the World Compiled by the International Centre for Distance Learning*, Milton Keynes: The Open University
- IRDAC (1990): *Skills shortages in Europe. IRDAC opinion*
- Jeffries, C, Lewis, R, Meed, J and Merritt, R (1990): *A-Z of Open Learning*. Cambridge: National Extension College
- Jenkins, J (1989): Some trends in distance education in Africa: An examination of the past and future role of distance education as a tool for national development. In *Distance Education*, vol 10
- Ljosa, E (1992): Distance education in a modern society. *Open Learning*, vol 7
- Matthewson, C (1992): *Whose development, whose needs? Distance education practice and politics in the South Pacific*. Paper presented to the 16th ICDE World Conference, Bangkok, 8-13 November
- Miller, G (1993): Distance education encounters new technologies. *American Independent Study Newsletter*, Fall 1993
- Mugridge, I (ed) (1994): *Perspectives on distance education: The funding of open universities*. Vancouver: The Commonwealth of Learning
- Oliveira, J and Rumble, G (1991): Distance education in Latin America: a review. *Open Learning*, vol 6
- Orivel, F (1987): Educational technology. In Psacharopoulos, G (ed): *Economics of education: research and studies*. Oxford: Pergamon Press
- Perraton, H (1993a): National developments and international cooperation in distance education in Commonwealth Africa. In Harry, K, John, M and Keegan, D: *Distance education: New perspectives*. London and New York: Routledge
- Perraton, H (ed) (1993b): *Distance education for teacher training* London and New York: Routledge
- Perraton, H (1993c): The comparative cost of distance education: the relevance of scale. In Asian Association of Open Universities: *Economics of distance education: Conference book*. Hong Kong: Open Learning Institute of Hong Kong

- Perriault, J (1993): New requirements for educational systems in industrialised countries due to changing training needs. In Davies, G and Samways, Is (cnds): *Teleteaching (IFIP Transactions A-29)*. Amsterdam: North-Holland
- Rumble, G (1989): The role of distance education in national and international development: An overview. *Distance Education*, Vol. 10
- Rumble G (1992a): The management of distance learning systems. *Fundamentals of Educational Planning*, vol. 43. Paris: UNESCO/IIEP
- UNCED (1992): *Agenda 21: Programme of action for sustainable development*. New York: UN
- UNESCO (1976): *Resolutions of the 19th Session of the General Conference*. Paris: UNESCO
- UNESCO (1985): *Final Report: The 4th World Conference on Adult Education*, Paris: UNESCO
- UNESCO (1990a): *Third Medium-Term Plan (1990-1995)*. Paris: UNESCO
- UNESCO (1990b): *Seminar on distance education, (Arusha Tanzania), 24-28 September 1990*. Final report. Paris: UNESCO
- UNESCO (1991a): Africa: A survey of distance education 1991. *New papers on higher education: Studies and research, No 4*. Paris: UNESCO
- UNESCO (1991b): Latin America and the Caribbean: A survey of distance education 1991. *New papers on higher education: Studies and research, No 5*. Paris: UNESCO
- UNESCO (1991c): Address by Mr Federico Mayor, Director-General of UNESCO at the opening of the UNESCO-AAU on the *Institutional Development of Higher Education in Africa*. Legon University, Accra, 25 November 1991. Paris: UNESCO
- UNESCO (1993): *Consideration of the Results of the Deliberations of the Ad Hoc Forum of Reflection 142 EX/37*. Paris, 8 October 1993; Paris: UNESCO
- UNESCO (1994a): *Final Report, Fifth Conference of Ministers of Education and those responsible for Economic Planning in the Arab States, Cairo 11-14 June 1994*. Paris: UNESCO in cooperation with ALECSO and ISESCO
- UNESCO (1994b): *Final Report: Education for All Summit of Nine High-population Countries*. New Delhi, 12-16 December 1993. Paris: UNESCO
- UNESCO (1994c): *'Lifelong Learning for the 21st Century'*. Address by Mr Federico Mayor, Director-General of UNESCO at the First Global Conference on Lifelong Learning, Rome, 30 November 1994. Paris: UNESCO
- UNESCO (1994d): *'International Collaboration and facilitation of learning environment technology'*, Keynote address by Mr Colin N. Power. UNESCO Assistant Director-General for Education, at IBTA Conference; Adelaide, Australia, 28 September, 1994, Paris: UNESCO
- UNESCO (1994e): *Final Report, Sub-regional Seminar on Distance Education in Eastern and Southern Africa : Dar-es-Salaam. Tanzania, 14-17 November 1994*, Paris: UNESCO
- UNESCO (1995a): *Medium-Term Strategy 1996-2001*. Paris: UNESCO
- UNESCO (1995b): *Policy Paper for Change and Development in Higher Education*, Paris: UNESCO
- UNESCO (1995c): *Resolutions of the Twenty-eight Session of the General Conference*. Paris: UNESCO
- UNESCO (1995d): *World Education Report 1995*. Paris: UNESCO
- UNESCO (1995 e): *Final Report: Sub-Regional Seminar on Distance Education in Western and Central Africa, Yaoundé, Cameroon, 5-9 June 1995*. Paris: UNESCO
- UNESCO (1996a): *'Learning: the Treasure Within'*. Report to UNESCO of the International Commission on Education for the Twenty-first Century, Paris: UNESCO
- UNESCO (1996b): *Draft Recommendations of the International Congress on Education and Informatics* Moscow, July 1996. Paris: UNESCO
- UNESCO (1996c): *The Challenges of the Information Highways: The Role of UNESCO*. 150 EX/15. Paris, 16 August 1996. Paris: UNESCO
- Visser, J (1994): *Distance education for the nine high-population countries. A concept paper*. Paris: UNESCO
- Wei, R. and Tong, Y (1994): *Radio and TV universities: The mainstream of China's adult and distance higher education*. Nanjing, Yilin Press
- Yenbamrung, P (1993): The emerging electronic university: a study of student cost-effectiveness In Asian Association of Open Universities: *Economics of distance education: Conference book*. Hong Kong: Open Learning Institute of Hong Kong
- De Zwaan, F II (1993): Open and distance higher education and national higher education policy in The Netherlands. In de Vocht and Henderikx, P: *Flexible responses in higher education. Conference reader*. Brussels: Studiocentrum Open Hoger Onderwijs C