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ABSTRACT

This document presents an overview of environmental education (EE) with special reference to basic education. An introduction gives a general definition of environmental education and discusses its relationship to basic education, functional literacy, and sustainable development. The remainder of the document is divided into seven sections. The first section discusses the evolution of the concept of EE. The second section identifies the ultimate aims of EE: environmental literacy, national awareness of EE issues, and individual responsibility. The third section provides a list of objectives and characteristics of EE. The fourth section identifies three target groups of EE and training: the publics; specific occupational or social groups; and professionals and scientists. The fifth section discusses curricular and instructional problems in developing EE. The sixth section presents six strategies for the development of EE at the national level: (1) incorporating EE into all sectors and levels of education; (2) general education of the public through formal and nonformal education; (3) EE for specific professional groups; (4) training of personnel for the development of EE; (5) use of educational research in the development of EE; and (6) use of mass media in meeting basic EE needs. The final section presents the priority aspects of international cooperation and the contribution of the United Nations system, especially the UNESCO-UNEP International EE Program, in the development of EE. Contains 15 references. (MDH)

A Special Study for the
WORLD CONFERENCE ON EDUCATION FOR ALL
(Thailand, 5-9 March 1990)

ENVIRONMENTAL EDUCATION

by Unesco-UNEP International Environmental Education Programme

United Nations Educational, Scientific and Cultural Organization

WCEFA Round Table
on
Environment & Education

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Education Programme

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Table of Contents

A Summary

This document aims at serving the WCEFA Round Table on Environment & Education by presenting an overview of environmental education with special reference to basic education, where relevant.* Indeed the pertinence of environmental education as a component of basic education is the underlying theme. It is inherent in the priorities of Unesco as established in the Organization's Medium-Term Plan (1990-1995): peace, development and the environment.

The world concern about peace is indisputable. The growing concern about a threatened environment, locally, nationally and globally, is increasingly a feature of the daily newspaper and the nightly TV news programme. The public demand for solutions to environmental problems without lessening its demand for the benefits of development constitutes one of the principal challenges confronting today's policy - and decision-makers.

Actually both demands can best be met by a national policy and practise of sustainable, that is, environmentally-sound, development. This means, for short-term as well as long-term solutions, the environmental education and training of generation upon generation of a nation's people. And that means, at the least, environmental literacy -- a basic, functional education for all, which provides the elementary knowledge, skills and motivations for people to participate in the solution -- and anticipation -- of environmental problems and thus make their indispensable contribution to sustainable development and an improved quality of life.

Basic, literacy instruction is not enough. It must be accompanied and supported by educational contents and activities that make reading and writing really useful, rewarding and necessary skills to possess for personal as well as collective benefits and goals.

Here the conception of functional environmental education comes into full play. When reading and writing bring immediate results, motivation is created for more literacy, more knowledge, a greater grasp of the skills and tools required for a better life. In this connection, there are few concerns as vital as people's concern about their own environment, its protection and enhancement.

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* This overview accompanies three other documents serving the present Round Table: (1) Changing Learner Behavior Through Environmental Education; (2) Introduction of Environmental Education in Elementary Schools: A Malaysian Case Report; and (3) Non-formal Environmental Education in Zimbabwe: A Case Study.

Furthermore, the more knowledge the public has about the environment, the better, the more rapid, the more effective decision-makers can be. Above all, they will have the invaluable support of an informed public opinion backing their political will -- nationally and internationally -- to make the imperative decisions to preserve and improve our threatened planet Earth.

It is to be hoped that when this Round Table on Environment and Education has reached its end, participants will have concluded with Unesco's General Conference, as expressed in the Approved Medium-Term Plan, that "in the area of environmental education, priority will be given to its development as part of basic education, including literacy and post-literacy education, for young people and adults alike, as well as primary education and secondary, general, technical, vocational and higher education".

ENVIRONMENTAL EDUCATION

INTRODUCTION

Awareness of the environment begins at least at birth, and most likely before -- with the first, sharp cry of the child emerging from the most comfortable, life-sustaining environment it will ever know into the environment we know.

In that sense, environmental education begins with education itself. It is as basic as learning to arrange one's toys, care for one's room and personal hygiene, one's home, school yard or farm yard; and it is as sophisticated as caring about a growing hole in the ozone layer, depletion of rain forests, photochemical fog, land management and urban planning. It lasts a lifetime as one's own life undergoes an ever-changing, ever-evolving, ever-threatened environment. It is lifelong learning in, about and for that environment with an accent on action in a process of problem solving and the slow development of an environmental ethic inseparable from social morality, lifestyle and principled behavior.

Interaction between people and their environment has existed since people first appeared on earth. That interaction is intrinsic to human development and has passed through many historical phases. What distinguishes modern times from former times is the accelerating tempo of historical change, the exponential increase of technological, industrial, chemical and other such impacts upon the environment -- their massive scale, the universality of their consequences.

The ringing slogan of environmental education has become: Think globally, act locally! Increasingly one must now add: Global concerns demand global education, global solutions, global action.

True, every community, every country, has its own local environmental problems which understandably call for priority action -- and indeed there is no contradiction between that priority and the claims of global concerns, for both must be resolved in the pursuit of a constantly sustained, life-enhancing, life-sustaining, environment.

If there is one social constant in such vast variety of national differences and disparities, it is the escalating concern of each, rich or poor, privileged or deprived, to achieve sustainable -- environmentally sound and safeguarded -- development to meet its people's aspirations and needs. No one contests any people's development; but no people seek -- or should seek -- their development at a price to be paid by their children and their children's children. They seek -- or should seek -- to meet their development needs even as they make sure they do not jeopardize the world they bequeath to future generations. Thus, too, States must reconcile economic and social growth with the long-term preservation of the natural resources on which their countries' continuing development ultimately depends.

Two major United Nations reports -- UNEP's "Environmental Perspective to the Year 2000 and Beyond" and the UN Brundtland Commission's "Our Common Future" -- have dramatically brought the attention of the world to this pressing concern, namely, long-term environmental strategies for achieving sustainable development.

Immediately one recognizes that nothing is longer-term in this respect than environmental education, conducted from pre-school age through the university years, and thereafter, formally and nonformally, for succeeding generations.

Is there anything more basic in a basic education for all than functional literacy, provision of people with the elementary knowledge, skills and motivations to meet their development needs and improve the quality of their lives and environment? For environmental literacy is no small part of effective, functional literacy, indeed, of the very essentials for a nation's sustainable development.

Consider, now, an entire generation which has been environmentally educated from childhood through youth and adulthood, and which continues to acquire updated knowledge and skills in a lifelong process of EE (Environmental Education) that enables it to deal with an ever-changing environment, natural and built.

Then consider, more closely (as this document proposes), vocational and professional university levels of education into which an environmental dimension has been thoroughly incorporated. It is from these latter levels of education that the vast majority of a nation's decision-makers and officials, elected or apppointed, are recruited. They are prepared by this educational process for both crash measures for coping with immediate environmental crises and problems and long-range measures for anticipating and preventing them.

Moreover, and perhaps most importantly, these decision-makers and officials will have the indispensable backing, support and participation of an environmentally educated public as well as a nation-wide network of environmentally trained specialists capable of taking effective actions.

There is surely no greater contribution or more essential ingredient in a basic education for all, aiming at the "long-term strategies for environmentally sound and safeguarded sustainable development", called for by the major United Nations reports, than such environmental education and training of today's and tomorrow's generations -- to be undertaken immediately, if not before.

It is no longer enough to portray pictures of gloom and doom in the face of global environmental problems. It is time for environmental solutions. We know what the problems are, we have the know-how for their solutions. What is needed is a thoroughly

educated public supporting a political will -- nationally and internationally -- to apply the solutions -- in short, environmental education for everybody.

Facing up to environmental reality is not to surrender to hopelessness. Rather, it is to do something about it. Environmental education is not handwringing. It is problem-solving, action-oriented andd thus profoundly optimistic: something can be done and one is actively helping to do it -- cleaning the air, soil and water, returning nature to its pristine beauty and bringing a new quality to urban life.

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Evolution of the concept of environmental education (EE)

The concept of environmental education has, in its evolution, remained closely linked with the concept of environment itself and to the way in which this is perceived. The view of the environment, equating it with its biological and physical aspects, has given way to a wider conception, which takes into account its economic and socio-cultural aspects and emphasizes the correlations between them.

Education has, in a way, always been associated with the environment. In earlier societies, and still today among large sectors of the rural population, a person's preparation for adult life involved an intimate experience of nature. The curricula of modern systems of education have, up to a certain point, always included aims and content related to the environment, even if this was seen primarily in its biophysical aspects. This was the case in particular of subjects coming under the "natural sciences", which were in any case taught separately and without coordination.

In this traditional context, pupils were expected to draw together the threads of the knowledge acquired, to form from this an overview of the world around them and to perceive the relationships between its various elements. More recently, as a result of economic concerns and the development of ecological disciplines, the environment has come to be explicitly included in education, but attention has been focused primarily on the problems of conservation of natural resources and the preservation of animal and plant life, or related subjects.

At the present time, and as a result of the concern expressed and the guidelines formulated at the United Nations Conference on the Human Environment (Stockholm, 1972), new approaches to environmental problems are envisaged. Although the biological and physical aspects admittedly constitute the natural basis of the human environment, the socio-cultural and economic dimensions define, for their part, the lines of emphasis and the conceptual and technical instruments that enable people to understand and make better use of the resources of nature in satisfying their needs.

In this connection, a series of meetings within the framework of the Unesco-UNEP International Environmental Programme (see pp. 18-20) has resulted in current ideas on the role and objectives of environmental education. This is true particularly of the International EE Workshop held in Belgrade (1975) and especially the world's first Intergovernmental EE Conference (Tbilisi, USSR, 1977) and the Moscow EE Congress of 1987.

A consensus was reached at these international encounters that environmental education was not simply a theme to be added to curricula as a separate discipline or specific subject (in the same way as mathematics, physics or biology) but represented a dimension that must form an integral part of curricula. Environmental education is the outcome of a reorientation and dovetailing of the various disciplines and of different

educational experiences (natural sciences, social sciences, arts and letters), making it possible to achieve an integrated perception of the environment and to act towards it in a way that is more rational and corresponds to social needs.

Ultimate aims of environmental education

The ultimate aims of education - and particularly those of environmental education - cannot be defined without taking into account each society's actual economic, social, cultural and ecological circumstances and the objectives established by that society for its development. It nevertheless is possible, and indeed necessary, to reach agreement on certain common aims of education, such as will foster progress as well as preservation and improvement of the environment.

One of the basic aims of environmental education is environmental literacy, namely, to enable human beings to understand the complex nature of the environment as this results from the interaction of its biological, physical, social and cultural aspects. It accordingly provides the individual and the community with the means of interpreting the interdependence of these various elements in space and time, so that they have a greater sense of awareness of their own place in the environment and so as to promote a more considered and cautious use of the resources of the universe to satisfy the present and future material and spiritual needs of humanity. (At the elementary level, this begins with the local community and evolves from there).

Environmental education thus contributes to the development of a national awareness of the importance of the environment in development, economic, social and cultural. It fosters, at every level, responsible and effective participation in the framing and monitoring of decisions involving the quality of the environment. It disseminates information concerning development alternatives that have no harmful implications for the environment and, at the same time, encourages the adoption of ways of life that will make a harmonious relationship with the environment possible.

Finally, in its highest form environmental education provides a clear awareness of the economic, political and ecological interdependence of the modern world, where the decisions and behaviour of the various countries can have international repercussions. In this sense, EE has the extremely important task of developing a spirit of responsibility and of solidarity between countries and regions, irrespective of their level of development, towards which international cooperation for the development of environmental education aims.

Objectives and characteristics of environmental education

The principal categories of EE objectives have been best defined by the Tbilisi Conference of 1977 as: awareness, knowledge, attitudes, skills and participation. These are also the objectives of basic environmental education.

Similarly, the Tbilisi Conference defined the characteristics of EE in terms of guiding principles, namely, that environmental education:

Considers the environment in its totality - natural and built, technological and social;
Is a continuous lifelong process;
Is interdisciplinary in its approach;
Examines major environmental issues from local, national, regional and international points of view;
Focuses on current and potential environmental situations;
Promotes the value and necessity of local, national and international cooperation;
Explicitly considers environmental aspects in plans for development and growth;
Enables learners to have a role in planning their learning experiences and making decisions;
Relates environmental sensitivity, knowledge, problem-solving skills and values clarification with special emphasis on environmental sensitivity to the young learner's own community;
Helps learners discover the real causes of environmental problems;
Emphasizes the complexity of environmental problems and thus the need to develop critical thinking and problem-solving skills;
Utilizes diverse learning environments and educational approaches to teaching/learning in, about and from the environment;

The last is particularly pertinent to basic EE.

Target groups of environmental education and training

It might be best to identify the recipients of environmental education (and training) by considering EE's functions.

A primary and basic function is education of the public. This, while imparting general knowledge to all, creates an awareness of environmental problems in everyday life and encourages the adoption of relevant behaviour and real involvement in these problems. This education should be provided at every age and at all levels of formal education (pre-primary, primary, secondary, higher education, for pupils and teachers alike) and in the various nonformal education activities for young people and adults.

A second EE function is education of specific occupational or social groups, whose activities or influence have an important bearing on the environment, such as engineers, architects, townplanners, economists, lawyers, property developers, industrialists, trade unionists, doctors, etc. They also often have a subordinate work force whom they can make better aware of basic environmental principles and practices.

A third EE function has to do with the training of certain professionals and scientists working on specific problems of the environment. This is a very wide group of people with a variety of technical skills, some of them being highly specialized (e.g., in planning the use of resources, techniques for the monitoring of air and water pollution, landscape architecture, etc.), while others receive interdisciplinary training equipping them for complex problems. Here, too, are subordinate work forces to educate environmentally.

Problems in developing environmental education

One should be realistic about the difficulties of developing environmental education in the average, traditional educational system, whether at the elementary level or higher.

To begin with, environmental education is not simply a matter of including a new set of subjects in programmes of traditional (formal and nonformal) education, but rather calls for new approaches, methods and content. Thus it is normally necessary for the traditional structures of educational systems to be made more flexible, with reference to the characteristics of environmental education: interdisciplinarity, the importance of problem-solving, responsiveness to the community, and lifelong education.

Many other obstacles to the development of environmental education at the national level are due to the inadequacy of personnel, teaching materials and funds, due mainly to insufficient use of existing materials or of the mass media, and from budgetary options unfavourable to environmental education.

Strategies for the Development of Environmental Education at the National Level

1. In the context of educational planning and innovations

The majority of States are currently reconsidering the trends and structures of education and undertaking the reform of methods and content. These efforts, which form part of a global process of renewal of the education system, afford a particularly favourable opportunity for incorporating environmental education at all levels and into all sectors of education.

For environmental education to take account of the specific environmental and developmental characteristics of each country, the administrative and technical bodies responsible for educational planning at the regional, national and local levels

need to work out and implement methodologies which consider the requirements of that education, of general educational activities and of training for the personnel required for development.

India, for instance, has recently included a mandate in its national education policy requiring all educational institutions to incorporate an environmental dimension into all their formal and nonformal educational programmes, from pre-primary up to and including the university level. Malaysia provided another innovative example in this area, especially at the elementary-school level. (See the accompanying document: Introduction of EE in Elementary Schools: A Malaysian Case Report).

One way of effectively linking education and the environment nationally consists in explicitly including environmental education in social, economic and cultural programmes and projects which have implications for the various aspects of the human environment, such as projects carried out in the context of international cooperation and, in particular, of those which come within the framework of country programming.

Here the case of the ASEAN countries is instructive. As a preliminary step in their regional environmental education programmes, they established a project supported by UNDP and executed by Unesco for the training of science teachers in environmental education through a regional training course and national training workshops.

In order to achieve better interconnection and greater effectiveness in the various measures relating to environmental education, it is necessary to establish or strengthen the machinery for ensuring the coordination of the institutions which, in one way or another, are involved in the framing and implementation of environmental policies, in which education plays an important part.

National examples of associations for the purpose of coordinating the work of institutions involved in environmental education include, among many more, the Environmental Education Advisers' Association of the U.K., and the North American Association for Environmental Education, which is located in the U.S. but covers the North American continent.

2. General education of the public through formal and nonformal education

Strategies for the incorporation of environmental education into formal education should take into account the various components of the educational process, that is to say, the objectives, content and methods, teaching materials, training of personnel and research and evaluation activities.

So far as objectives are concerned, those pertaining to the understanding and solving of environmental problems need to be clearly included among those of education in general, at all levels and in all sectors. As for content, the task is to define and dovetail the contributions to be made by the various fields

of knowledge (social sciences, natural sciences, arts and humanities) to an understanding of the actual situation of the local environment and the solution of its problems, laying emphasis on the development of a clear awareness, so as to allow for the adoption of ways of life and development patterns which have no detrimental effects on the quality of the environment. This, too, is both basic (if simply approached and taught) and advanced EE.

With the same end in view, a particular effort should be made to prepare appropriate teaching materials and to train and retrain educators and enable them to introduce environmental education into their teaching. Lastly, the complexity and scale of these efforts make it necessary for research and evaluation activities relating to environmental education to be strengthened, so as to provide a scientific and experimental basis for innovations in EE.

As has been pointed out, there is no universally applicable model for the integration of environmental education into the educational process. The forms to be taken by this integration will have to be defined with reference to the characteristics of the environment, and the specific socio-economic aims, structures and circumstances of each country or region. In order for practical strategies for the integration of environmental education to be defined, governments need to encourage in-depth studies of these circumstances. This is particularly true of basic EE, where there is intimate link of pupil and local environment.

The inclusion of EE in education is currently envisaged as being effected by various procedures, all of which, in varying degrees, call for an interdisciplinary approach. These procedures range from the mere introduction of an environmental component into the different traditional subjects to the total integration of those subjects around specific environmental topics or problems. Again, the single elementary teacher may be the integrator.

Among the strategies for the integration of EE which may be regarded as viable, mention should be made of the reorientation of the subject matter of the traditional disciplines. This can be achieved through the introduction of new subjects or through better use of those already included in syllabuses, but the most suitable approach, from this point of view, is no doubt the reappraisal and restructuring of the whole content of the different subjects. In basic education, for instance, or adult literacy, numeracy etc., this would mean organizing the content around the theme of the local environment, rendering the education more personal and pertinent.

A subsequent stage consists in ensuring, for the study of the various environmental problems, a convergence of subjects presenting certain conceptual and methodological affinities, those for instance which come under the heading of natural sciences, social sciences, or arts and humanities. With this in view, considerable efforts are currently being made in several countries to develop environmentally integrated natural science

or social science teaching. The object of these efforts is often to produce integrative teaching-learning units (modules), constituting educational "packages" in which the environmental objectives and content pursued are clearly defined and which are also accompanied by methodological suggestions, working guides for teachers and pupils and appropriate instructional aids.

Lastly, the most complex but perhaps also the most satisfactory method of achieving the aims of environmental education consists in doing away with traditional compartmentalization and integrating the content of the various curricular subjects in the framework of crucial environmental topics or problems. This entails the horizontal integration of the teaching-learning process around environmental topics at the various levels of education, and vertical linkage, ensuring the continuity and coherent progression of environmental education from the elementary level upwards, throughout the whole of the formal education process.

The various systems for integrating environmental education, just described, are neither mutually exclusive nor necessarily successive. These systems may be combined and adapted, in each country, to the different levels of formal education. Flexible structure (team teaching, for instance), enabling teachers of the various disciplines to join together in preparing curricula and putting them into effect, need to be devised. It is also necessary to define effective ways of bringing the school into contact with the community, be it only, initially, by seeking the participation of local environmental specialists in the preparation of curricula and, at certain levels - especially the higher level - in teaching activities and field exercises.

The preparation of teaching materials reflecting the actual environmental conditions of a country, region or area is of fundamental importance, but most of the existing aids do not conform to this definition: their content is too general and they are devised within the framework of a single discipline. Care must therefore be taken to ensure that the content of instructional aids takes into account the diversity of problems in the real-life environment and the level of the learner.

Not only is it necessary to produce, for all levels of formal education, teaching materials in conformity with the lines of emphasis of environmental education, but it is also indispensable to improve dissemination of existing materials. The framing and strengthening of provisions aiming to promote the international circulation of teaching materials will, however, have to be accompanied by an effort of evaluation in the national context in order to assess the extent to which materials produced abroad correspond to the socio-economic and educational needs and objectives of the country and the specific characteristics of its environment.

Nonformal EE fosters in all categories of the population new attitudes conducive to collective participation and collaboration and to generating responsible behaviour in respect of environmental management and protection. It has a dual purpose: on the one hand, to train citizens capable of

understanding and shouldering their own responsibilities in relation to the environment and, on the other, to raise the awareness of the various population groups in relation to the different ecosystems and socio-cultural environments in which they live and to the activities which they perform in them (workers, peasants, urban, semi-urban and rural population, various categories of responsible officials and specialists, etc.). Here functional, environmental literacy is basic.

In urban areas nonformal EE makes the public and those responsible for urban development aware of the need to provide town dwellers with living conditions favoring their physical and moral health, the development of a community spirit and the re-establishment of contact with nature. In rural areas, nonformal EE should contribute to the conservation and rational use of the land, forest and water resources, etc., and help to improve the living conditions of country dwellers (housing, food, health, etc.). In both urban and rural areas, environmental education should help to produce citizens capable of judging of the quality of public services (health, security, housing, education, recreation, etc.). It should result, in a word, in citizens possessed of a critical faculty, but also ready to give their support to those measures affecting the environment which really correspond to their needs and to their concern to improve the quality of the environment and of their life.

This is a field in which young workers' and students' organizations have an important role to play. In almost every country, associations of young people wishing to be of assistance in solving environmental problems have already moved into action. It is up to the national authorities and educators to encourage and support their activities by means of programmes of education and practical training enabling young people to become more effective in performing their tasks and in coaching even younger people in environmental know-how and activity.

As regards institutions and programmes, the basic strategy for the development of nonformal environmental education consists in explicitly integrating it into the ever-widening spectrum of existing nonformal education programmes. These programmes range from basic literacy work to intensive courses of occupational training and include training activities for industrial workers, peasants, civil servants, etc. In addition to ministries of education and higher education, a number of other public and private institutions are involved in these efforts: ministries of labour, industry, agriculture, public health, social welfare, etc., as well as civic organizations, professional associations, trade unions, consumer associations, sports, tourist and cultural associations, etc. These are, as well, basic organizations for basic education.

A further indispensable measure consists in establishing or strengthening machinery for the effective coordination of activities and for ensuring the exchange of ideas, teaching materials, etc., between such institutions. Such machinery could also be used for collecting and disseminating informationn relating to nonformal environmental education.

The inclusion of EE in nonformal education programmes requires a special effort to draw up courses of study adapted to the different clientèles. Institutions and individuals responsible for nonformal education programmes are very frequently willing to introduce environmental content and experimentation into them, but do not do so because they do not know how to present and integrate that content in nonformal education. This points to a need for technical bodies capable of helping such institutions to infuse environmental education into their programmes. Similarly, special effort should be made to produce and distribute teaching materials suited to the different nonformal education programmes, from cartoon posters and books to scientific texts, with due regard for both financial and educational criteria. In some cases, such materials could be prepared with a view to a variety of uses and lend themselves equally well to formal and nonformal education programmes.

Sometimes printed and audio-visual materials geared to the local or national environmental situation already exist and could therefore be used as aids in nonformal environmental education. In addition, nonformal education programmes should be able to draw to a larger extent on the resources available to schools, colleges and universities. Printed or audio-visual aids of the traditional type are indispensable but, as in formal education, account should be taken of the education resources offered by the environment itself: zoological gardens, forest parks, but also museums, exhibitions, etc. The local natural and cultural environment, with the living experiences that it affords, can be best resource on which environmental education -- all basic education -- can draw.

Nonformal EE calls for close liaison between institutions responsible for programme design and institutions which, at local, regional and national levels, are responsible for planning and implementing measures relating to the preservation and improvement of the environment. Such liaison will enable a functional link to be established between the objectives, content and results of environmental education and the policies relating to each country's specific environmental problems. Technicians and professionals directly concerned by environmental projects should actively participate, alongside educators, in the design and implementation of EE programmes, even at the lowest, basic level.

By its nature and its characteristics, environmental education may provide an excellent means of linking formal education and nonformal education, as it aims to secure the participation of the various groups in a given community (children, young people and adults) in preventing and solving environmental problems, which is an objective shared by formal and nonformal education and which entails the pooling of their resources. At a time, such as now, when all forces are to be mobilized in massive basic education, this pooling of all resources is a sine qua non.

In the Asia/Pacific region alone, several countries have embarked on innovative and stimulating initiatives in EE which can be applied in basic education. In Thailand, for instance,

the new elementary school curriculum is divided into four integrated areas -- basic skills, life experiences, character education and work experience. The life experience programme integrates, among other subjects, social studies, environmental studies and health. The nation's Department of Nonformal Education and Department of Public Welfare have jointly undertaken the innovative Hill Areas Education Project to meet the primary EE needs of both adults and children in the mountainous northern region. The project includes a joint child-adult curriculum, teaching/learning materials and models for teacher training, field supervision, administration and monitoring.

In Burma and Bangladesh, direct use is made of the out-of-doors to develop children's environmental sensitivity and love of nature. There are guidebooks for the teacher, but no textbooks for the pupils, who are encouraged to learn directly from their environment. In Austrialia, several secondary schools teach about the environment by choosing real-life situations and involving teachers, pupils and local experts in them. The basic idea is to center traditional elements of the curriculum on a particular issue and to explore what additional knowledge, skills and attitudes are involved in solving an environmental problem.

The examples can be multiplied: use of satellite, distance teaching and video-cassette systems in Pakistan, India and the Philippines for EE and other teacher training; use of the mass media for public EE in Japan, etc.

3. Environmental education for specific professional groups

This section aims at a presentation of a very important aspect of environmental education. Though seemingly remote from basic education, members of the group described, properly environmentally educated, can be a rich resource in the education of their subordinates or associates or work force in environmental problems and solutions as well as in appropriate environmental attitudes and behavior -- which is basic environmental education par excellence. This is specially true for those professionals at work in the fields of food production, public health and sanitation, housing and urban planning, engineering, architecture, town planning, etc.

As for strategies to be employed, a first possibility is to introduce a general outline of environmental problems at the final stage of occupational training programmes. A second solution is a first-year general introductory course on environmental problems, followed in subsequent years of study by a series of elective courses on the principal fields of environmental studies. This solution would be particularly suited to universities. The third possibility involves a total reform of the various vocational training programmes for the purpose of incorporating an environmental component in them on a functional basis. This is particularly applicable to adult literacy and similar programmes.

4. Training of personnel for the development of environmental education

Pre-service and in-service training prgrammes for teaching personnel should make them capable of including an environmental component in their teaching activities. At the elementary level, teachers need to be trained in the teaching of basic environmental concepts and simplified environmental awareness and good practises, using the local environment to a maximum as the learning environment.

First, educators should be made aware themselves of environmental problems in the context of human development in general and/or national socio-economic development in particular. Courses on the "national situation" which have started to be developed in certain training institutions, particularly in developing countries, may be useful instruments in achieving this end. Second, care must be taken to develop attitudes and skills which will enable educators to establish an interdisciplinary dialogue and to co-ordinate their specific activity with those of other educators who are also contributing to environmental education. It is indispensable in this connection to increase the number of seminars or workshops, general courses and practical activities in the field involving joint participation by teachers of different disciplines.

Another essential factor in ensuring adequate teacher training is participation by teachers and their pupils, together with socio-occupational groups, in specific activities aimed at the preservation and improvement of the environment. Educators have in fact a decisive part to play in preventing and solving environmental problems, not only by virtue of their teaching activities but also through their participation, as citizens and professionals, in the framing and implementation of environmental policies. This dual function of educators confers on them great social importance, but also great responsibility. Furthermore, they become exemplary models for their pupils and students.

The development of environmental education also entails the training of personnel responsible for education decision-making, inspection and planning, since they will have the task of taking the decisions and coordinating and guiding the educational activities bearing on the environment, at national, regional and local levels.

5. Functions of educational research in the development of environmental education

Incorporation of EE into a national education system requires a general process of change and renovation of the educational programme, based on initial research and experimentation as to the best EE methods, content and materials, etc., at each of the levels concerned -- pre-primary, primary, secondary, etc., as well as formal and nonformal. Additional areas for investigation and research include such studies as the long- and short-term effectiveness of a specific EE programme or process; the local or national style most appropriate; innovative

forms and ways of transmitting environmental messages; the practical results of the problem-solving aspect of local and national environmental education, etc.

Research should also be undertaken in the development of ways, means and programmes for environmentally sentizing the general public, particularly via the mass media (see below), and in the preparation of appropriate evaluation tools for measuring their impact. At all levels, but especially in basic education, research should be done on the prior knowledge and attitudes of individuals vis-a-vis the environment, so as to determine the most effective approach, content, etc., for improving the knowledge and favorably modifying the attitudes of the pupils or students.

In this connection, ongoing institutions should be established to ensure continuity and renewal of the EE process and educational system, based on continuing studies, research and evaluation. Consequently, effective development of EE presupposes the development of a national policy and strategy for promoting EE research and strengthening EE training of personnel for conducting research and applying its findings to educational practices. As for the evaluation aspect, continuous qualititative and quantitative evaluation of EE activities must be maintained so as constantly to improve their efficiency and effectiveness.

Thus research and evaluation - as in monitoring basic education for all results, including environmental awareness, behavior and actions - are of an essentially practical character, providing usable guidelines for the preparation of environmental education and training programmes and improvement of EE teaching materials and methods.

Lastly, a coherent and rational policy of EE research at the national level entails the establisment of ways and means for an international exchange of information and experience in EE -- as well as the updating of EE by the incorporation of pertinent and continually updated findings in the environmental sciences and technologies.

6. Role of information and the mass media in meeting basic environmental education needs

On account of their great audiences, coverage, flexibility and power of penetration, mass media, such as radio, television, cinema and the press, constitute particularly suitable means of reaching wide and varied sectors of the population and also of reaching certain social groups which, for a variety of reasons (geographical inaccessibility, language differences, etc.) remain outside the mainstream of conventional education.

In view of the considerable costs of the classical mass media -- TV, radio, film, newspapers, etc. -- as well as the relative impersonality of their programmes and messages, one should also think of comparatively low-cost and locally-relevant posters, sign boards, advertisements, videotapes, movies, plays, festivals and even popular-song get-togethers, and the like. The examples are innumerable and the variety ingenious, expressing

the vast variety of cultures, customs and societies globally. Here local talent, materials and occasions are used to the maximum at minimum costs. (One can also readily see their effectiveness in local programmes for basic education, including its environmental component).

As for national programmes, a great number of countries already use the national mass media -- TV, radio, cinema (for documentaries) and the press -- to widely disseminate scientific knowledge concerning the environment and also to develop public awareness of problems, such as pollution or the deterioration of soil, depletion of forest resources and decline of certain biological species; or, from another angle, to inform the public of certain practices in regard to hygiene and nutrition, or to induce consumers to adopt a more rational behaviour. It must be acknowledged today that the new awareness, on the part of the public and of authorities, of the seriousness of some of these problems and the emergence of strong currents of public opinion on those problems are, to a large extent, the result of messages disseminated by the mass media.

In addition to the functions that the mass media can fulfil in nonformal environmental education, they also have an important role to play in formal education. Educational television and other systems of educational technology are now widely used in many schools and universities in different countries, and although it is still expensive to introduce certain technological systems on a large scale, education by television, for instance, is generally held to be as effective as interpersonal (teacher-pupil) education. The main advantages of such systems are, on the one hand, that they provide a means of enlarging the audience reached by educators by carrying their message into areas where, otherwise, they would not be heard, and, either by disseminating selected programmes or by freeing educators to work with smaller groups of students.

Training courses are recommended for journalists, editors, radio and TV producers and other mass-media personnel, enabling them to deal effectively with environmental issues and education. International exchanges are also to be arranged of mass-media programmes, articles, films, etc., carrying an environmental message.

Furthermore, particular attention should be paid to the training of instructors and supervisory personnel for the dissemination of programmes and to the training of personnel specializing in the monitoring and evaluation of such programmes, so that the messages transmitted fulfill a genuine educational function in respect of the environment. Lastly, the relevant authorities should also take the necessary steps for the establishment of educational programmes (radio, television, press) which are in line with the aims of environmental education. From the same point of view, they should systematically study the educational programmes already existing in different countries so as to adapt them to their own situation or to draw inspiration from them for the preparation of their own programmes.

International Cooperation for the Development of Environmental Education

1. Priority aspects of cooperation

The exchange of information and experience constitutes one of the priority aspects of international cooperation for meeting basic EE needs. Innovative experiments are being carried out in certain countries, relating particularly to the preparation of curricula, materials and methods and the training of personnel; these are, however, not sufficiently known.

National institutions and specialists form the basis of an international network which makes it possible to gather information, intended first and foremost for decision-making bodies, but also for institutions concerned with research and innovation as well as basic EE.

Exchange of experience and views by means of conferences, meetings, symposia and seminars are another important aspect of communication . Such meetings should devote themselves to a study of precisely defined questions, such as curriculum design and the use of educational materials by specific sections of the population. The conclusions should be published in several languages so as to be accessible to all who, in the different countries, are responsible for the design and implementation of basic and advanced environmental education programmes.

Moreover, it seems imperative to include environmental education in the agenda of many of the conferences and meetings organized by Unesco, UNEP and other organizations of the United Nations system and by various intergovernmental and nongovernmental organizations. Certainly aspects of environmental education and training need to be included in the agenda of the conferences, meetings and symposia organized on environmental problems. This is of particular importance for follow-up, permanent results, since environmental education is lifelong education for present and future generations. For this reason, too, a basic component of all development projects should be environmental education and training, so as to ensure the future as well as the project. Here, again, the principle is most applicable in all programmes and projects, conferences and meetings, involving basic education and functional literacy as one of their goals and agenda items.

International and regional cooperation should include exchanges of information and experience concerning the solutions which have been applied in different countries to the problem of participation by the mass media in sensitizing public opinion and educating the public on the subject of the environment. These exchanges could relate particularly to the preparation and exchange of programmes for the mass media. It would also be useful for such cooperation to enable mass media authorities and specialists to participate in meetings and symposia on environmental education.

The training and retraining of educators and educational researchers, planners and administrators constitute another priority area for international and regional cooperation. The development of curricula, methods and educational material, and of educational activities themselves, requires the training and retraining of a sufficient number of these specialists. It is mainly through this training that it will be possible to incorporate environmental education into formal and nonformal education. It is of course up to the countries themselves to adopt the necessary measures, but international cooperation can play an important role in the transfer of experience and technical support to help States to include components relating to the environment and appropriate methodologies in their training programmes.

The allocation of fellowships and the organization of intensive regional and subregional courses are particularly appropriate means of cooperation. Such measures make it possible to train an increasing number of people who would later, in their respective countries, take charge of promoting and organizing educational activities. This multiplier effect of "training trainees" is probably the first priority for international, regional and subregional cooperation and should receive the greatest attention in the near future. International, regional and subregional cooperation can also play an important role in encouraging the exchange of teachers, students and specialists.

2. Contribution of the United Nations system and specially the Unesco-UNEP International EE Programme

Specialized agencies and bodies, such as the United Nations Food and Agriculture Organization (FAO), the International Labour Organization (ILO), the United Nations Children's Fund (UNICEF), the International Bank for Reconstruction and Development (IBRD), the World Health Organization (WHO), the World Meteorological Organization (WMO) and the United Nations Development Programme (UNDP) all have programmes of education and more especially of training concerning certain aspects of the environment.

Unesco and the United Nations Environment Programme (UNEP), however, deserve special attention among the UN agencies and bodies: collaborating in several projects and programmes, they have made environmental education a priority aspect of their activities. Unesco, for its part, had already taken a number of initiatives in favour of environmental education back in the first years of its existence (as has UNEP). In the last years, these Unesco initiatives have involved all sectors, with emphasis laid more and more on intersectoral programming and activities.

Specifically, environmental education (and information) has been given a special priority in a major programme area of Unesco's Medium-Term Plan (1990-1995), the chosen instrument being the International Programme for Environmental Education (IEEP), jointly launched in 1975 by Unesco and UNEP in response to Recommendation 96 of the UN Conference on the Human Environment, Stockholm, 1972.

Successively, actions of th International EE Programme have centered upon :

- development of a general awareness of the need for environemental education;
- development of concepts and methodological approaches in this important field of education; and
- efforts for incorporating an environmental dimension into the educational systems of nations of the world.

Contributing most to the development of global awareness of EE needs was IEEP's series of international and regional meetings culminating in the Tbilisi Conference and the Moscow Congress. A policy of regular, periodical information also contributed -- and continues to contribute -- to this awareness, notably through the IEEP's international newsletter Connect, published in Arabic, Chinese, English, French, Russian and Spanish, and distributed freely each quarter to 15,000 individuals and institutions throughout the world who are actively involved in environmental concerns, as well as in environmental education In parallel, the IEEP has been steadily building a computerized information system whose data base contains information on over 1,500 EE institutions and projects, which is published in regularly updated directories.

The International EE Programme itself has undertaken dozens of pilot, experimental and research projects aimed at aiding nations to incorporate EE into their educational processes. Similarly, IEEP has organized many regional and subregional EE teacher-training workshops in all regions of the world as well as national training workshops in the same regions. As a result, up to 150 countries have been directly involved in IEEP's activities which include preparation and diffusion of EE manuals, guidebooks modules, sourcebooks, audio-visual and other materials concerning all levels and forms of environmental education and training. Of particular interest to those involved in basic education is the ongoing "EE Series" of publications of IEEP, especially the teaching/learning modules for primary and secondary education.

Currently, the Unesco-UNEP International EE Programme is being greatly expanded to meet the new world urgency of education for sustainable -- environmentally-sound and - safeguarded-- development. Core domains of action will continue to be those described. There will be as well a new emphasis on global dissemination of information on the environment with an accent on the areas of critical environmental concerns as defined by UNEP: protection of the atmosphere by combating climate change and global warming; depletion of the ozone layer and transnational air pollution; protection of the quality of freshwater resources; protection of oceans, coastal areas and their resources; protection of land resources by combating deforestation and desertification; conservation of biological diversity; environmentally-sound management of biotechnology;

environmentally-sound management of hazardous wastes and toxic chemicals; protection and improvement of human health conditions and the quality of life.

As a concrete aid to States in their development of a National Strategy for Environmental Education, the Unesco-UNEP Moscow Congress of 1987 formulated elaborate guidelines, now issued as a publication in six languages (with more to come), titled, "International Strategy for Action in the field of Environmental Education and Training for the 1990s." The publication also serves in the reinforced emphasis of the International EE Programme on development of greater and more effective environmental awareness and knowledgeability on the part of policy - and decision-makers.

For a key policy issue for decision-makers, governmental and nongovernmental, and at all levels -- national, regional and international -- is the priority to be given to environmental concerns and consequently to environmental education and action.

In this connection the priorities of Unesco as set forth in its Third Medium-Term Plan (1990-1995) are particularly relevant. These priorities are peace, development and the environment. There can be no dispute about the world priority of peace. As for development and the environment, they are in fact linked in the international consensus that development can be sound only when it is sustainable -- environmentally sound -- development which means an environmentally educated and trained public, official and expert.

Public demand for environmental concern is already a high priority, and on the rise, challenging policy- and decision-makers throughout the world to actively respond. Environmental, problem-solving education is clearly part of a permanent, enduring response.

With this pressing objective in view, Unesco states in its Medium-Term Plan that "in the area of environmental education, priority will be given to its development as part of basic education, including literacy and post literacy education, for young people and adults alike, as well as primary education and secondary, general, technical, vocational and higher education".

This seems remarkably fitting for consideration by this crucial World Conference on Education for All, whose concern is basic education. Indeed, the statement might serve as a draft resolution to be submitted for plenary, consensual approval, significantly strengthening the hand of policy- and decision-makers of governmental, intergovernmental and nongovernmental bodies in all corners of the Earth -- the endangered, but encouragingly responding, planet.

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