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AN EVALUATION OF MODELS FOR ENVIRONMENTAL EDUCATION IN DEVELOPING COUNTRIES

A thesis
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of the requirements for the Degree
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Abstract of a thesis submitted in partial fulfilment of the requirements for the Degree of Master of Parks and Recreation Management.

AN EVALUATION OF MODELS FOR ENVIRONMENTAL EDUCATION IN DEVELOPING COUNTRIES

By H.B. Gurung

The planet Earth is under growing stress from human activity, and there is increasing pessimism surrounding the outlook for the world environment. Despite rapid escalation of environmental problems in developing countries, there seems to be little concern about solving these problems. Environmental education is vital to heighten people's awareness of sustainable resource use and development.

This study evaluates selected environmental education models and processes. In it, I argue that present models could only be used in developing countries with considerable modification. There is thus a need for an environmental education model more directly applicable to developing countries in order to facilitate conservation education at the community level. Such a model will help solve environmental problems which directly impact local people's quality of life.

A literature review, an expert survey, and interviews were used to collect information for this research. Thirty-one international respondents returned a questionnaire about the underlying basis for models of environmental education. From these thirty-one, fifteen people were selected to review the researcher's model.

Results from the expert opinions surveyed indicate differences in the magnitude and causes of environmental problems in various countries and differences of opinion about the role of environmental education in resolving these problems. There was consistent support for the participation of local people in environmental education planning and for the integration of cultural and religious values in nature conservation. The outcome is an "Integrative and Participatory Model" for environmental education which will promote the goals of conservation and sustainable development via a synergic relationship between local people

and nature conservation agencies.

Keywords: *Environmental education, conservation education, developing countries, environmental problems, cultural and religious values, local people participation, nature conservation, synergy, models, sustainable development.*

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CHAPTER ONE

When the Earth is sick and the animals disappear
the Warriors of the Rainbow will join together
to protect the wildlife and heal the Earth.

Legend of the North American Indians

1.1 INTRODUCTION

The planet Earth is under growing stress and there is more pessimism surrounding the outlook for the worlds environments. "It is not something which is new, but the potential threat and some understanding of its magnitude is wide spread" (Devlin 1992:7). Overuse and misuse of resources have accumulated environmental degradation and threatened the biotic health of the planet Earth[1] (Buchan 1992).

The problem of overpopulation is not just "too many people," but rather too many people in relation to land space and existing resources (Stapp 1974b). However, environmental problems in developed countries rest much less with "population", than they do with excessive use of resources. Chiappo (1978) also stressed that the cause of environmental problems in developed countries is not essentially hunger; the cause is overconsumption, wastage, shortsighted profit seeking plundering of the natural world, and economic injustice. However, the causes in developing countries, in general, are different. The escalation of environmental problems is associated with unprecedented population growth and uncontrolled resource-based tourism development.

Poverty can force overuse of resources in order to survive in the present, even where it is known that problems are being created for the future. It is unlikely that people will be

---

[1] Buchan (1992:9) has summarised the causes of environmental degradation by the formula "Population X (C+D)", where C and D are our two types of environmental impact. 'C' for consumption represents impact flowing from our streams of material and energy use, from the upstream end (e.g. mining, felling, food production) to the downstream end (e.g. sewage, landfill, combustion, incineration). 'D' for direct represents our direct impact on the biosphere, including land (or marine) change for settlement, production or recreation, and depletion or loss of living species.

concerned about natural environments when their hearts and minds are preoccupied with meeting their basic needs. Devlin's (1992:7) view is that:

> *"... it is much easier to be concerned about natural environments if you have a full stomach and some confidence that it will remain full! If your survival, safety, or even comfort are under threat, then so too may environmental resolve become accordingly diluted. These issues in basic human rights and justice need to be resolved before any real progress will be made."*

There are strong imperatives for action. The challenge is how to bring human populations and shrinking resources into balance, rather than on a collision course. We must act together individually and collectively to fulfil this challenge. There is a pervasive optimism that environmental education can help to heal environmental ills and help resolve the problems that have immediate impact on the quality of life of individuals, especially in developing countries.

The International Union for Conservation of Nature and Natural Resources, now the World Conservation Union (IUCN), has formulated the most widely used definition of environmental education. In the broadest sense, environmental education is:

> *"... the process of recognising values and clarifying concepts in order to develop the skills and attitudes that are necessary to understand and appreciate the interrelatedness among human beings, their culture and their biophysical surroundings. Environmental education also entails practice in decision-making and self-formulation of a code of behaviour about issues concerning environmental quality"* (IUCN 1970:11).

In 1972 the United Nations Conference on Human Environment held in Stockholm recommended the establishment of an International Environmental Education Programme (IEEP). The rationale behind the conference was primarily the issue of degraded human environments. Environmental education was not a major agenda issue but it was raised vigorously by many countries as it was seen as a vehicle for changing the human behaviours that threaten our life support systems.

In 1975 UNESCO/UNEP launched the IEEP in response to the Stockholm Conference. Experts from around the world attended the workshop in Belgrade. It is since Belgrade that environmental education has been recognised internationally.

In 1977 the UNESCO/UNEP intergovernmental environmental education conference was held in Tbilisi, Russia, with sixty five countries represented. Here the Western concept of environmental education was greatly modified during the development of international environmental education guidelines.

Environmental education is an important mechanism for reconciling the dilemma of conservation and development in developing countries (Gurung 1992). Therefore environmental education is important from the perspective of nature conservation. They become 'partners' in a pathway to help people in the sustainable management of their own resources. This is because education is the first step in cultivating awareness and concern for the natural environment. Education provides the knowledge and skills that are necessary for nature conservation.

In this study, I investigate the status of environmental education in developed and developing countries. The rationale for development of environmental education and its implications in conservation and management of natural resources is examined.

Although several environmental education models have already been developed in different countries, little emphasis has been placed on their evaluation. This study, therefore evaluates selected environmental education models and their implications for conservation education in developing countries. There is a need to develop an environmental education model which is readily applicable in developing countries. An 'Integrative and Participatory Model' for environmental education has been developed to fulfil this need.

The study also addresses the neglected issues and perspectives of cultural and religious values of local (indigenous) people. The cultural/religious values are included because of their strong traditional implications for sustainable resource use. They are considered more important than other aspects (e.g. economic) because local people still possess and practice cultural rituals which in the long run can become catalysts for their participation in environmental education processes. These values bring local people together in the mainstream of both conservation and development and can in turn provide opportunities to determine their own needs and solutions to problems.

1.2 RESEARCH OBJECTIVES

Three objectives were proposed to provide the structure and direction for this study. These objectives were:

- to determine the status of environmental education in developed and developing countries.
- to determine the role of cultural and religious values in environmental education planning, and the desired level of involvement of local people.
- to evaluate selected environmental education models and to construct a model suitable for use in developing countries.

1.3 HYPOTHESES

Two hypotheses were tested:

1. That 'developed country' models of environmental education are either inadequate or inappropriate for 'developing countries'.
2. That a new model, incorporating local conditions in developing countries, and involvement of local people, will better suit developing countries' needs for environmental education.

1.4 THESIS OUTLINE

The thesis consists of ten chapters. Chapters Two and Three examine the status of environmental education in developed and developing countries. Chapter Four examines the environment and development issues of developing countries. In Chapter Five, the integration of cultural and religious values into environmental education, and the involvement of local people at grassroots levels for environmental education planning are examined.

The next chapter describes the research methods used for this study. Chapter Seven evaluates the selected models and programmes of environmental education and their contributions to the facilitation of conservation education in developing countries. Chapter Eight deals with the data analysis and interpretation of the panel of experts' views of environmental education. The penultimate chapter discusses the "Integrative and Participatory Model" for environmental education and its implications for developing

countries. Finally, Chapter Ten draws together the main themes from the study and sets out the conclusions reached.

CHAPTER TWO

ENVIRONMENTAL EDUCATION IN DEVELOPED COUNTRIES

"How to create a really ecological ecology walk is a question I can't answer, but it is a problem which should be high on the priority list in the field of outdoor environmental education."

Callicott, J. Baird 1982: 35

2.1 INTRODUCTION

This chapter briefly traces the evolution of environmental education in developed countries. An historical review is imperative in order to portray its impact on the contemporary educational scene. A brief examination of the changing concept of environmental education within North America and other the developed countries is given.

2.2 THE EVOLUTION OF ENVIRONMENTAL EDUCATION

2.2.1 Origins

The origins of environmental education go back several decades from the present education scene. The term "environmental education " was first used by Matt Brennan in 1958. It has roots in several related movements - organised camping, nature-study, outdoor education and conservation education (Stapp 1974a; Scott 1980; Knapp 1990).

2.2.2 Organised Camping

Organised camping began during the late 1800s in the United States of America (USA) which had developed into an industrialised nation with crowded urban centres and young people habituated to indoor environments. Recent research discloses that camping was initiated during the period 1823-1834 by Joseph Cogswell and George Bancroft of the Round Hill School in Northampton, Massachusetts (Ford 1981).

School camping provided opportunities for fun and for relief from the rigid structure of the school curriculum. Additionally, organised camping was used to teach students to be more self-reliant and to strengthen them physically and morally (Knapp 1990). It occurred as

trips into the country side and reflected the pioneer life-styles that characterised the westward expansion of the country at that time.

These early camps provided students with a mixture of work projects, team sports and nature study. I believe that the philosophy and practice of camping had sown the seeds of modern outdoor environmental education. However, the term "school camping" lost favour when the wisdom of spending tax moneys on recreational programmes (i.e. camping) was questioned, and when families that could afford to were also sending their children to public agency, private or church camps in the summer vacations (Ford 1981). From the early 1960s, the term school camping was superseded by "resident outdoor education" (Knapp 1990).

2.2.3 Nature Study

Nature study is education about natural objects and the development of an appreciation and understanding of wilderness. The literature is, however, inconsistent about the purpose and intentions of nature study. It originated when there was little concern for the natural environment (Stapp 1974a). The term was first used in 1884 by a teacher in Pennsylvania to replace other terms such as 'natural history' and 'object teaching'(Knapp 1990). Wilbur Jackman, often called the 'father of nature study', used it when he published **Nature Study for the Common Schools** in 1891 (Stapp 1974a).

Early leaders such as Liberty Hyde Bailey, author of **the Nature Study Idea** (1907), were convinced that nature study had a significant role beyond the school programme. Its principle purpose was that of "putting the child into intimate and sympathetic contact with the things of the external world" (Scott 1980) using all the senses and expressing them through art, poetry and prose, as well as scientific recording.

2.2.4 Outdoor Education

Stapp (1974a) noted that outdoor education evolved during the late 1920s, and has been essentially devoted to the preparation of teachers, leaders, and participants in ways to use the outdoors safely, thoughtfully, and appropriately (Devlin 1992). Outdoor education, once born, has flourished and diversified and now is in a period of being challenged, questioned and called to account (Lynch 1992).

It is believed by some that the outdoors is a laboratory which can provide first-hand experiences with the natural environment. L.B. Sharp, an important and eloquent spokesperson for outdoor education, gave a philosophical foundation to outdoor education with this statement:

> *"... that which can best be learned inside the classroom should be learned there; and that which can best be learned through direct experience outside the classroom in contact with native materials and life situations should be learned there"* (Ford 1981).

Other authors believe that outdoor education is the acquisition of skills for the intelligent use of the outdoors and a proper use of one's leisure (Ford 1981; McRae 1990). Knapp (1990) concluded that as cities grow larger and technology increases in complexity, outdoor experiences are bound to be become more popular.

Outdoor education has a great influence on environmental education. Becoming environmentally responsible is an aim of many outdoor education programmes which are based in natural ecosystem settings (Lynch 1992).

2.2.5 Conservation Education

Like nature study and outdoor education, conservation education was born of the American education system and the term was first used during the years 1930s in the outdoor education literature (Ford 1981). Conservation education appeared because American society was faced with several major controversies and catastrophes involving natural resource use (Knapp 1990). Initially, conservation education was directed towards the preservation of natural systems (Stapp 1974a). It also aimed to assist people in understanding more fully the characteristics, uses, problems and issues surrounding natural resources (Stapp 1974a). However, conservation education had limited classroom value (Stapp 1974a; Scott 1980) because the "traditional approach to conservation education has been to 'teach the facts' and assume that if people 'get the facts' about the resource problems they will become concerned about the problems" (Swan 1974:30).

Conservation education began as natural history, principles of ecology and of the development of an ethic of resource conservation. However, by the 1960s, particularly because of popular writings such as **Silent Spring** (Carson 1962), there was a growing

concern for the environment in developed countries. People had become more aware of human impacts on the environment and a shift occurred from conservation education to environmental education.

2.3 ENVIRONMENTAL EDUCATION IN DEVELOPED COUNTRIES

Scott (1986) argues that environmental education is a broad synthesis of nature study, outdoor education and conservation education which developed out of a need to bring together the diverse philosophies and goals of the three movements. Environmental education appeared around the 1960s in the quest for better environmental quality (Stapp 1974a). It sprang from a new set of societal values based on the requirements of living with and within our total environment[2]. Environmental education is a lifelong process. It is a way of looking at life which fosters awareness of non-human life forms and of ecological relationships. One of the leading proponents of environmental education in this period was William Stapp, professor of environmental education at the University of Michigan, USA, who points out:

> *"It is important to provide opportunities and intellectual and informational tools for individuals so that they may be effective in working toward the solution and prevention of environmental problems. This approach designed to reach citizens of all ages, is called environmental education"* (Stapp 1974a).

In the following subsection I briefly review the status of environmental education and the changes in the concept from its origin within the American education system.

2.3.1 Environmental Education: Defined

In his doctorate research, Scott (1986) asked the question: what **exactly** is environmental education? It seems that there is still a cloud of confusion about its nature and philosophy. Law and McConnell (1992:2) have formulated the following definition of environmental education:

> *"Environmental education is a process which develops awareness, knowledge and understanding of the environment, positive and balanced attitudes towards it and skills which will enable people to participate in determining the quality of the environment."*

---

[2] The term "total environment" includes natural, built, technological and social(economic, political, technological, cultural, historical, moral, aesthetic).

Whatever the definition, the concept of environmental education must remain closely linked with the concept of environment itself and to the way in which this is perceived (UNESCO 1980:22). In the late 1960s and the 1970s, the term environmental education appeared to capture the idea of teaching about natural resources and working towards a quality of environment (Knapp 1990). Scott (1980, 1986) stressed that the broadening of environmental education in both its conceptual and instructional dimensions resulted in extraordinary diversity among programmes. The result was widespread confusion about the nature and intentions of environmental education. In America, Schoenfeld and Dissinger (1977 cited in Scott 1986:22) reviewed environmental education and wrote:

> *"Barring reading, writing and arithmetic few subjects are being taught today in so many diverse ways and places, institutions and people as that complex of cognitive content and affective process known, precisely or not, as environmental education. To paraphrase Aldo Leopold (1938), it is, by common consent, a good thing to engage in environmental education. But wherein lies the goodness, and what can be done to encourage its pursuit? On these questions there is a confusion of counsel, and only the most uncritical minds are free from doubt".*

In the United States, the term 'outdoor education' and 'environmental education' are often used interchangeably. Sometimes, they are even combined ('outdoor-environmental education') because of the interrelationship between the two constructs (Knapp 1990). Similarly, in the past in New Zealand, environmental education was often equated with outdoor education (Dowling 1979).

Environmental education is often based on cognitive learning and sensory awareness through school based activities. Swan (1974:29) argues that "while some environmental problems cannot be perceived first-hand, there are many that can be detected by the senses". He believes that sensory awareness is an important aspect of environmental education. Perception is based upon both one's previous experience and the present environmental conditions. The development of perceptual awareness, therefore, can be affected by one's variety and quality of environmental experiences. His view is consistent with that of Steve Van Matre who has written comprehensively about environmental education programmes (e.g. Acclimatization 1972; Acclimatizing 1974; Sunship Earth 1979; Earthkeepers 1987 and Earth Education 1990) all of which have influenced the lives of many thousands of educators, leaders and learners in numerous countries.

Van Matre's overriding concern is to stimulate awareness, increase appreciation and motivate students for further involvement with the natural world. He has described environmental education as breaking down the physical and attitudinal barriers of students. He states:

> *"This is the meaning and goal of the Acclimatization programme: a breaking down of the barriers to the point where human beings can feel themselves not only completely surrounded by their environment, but totally involved with it as well. Once, they have felt this unity with Nature, they are more hesitant to destroy it; they realize that to do so would destroy themselves."* (Van Matre 1972: 11).

This philosophy of environmental education developed similarly in Australia where it grew from concern about the environmental crisis (Greerall 1986) and a need for increased social awareness of environmental issues (Gough 1990). It has not, in general, been a vehicle for action-oriented projects.

2.3.2 School-based Environmental Education

Van Matre's approaches were trialled in Summer vacation camps but prior to this environmental education appeared in the United States of America in 1968 as units of formal schooling. Subsequently it has been subject to incorporation within the structure of schools (Scott 1980). It is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work towards their solutions (Stapp 1974a).

Halverson (1979) has attempted to identify the weakness of the form of environmental education that is common in USA, Australia and New Zealand. His criticisms were that:

> *"(a) the content focus on natural rural environment (is) at the expense of social and built urban environments despite the drastic shift in the population distribution of most developed nations from a primarily rural to urban dominated society.*
>
> *(b) the methodological tendency to examine the environment strictly from the view point of a scientist at the expense of other potentially valuable non-positivistic ones(e.g. intuitive and artistic ways of looking at the environment); and,*
>
> *(c) the advocation of a preservationist view of the environment (i.e. the "purity") of the natural environment must be preserved at all cost, as opposed to being utilised through a variety of efficient resource management strategy"* (Halverson 1979:20).

Additionally, environmental education has often concentrated on surface symptoms such as air and water pollution, solid waste and over-population. However the roots of environmental crises are driven by human attitudes, values and belief systems. Treatment of such crises requires a fundamental change in economic, political and educational policies. If not, environmental education will stress only solving short term problems. Furthermore, simply providing information to students and the public will not change prevailing attitudes. Hence, environmental education must deal with human behaviour if the real causes of environmental problems are to be solved.

Many authors (e.g. Greenall 1986, Van Matre 1990) have argued that environmental education in schools has failed to achieve all of its objectives, there being two major reasons for this failure:

"... teachers feel "safer" with programmes in and about the environment rather than for it.
- insufficient support is provided to teachers to implement the radical changes in teaching methods, styles and organisation of most schools required for the achievement of the full set of objectives of environmental education." (Greenall 1986: 10).

Van Matre (1990) concluded that environmental education for many people represents enjoyable experiences with outdoor pursuits, nature crafts, curriculum enrichment activities, nature awareness, games, socialization techniques and environmental action projects.

Education is not an end in itself and it must be concerned with the functioning of our society and the quality of life on our planet (Wheller 1977). Education is a process, not a product, yet most educational programmes are geared toward teaching people what to think rather than how to think (Swan 1974: 30). In addition, current educational systems are based on abstract learning and examinations. These systems may not be able to provide the basis for a socially oriented education. It is a timely to think that environmental education is a vehicle for reforming the formal education process.

2.4 SUMMARY

This chapter has briefly reviewed the evolution of environmental education in developed countries. Environmental education has evolved from camping, nature study, outdoor education and conservation education. These roots have made a positive contribution to the formation of modern environmental education which has been developed and incorporated into formal education.

Chapter Three will explore the status of environmental education in developing countries.

CHAPTER THREE

ENVIRONMENTAL EDUCATION IN DEVELOPING COUNTRIES

"So the main questions that we have to ask are the following: can we Latin Americans, Africans and Asians, inhabitants of the needy South, accept as valid the way of seeing and interpreting ecological facts adopted by the countries of the super-industrialized, wealthy North? Is it not necessary to reveal the ideology that underlines the attitude of dominance? What are the central issues of environmental education?...."

Chiappo, Leopoldo 1978: 456

3.1 INTRODUCTION

In this chapter I review the status of environmental education in developing countries. The need for environmental education from a Third World perspective is examined. Key issues in school-based and community-based environmental education are addressed and the centrality of conservation education for sustainable tourism development in developing countries is introduced.

3.2 THE NEED FOR ENVIRONMENTAL EDUCATION

The need for environmental education was recognized by the international community at the United Nations Conference on the Human Environment (Stockholm, June 1972) which recommended that:

> *"... the organisations of the United Nations system, especially the United Nations Educational, Scientific and Cultural Organisation, and the other international agencies concerned, should after consultation and agreement, take the necessary steps to establish an international programme in environmental education, interdisciplinary in approach, in school and out of school, encompassing all levels of education and directed towards the general public, in particular the ordinary citizens living in rural and urban areas, youth and adult alike, with a view to educating them as to the simple steps they might take, within their means, to manage and control their environment"* (UNESCO 1980:19).

According to Krasilchik (1987) the need for environmental education goes further than that noted by UNESCO (1980). Conciliation between the interests of development and social progress in the regions of Third World, and preservation of the environment, demand a well prepared population and enlightened institutions that could bring about the process of

creating new forms of action and economic activities that would respect the necessity of maintaining an ecological balance. Each new generation needs to learn for itself the importance of nature conservation.

3.3 THIRD WORLD DEFINITION AND FORM

The definition of environmental education in developing countries is based on needs identified in local situations. For example, Bhuju (1990: 12) has defined environmental education for Nepal as:

> *"... a system to mobilize human resources for promoting sustainable development and environmental protection through information, extension, education and training to the resource consumers, community partners, special interest groups, and decision makers, so that in the long term environmental responsibility will devolve to the government, non-government organisations, community and individuals whose decisions and actions collectively and cumulatively determine the quality of environment of Nepal in particular and of the world in general".*

Fensham (1978: 449) noted about the nature of environmental education in developing countries that:

> *"... environmental education is still largely unknown, not accepted, or misunderstood by many educational administrators and teachers. Curriculum units such as 'Choosing the Best Fuel'(Nepal), 'Model Home Garden' (Philippines), 'Small Farmer Numeracy'(Thailand) may well make headway in these and other Asian countries under the rubrics of science or basic education".*

Fensham (1978) further argues that if the 'Best Fuel' syllabus is an environmental education programme, it will not do much to raise environmental awareness. Instead, it will help local people and children in Nepalese schools to choose fuels more efficiently and share these skills with their families. They will experience relief from what is an increasingly time-consuming task as they search for fuelwood.

There has recently been considerable development of environmental education initiatives and associated curricula in developing countries, such as Mexico (Carrera and Knotts 1988); Nepal (Sherpa 1987; Gurung and De Coursey 1988; Bhuju 1990; National Planning Commission/Nepal and IUCN 1991); Jamaica (Taylor 1988); Africa (Kabala 1974; Koech 1988); Asia and the Pacific (Krishnaswamy 1974; UNESCO 1981; UNEP 1986); Latin America (Luti 1974); Costa Rica (Hall 1985); Israel (Zoller 1987; Blum 1988). Lack of

documentation and language barriers may prevent the full extent of other programmes being known. There is also a growing body of literature dealing with environmental education and the Third World in general (Chiappo 1978), and some detailed studies are available (Bakshi and Naveh 1980; UNESCO 1981; Baez, Knamiller and Smyth 1987 and Albrecht and Seeley 1987). Common elements can be distilled from these programmes.

Environmental education should be concerned with conservation and development (Luti 1974), thus promoting the survival of human beings and retaining the delicate balance of nature. To place environmental education in its logical context, we must be clearly aware that the task cannot be reduced to a problem of industrial hygiene and the conservation of species, although this is an urgent part of it (Chiappo 1978). People in developing countries should not be concerned primarily with saving endangered and rare species at the same time that they have to deal with day-to-day hardship and survival. The needs both of individuals and whole societies in each country must be addressed alongside ecological concerns (Vidart 1978). Hence, the new strategies for environmental education in developing countries are not only to cultivate environmental awareness and change prevailing attitudes but also to focus on action-oriented problem solving strategies (Howard 1983).

3.4 SCHOOL-BASED ENVIRONMENTAL EDUCATION

Ham and Castillo (1990) reported that most school-based environmental education models and programmes in developing countries are imported from developed countries. This is because most schools lack locally prepared teaching materials.

Chiappo (1978) challenges the wisdom of imported education, stating that developing countries need to approach environmental education from the point of view of impoverished peoples. Environmental education needs to address local environmental issues, as Rugumayo (1987), an African biologist and educator, succinctly states:

> *"Third World countries have more or less similar problems, but priorities can only be determined by each country after it has assessed concretely the problems as they express themselves in real life. Generally, after a survey of various countries' environmental issues, the key issues fall under six headings: conservation, food, family planning, water-related and pest-vectored diseases, pollution and energy".*

These six major subject categories can be addressed in a number of ways. Knamiller

(1987:66) distinguished the issue-based learning approach in environmental education from the knowledge-based learning approach and developed a syllabus appropriate to developing countries (Table 1).

The emphasis of environmental education is on:	*Lesser emphasis on:*
Planting crops on a hillside to minimise erosion	*Explaining the structure of soils*
Applying oral hydration therapy to infants suffering diarrhoea	*Extolling the virtues of boiling water*
Growing (catching), preserving and cooking fish	*The ecology of fish populations*
Building efficient wood burning stoves	*The energy cycle*
Controlling food crop pests	*The interaction of plants and animals*
Building economic and pleasant shelters in which to live	*The sociology of human behaviour*
Developing and maintaining a community organisation for protecting local water supplies	*Describing systems of human organisations*
Identifying a specific local environmental problem	*Discussing global environmental issues*
Participating in solving a specific local environmental problem	*Doing simulations*

Table 1 Issue-based Learning Approach

As Table 1 indicates, an issue-based approach is most conveniently described as a programme where subject content and skills are learned in the light of actual local environmental concerns (Knamiller 1987). In this sense, for developing countries "... illiteracy, poverty and economic inequalities suffered by their people were as environmental as population, pollution and resource exploitation in industrialized countries" (Traver 1981: 11). Environmental education should focus on real, practical and local problems through participatory action rather than purely on theory or knowledge-based approach.

3.5 COMMUNITY-BASED ENVIRONMENTAL EDUCATION

Non-formal environmental education has been practised widely in many developing

countries (e.g. Korea, Thailand, Papua New Guinea, Indonesia, Sri Lanka, Philippines, India and Nepal) and is approached differently depending on immediate needs. For example, in Korea environmental education focuses on traditional technologies while in India it aims to improve functional literacy and to provide guidance on aspects of health and hygiene (UNESCO 1981).

In the Annapurna region of Nepal it "... is not so much about developing literacy skills among the local residents nor is it just about diffusing ideas or technologies in the community. Instead, it is about changing prevailing attitudes towards the use of natural resources" (Thakali 1991).

3.6 ENVIRONMENTAL EDUCATION FOR SUSTAINABLE TOURISM DEVELOPMENT

In many developing countries environmental education is seen as a vehicle for sustainable tourism development. However, tourism for economic development is based on the exploitation of natural resources. Such exploitation has accelerated the problem of deforestation, depletion of wildlife and accumulation of rubbish in tourist destinations.

Environmental education in these areas, therefore, emphasizes conservation of precious natural resources. As a result the practice of conservation education, rather than environmental education, is once more being espoused (e.g. Achoka 1987; Tomkins 1987; Gorick 1987; Gurung and De Coursey 1988; Gurung 1992; Passineau 1990; Thakali 1991). This is particularly important where the local economy is based on nature tourism.

In Zambia and Kenya, environmental education is viewed as a positive approach to the conservation of wildlife through the establishment of national parks and game management (Wheller 1977). Sherpa, Coburn and Gurung (1986) and Burbank (1992) similarly concluded that conservation education is particularly helpful for local resource conservation and sustainable tourism development. They stated:

> *"Conservation education helps trekkers understand the complexity of the human and wilderness environment and helps local people learn the best ways to maintain the limited resources in their areas".*

There is a growing concern about the management and conservation of natural resources

in tourist destinations. International and domestic tourists must be educated in understanding the natural and cultural environments of these destinations, and in minimising their adverse impacts on the environments, thus maintaining the delicate balance of nature and human beings. For example, tourists can be self-reliant for their fuel needs while local people can plant trees to meet their fuelwood needs. Such programmes will help improve the quality of environments while the tourism industry is sustained.

3.7 SUMMARY

It is clear from the literature review that the perception of environmental education in developing countries is different from that in developed countries. For developing countries, school and community-based programmes should be more practical than theoretical. There is also an urgent need for conservation education for sustainable development in countries reliant upon tourism dependent on the attraction of natural environment.

Chapter Four examines the environment and development issues of developing countries with emphasis on environmental problems and the role of environmental education in resolving the problems.

CHAPTER FOUR

ENVIRONMENT AND DEVELOPMENT: ISSUES AND PROBLEMS

"Poverty is locking the people of Third World into a dismal cycle of events; in their efforts merely to meet needs of food, shelter and heat, they are being forced to destroy the very resources on which their future survival (and the future prosperity of all) depend."

Tolba, Mostafa Kamal 1987:1

4.1 INTRODUCTION

In this chapter I discuss the literature on the environmental and development issues of developing countries. These countries share common characteristics such as poverty, poor educational systems and dependence on external aid. The vicious poverty cycle has accelerated common environmental problems, and environmental education is crucial to resolving these problems.

4.2 DEVELOPING COUNTRIES: A DEFINITION

The term 'developing countries' is widely used in the literature (Barke and O'Hare 1984; Cole 1987) to distinguish the relatively poor nations from the relatively rich. Other terms, such as 'emerging', 'underdeveloped', 'less developed', the 'South' and the 'Third World' have been used in a similar ways to refer to "... a large group of independent nations in Africa, Asia and Latin America" (Barke and O'Hare 1984:1). From their geographical location and extent, these countries are collectively known as the Third World. The term *tiers monde* (Third World) was first used by French demographer Alfred Sauvery in 1952 in referring to different 'stages' of quality of life. He did not intend it to have either the political or economic connotations which it has now acquired.

4.2.1 What Constitutes Development?

Development is a complex economic, social and political concept (Barke *et al* 1984), based on Western societies notions of lifestyle and progress. Underdevelopment implies a Western interpretation of what constitutes development. The United Nations and the World

Bank both assume the economic growth concept of development which utilises Gross National Product (GNP) as a concise measure of development. Development, therefore, tends to be driven by exploitation of natural resources which may have adverse impacts on ecological systems. As a result, the future welfare of human beings is threatened.

Bawa (1989) is critical of the United Nations and the World Bank and arguing that:

> *"Development to us means not merely the production of wealth, but its distribution in an equitable manner. This includes provision for the fulfilment of minimum needs for all; instead of only a few individuals achieving a high standard of living"* (Bawa 1989: 143).

Ascher and Healy (1990) have shown that the development process is bound up with complex inter-relationships among four key aspects of socio-physical development, i.e. economic production, distribution of income, utilisation of natural resources and environmental well-being (Figure 1).

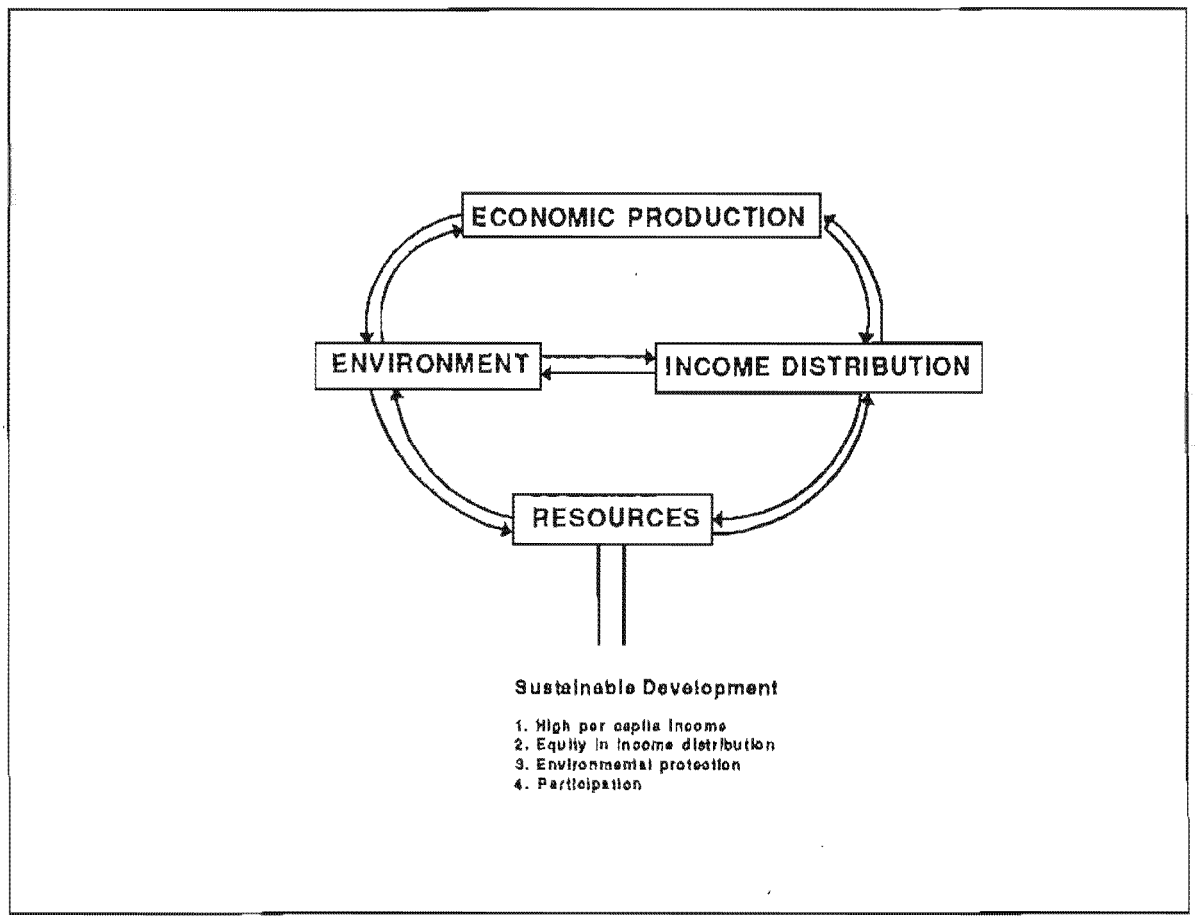


Figure 1 Aspects of Socio-physical Development
Adapted from Ascher and Healy (1990:19)

The bi-directional relationships in Figure 1 illustrate how economic development is linked with the natural environment through natural resources. An increase in economic production therefore, increases a wide range of environmental externalities including reduction in biological diversity and soil erosion.

The above aspects of socio-physical development must be consistent with the notion of sustainable development. Sustainable development is 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED 1987). It addresses both the basic needs of people and conservation of natural resources so that development and conservation can be compatible. Sustainable development legitimises conservation by casting it as the guardian of long term economic growth (Ascher *et al* 1990). The notion of sustainable development is further explored in Chapter Nine.

4.3 THE ISSUES ADDRESSED

4.3.1 Poverty

The World Bank (1990) reported that more than one billion people in developing countries are living in abject poverty. Since 1980, the number of malnourished people in these countries has increased 30 per cent (World Resources Institute, International Institute for Environment and Development and United Nations Environment Programme 1988). In the poorest countries, population growth rates are outstripping the national ability to provide the bare necessities - housing, fuel and food (Toufexis 1989). Poverty is indirectly accelerating the overuse of resources and consequently creating environmental problems. For example, in Nepal people over exploit forest resources in order to gain a share of income. The reasons for poverty and the consequences of poverty should be considered in the issues of conservation and development.

4.3.2 Inequality in Income Distribution

Although more than enough food is produced internationally to feed the world's five billion people, inequitable distribution of land and wealth causes widespread hunger (World Resources Institute *et al* 1988). Venkataramanan (1989:27) identifies the inequalities between developed and developing countries:

> *"Nearly 79 per cent of the world's total output is produced in developed countries where only 25 per cent of the world population lives. The remaining 75 per cent*

of population share the balance of 21 per cent of world output. The inequality in living standards is even more glaring when we realise that 47 per cent of the population living in low-income countries like Bangladesh, India, Pakistan and countries of tropical Africa produce only 5 per cent of the world's output".

Inequality of income distribution is one of the biggest problems but social structure also contributes (World Bank 1990). For example, 'lower castes' and tribal people are among those at greatest risk from greatest poverty in many developing countries including Nepal, India and Bangladesh.

4.3.3 Agricultural Modernisation: The Green Revolution

"Some of the most profound social and economic changes experienced in developing countries since the end of World War II have been associated with attempts to modernize agriculture" (Ascher *et al* 1990:31). The modernisation of agriculture, or, the so-called "Green Revolution", has also been accused of changing rural income distribution in ways unfavourable to the poorest of the poor, resulting in increased numbers of landless and unemployed peasants, dependence on multinational corporations and long term environmental problems through chemical pollution.

Although it has been stressed (e.g. the World Resources Institute *et al* 1988) that the "Green Revolution" of the 1960s has alleviated hunger in many developing countries, a large percentage of their populations, some 40 to 50 per cent (Venkataramanan 1989) still live in poverty and suffer from malnutrition. The movement has benefited only the richest people in any one developing country.

4.3.4 Education

Many developing countries have previously been colonies of foreign powers and their education systems were often totally irrelevant to indigenous concerns, being based on syllabi and examinations derived from Western, urban perspectives (Howard 1983; Vulliamy 1987; Tomkins 1987). The outcome of such education, where it has been accessible, has been lack of provision for the skills for survival and community improvement which are needed in rural villages of developing countries (Howard 1983).

Political independence brought degradation of education systems. Schools in developing

countries now lack necessary teaching materials. This hampers the efficiency and the quality of general education. There is no free access to schooling and most poor people are left without a basic education. As a result, many people are illiterate, and high 'drop-out' rates occur especially among the poorer children whose labour is needed for fuelwood collection or for working the family agricultural plot.

It is important to extend environmental education beyond formal schooling systems so that the poorer children can be included in local conservation initiatives at their villages. Lack of access to school often leads to lack of access to environmental education through formal systems. Therefore, informal environmental education should be widely disseminated in villages to make up for this lack. Informal systems will help to address the long term goals of conservation and development, until such times as schools with appropriate programmes are available.

4.3.5 Dependence and Aid

Developing countries are highly dependent on their 'developed' counterparts for technology, trade and aid. For example, aid contributes from 2.8 per cent of GNP for Fiji, to 200 per cent for Tokelau (Buckley 1990).

Linden (1989) argues that aid can play a positive role in solving environmental problems and in enhancing the quality of life in the Third World. Conroy and Latvinoff (1988:xii) however, make the criticism that "... unfortunately, there are many examples of aid projects that have disrupted the lives of local people and done serious damage to the environment...." One major culprit is the World Bank, the lending institution for distributing international aid, which has a history of investing primarily in large, ecologically damaging capital projects such as jungle highways and hydroelectric dams (Elmef-Dewit 1992).

4.4 ENVIRONMENTAL PROBLEMS

"An environmental problem is a resource and life damaging situation which is not universally recognised or is difficult to improve" (Trudgill 1990:42). The United Nations Conference on the Human Environment in Stockholm 1972 reported that environmental problems are mainly caused by over population, overconsumption of natural resources, unequal distribution of wealth between industrialised and less developed countries and

between different sectors of the community within each country, and a senseless drain on resources in wasteful technology including military armament (Withrington 1977).

A workshop on environmental education held in Bangkok (UNESCO 1981) reported similar environmental problems in Asia and the Pacific. For example, Bangladesh (Latif 1981); India (Atreya 1981); Indonesia (Sinambela 1981); Malaysia (Prabhakar 1981); Nepal (Lohani 1981); and Sri Lanka (Pananalderiya 1981) have reported that deforestation, water pollution, extinction of wildlife, soil erosion, fuelwood crises, air pollution and flooding are major environmental problems in their countries.

4.4.1 Deforestation

According to the World Resources Institute *et al* (1988), forests and rangelands, which together cover about 84 per cent of the Earth's land surface, supply humans with the basic products of wood, meat and milk. Managing them sustainably is one of the greatest challenges to human kind. Unfortunately, the destruction of forest resources in developing countries is one of the major environmental concerns in the 1990s. The World Resources Institute *et al* (1988) reported that if the present deforestation rate of 6.2 million hectares per year were to continue, the tropical moist forests would be completely cleared in 177 years.

Environmental degradation in the Himalaya has worsened rapidly since the 1950's and human population explosion is blamed for it. In Nepal the greatest degradation is caused by the need to extract fuelwood for cooking and heating, poles for fencing and timber for house construction (Bajracharya 1983).

Recent research on firewood has found that thirty developing countries are already experiencing acute shortages (Gregersen, Draper and Elz 1989). Urgent action is required in order to meet the needs of local people and to develop alternative sources of energy for home consumption (Bartelmus 1986). Energy sources such as biogas are unlikely alternatives, however, because the cost of even the cheapest plant far exceeds the entire assets of most households in rural villages (Gurung 1989).

Deforestation contributes in several ways to degradation and destruction of environments.

It is estimated, for example, that some 60,000 km^2 of land is affected annually in the Sudano-Sahelian zone, Brazil, Iran, Pakistan, Bangladesh, Afghanistan, Northern Africa and the Middle east areas (Bartelmus 1986) where poor soils and erratic climates have resulted in severe droughts and floods (Buchanan 1980:34). Barke *et al* (1984) argue that the practice of shifting (or 'slash and burn') cultivation in developing countries, especially where there is tropical rain forest, is the cause of environmental deterioration. However, other writers argue that this is not necessarily true. Indigenous people in Zimbabwe have maintained shifting cultivation without removing trees since the 1930s (Wilson 1988). Such agricultural practices can have implications for environmental education.

4.4.2 Urbanisation

Virtually all Third World nations are becoming increasingly urbanised and 80 per cent of the growth in population in the next few decades will be urban (Hardoy and Satterthwaite 1989). Accelerated urbanisation without adequate basic facilities such as public water supplies, sewer systems and rubbish disposal systems have been the root of most urban environmental problems (Barke *et al* 1984; Bartelmus 1986; Hardoy *et al* 1989; World Resources Institute *et al* 1988). Environmental education in urban settings should include a focus on these problems.

4.4.3 Pollution

Pollution (land, air and water) has been a significant environmental problem in developing countries, but it is not confined to indigenous human settlements alone. For example the World Heritage site of Sagarmatha (Mount Everest National Park) has become a "rubbish dump" due to the activities of successive climbing expeditions. Other commentators on pollution include Hardin (1974). His controversial article "Lifeboat Ethics" suggests that instead of solving the problem of poverty, the "Green Revolution" has become an agent for eco-destruction through chemical pollution. Extensive use of fertilizers has degraded soil fertility and contaminated water.

Population growth and economic development have added to the depletion and pollution of water supplies throughout the planet, raising the risk of starvation, epidemics and even war (Linden 1990). In addition, many health problems are linked to the quality and the quantity of water available. the conditions under which it can be obtained and the

provisions made for reduction of overuse (Hardoy *et al* 1989).

The spread of water related diseases such as malaria and diarrhoea is common in developing countries and is exacerbated by poor health care. Barke *et al* (1984) reported that less than five per cent of GNP is used in the provision of health care in developing countries. As a result, high rates of infant mortality and poor life expectancy occur. Environmental education should embrace a wide range of such issues. Health in particular should be included as it is of direct relevance to the daily lives of individuals in all countries.

4.4.4 Reduction of Biological Diversity

Developing countries are rich in biological diversity. The implications of reductions in biological diversity are largely attributable to losses in natural habitat beyond national boundaries (Pearce 1991). The so called "megadiversity states" identified by the WWF include Mexico, Colombia, Brazil, Zaire, Madagascar and Indonesia. Four of these states alone contain approximately 75 per cent of all primate species (Swanson 1991:185).

Numerous "hot spots" have been identified (Linden 1989) where ecosystems are under attack and species face immediate threat of elimination. Among the troubled areas are Madagascar, where more than 90 per cent of the original vegetation has disappeared; New Caledonia, where 83 per cent of the plant life is endemic; the eastern Andes, forests in East Africa, peninsular Malaysia and the Atlantic coast of Brazil.

These "hot spots" directly result from developing countries struggling to feed their people. Conservation of biological diversity is simply not a priority of poor people who are unsure of where their next meal will come from. One of the greatest challenges for environmental education is the difficulty of addressing environmental issues if the immediate needs and problems of people are acute.

4.5 ENVIRONMENTAL EDUCATION: A PANACEA?

Many environmentalists believe that environmental education has a crucial role to play in resolving environmental problems. Regrettably, education is a slow process and its outcomes may only appear well into the future. Nevertheless, education is seen by many

as a panacea because it maintains and strengthens not only human daring, initiative and constructive activity but also people's regard for nature (Schumacher 1973).

The question of what should constitute environmental education is crucial (Pepper 1986). It targets all people, and is education **FOR, IN** and **ABOUT** the environment (Devlin 1992). Environmental education raises awareness, and enhances the knowledge and communication skills, people require for resolving environmental problems. Hence, it has a vital role in developing human resources (Cortese 1992). Society needs well trained educators and professionals to deal with environment and development issues.

4.6 SUMMARY

This chapter has provided an overview of developing countries, the concept of development, the issues of poverty, agricultural modernisation, education, dependence and aid. Deforestation, urbanisation, pollution and depletion of biological diversity are the primary environmental problems affecting the natural environment in developing countries. Environmental education is a cornerstone for development of human resources so that appropriate educational policies can be developed to tackle the above problems.

CHAPTER FIVE

CULTURE AND RELIGION: A KEY TO LOCAL PEOPLE INVOLVEMENT

"There are places in the world, for example, where people have never heard of environmental education, but where many of its prime goals are already widely practised as a result of certain long-held religious and cultural beliefs that place high value on the wise custodianship of the natural world."

Schmieder, Allen A 1977:24

5.1 INTRODUCTION

Chapter Four concluded with the view that education was a cornerstone in developing the human resources required to tackle environmental problems in developing countries. Culture and religion are equally important cornerstones. In this chapter I examine the place of cultural and religious values in environmental education and discuss the participation of local indigenous peoples in the planning of environmental education. Cultural and religious values are important elements in traditional societies for maintaining the practice of traditional nature conservation.

5.2 CULTURE AND RELIGION IN ENVIRONMENTAL EDUCATION

5.2.1 What is Culture?

For the purpose of this research, culture is defined "... as the totality of the arts of living exercised by human beings individually and collectively in interaction with their ecological environment to promote survival and the enjoyment of life" (Bidney 1967). "Culture consists of the complete set of learned and shared beliefs, customs, skills, habits, traditions and knowledge common to the members of society" (Landis 1971).

5.2.2 Culture and Environment

Garratt (1984) points out that local and indigenous cultures throughout history have developed traditions and practices which help them to live in harmony with the environment. They have sustainably managed natural resources for centuries and maintained the delicate balance of nature through the practice of their cultural and religious

values. Many authors (e.g. Klee 1980; IUCN 1983; McNeely and Pitt 1985; Nowicki 1985; Jakowska 1987; Gurung and De Coursey 1988 and Poranee 1991) have argued that cultural and religious values are essential elements in environmental education development strategies. It is important to embrace cultural and religious values since their practice has significant implications in nature conservation (Klemm 1985). Local people of Nepal see the forest as an important economic resource and highly revere certain forests as the place where the gods and spirits live (Muller-Boker 1991). For example, in many villages of Nepal, local people protect certain forests in the name of Gods. They believe that the Gods live in the forests and therefore do not cut down these trees for firewood and timbers needs. Instead they have high regard for such forests for their cultural and spiritual identities. Therefore management of forest resources is influenced by cultural and religious parameters.

Jeans (1974) argues that perceptions of environments differ with culture. The physical environment is perceived through a cultural 'filter' made up of attitudes, past experiences and styles of observation. It is important at local levels to critically examine and adopt into environmental education local traditions and cultural values. In this way, environmental education can be made more meaningful and appropriate to local indigenous people.

5.2.3 Indigenous Resource Management

According to Dasmann (1974 cited in Klee 1980) there are two major types of people in the world: "Ecosystem People" and "Biosphere People".

> *"Ecosystem" (traditional people) are the members of indigenous cultures who live within a single ecosystem, or at most two or three adjacent and closely related ecosystems. Hunting - and - gathering societies that exploit only their local area, primitive fishing societies that harvest nearby reefs, and subsistence agricultural societies that till local fields would all be considered examples of traditional societies practising traditional systems of resource management. In contrast, are Dasmann's "Biosphere People" tied in with global technological civilization, drawing support, not from the resources of any one ecosystem, but from the entire biosphere. One look at a representative meal of the average American makes it obvious we are Biosphere People; the beef steak from Argentina, the wheat bread from Canada, and the coffee from Brazil are all elements of a way of life based on global resource exploitation"* (Dasmann 1974 cited in Klee 1980).

Dasmann (1974 cited in Klee 1980) suggests that the ecosystem people maintain their existence within their own ecosystem, while the biosphere people invade the global

ecosystems thus maintaining themselves from other peoples ecosystems. Local or indigenous people (ecosystem people) have managed their natural resources for hundreds of thousands of years in many parts of the world without collapsing their life support systems (IUCN 1983; McNeely and Pitt 1985; Sponsel 1987). Indigenous cultures have insights regarding living with the earth that the technocratic world has lost. Indigenous people possess an exact knowledge of their local environment (McNeely and Pitt 1985).

Many small-scale cultures have evolved ways of coping masterfully with their environments - jungles, mountains and hot or cold deserts (IUCN 1983). There are several benefits of traditional conservation practices. For example, "slash and burn cultivation" has been blamed for a number of environmental problems but this is not so when practised on a small scale.

Traditional systems of nature conservation and resource management in developing countries are tied with strongly held cultural and religious values. Resource management by strictly regulated use of sacred plants and animals, sacred groves, lakes and river pools, is an important ways of maintaining life support systems. Indigenous wisdom often has high conservation and ecological value.

India, Bhutan and Nepal have a cultural inheritance of worshipping trees, tigers and elephants. There are also familiar sayings, such as that a tree is as valuable as ten good sons, since a tree provides ten important needs of people: food, fodder, fertilizers, fibre, fuel, air, water, soil, shade and beauty. However, due to the indirect influence of foreign 'developed' visitors, traditional cultures are disappearing at an increasing rate (Klemm 1985) and this decline means the loss of much useful environmental information.

Conservation skills are lost as old people die and their knowledge, usually unrecorded, is not transmitted to younger generations. Cultural conservation could be a strategy for environmental education which safeguards people's identity with sound environmental practice.

The significance of cultural values cannot be overemphasised. Cultures are:

> *"...the 'librarians' of vast stores of knowledge, accumulated over centuries, about the potential and actual usefulness to human welfare of resources unique to their*

own environment: natural sources of food, medicine, textiles, dyes, pesticides and much besides that has not yet a category in conventional wisdom" (IUCN 1983: 97-98).

Cultural and religious values constitute an alternative approach to nature conservation which can play a dual role as cultural conservation and nature preservation (WWF 1988; Dwivedi 1990; Sivaraksa 1990; Clark 1990; Moore 1990; Izzi Deen 1990). Recent academic discussion reflects this role. White (1967) and Moncrief (1970) argue that in the Western world, the cultural roots of the modern aggressive pursuit of science and technology lie in late medieval Christianity which has been blamed for the current environmental crisis. The contrast between the outcomes of religious and cultural influence is therefore striking.

5.3 LOCAL PEOPLE PARTICIPATION IN ENVIRONMENTAL EDUCATION PLANNING

The need for the involvement of local people including influential locals in environmental education planning is crucial (Wheller 1977; Jakowska 1987). A combination of a strong grassroots movement, influential decisions makers and favourable public opinion was found to be the best approach to effective environmental education (ibid).

5.3.1 Why Local People Participation?

In general, participation means involving the public in planning (Commission for the Environment and Ministry of Works and Development, New Zealand 1979). The term "local people participation" refers to the ability of local communities to influence the outcome of environmental education. Participation in the planning process includes such tasks as identifying problems, formulating alternatives, planning activities, and allocating resources (Drake 1991).

According to Howard (1983) the emphasis for indigenous people should be on participation in determining appropriate patterns of development. He found the plight of poor people in developing countries (as with poor people everywhere) has been compounded by two major factors:

1. "Lack of genuine power to shape their own lives: Power has not been granted to the poor or encouraged in them by the ruling groups, who cite their backwardness and ignorance as reasons why they cannot be trusted to make intelligent

decisions about the issues affecting their lives"

2. *"Lack of a sophisticated community awareness of both the potentials and the hazards inherent in the various proposals for economic and environmental development"* (Howard 1983:42).

However, participation of people in conservation and environmental education depends upon their awareness of environmental issues, their awareness of how the changing state of the environment affects their well-being, and how their lifestyles affect the environment (Tolba 1988). Knowledge of proper conservation practices still does not reach millions who suffer the effects of environmental degradation. Environmental education should assist local people so that they can benefit from and contribute nature conservation programmes (National Planning Commission/ Nepal and IUCN 1992). Barbier (1991) on the other hand, suggests that local people are usually very much aware of the costs and impacts of environmental degradation but unfortunately their knowledge is often overlooked.

Howell, Olsen and Olsen (1987:5) emphasized that "the early democratic theorists realized that if individuals are to learn how to participate effectively in public affairs, and be motivated to do so, they must have opportunities in all realms of their lives to take part in collective decision making". The rationale for local people's involvement in the planning of environmental education is not simply to inform local people about the environmental problems. Indeed, it is to revive the cultural and religious values that have strong implications in nature conservation.

In addition to involvement in planning environmental education, Jakowska (1987) points out that local action groups are also very important because they are economically, socially and emotionally attached to local issues and problems. The "Chipko Movement" (hug trees movement) for example, has been initiated in India through the involvement of local people in response to environmental degradation in the highland districts (Dixit and Tuting 1986; Jakowska 1987; World Resources Institute *et al* 1988; Dwivedi 1990; Bandyopadhyay 1992). Local people in India have literally "embraced" the Chipko Movement as a protest against tree felling by commercial enterprises.

By contrast, Western techniques for citizen involvement including public meetings,

workshops, committees, forums, submissions, surveys, demonstrations, displays and media releases (Sarkissian, Perlgut and Ballard 1986) are not always suitable when comparatively uneducated people are involved (Garratt 1984). Special approaches to environmental education are required when there are conflicts between community interests and conservation (Jakowska 1987).

Where there is a centrally planned conservation strategy and enforcement of conservation laws without public involvement, conservation programmes have often failed (Bunting, Sherpa and Wright 1991; Jakowska 1987). Every effort should be made to achieve the designed conservation objectives with minimum disruption of traditional ways of life and maximum benefits to local people (Dasmann 1984).

5.3.2 Benefits of Local People Participation

Harrison (1980) stresses that public participation gives local people confidence in their ability to control circumstances instead of being controlled by them. Increased participation will mean a considerable measure of self-help.

According to Howell *et al* (1987), local people participation has four benefits:

- *participatory democracy*
- *comprehensive communication*
- *effective decision making*
- *political legitimacy*

5.3.3 Incentives

Experience has shown that where human needs are given attention, conservation efforts can be successful (Jakowska 1987:233). Conservation without economic benefit is unlikely to be accepted (Gregersen *et al* 1989). **"Together, incentives and disincentives provide the carrot and the stick for motivating behaviour that will conserve biological resources"** (McNeely 1988:ix). To function effectively incentives require some degree of regulation, enforcement and monitoring through traditional structures.

5.4 SUMMARY

This chapter has briefly reviewed the significance of cultural and religious values in environmental education. Traditional resource management and nature conservation programmes are imperative in order to conserve the precious resources and meet the needs

of local people. Such practices, when integrated into environmental education planning through the active participation of local indigenous people will strengthen environmental education programmes.

It is apparent from this review of literature that there exists a tremendous diversity of opinions on the objectives, foundations, benefits, and approaches of environmental education programmes, and the ways in which these might be appropriate for developing countries. The major objective of my thesis is to evaluate this diversity of material and to reach an improved synthesis and outcome through collating the evaluations and considered opinions of people deeply involved with environmental education programmes and knowledge and understandings of developing countries.

The next chapter will discuss the research methods selected for use in this study.

CHAPTER SIX

RESEARCH METHODS

"Science is an enterprise dedicated to "finding out". No matter what you want to find out, though, there are likely to be a great many ways of doing it."

Babbie, Earl R 1989: 79

6.1 INTRODUCTION

In this chapter I discuss the research methods and procedures used in this study. The purpose of the study and research design are briefly discussed, and the limitations of this research identified.

6.2 RESEARCH OBJECTIVES

Three objectives provide the structure and direction for this study. These are:

- to determine the status of environmental education in developed and developing countries.
- to determine the role of cultural and religious values in environmental education planning, and the desired level of involvement of local people.
- to evaluate selected environmental education models and processes, and to construct a model suitable for use in developing countries.

6.3 THE RESEARCH DESIGN

Babbie (1989:96) stressed that "... the best study design is one that uses more than one research method, taking advantage of their different strengths". This study is therefore based on three approaches: (1) a literature review, (2) an expert survey and (3) personal interviews.

6.3.1 HYPOTHESES

Two hypotheses were tested:

1. That 'developed country' models of environmental education are either inadequate or inappropriate for 'developing countries'.
2. That a new model, incorporating local conditions in developing countries, and

involvement of local people, will better suit developing countries' needs for environmental education.

6.3.2 THE SELECTION OF "EXPERTS"

The question of who should be consulted in this study raised a number of issues. The first was the meaning of "expert" in terms of environmental education.

For the purpose of this study, an environmental education expert is defined as one who has both theoretical and practical understanding of environmental education at a high level, gained over several years. These people would have received recognition for their involvement such as that noted in journals, books, and conference papers.

Purposive sampling (reputational sample) was used in this study. According to Babbie (1989:207) "purposive sampling is a type of non-probability sampling method in which the researcher uses his or her own judgement in the selection of sample members". This method was appropriate for this study because it involved an investigation of expert opinion.

The experts were selected both from developing and developed countries. The geographical spread obtained was wide with environmental education specialists representing Bhutan (2), Canada (2), Fiji (1), Nepal (5), New Zealand (13), Papua New Guinea (1), Peru (1), Solomon Islands (1), South Africa (1), U.S.A. (1), U.K. (2) and Zimbabwe (1). Most experts from developed countries have had experience with environmental education in developing countries.

A variety of sources and lists of participants were consulted in the search for environmental education experts. Emphasis was placed on locating at least one person from each of a range of developed and developing countries. A list of sources consulted is attached as Appendix II.

6.3.3 INSTRUMENT

A questionnaire was developed to elicit expert opinions on environmental education. Copies of a letter to the experts and the questionnaire are attached in Appendix III. The

questionnaire was tested on a pilot group of people including environmental education experts.

The questionnaire consisted of five sections. It involved rank order (1= the most important) and open-ended questions. Open ended questions were essential to obtain qualitative view of environmental education and gave more flexibility for panellists to express their creative views.

Section A of the questionnaire deals with environmental problems and the ways in which environmental education can contribute to the resolution of these problems.

Section B deals with environmental education in developing countries. This section focused on target groups and approaches for environmental education that can best influence the identified target groups.

Section C deals with environmental education models. The information obtained from the panel members was subsequently used in developing the researcher's environmental education model.

Section D deals with the involvement of local people in developing countries in the planning of environmental education for resource management. This section investigated the importance of involvement of local people in the planning of environmental education, and the implications of their cultural and religious values in this process.

The final section sought general information on the background and experience of the environmental education experts. A list which gives brief profiles of participants is attached as Appendix IV.

There was provision for final comments in the questionnaire. These comments have high qualitative value and are attached as Appendix V.

6.3.3.1 Procedures for Administering Questionnaires

A letter of invitation and a survey questionnaire along with a self-addressed return

envelope were sent to the selected experts in April 1992. Six weeks were allowed for completing the questionnaire since it was both long, and involved considerable reflection on past experience as well as current research. In addition, slow postal services in some countries necessitated allowing a reasonable turn around time.

It was not possible to obtain postage stamps for all countries involved. I appreciate the generous support of my panel of experts in this respect. Within New Zealand, the freepost service of Lincoln University was used.

Follow-up letters (see Appendix VI) were sent to non-respondents after four weeks. In some cases telephone, fax, and electronic mail messages were also used.

Sixty-one people were invited to join the panel, five letters were returned without having reached the addresses, seven people declined the invitation and thirty five accepted. The remaining fourteen invitations were unanswered. Four of those who agreed to join the panel subsequently failed to reply to the questionnaire. Thirty-one environmental education experts therefore constituted the final panel. The reasons for declining the invitation are attached in Appendix VII.

6.3.4 DATA ANALYSIS

6.3.4.1 Content Analysis

Content analysis by systematic categorisation was used to analyse the data gathered by the mail survey. Environmental problems in developing and developed countries were coded separately. The highest rank (1= the most important) indicated the most important aspects of issues identified. Questions one (environmental problems), four (outcomes of environmental education), and six (approaches for environmental education) were coded in this way. Question seven (target group and possible approaches) was coded by considering the respondents' three most important possible approaches for environmental education.

The answers to the open-ended questions were transcribed and coded under a number of headings. Similar responses were coded in categories under headings that reflect themes from the literature reviewed.

Content analysis was employed for two reasons. Firstly, it enabled problems or statements provided by the panel of experts to be interpreted and categorised quickly. Secondly, because ranking in terms of importance was involved, it enabled the interpretation and categorisation to be done with considerable objectivity.

6.3.4.2 Interviewing

Five environmental education experts were interviewed in Christchurch, New Zealand, during the early stages of the study. The purpose of these interviews was to settle on the scope of the study and to firm up a realistic set of objectives. This approach is supported by Weller and Romney (1988:7). In the beginning stages, informal exploratory interviewing is necessary in order to define the area of inquiry and obtain a general notion of what to expect.

The interviews were unstructured and recorded on audio tape. Lofland and Lofland (1984:12) suggested that "... the intensive interview seeks to *discover* the informant's *experience* of a particular topic or situation". This information was additionally used to give a multidisciplinary picture of environmental education.

6.3.5 REVIEW OF A MODEL

Following analysis of the major survey and interviews, a composite model was constructed for review and criticism. The "Integrative and Participatory Model" for environmental education (Appendix VIII) was then distributed to fifteen people from the original panel for their comments and suggestions. Initially, it was expected to distribute the model to all members of the panel, however, time constraints affected most respondents and only those who specifically expressed their willingness to do so were actually involved in this review stage. "Thank you" letters were sent to all of those people who contributed in the first stage of the study (Appendix IX).

6.4 LIMITATION OF THE STUDY

The limitations in this study are inherent with the enormity of the task and the methodology chosen. The expert survey is open to bias in terms of the panel selected. There will be many experts whom I did not know and therefore the sample can not represent the opinions of all environmental education experts. However, the range of ideas expressed

by those who responded are consistent with the literature and the limitation is not therefore considered to be a major one.

It is also important to note that to investigate models alone is seen as a potential limitation and it was for this reason that the term 'approaches' has subsequently been added. Hence the description models/approaches may be a better basis on which to criticise environmental education.

6.5 SUMMARY

This study attempts to identify a wide range of expert opinions about the multidisciplinary field of environmental education. The opinions were extremely useful for identification of environmental problems, models/approaches and development of an environmental education model for developing countries. A literature review, an expert survey and interviews were used to collect and to obtain expert opinions on environmental education from different countries. Interviews were used to elicit the deeper understanding of models and approaches for environmental education. The review of literature on environmental education models was fundamental in developing an integrated environmental education model which may facilitate conservation education in developing countries.

CHAPTER SEVEN

AN EVALUATION OF MODELS AND PROGRAMMES

"Evaluation is something we do every day - from looking in the mirror in the morning and judging our appearance to greeting a friend and eliciting a response about how he or she feels. We engage in it when we make most, if not all, our daily decisions - shall we go here rather than there? Is this or that a better buy?"

Bennett, Dean B. 1988: 14

"Environmental education has been notoriously difficult to evaluate".

O'Hearn, George T. 1981: 1

7.1 INTRODUCTION

Because conservation education and environmental education are based on similar concepts, they are in this thesis used synonymously. The role of models and programmes is not consistent in the contemporary environmental education scene. Models have often been seen as theoretical supplements to, rather than the core of environmental education. Additionally, many environmental education models and programmes embrace the philosophical concept of Spaceship Earth (Stapp 1974b). Spaceship Earth is described as a limited life supporting system which contains essentially all the available air, water, and land. This concept underpins most of environmental education models and programmes discussed in this thesis.

In this chapter I will evaluate selected models and programmes of environmental education. These models and programmes were selected because they were consistently referred to in the literature reviewed, and in responses from the panel of experts. Their contributions, limitations, and implications are evaluated for the development of appropriate conservation education programmes in developing countries.

7.2 THE NEED FOR EVALUATION OF MODELS AND PROGRAMMES

There have been no evaluative studies assessing the viability and implications of models for environmental education (Scott 1986). Hall and Day (1977) have defined a model as an abstraction or simplification of a system, or as the formalisation of our knowledge about a system.

The education models and programmes used by developing countries to facilitate conservation/environmental education for the management of natural resources have often been "imported" from developed countries . Research (e.g. Ham and Castillo 1990) has suggested that such models and programmes are often inappropriate outside their originating culture. For this reason, there is a need to evaluate the models and programmes of environmental education in order to develop improved, innovative and more appropriate ways to facilitate conservation education in developing countries.

7.3 EVALUATION FRAMEWORK

Evaluation is the process of judging the value of ideas, objects, and events using appropriate criteria (Bennett 1988). In environmental education it has mainly focused on the successes and pitfalls of the programmes rather than on the models (O'Hearn 1981).

Environmental education has been notoriously difficult to evaluate (O'Hare 1981). Robottom (1985) has reported two different perspectives to evaluation. The scientific/analytic approach is a direct observation of perceived things and processes which provide the ultimate link between scientific knowledge of the world and the world itself. This approach is typically used to determine programme effectiveness but the ideology or values embedded in the goals of an educational programme are not scrutinized. The critical approach to evaluation assumes that knowledge is dialectical, an interplay of subjective views of the world and the historical and cultural frameworks in which they are located to evaluation. Critical evaluations question the values underlying educational programme.

I have developed an evaluation framework for this study which focuses on how models can be used to contribute to or improve and facilitate conservation education. It requires an evaluation of philosophy and concepts, processes, expected outcomes, implications and

actions (Table 2). The implications and actions of the models and programmes are examined in terms of their capacity to facilitate conservation education in developing countries.

1. PHILOSOPHY AND CONCEPTS
2. PROCESSES (MEANS)
3. OUTCOMES (ENDS)
4. IMPLICATIONS
5. ACTIONS

Table 2 An Evaluation Framework for Environmental Education

7.4 AN ACTION MODEL FOR ENVIRONMENTAL EDUCATION

7.4.1 Philosophy and Concepts

Stapp (1974b) has developed an Action Model for environmental education at the University of Michigan in the United States of America (Figure 2).

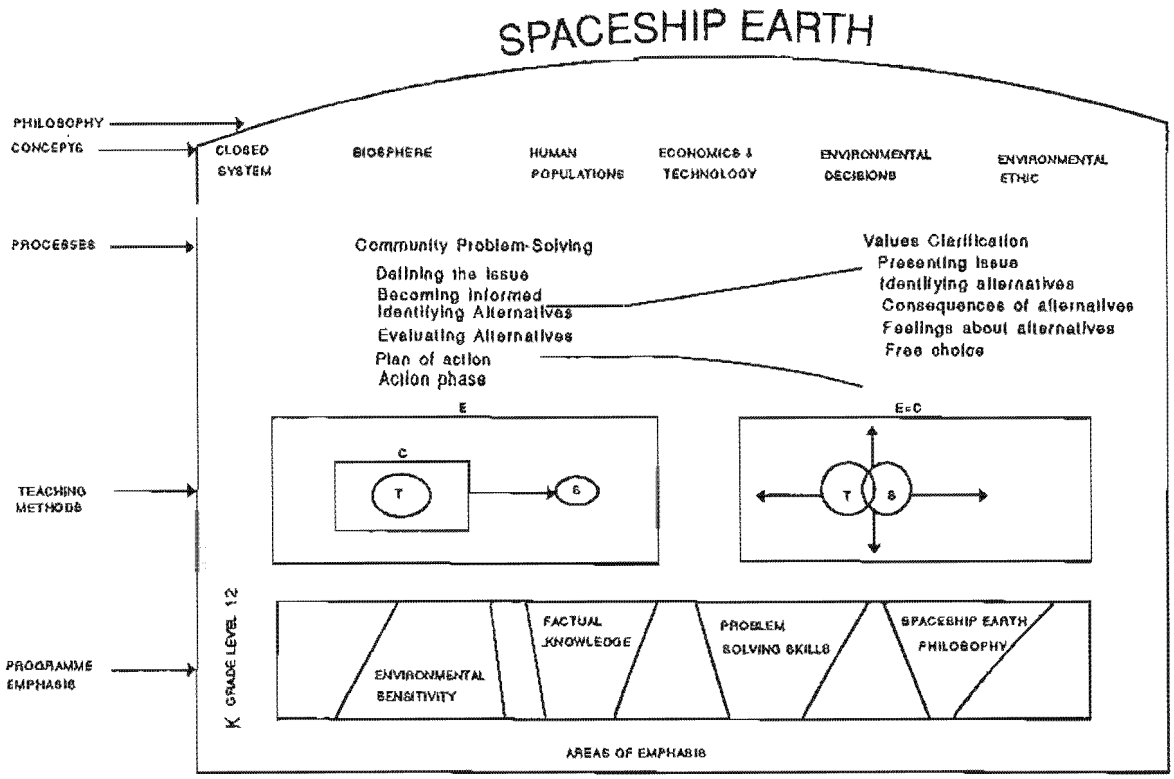


Figure 2 An Action Model for Environmental Education

Adapted from Stapp 1974b:76

The 'Spaceship Earth' is a philosophical "umbrella" for Stapp's model. This philosophy is an appropriate framework for a programme because its concepts are basic and essential to environmental education. It is a limited life supporting system powered by the energy of the sun. It contains natural resources which are distributed unevenly around the earth as well as within each nation.

The biosphere is a complex system which consists of the living and non-living things. Human beings are part of the biosphere and can play vital roles in its management as producers and as consumers of materials. Furthermore, people can make rational decisions and establish a set of environmental ethics that are based on human integration with, rather than exploitation of the environment.

7.4.2 Processes

Two basic processes that are integral parts of the Action Model are problem solving and valuing. These processes relate to each other and assist the learner to develop skills in the area of defining problems; collecting information; organising and analysing data; generating alternative solutions; evaluating alternative solutions and selecting the best alternative; and developing, implementing, and evaluating a plan of action.

As illustrated in Figure 2, a teacher (T) digests a predetermined body of information and then conveys the materials to the students (S). When the teacher functions in this role, the content (C) has already been determined by administrators. The teacher becomes familiar with the content and then assumes the role of expert in conveying this information to the student. An alternative situation is one in which the amount of information available about the environment (E) and the demand of students for this information calls for a teaching model wherein the instructor does not serve as the principal source of information. Teachers are highly effective when they participate in learning projects as team members, guides and counsellors rather than as star performers (Stapp 1974b).

7.4.3 The Outcomes

The Action Model aims to provide the opportunity for school children to explore their environment physically, intellectually and through sensory experience in order to develop the knowledge, skills, attitudes, and motivations to become environmentally literate people.

The philosophical concepts which underpin this model provide a broad approach to the biosphere which can be useful for conservation education in developing countries.

The foundation for strong citizenry rests not only in school communities but to a large degree on what happens in our homes and daily lives and community as a whole. Hence, models should target people of all walks of lives rather than single school communities. The Action Model has a weakness in this regard. Additionally, children in developed countries attend schools from early ages but in developing countries most children never have access to education. They learn through informal methods, and the Action Model cannot be easily applied by these methods.

An environmental education model must target the whole community involved in resolving environmental problems. Changes in prevailing attitudes to environmental use do not happen easily. A long term, ongoing effort and commitment from all people is required. For this reason, the economic and spiritual needs of the target groups must be integrated into environmental education programmes so that there is continued support for a programmes outcomes. Entire communities should be involved in environmental programmes and provided with opportunities to identify their particular problems and traditional ways of managing resources.

7.5 THE UNESCO PROGRAMME

7.5.1 Philosophy and Concepts

The UNESCO model is not presented diagrammatically but as a programme for global environmental education. It evolved from the historic 1972 Stockholm conference of the United Nations on the Human Environment and appeared in 1975 under the name of "International Environmental Education Programme (IEEP)".

Similar to that of Stapp, the UNESCO model is based on the philosophy of "Spaceship Earth" (see Figure 2) which many individual countries (e.g. USA, South Africa) have adapted for their own environmental education needs. Its goals, objectives and guiding principles (Table 3) were endorsed at the 1977 UNESCO/UNEP Intergovernmental Conference on Environmental Education in Tbilisi, Russia (UNESCO 1980) and were re-endorsed at the 1987 UNESCO/UNEP International Congress on Environmental Education

and Training in Moscow (UNESCO/UNEP 1988).

William B. Stapp, formerly the executive director of UNESCO's environmental education programme has stressed that:

> *"the goals and objectives of environmental education as adopted by the Environmental Education Programme at UNESCO is very applicable to all nations. It emphasises focusing on critical environmental issues as identified by the nation in an interdisciplinary, problem solving, real world, culturally sensitive, and futuristic manner. It also emphasizes a focus on attitude formation and change, clarifying values, and developing critical thinking and communication skills. Furthermore, it places an emphasis on resource development aimed at sustainability"* (Stapp 1991).

1. The goals of environmental education are:

   (a) to foster clear awareness of, and concern about, economic, social, political and ecological interdependence in urban and rural areas;

   (b) to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment;

   (c) to create new patterns of behaviour of individuals, groups and society as a whole towards the environment;

2. The categories of environmental education objectives:

   Awareness: *to help social groups and individuals acquire an awareness of and sensitivity to the total environment and its allied problems.*

   Knowledge: *to help social groups and individuals gain a variety of experience in, and acquire a basic understanding of the environment and its associated problems.*

   Attitudes: *to help social groups and individuals acquire a set of values and feelings of concern for the environment, and the motivation for actively participating in environmental improvement and protection.*

   Skills: *to help social groups and individuals acquire the skills for identifying and solving environmental problems.*

   Participation: *to provide social groups and individuals with an opportunity to be actively involved at all levels in working toward resolution of environmental problems.*

Table 3 The UNESCO Programme

UNESCO (1980)

7.5.2 Processes

Although the UNESCO programme is designed to facilitate environmental education from a global perspective, its implementation has been dominated by Western culture, schools and societies. Schools often become a focus for community action and an agent for social change (Gough 1990) and in the area of environmental education they have not been excused. Most developing countries, however, have limited access to formal education, so targeting school children alone will not be an effective agent for social change.

The complexity of cultural and socio-economic diversity in developing countries makes it difficult to adopt such a rigid model without significant modification. The model tends to ignore development issues (Hurry 1992) which is a major weakness because environment and development cannot be separated from each other. For example, road and dam constructions may have adverse impacts on the natural environment.

7.5.3 The Outcomes

The UNESCO programme concentrates on creating a world population that is aware of environmental issues and committed to solving environmental problems. It is flexible enough to provide the framework for the sort of environmental education required in a multitude of countries.

The UNESCO programme fails to account for the reasons behind environmental degradation in developing countries. To be successful, it should emphasise both conservation and development issues since quality of life depends on the sustainable use and management of natural resources.

Theoretically the programme appears to be a holistic one applicable to all nations. However, because of the domination of theoretical concepts and lack of practical guidelines, it provides very little practical guidance for practitioners and teachers in the field. Nevertheless, the broad philosophy of this model will provide useful guidelines for defining goals and objectives of environmental/conservation education. It can be a useful tool for developing a strategy for conservation education programmes in developing countries.

7.6 PROJECT WILD (PW) AND PROJECT LEARNING TREE (PLT)

7.6.1 Philosophy and Concepts

Project Wild (PW) and Project Learning Tree (PLT) are innovative works of the Western Regional Environmental Education Council and other associated organisations in the United States of America (Western Regional Environmental Education Council[WREEC] 1986a, 1986b, 1988). They are separate but compatible frameworks for interdisciplinary environmental and conservation education programmes which emphasise wildlife and forests ecosystems.

The philosophical approach of PW and PLT is to raise environmental awareness and appreciation of nature. It is important because of their intrinsic, ecological, and other values, as well as its importance as a basis for understanding the fragile grounds upon which all life rests. PW and PLT are concerned with providing information and helping students evaluate choices, thereby helping youngsters learn **how** to think rather than **what** to think. The WREEC (1986a; 1986b:vii, 1988) states:

> *"the goals of Project PW and PLT are to assist learners of any age in developing awareness, knowledge, skills, and commitment to result in informed decisions, responsible behaviour, and constructive actions concerning wildlife and plants and the environment upon which all life depends."*

7.6.2 Processes

PW and PLT are designed for teachers of elementary and secondary students in North America. These programmes provide an excellent set of teaching materials bound in attractive formats. However, because they constitute a "cook book" approach for teaching environmental education from kindergarten through grade twelve, they are restrictive in terms of teacher initiative and not easily transferable to different cultural or geographic settings.

PW and PLT use both indoor and outdoor settings to enhance learning. These programmes have been used most heavily in the United States and Canada. PW and PLT provide instruction and materials to thousands of teachers and youth leaders. Their strength comes from the orderly process which begins with defining objectives and concludes with evaluating the activities undertaken (Table 4).

1. DEFINE OBJECTIVE
2. PROVIDE BACKGROUND INFORMATION
3. DESCRIBE METHOD
4. MATERIALS
5. DESCRIBE PROCEDURES
6. EXTENSIONS
7. EVALUATION

Table 4 The Processes of PW and PLT

WREEC (1986a, 1986b, 1988)

This process can be helpful in developing programmes locally in developing countries. However, the inflexibility in the contents and activities can be an obstacle if they are transplanted without modification.

7.6.3 The Outcomes

Both PW and PLT set out to achieve in students heightened awareness of the ecological relationships between wildlife, plants and the management methods employed by humans. One of the limitations of both PW and PLT is that the programmes are designed specifically for a North American perspectives. Ham and Castillo (1990) reported that a research programme in rural Honduras elementary schools found several problems in exporting environmental education models such as the PW and PLT. For example, rural Honduran teachers themselves had no more than a high school education, dropout rates are high and teachers teach more than one grade level in the same class. Additionally, these schools have very few teaching resources and physical facilities. The authors suggest that "...U.S. environmental education models and materials may be based on assumptions about U.S. schools that do not hold in developing countries" (Ham *et al* 1990:27).

7.7 EARTH EDUCATION

7.7.1 Philosophy and Concepts

Earth Education is the process of helping people live more harmoniously and joyously with the natural world (Van Matre (1987,1990). Steve Van Matre called it Earth Education because he believed the mission of environmental education had gone astray, not because of a lack of resources but because people did not have a clear vision or direction for environmental education. Hence, Earth Education was offered as an alternative.

One of Van Matre's pioneering and more influential books **Acclimatization** (1972) provides a basis for Earth Education. Acclimatization became a generic term for sensory awareness activities especially in North America and other developed countries. According to Van Matre, many Western people experience the natural world as a "new" place, a place they had not previously experienced deeply and meaningfully.

Steve Van Matre characterises Earth Education as a programme which:

"1. *hooks and pulls the learners in with magical experiences that promise discovery and adventure (the hooker).*
2. *proceeds in an organised way to a definite outcome that the learners can identify beforehand and rewards them when they reach it (the organiser).*
3. *focuses on building good feelings for the earth and its life through lots of rich, firsthand contact (the immerser).*
4. *emphasizes major ecological understandings (at least four must be included: energy flow, cycling, interrelationships, change).*
5. *gets the description of natural processes and places into the concrete through tasks that are both"hands-on" and "minds-on."*
6. *uses good learning techniques in building focused, sequential and cumulative experiences that start where the learners are mentally and end with lots of reinforcement for their new understandings.*
7. *avoids the labelling and quizzing approach in favour of the full participation that comes with more sharing and doing.*
8. *provides immediate application of its messages in the natural world and later in the human community.*
9. *pays attention to the details in every aspect of the learning situation.*
10. *transfers the learning by completing the action back at school and home in specific lifestyles tasks designed for personal behavioural change."*

(Van Matre 1990: 269-270)

These are expressed in the following table (Table 4).

PRINCIPLES OF EARTH EDUCATION

THE "WHYS"

PRESERVING

We believe the earth as we know it is endangered by its human passengers.

NURTURING

We believe people who have broader understandings and deeper feelings for the planet as a vessel of life are wiser and healthier and happier.

TRAINING

We believe earth advocates are needed to serve as environmental teachers and models, and to champion the existence of earth's nonhuman passengers.

THE "WHATS"

UNDERSTANDING

We believe in developing in people a basic comprehension of the major ecological systems and communities of the planet.

FEELING

We believe in instilling in people deep and abiding emotional attachments to the earth and its life.

PROCESSING

We believe in helping people change the way they live on the earth.

THE "WAYS"

STRUCTURING

We believe in building complete programmes with adventuresome, magical learning experiences that focus on specific outcomes.

IMMERSING

We believe in including lots of rich, firsthand contact with the natural world.

RELATING

We believe in providing individuals with time to be alone in natural settings where they can reflect upon all life.

Table 5 Principles of Earth Education

(Van Matre 1990: 87)

Earth Education advocates for urgent preservation of planet earth by educating children about complex ecological processes. However, the notion of preservation in Earth Education has been challenged. For instance, Devlin (1992:5) has suggested that:

> *"To preserve means to save from use. However, it is possible to have conservation as well as use. To conserve means to save for use, or, to use wisely."*

The survival of human beings depends on the use of earth's natural resources. Human beings therefore cannot preserve the earth but can use natural resources wisely. Instead of advocating for preservation of planet earth, Earth Education would be better to emphasize wise use and management of natural resources for the benefit of present generations and posterity.

Ecological understanding is a vehicle for nurturing the interrelationships between human beings and the natural world. Earth Education exists primarily to help young people develop a better sense of their relationship with the natural world. Van Matre (1990:93) states:

> *"In the field of environmental education, the term ecological understanding has been used for years, but it is also ecological feeling that we seek. If ecology is the study of an organism's relations with its surroundings, then for us, a significant part of that relationship must include an affective dimension."*

Earth Education provides a new synthesis between ecological understandings and emotions. The challenge lies in fully grasping our ecological relationship with the earth by using both our head and our heart. Understanding of and feeling for the major ecological systems and communities of the planet are essential elements for attitudinal change. Management is the key to the well being of human and other species on the earth.

7.7.2 Processes

One of the most important components of Earth Education is in the provision of methods of programme building. Earth education sets guidelines based on prescribed programmes with expected outcomes. Participants in the programmes are encouraged by rewards and reinforcements which relate to their own daily lives. However, changes in children's prevailing attitudes are unlikely to occur because their lifestyles are driven by larger cultural values and social norms.

Van Matre (1990: 253) suggests seven steps for building an Earth Education programme (Table 6).

1. Design Criteria
2. Rationale and Purpose
3. Goals and Objectives
4. Hookers, Organisers, and Immersers
5. Vehicles and Activities
6. 3R's: Reward, Reinforce, Relate
7. Transfer Components

Table 6 Programme Building Checklist

In developing countries, many conservation education programmes can be developed based on this checklist. Programmes which target school children require very little or no technical support because they utilize the local environment and resources. However, trained people and specialised knowledge are required in order to run the programmes effectively and efficiently. This would emphasize practical participatory activities involving role play, games and a variety of creative activities.

The model excludes socio-economic, political and social factors which are direct agents for compounding environmental degradation. The basic needs of people which have been ignored should be of high priority in the education programmes for developing countries. For example, Barry Commoner (1973), renowned ecologist, concluded that:

> *"We will not learn to treat the world of nature as it needs to be treated until we learn to treat our fellow human beings as they deserve to be treated in the ancient coin of social justice."*

Commoner thus suggests, that in many parts of the world, conservation of nature is failing because peoples' basic needs are unfulfilled. Educational effort must be cognisant of their needs and realities. This must be a primary consideration in models and programmes of environmental education. If we fail to recognised and address such human related issues, educational efforts will be ineffective.

7.7.3 The Outcomes

Earth Education solely advocates preservation of the planet Earth. It is totally facilitator-centred and learning outcomes are specific with predetermined activities set to meet them. However, living more harmoniously is extremely difficult in already spoiled environments. Additionally, I do not think it is feasible to change people's behaviours and attitudes through a few days of outdoor programmes as Earth Education appears to recommend. Environmental education must be ongoing and target adults as well as children.

7.8 A PROCESS MODEL

7.8.1 Philosophy and Concepts

A Process Model (Scott 1984) for environmental education was developed in New Zealand by the Commission for the Environment (Figure 3). It is intended to be used for school-based environmental education.

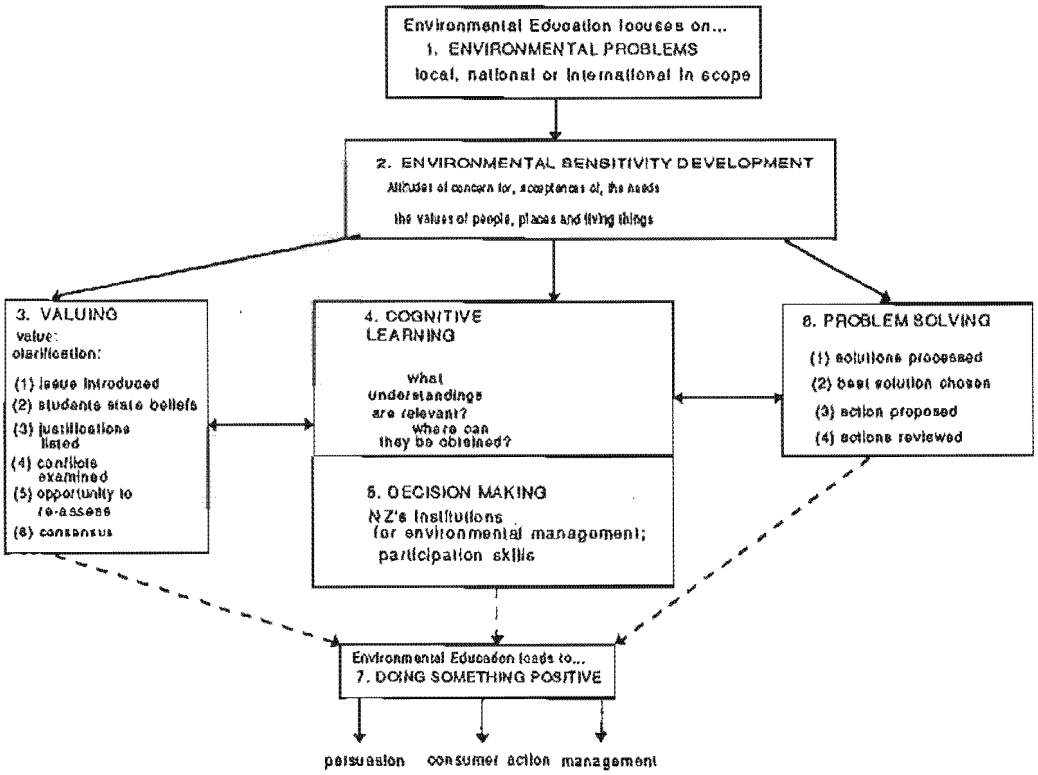


Figure 3 A Process Model for Environmental Education

Adapted from Scott 1984,86

The Process Model is based on the assumption that there is a growing concern for the environment and formal education should reflect this concern. Current environmental problems are the focus in this model, alongside strategies for resolving problems and preventing new ones. "The process model requires a pattern of classroom teaching that is high in process, low in content and involves controversial issues in the classroom" (Scott 1986: 265).

7.8.2 Processes

The model suggests that environmental education begins with the identification of an environmental problem and ends with some positive action which contributes towards resolving the problem. Once the environmental problem has been identified, classroom instruction is based on environmental sensitivity development, values clarification, cognitive learning, problem solving and decision making or action.

The model is dominated by a conventional method of classroom learning about the environment. It does not necessarily provide first-hand experiences or opportunities to explore the real physical world, but is a teacher-led style of education. Teachers in New Zealand (e.g. Smith 1992) believes that this model fails to inform children about a wide range of environmental issues and ecological principles because it focuses on one only environmental issue at a time . The model suggests that the rest of the elements are based on environmental sensitivity development. It would appear that without forming attitudes of environmental sensitivity, other elements cannot stand by themselves.

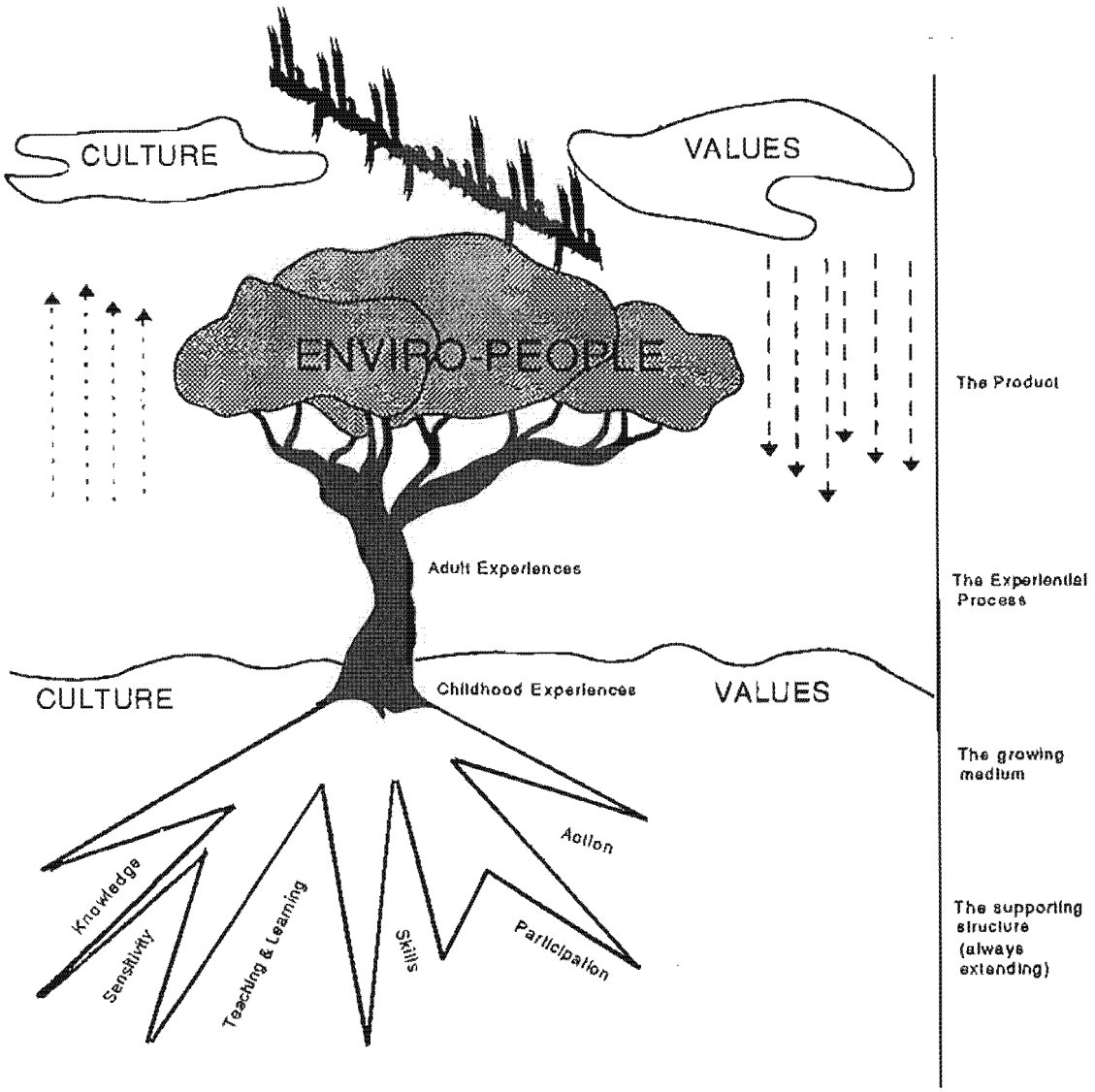
7.8.3 The Outcomes

The Process Model offers a process for taking some positive actions toward the resolution of an environmental issue or problem by persuasion and management. Identification and discussion about the problems will provide an appropriate course of action so that the immediate problems can be resolved and prevent new ones. It gives equal weight to the demands of both conservation and development.

7.9 ENVIRONMENTAL EDUCATION AOTEAROA (EEA)[3]

7.9.1 Philosophy and Concepts

Law and McConnell (1992) have recently developed an Environmental Education Aotearoa Model (Figure 4).



Adapted from Law and McConnell 1992

Figure 4 Environmental Education Aotearoa

The model covers three major themes: interrelationships with the natural environment,

[3] Aotearoa is the Maori name for New Zealand.

human effects upon the environment and resource management. It is based on experiential learning from childhood to adulthood. In this model culture is the 'growing medium' in which environmental education is fostered. Additionally, human values are a vital element in the model which stem from the cultural background and upbringing of individuals.

7.9.2 Processes

In this model, learners are involved in experiential processes by choosing to involve themselves with an ecological process or an environmental problem or an environmental resource. This model requires monitoring and management to provide first-hand experience, enhance cognitive learning and experience different values. The management strategies are essential for resource management. The model provides for learning experiences which develop appreciation for the beauty and fragility of the natural environment and an understanding of interrelationships within and between natural ecosystems and humans. Furthermore, it sets out to develop the skills of critical thinking, inquiry, interaction and communication, evaluation and implementation of programmes.

7.9.3 The Outcomes

The model aims to produce environmentally aware people and ecologically sustainable lifestyles. Such aims, however, are only achievable when all sectors of a population are committed to change their prevailing attitudes. This will be a long-term process and will be difficult to measure.

The model integrates the concepts of other models: the **Process Model** (Scott 1984), Flow Learning Chart from **Sharing the Joy of Nature** (Cornell 1989) and **Earth Education** (Van Matre 1990). The model could work well in New Zealand where many schools are well equipped with trained teachers and resources. Environmental education has been well fostered in a cross-curricula or interdisciplinary fashion in New Zealand. However, the model is yet to be widely tested. The flexibility in choice of topic can lead to a variety of programme outcomes. The model is limited in its use for developing countries since the political, socio-economic and social factors are so different from the mainstream cultures found in New Zealand.

7.10 ACTION RESEARCH AND COMMUNITY PROBLEM-SOLVING (ARCPS) MODEL

7.10.1 Philosophy and Concepts

The Action Research and Community Problem Solving (ARCPS) Model is an approach to environmental education developed at the University of Michigan, USA, in collaboration with the Deakin University, Australia. The ARCPS model for environmental education provides bridges between the natural and social sciences, learning and doing, and the school and the community (Wals, Beringer and Stapp 1990). It aims to link formal education with "real world" issues by the means of a plan of action, implementation and evaluation of classroom actions.

Two different but compatible elements make up the ARCPS model. First, "Action Research" is based on a democratic decision making concept, aimed at using practical problems as a source of ideas and knowledge (Wals *et al* 1990). It is carried out in a series of repeated steps that can be illustrated as a spiral (Wals *et al* 1990: 14).

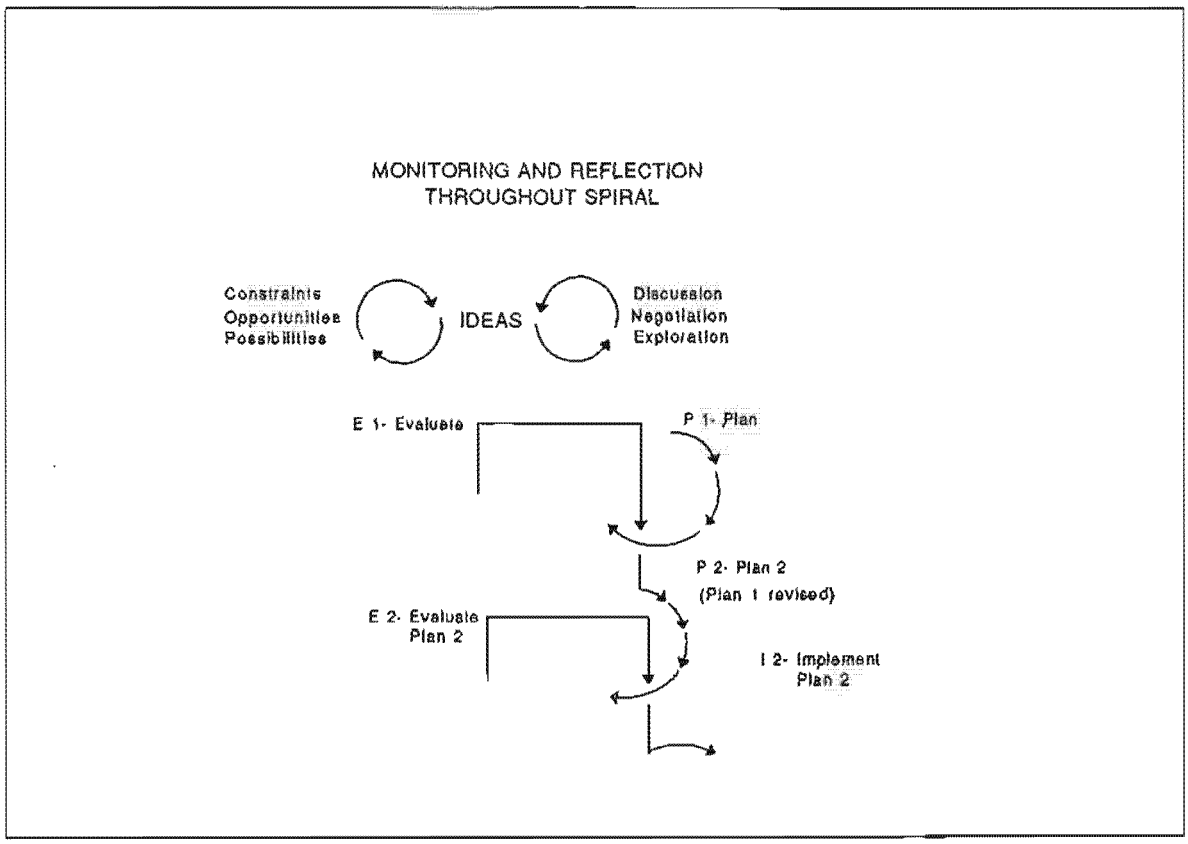


Figure 5 The Action Research Spiral

"Action Research" then, is mediated by a process of critical reflection upon personal practice engaged in by the teacher and students. The process begins when participants (e.g. teachers and students) choose the problems that affect them. By discussing, negotiating and exploring with one another, action research participants isolate one environmental problem for study. They mutually work together to understand the problem, to recognise the possibilities for resolving it, to explore the opportunities for taking action, and to identify the potential constraints that may impede their efforts. As participants begin to generate ideas, they enter the first loop of the spiral. They develop a plan of action (P) that will solve the problem, implement the plan (I) and evaluate (E) its effectiveness. Evaluation of the plan leads to the development of another plan of action, which takes them into the second loop, and the spiral continues. Loops generate more loops until the problem is resolved to the desired level of the participants.

The second element of the ARCPS is Community Problem-Solving. It describes the realm in which action research is employed in the context of environmental education. Environmental problems are identified in co-operation with students and other affected people.

The ARCPS is therefore the consciously directed to areas outside or beyond the classroom. Its goals are presented in Table 7.

To involve students in the planning of their own education, and, as a result, shift more responsibility for education to the students themselves.

To place education in a meaningful context for students.

To provide students with opportunities to apply acquired knowledge in improving a local problem that they themselves have identified and recognised to be important.

To develop skills needed in environmental problem-solving, including working in groups; gathering; analysing, synthesizing, and interpreting information; clarifying norms and values; designing, implementing, and evaluating a plan of action; and joint critical decision making.

To identify and utilize sources of information within the school's own surroundings for educational purposes.

To link disciplines through focusing on a real world issue; giving teachers a chance to support each other in their teaching (and to actually get to know each other a little better).

To substitute feelings of apathy and powerlessness with the feeling that one, be it as an individual or in a group, can indeed make a difference.

Table 7 Goals of ARCPS

(Adapted from Wals *et al* 1990: 15)

7.10.2 Processes

Teachers and students work as co-learners in choosing the appropriate topic, determining the action and evaluating the projects. The project topic is often chosen by walking or touring around the school neighbourhood. The feature of this process is that the problems are chosen in the "real world" rather than in the conventional classroom. Evaluation and modification are ongoing elements in all phases of ARCPS. This reflexive approach is a significant strength of the process.

7.10.3 The Outcomes

The ARCPS model is a systematic approach to learning that aims to equip students with the self-esteem and necessary skills for solving environmental problems. It is planned to facilitate a well-rounded, interdisciplinary, active learning experience that helps people to work co-operatively toward the resolution of an issue of mutual concern. Such a model can contribute to and foster synergic relationships between the objectives of participants.

Examples of this process can be found in USA, Canada, Australia, Germany, Great Britain, Latin America and Africa (Di Chiro and Stapp 1986). Hence, this model contributes a great deal towards understanding the structural needs for environmental/conservation education programmes in developing countries.

7.11 IMPLICATIONS AND ACTIONS: A SYNTHESIS

Although the ideologies of the above models and programmes do not fit specifically the context of developing countries, there are many useful ideas in them that could prove valuable if adapted to local needs and conditions. A good example of such adaption is an effort by teachers and faculty at the National University in Costa Rica to develop environmental learning activities based on Project Wild methodologies that take advantage of the successful teaching strategies but go beyond mere translation of the materials (Ham *et al* 1990). They have designed a new programme based on the framework of Project Wild and implemented it in local schools.

Exported models and programmes of environmental education have been used in many developing countries (e.g., Honduras, Brazil and many African countries). As laudable as these "export" efforts may appear to be, they are based on an underlying assumption that language differences constitute the only obstacle to effective implementation of the models and programmes in exogenous countries. In fact, several factors should be considered besides languages, including the financial and human resources required to implement the models and programmes. Instead of solving the problems, the "export" of models and programmes can lead to undesirable results. For example, Ham *et al* (1990) criticise the adoption of Project Wild in Brazil, where it was used without adaption to local conditions:

> *"It dealt with North American predators such as timber wolves and grizzly bears. The Brazilian children apparently enjoyed learning about these exotic animals but a question was raised concerning whether they should be learning, instead, about the beleaguered predators in their own country that are quickly losing habitat to unplanned development and accelerating deforestation"* (Ham *et al* 1990:27).

I believe that a careful analysis of environmental issues, the notion of sustainable development, the needs of local people, their educational institutions, the cultural and religious values that have traditionally helped them manage their natural resources must be undertaken before adopting foreign environmental education models and programmes. Models and programmes should not only provide philosophical frameworks but also be

"down to earth" and action-oriented with a local, or 'macro' focus. All too often the actions and activities set out in models and programmes are seemingly designed to inform the learner of macro environmental problems and to 'fix up' environmental woes such as the green house effects, or ozone depletion, rather than the immediate problems such as soil erosion, poor quality water supplies or and deforestation which have immediate impact on local people. In developing countries, it is important to develop a plan for environmental education that helps resolve the immediate problems which have direct impact on the sustainability of quality daily life of local people.

Another pitfall of the above models and programmes is that they principally target only the institutions of formal education. Traditionally, education has been focused in schools but environmental education now must occur in places or settings other than the classroom, particularly in countries where many people are illiterate and schools may be absent. Informal education by public participation could be the most effective method of disseminating environmental messages and taking the actions necessary to manage natural resources successfully.

7.12 SUMMARY

This chapter has evaluated a selection of contemporary models and programmes of environmental education with an emphasis on their philosophy and concepts, processes, expected outcomes and implications for developing countries. The Spaceship Earth concept is applicable world wide but is unlikely to be seen as an imperative in developing countries. From this discussion it is evident that a model of environmental education for developing countries cannot simply be transplanted from western nations without considerable modifications. A careful analysis of the needs of local people must be considered before designing and implementing environmental education models and programmes in developing countries.

CHAPTER EIGHT

RESULTS AND DISCUSSION

"We must be clear about the end if we are to develop the means."

Stenhouse, Lawrence 1975

8.1 INTRODUCTION

In this chapter I present the results from the expert survey questionnaire. The quantitative results are reported followed by the qualitative results which were content analysed. They have been drawn together in answer to the research questions and are discussed under theme headings. Interpretations are made in the light of themes raised within the results themselves and the literature reviewed. Environmental education models are discussed along with philosophical approaches and programmes. Some of the direct quotes have been slightly modified for presentation in standard English. I have used the initials of respondents' names as well as identifying numbers to reference quotes.

The rank orders indicated from the respondents in questions one, four and six were re-assigned new values. For example, 1 for most important was re-assigned the highest score of 10 and so on until the least important had the lowest value. The segment sizes are based on the total re-assigned values.

Question seven was analysed through the determination of important environmental education approaches for the identified target groups.

The data presented here represents all the results from the four relevant sections. Each section is presented separately along with the questions for ease of reference.

8.2 SECTION A

This section deals with environmental problems in the country in which you live and the ways in which environmental education can contribute to the resolution of these problems.

Q. 1. In general what are the environmental problems in your country? Please list the problems and then rank them from most important to least important (1= most important).

Q. 2. What are the causes of the above environmental problems? Please list the most significant causes.

Q.3 . What do you see as the specific role that environmental education has in helping to resolve these environmental problems?

Q. 4. In your opinion, what might the outcomes of environmental education be? Please rank the outcomes from most important to least important (1= most important).

8.2.1 Environmental Problems

This study shows that in the opinions of selected environmental education experts, the natural resource bases of both developed and developing countries are deteriorating at an alarming rate. Environmental problems were identified for developed and developing countries respectively (Table 8). The most important problems from both categories are illustrated in Figure 6.

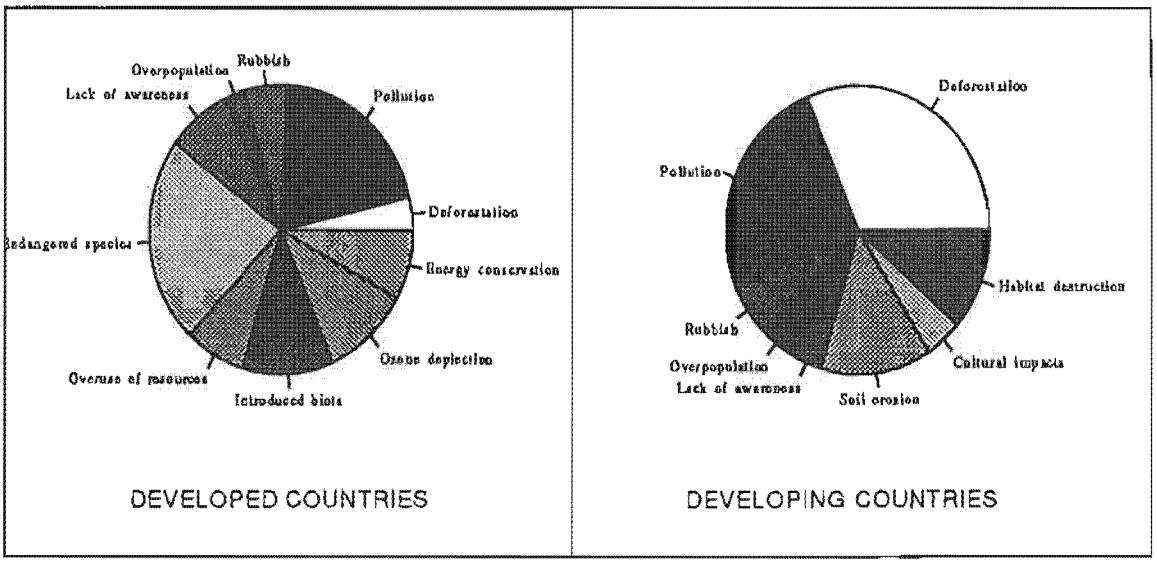


Figure 6 Environmental Problems Identified in Developed and Developing Countries

Some environmental problems are similar in developed and developing countries, but the magnitude of the problems differ. The panel of experts from developed countries showed more concern about depleted biological diversity, pollution (air, water and land) and introduced biota (especially in New Zealand and USA). One of the experts' view of the prevailing "attitude" towards environment was that:

> *"lack of ecological awareness, and belief that economic growth and resource exploitation can continue since scientific and technological expertise provide [the] foundation for economic growth and therefore improve the quality of life"* (M.O. 11).

Rank	Developed Countries	Rank	Developing Countries
1	Endangered Species	1	Deforestation
2	Pollution	2	Pollution
3	Introduced biota	3	Soil erosion
4	Ozone depletion	4	Habitat destruction
5	Energy conservation	5	Rubbish
	Lack of awareness	6	Overpopulation
6	Overuse of resources		Cultural impacts
7	Rubbish	7	Lack of awareness
8	Deforestation		
9	Overpopulation		

Table 8 Environmental Problems Identified in Developed and Developing Countries

Additionally, ozone depletion, lack of energy conservation, lack of environmental awareness, over-exploitation of resources, inadequate waste disposal and low government commitment to environmental management were seen as lesser problems.

The most important environmental problems in developing countries were identified as pollution, deforestation, soil erosion, habitat destruction, and refuse accumulation. Overpopulation, diminution of traditional cultural values, lack of public environmental awareness, desertification, the effects of slash and burn agricultural practices and loss of water through deforestation were reported to be lesser problems.

Apart from soil erosion, there is very little correspondence between the two groups in their definition of problems. The clear implications of this for conservation education/environmental education will be developed during the discussion which follows.

8.2.2 Causes of the Problems

A wide range of causes were reported for the environmental problems identified. In many countries such as New Zealand, United Kingdom, United States and Canada in particular, unsustainable economic growth and "high" standards of living are reported to have led to the deterioration of the natural environment.

> *"There is an unwillingness among individuals to give up 'high' standard of living. They will continue until they are forced to do so by changing [their] economic circumstances"* (B.A. 1).

Respondents in this study also suggest that the prevailing Western 'technocratic' approach to life emphasises human dominance over nature rather than seeing humans as an integral part of the environment.

> *"Historical factors and technology allow Western countries to expand themselves beyond the environmental limitations of more traditional societies. A traditional society knows its environmental limitations and so lives in balance all the time. A Western society forgets, overuses resources, and creates pollution"* (G.C. 25).

The panel of experts from developing countries such as Nepal, Bhutan, Fiji and Peru suggest that poverty is an 'agent' for the overuse of natural resources. For example, many rural people must utilise forest products to meet their cooking, heating and lighting requirements. Additional factors include a lack of alternatives or 'cultural reluctance' to use other than natural fuelwood, illiteracy, uncontrolled growth of tourism and unplanned urban and rural development.

Lack of knowledge of cause and effect is another reason for environmental problems. People lack appropriate information, and conservation agencies often fail to supply information about the causes of problems. As a result local people are often ignorant about their effect on the environment or on their own lives.

> *"Often people are told something is wrong or [is] a problem without being told why they should not do something; unless people understand fully how something will negatively affect them, nothing will change"* (D.F. 24).

The key to dealing with these problems appears to lie in the social, cultural and economic factors which influence the way people interact with their environment. Additionally, the practice of 'dilution as solution to pollution' has accelerated a wide range of environmental problems which allowed for:

"... increasing recreational, tourism, hydro and forestry development of wildland areas...
... weak implementation/enforcement of anti-pollution, regulations and...
... agricultural practices that are detrimental to the maintenance of long term soil productivity and water quality" (W.L. 10).

The study has revealed that neglect of traditional knowledge and conservation skills has also been at the roots of the environmental crisis in developing countries. Ignorance of such knowledge and skills hampers the practice of conservation of natural resources because once change has been accelerated, traditional knowledge can no longer compete or reverse the new condition.

"Native knowledge has been neglected, as a result new [ideas] has meant animals and crops being introduced to very fragile environments...." (M.T. 20)

Until now, a narrow view was considered in solving environmental problems. One expert opinion was that:

"Many environmental issues are managed in isolation without a more holistic approach that focuses on all things being interrelated and inter-dependent. An environmental issue is also a human health issue. All issues have human management consequences and or causes. To find long term sustainable solutions to problems, there needs to be inter-agency co-operation; information sharing from the grassroots level to the international level. Environmental problems are not confined by any of the geographic boundaries that human beings have established" (D. F. 24).

8.2.3 The Role of Environmental Education

Expectations of the possible outcomes from environmental education programmes are suggested by many respondents. These include:

"... developing appreciation of Earth and the global habitat through theoretical and experiential education;*
** revealing our individual impact on the environment*
** showing how we can reduce (or even reverse) that impact in our own day-to-day actions*
** conveying understanding of processes and mechanisms in the environment, to better enable appreciation and understanding of, and hence remedies for, the problems"* (G.B. 6).

A clear outcome of this study is that there is no single role for environmental education in the resolution of environmental problems. Education is a slow process. It has as a major motivation, the expectation of future benefits. Education should lead to changes in

human behaviour to minimise future adverse impacts on environments. There is little, if any, evidence that this result will necessarily occur, or has occurred.

> *"Environmental education is essential to raise the level of awareness of all target groups. Increasing understanding should then lead to changes in individuals, community, and industrial behaviour...."* (M.B. 3)

Results from the survey indicate that environmental education should encourage groups and individuals to take action in resolving environmental issues because it helps people to know the problem, to identify the key issues and act appropriately. Education is viewed as the key to conservation and in understanding long term social and ecological consequences of human interrelationships in our planet.

> *"Once people have knowledge and awareness of the inter-connectivity of all things (physical, human etc.) then they should be aware of environmental problems (but other factors are often more important e.g. economic gain). So no matter how aware they are, it does not mean good development in practice"* (J.B. 21).

Environmental education, according to the panel surveyed, should be integrated into all forms of learning. It should not be just a 'stand alone' subject but should permeate everyday life.

> *"It should ideally be part of everyday life from childhood to adulthood, helping children developing conservation skills while showing adults what damage their activities are causing to the environment and what role they can play in managing their environment in sustainable ways"* (B.P. 23).

Environmental education will help individuals face the major issues which are the causes of most environmental problems through human activities and their need for resources. Two of the expert panel commented that:

> *"It will also develop awareness, knowledge and understanding of the environment, positive and balanced attitudes towards it and skills which will enable people to participate in determining the quality of the environment"* (B.L. and B.M. 28).

The specific roles of environmental education which were reported in this study have been regrouped and are presented in Table 9.

A. INFLUENCING INDIVIDUALS	
1.	*Raising awareness of impacts of human behaviour on ecosystems*
2.	*Encouraging individuals to modify personal behaviour*
3.	*Developing an understanding of environmental problems and testing possible solutions*
4.	*Giving young people practice in focusing on issues, forming opinions, then acting appropriately*
5.	*Developing problem solving skills*
6.	*Developing appreciation of earth and the global habitat through theoretical and experiential education*
B. INFLUENCING SOCIAL GROUPS	
7.	*Teaching methods of resolving issues*
8.	*Promoting self help options to the communities affected*
9.	*Facilitating action through governments, non-governmental organisations and agencies and communities*
10.	*Providing opportunities to participate in social and environmental decision making*
C. INFLUENCING CULTURAL IDEOLOGIES	
11.	*Developing and supporting appropriate policies*
12.	*Promoting sustainable living*
13.	*Exposing alternatives for natural resource use*
14.	*Developing environmental literacy*
15.	*Teaching conflict resolution*

Table 9 Roles of Environmental Education

8.2.4 The Outcomes of Environmental Education

Many panellists suggested similar outcomes for environmental education. These outcomes reflect the goals, concepts and processes of individual environmental education programmes and the extent to which programmes attempt to modify individual and community behaviour.

Nevertheless, all outcomes have significant implications for improving the state of the environment. According to the experts surveyed, the most important outcomes of environmental education were changing the attitudes and behaviours of people, raising environmental awareness, practical actions towards resolving environmental problems and

increasing people's understanding of ecological concepts.

> *"Effective environmental education should lead to development of positive attitudes towards environment and a new philosophy/ethic which minimises negative impact on environment and encourages positive action to improve it"* (M.B. 3).

Additionally, improvement in the quality of environment, sustainable resource management, appreciation of nature, developing conservation skills, disseminating information about environment, developing a conservation ethic and improving the living standard (quality of life) of people were reported to be less important outcomes. However, 'conservation skills', 'resource management', and 'improve environment' are action oriented outcomes are may just as readily be considered sub-sets of the action segment rather than less important outcomes.

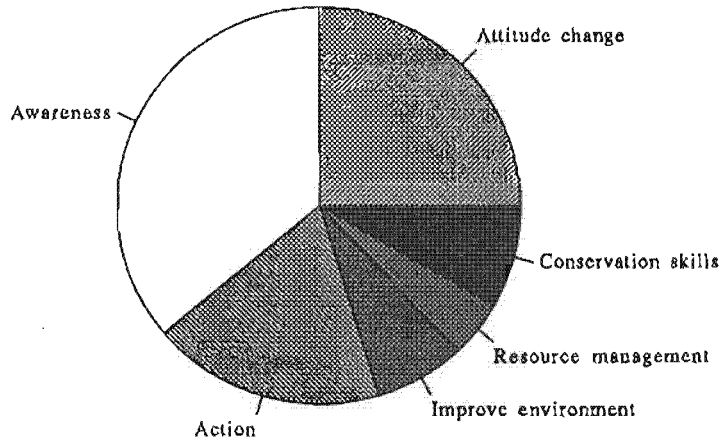


Figure 7 The Outcomes of Environmental Education

The outcomes are illustrated in Figure 7. The segment size is based on the size of the total rank score for each outcome. Items of similar connotation have been collated under a

common heading, for example, appreciation of nature and distribution of information about environment are included under raising environmental 'awareness'. Additionally, developing a conservation ethic is included under the heading 'conservation skills' and improving the living standard (quality of life) of people is inserted under the heading 'improvement environment'.

One view of the outcomes of environmental education was that they:

> *"... should lead to changes in attitudes, behaviour and actions at [the] local level which protect the environment and support conservation initiatives by cultural institutions"*(M.E. 17).

8.3 SECTION B

This section deals with environmental education in developing countries. If you have not had first-hand experience in developing countries please answer the questions based on your general experience with environmental education.

Q. 5. Please identify target groups (in order of priority) which you think may benefit from an environmental education programme in developing countries. Please state your reasons for your order of priority.

Q. 6. Which of the following do you think are the most important approaches for environmental education in developing countries? Please rank them from most important to least important (1= most important).

Q. 7. Which of the above environmental education approaches can best influence the target groups you have identified? Please write the target groups on the left and the letter corresponding to approaches in Q. 6 in the brackets on the right.

8.3.1 Target Groups and Approaches for Environmental Education

A wide range of target groups for environmental education have been identified from this study. These are listed in order of priority in Table 10. Environmental education needs to address all target groups because they can all contribute in some positive way to the resolution of environmental problems. Some believe that the highest levels of political powers are the priority target and a trickle down effect will follow:

> *"The key is <u>dissemination</u> of knowledge/education... by making changes at <u>higher</u> levels, dissemination can occur through a pyramidal system... filtering down to the*

public. The people in power also have the ability to impose positive measures or encourage change through tax incentives...." (P.S. 2)

However, it is also found that the priority order of target groups can be varied, for example, educating those with greatest influence (the voting public) who can then influence the politicians and leaders. One of the respondents commented that:

> *"Politicians react to public pressures and public pressure comes from an informed and legally active public. Thus politicians needs to know what to do".*

> *"... I consider environmental education to be pasture and livestock management training for farmers and herders, [or] design alternatives identification for engineers who build roads and hydro-electric facilities. Environmental education has come to be a topic relevant to the urban, middle-class, educated person whose basic human needs are met and therefore the luxury to address their higher human needs (refer to Maslow's hierarchy of human needs). For most people you need to teach the practical aspects not the theories"* (W.L. 10).

The approaches which can benefit different target groups as identified in this study are presented in Table 10 below.

TARGET GROUPS	REASONS	POSSIBLE EE APPROACHES
Priority # 1 Politicians Decision makers Policy makers	* Education concerning the costs of environmental damages vs the costs of avoiding them * By making changes at higher levels, dissemination of knowledge can occur through a pyramidal system: filtering down to the public * The people in power also have ability to formulate policies, legislation, change laws and impose positive measures (e.g. tax schemes) * They need to understand why they act as they do as well as provide them information * Conservation efforts will become a way of life only if we get support from politicians and governments and agencies	* International and regional co-operation in sharing information * Access to information * Informal education * Workplace EE plans for employees

Priority # 2 Pre-school children School children Students	* Training future citizens/leaders * Need to instil a new approach from the earliest stages of education * Largest group of young population that is easily accessible via formal education * It is difficult to change established adult values. Emphasis on the young so they grow up with an appropriate environmental ethic	* EE integrated into general school/ university education * Informal educational opportunities with incentives for young people e.g. award schemes * Supply appropriate teaching materials
Priority # 3 Community leaders Religious leaders	* They often have environmental knowledge and ability to share it * Many people will copy those who they respect	* Informal education to local leaders * Specialist training * International and regional co-operation in sharing information
Priority # 4 Parents Farmers Landowners	* They will pass it on to families and children and can lobby government at all levels to provide practical help in the field that is essential for change * Need to recognise the need for sustainability * Technical livestock and agricultural management programmes that first meet their needs while providing better soil and water conservation * They are the custodians of forests resources	* Informal education to parents, farmers etc. * Access to information * Technical and vocational education
Priority # 5 Teachers Educators	* Inform public, children, informal education instructors	* Supply appropriate teaching materials * Training of personnel * Access to information
Priority # 6 Industrialists Business managers	* To inject real sustainability from the 'top down' * They have strong influence on politicians * Commercial practices are causing serious environmental problems	* Informal education to industrialists, business managers etc. * Training of personnel * International and regional co-operation in sharing information
Priority # 7 Aid agencies Development specialists Non-governmental organisations Volunteers	* To raise awareness of the affects of development programmes and to ensure that environmental concerns as addressed * Development programmes are in a good position to become involved with EE, especially since they are usually involved with community-based projects	* Training of personnel * International and regional co-operation in sharing information * Access to information
Priority # 8 Journalists (media)	* They have strong influence on decision makers and public opinions	* Access to information * Informal education to journalists * Training of personnel
Priority # 9 Women	* Women educate all children * Women do most agricultural work, development projects and health associated management	* Informal education to women * Access to information * Supply appropriate teaching materials

Priority # 10 Domestic tourists International tourists (trekkers)	* To minimise the undesirable impacts on the natural environment * To improve resource condition of destination areas	* Access to information * Informal education to tourists * International and regional co-operation in sharing information
Priority # 11 Natural resource practitioners	* For better utilisation of the existing human resources	* Specialist training * International and regional co-operation in sharing information

Table 10 Target Groups and Approaches for Environmental Education

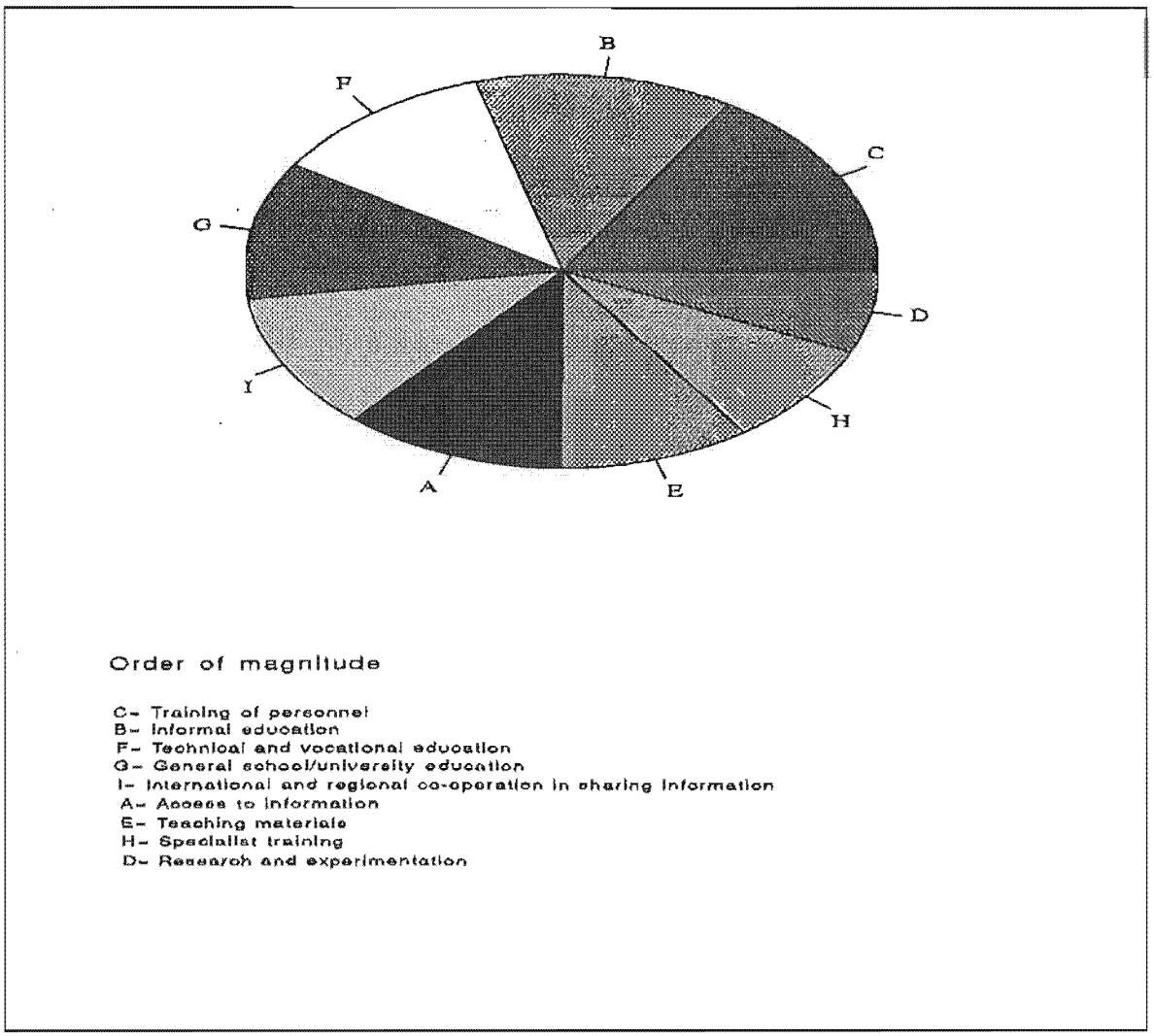


Figure 8 Approaches for Environmental Education

The panellists suggested that the approaches given in the Table 10 will be the most influential forms of environmental education for the particular given target group. One of the clearest themes that emerged from this study is that a combination of informal education, formal education and international and regional co-operation is the best strategy for comprehensive environmental education (see Figure 8 for comparison of environmental education approaches). International and regional co-operation is particularly important for sharing information and developing appropriate environmental policies among countries and regions. Developing countries should benefit from increased international and regional co-operation in environmental education by resolving regional environmental problems.

Another outcome from this study was that the use of local environmental problems and issues is vital for teaching purposes. Agencies and educators should spend relatively less time and resources in developing teaching materials, specialist training, experimentation and research activities compared with simply making things work at the local level. It is not that teaching materials, specialist training, research and experimentation are not desirable, but they are of lower priority.

Additionally, training of personnel was frequently mentioned. This is because there are shortages of qualified environmental education teachers at all levels in developing countries. Training of teachers is therefore imperative in the nature and communication of environmental education especially in interdisciplinary situations. The integration of environmental education into technical and vocational education is essential in order to provide environmental knowledge to technicians so that they can help people at the grassroots level.

As these results indicate, informal education is one of the most important approaches for development of genuine 'environmental literacy'. There is no "single most important" approach, but several equally important approaches. Media related education programmes are very effective for the dissemination of environmental messages across the whole society (Smith 1992). Efforts to facilitate exchanges of information and dissemination of new knowledge about the environment should be promoted.

It is evident from these results that environmental education approaches must suit the needs

of specific target groups. Environmental programmes are unlikely to be successful if the approaches used are inappropriate.

8.4 SECTION C

This section deals with the environmental education models and processes which have been applied both in developed and developing countries.

Q. 8. Which environmental education model(s) (e.g. Spaceship Earth Model) are used in your country and/ or in a developing country with which you are familiar? Please briefly describe and comment on the model(s) and name the country to which they relate. (You may not be able to identify a model as such, but a description of approaches you have encountered would be helpful).

Q. 9. What are the essential elements of the model(s) that are effective frameworks for environmental education in the countries above?

Q. 10. In your view what are the strengths and weaknesses of the model(s)?

8.4.1 Models and Approaches for Environmental Education

Data gathered in this study reveal that environmental education occurs via formal and informal education systems. The development of models has generally been restricted to formal education. Not all philosophies underlying environmental education are expressed as models *per se* but may be described as 'processes' or 'approaches'. In this section these 'approaches' are recognised as important philosophies and are included alongside the models.

Hence, not all the experts believe in the use of models for environmental education or they describe their work differently. For example, one expert has commented that:

> *"the Pacific region does not work particularly to a model. The approaches vary and are often ad hoc depending on what expertise is around and how much money is available. It is romantic to imagine that countries have well defined approaches"* (J.B. 21).

A range of models and approaches have been used in environmental education. As these results indicate, most teachers and educators mix their methods including those based on indigenous ideas to achieve environmental education goals. Few teachers rigorously apply any one model alone in New Zealand, for example. This reflects the cross curricula nature of environmental education which results from relatively high levels of teaching

competence and the wide range of resource materials available.

Environmental education models facilitate conservation education in developing countries by highlighting the stages and processes required for successful implementation of programmes. Conservation problems are so severe, for instance, 96 per cent of Nepal's energy comes from forests (ACAP 1988) and local people persist in cutting down trees since there are no viable and affordable alternative sources of energy. The consequences are degradation of the environment and disruption to individuals' quality of life. Therefore, a provision of alternative fuels is vital before initiating any conservation programmes. Under such circumstances, conservation activities such as reforestation/afforestation in the villages must be carried out in association with environmental education programmes. Local people also must accept interim use of alternative fuels so that the pressure on cutting down of forests for fuelwood can be reduced.

Many experts articulated the approaches which they have used in their field, but few were able to clearly describe specific models for environmental education. The models and philosophical approaches that have been identified by the panel of experts are listed in Table 11 with their elements, strengths and weaknesses.

MODELS AND APPROACHES	ELEMENTS	STRENGTHS	WEAKNESSES
Earth Education (USA, UK, NZ) (Steve Van Matre) (A Copyright protected programme with an International market driven infrastructure)	* sensory awareness * concept development * personal reflection * fun * attitude change * organised activities	* little or no technical support necessary- uses local environment	* need extensive training in the specialised techniques used in the programmes
Scott Model (New Zealand Association of EE) (Developed and applied in New Zealand)	* problem identification * analysis and identification of potential solutions * values clarification	* improve students' communication skills * positive attitudes toward environment * everyone acts as watchdogs	* focuses on a single issue or a problem * too narrow in terms of the needs for developing countries

Participatory Interdisciplinary and Holistic Model (Developed by Shailendra B. Thakali and limited trial in the Annapurna Conservation Area, Nepal)	* awareness * understanding and appreciation * sustainable actions * grassroots approach	* participating * multidisciplinary * action oriented * target group based	* difficult to coordinate * objectives not well defined * difficult to quantify and evaluate short term results * lack of trained staff * too broad
Development Education Model (trialled in South Africa)	* aimed at EE and sustainable development * aimed at community participation	* promotes sustainable development	* long term processes and heavily demanding in terms of numbers of teachers
EE Aotearoa (N.Z.) (A model being developed in N.Z. by Barry Law and Bert McConnell)	* three major themes: ecology, human impacts and resource management	* simple framework * flexible choice of topic * considers cultural values * experiential process * learning outcomes * educational basis building on experiences from early childhood to adulthood	* requires some training in activities and knowledge of framework

Table 11 Models and Approaches for Environmental Education

As this analysis indicates, the main forces driving environmental education are scientific technique, ecological knowledge and growing environmental concepts. Environmental education models developed for the developing countries must reflect an understanding of basic human needs and realities.

> *"Environmental education models should be practical, rather than academic. They should integrate the needs and realities of developing countries. These should be illustrated through practical nature conservation activities"* (B.U. 15).

Environmental education models should embrace the cultural values of local people because these values are important from the perspective of nature conservation.

> *"Models developed for the developing countries must incorporate those things which bring the local people into the mainstream of conservation. The people should feel that environmental education is relevant to them"* (C.G. 14).

Additional programmes which are based neither on particular philosophies nor models, but

which are valuable approaches to environmental education have also been identified and are listed in Table 12 with their elements, strengths and weaknesses.

PROGRAMMES	ELEMENTS	STRENGTHS	WEAKNESSES
Wildlife Club/Nature Awareness (Kenya, Zambia, India, U.K.)	* clear set of objectives * means of communication * practical activities * co-operation with other organisations	* raise awareness and develops enthusiasm amongst important target groups * can often work within existing educational structure * attracts enthusiastic and knowledgeable teachers	* usually extremely difficult to make self sustaining * not always easy to locate appropriate staff
Technical support services (U.K. and India)	* building of suitable technical facilities * experience of EE in the field * appropriate technical resources (library, photographic, design, printing)	* very valuable catalytic support services able to provide training, advice, materials and information	* very difficult to locate adequate funding for core operations to allow 'free/low cost' services to developing countries
Visual and graphic presentation (Peru)	* builds on the traditions, myths and legends of local people * programmes are visual based, colourful and entertaining * active participation including community leaders	* strength the identity of local people * reevaluate the original knowledge of indigenous people * helps to solve socio-cultural problems besides environmental ones	* frequent changes in public managers, politicians and authorities in developing countries prevent continuous development and implementation of programmes

Table 12 Programmes of Environmental Education

The success of the programmes lie with focusing on the people, the users of resources and in trying to work within a framework appropriate to the people. One of the respondents suggested that:

> *"... environmental education must address directly and specifically the most urgent environmental problems that the country is facing...."* (M.T. 20)

8.5 Section D

The purpose of this section is to get your views on the involvement of local people in developing countries in the planning of environmental education for resource management.

Q. 11. Please comment on the importance of involving local people in the planning of environmental education and the strategies you have encountered or heard about which would help ensure that this takes place.

Q. 12. If local people are incorporated into environmental education planning how and at what stages of the planning should they be involved?

Q. 13. In what ways can cultural values (e.g. religious rituals, spiritual beliefs and traditional conservation skills) be incorporated into environmental education (please give specific examples where possible)?

Q. 14. Given your response to Q. 13 what methods are best used to foster inclusion of cultural values in local environmental education programmes?

Q. 15. In your opinion, what incentives are effective in encouraging local people to participate in environmental education programmes in developing countries? Please list the types of incentives (if any).

8.5.1 Local People Participation in Environmental Education Planning

The panel of experts have unanimously supported the importance of the involvement of local people at the grassroots level in environmental education for conservation and management of natural resources. It is essential that a diversity of local groups are involved because the strength and credibility of educational programmes depends on the involvement of local people.

> *"It is essential that local people are involved in the planning of environmental education. It is not enough just to include any citizen of the country, each environmental education project must include members of its intended target group, and should preferably cover the full diversity of the target group, for example, male, female, indigenous, rural, urban etc)"* (B.A. 1).

> *"At a local level it is my experience that environmental education works best when the whole community is involved. There must be national policies which support local and regional initiatives in environmental protection. While education is a cornerstone of conservation, it does not stand alone and must be an integral part of a "whole" programme designed to not only raise awareness but also provide positive results for the communities involved"* (M.E. 17).

The programme should be based on local understanding of the environment and on local initiatives for actions because they are the recipients of the consequences; good or bad. In the past, the involvement of local people has been neglected. Indeed, they have been often targeted as the 'culprits' for environmental problems. It is now recognised that their active participation in environmental education planning and implementation is vital for determining local knowledge and attitudes, for identifying problems as well as solutions, and for establishing rapport with local communities.

Some successful examples of local participation in conservation projects were reported by respondents. For example, "community conservation" projects such as the Masaimara Wildlife Reserve scheme in Kenya and the Annapurna Conservation Area Project in Nepal where local people have initiated conservation and development programmes. These programmes are durable and effective.

Some respondents also expressed concern about the effectiveness of local involvement in conservation and resource management, as the following excerpt indicates:

> *"... how can we expect local people to [value] environmental care, in those countries where their land and resources are subjected to externally imposed exploitation by international companies and agencies? For example, deforestation and logging in tropical countries is a major concern where the companies and agencies are creating severe environmental problems. It is of little avail to expect the fish in the tank to look after their own water, when it is being robbed or contaminated from outside"* (G.B. 6).

According to the survey, education experts and aid agencies from developed countries have often approached environmental education with an arrogant attitude. For example, they predetermine the goals and objectives of programmes and prepare plans of action without consultation with local people. It is therefore crucial that:

> *"... local people must be involved because they must perceive a benefit from whatever is promoted. To do this, we would need some idea of what they want or need. There have been too many situations where outside people come in with an attitude of "do what we say because we know best". Often their solutions turn out to be problems because of lack of knowledge of local conditions"* (G.C. 25).

The strength of community involvement in environmental education should be recognised and the profile and status of community leaders used to mobilise the whole community.

> *"In developing countries where people are still largely working on the land, it is these people who know the land best, it is these people who must put into practice any new ways or different ways of using the land, it is these people who must understand and support and implement any way of managing the land, it is these people who best know the best way of communicating with their peers. These people also best know what their problems are and probably best know the solutions to the problems. Without them, anything imposed on them is unlikely to be successful"* (D.F. 24).

The challenge facing resource managers and environmental educators is to persuade the

local people about the benefits of conservation in a social, economic and environmental sense. It is imperative to incorporate their traditional conservation knowledge which might be a successful tool for educational programmes.

> *"Traditional knowledge and customs need to be clearly understood as part of the environmental education process. For example, decisions on resource allocation in Papua New Guinea are made based on tradition and custom rather than the formalities of legally binding agreements"* (B.J. 18).

Environmental education should be stressed in local ceremonies to build stories about resource use with popular characters and music. Educators must be from the communities in which the programme will be offered. For example, an experience from Zimbabwe has shown that the use of centuries old 'handed down' experiences provided useful information for environmental education.

> *"... we taught school children in rural areas to provide information and we learnt of 'old' solutions to many problems gripping today's experts. There is a world of information in the generation of grandparents who now feel what they have is not needed because it is not coming out of a book. This is a waste of centuries of experience"* (C.T. 21).

Environmental education should be based on the daily life situations of those being educated. It should be beneficial for local people in both the social and economic sense and should be long term and locally taught.

> *"Environmental education should reflect the daily life of the local people and should help generate income for them to continue the programme on a sustainable basis"* (U.B. 16).

A wide range of strategies for local involvement have been revealed by this study. For example, most rural communities in developing countries are preoccupied with the seasonal imperatives of working their land. Therefore, timing is very important as people need to be involved in environmental education during the agricultural "off-seasons". Another successful example of involvement came from the Solomon Islands. Village groups have been encouraged to establish a protected areas network throughout the Island chain and then at each area prepare a management plan to guide the use and management of their resources. This is a 'self help' environmental and conservation programmes that allows the use and protection of their resources sustainably and prudently.

Local people must be incorporated at all stages of the environmental education planning process (Figure 9) in order to minimise doubt and misinformation.

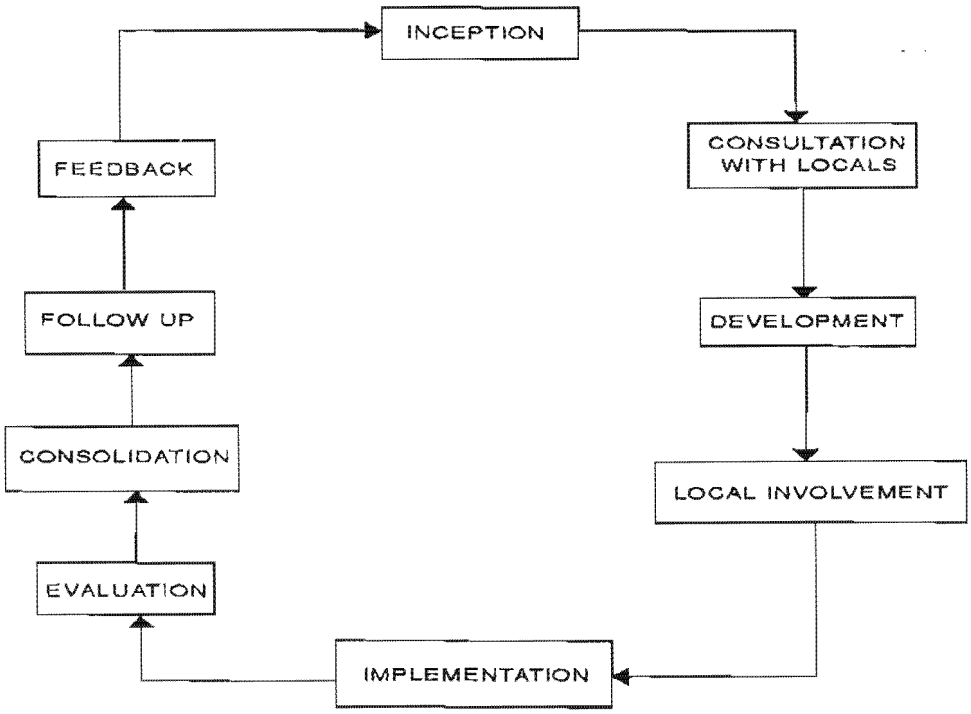


Figure 9 An Environmental Education Planning Process Based on Expert Responses

The question of "how" local people will be involved will depend on the nature of the target audience and the goals of the programme.

> *"How local people are involved will depend very much on the social structures and traditional methods of communication used in the villages. This is why it is very important that environmental education people are skilled in communicating and ensure that they have local knowledge for the particular area they are working in"* (B.A. 1).

This study indicates a clear agreement among panellists of the essential need to establish a close co-operation with local people at the outset, and before any serious planning takes

place. Every effort should be made to involve key people in the community, including village leaders, religious leaders and teachers. This may involve adopting a process which is unconventional in the western sense, to allow for different values and customs. Hence, dialogue, practical workshops, brain storming and establishing a task force are essential elements for preparation of a plan of action. Once the programmes are in place, continued monitoring of community needs through surveys and observations is vital. The effectiveness and changes (if required) to the programmes must be monitored through formal dialogue with the communities.

8.5.2 Cultural Values and Environmental Education

Indigenous cultural perspectives of natural and modified environments must be considered in the planning of environmental education programmes.

> *"... cultural and spiritual values are of absolutely central importance to environmental education, [to insure] development of [a] genuine Earthcare ethic, which is part of a wider perspective: philosophically, ... of the Earth as part of the breadth of creation and... of ourselves as part of a time line of people"* (G.B. 6).

In some cultures, religion has a more important role in nature conservation than others. Trees are, in Buddhist society for example, associated with the birth of the Buddha who advocated the planting of trees (Schumacher 1973). In Bhutan, Nepal and Thailand Buddhism is extremely influential and historically beneficial in nature conservation programmes, where as Christianity in Western cultures has a relatively small overt role currently, but has been 'blamed' as the root cause of environmental crises[4]. Existing cultural values need to be understood on a comparative basis and their strengths in local areas used to advantage.

> *"Cultural values can best be incorporated into environmental education by relating environmental factors to people's needs. For example, bamboo is essential for performing many important Hindu rites such as weddings, sacred ceremonies and funerals"* (B.P. 23).

Thus competing uses of bamboo can be placed in perspective by relating its importance to cultural and religious values. Conservation becomes meaningful if these values are incorporated into educational programmes. An expert commented that:

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[4] White (1967) and Moncrief (1970) argued that Christianity is one of many cultural factors contributing to the environmental crisis in the Western world.

> *"Most programmes cannot succeed in any enduring way unless cultural traditions and knowledge are incorporated into the programme conception, design, and operation"* (M.M. 26).

Some of the panellists have expressed that the ways in which cultural values can be incorporated into environmental education depends on local circumstances. There are cases where cultural values are already being incorporated into nature conservation programmes.

> *"Where cultural beliefs that work to sustain or enhance the environment are already in place, these should be encouraged. This will only work if the people understand why these beliefs/rituals are being favoured"* (P.S. 2).

The establishment of protected areas such as Tongariro National Park in New Zealand, where the sacred nature of these mountains to the Ngati Tuwharetoa people led to the gift of the peaks in 1887 as the country's first national park, carries a strong environmental education message. The significance in Hawaii of the volcano goddess, Pele, has been used to encourage respect for Hawaii Volcanoes National Park, and has also been used to keep some areas free from visitors. Cultural values/beliefs are an integral part of environmental education in Kakadu and Waru National Parks of Australia where Aboriginal people are involved. Additionally, sacred mountains forbidden to climbers in Sagarmatha National Park of Nepal promote respect for nature. Maintaining religious values is particularly important in traditional societies because:

> *"... religious rituals, cultural beliefs and traditions [bring] people together... This will provide opportunities to understand the fabric of the society"* (C.G. 14).

Cultural values can be incorporated into environmental education programmes through use of religious centres and community halls as meeting places, inviting religious leaders into seminars and press conferences, mass meetings and festivals, and consulting appropriately at all steps in the process. This means that throughout the planning process, it is essential that environmental education planners recognise the centrality of culture. A panellist offers the following check points:

> *"... recognise sense and significance of other cultures*
> *acknowledge the rights of these (usually indigenous) people to retain and develop their cultural values*
> *... show willingness to give these other values a clear place in environmental education programmes*
> *... share power and resources in environmental education programmes...."* (B.A. 1)

8.5.3 Incentives for Environmental Education

The panellists have strongly expressed the need of incentives for effective environmental education programmes. Incentives are very effective in encouraging local people to participate in environmental education programmes in developing countries. An expert stressed that:

> *"... the greatest incentive would be for their participation to result in tangible benefits for their communities, for example, better education, improved health, water supplies, fuel etc"* (M.B. 3).

Incentives chosen will be dependent on the needs of the target groups and their ability to participate in a programme. The programme must benefit them economically and culturally. The incentives must be based on communal benefits. From experience, one of the experts found that:

> *"... the type of incentives which work best are those [which] show a positive return to the community for the effort involved. I do not support straight financial handouts however, payment for work or involvement in a programme may be appropriate"* (M.E. 17).

However, one expert disagreed, stating:

> *"I don't believe in giving incentives to raise participation in environmental education programme. I rather believe in providing atmosphere and opportunities where they can be incorporated into our programme. We should emphasize that the programme is for them, not to fulfil our quest of making it successful"* (S.T. 13).

The following incentives were reported by panel members (Table 13).

POTENTIAL INCENTIVES	
1.	*Access to training programmes*
2.	*Study tours in order to see other relevant areas and to share views and experiences*
3.	*Income generating activities with the EE activities*
4.	*Alternate energy (e.g. kerosene, electricity)*
5.	*Integrative services (e.g. schools, health clinics, bridges, drinking water etc.) with EE programmes*
6.	*Higher wages for locally based management and enforcement officials*
7.	*Access to educational materials from other countries*
8.	*Access to tools and technology and training to use them in environmentally appropriate ways*
9.	*Money to develop new approaches*
10.	*Initiate self-help community forestry programmes (reforestation/afforestation) and show them how to run their own nursery; that conservation of trees is directly linked to survival, for fire wood and cooking, to prevent erosion and floods*
11.	*Health benefits and better agricultural production, livestock, lower cost fertilizers, pesticides, better education for children etc.*

Table 13 Incentives for Environmental Education

8.6 SUMMARY

This chapter has discussed the research findings of this study. A wide range of views have been elicited to describe and explain environmental problems and their underlying causes. These causes resulted from social, cultural and economic factors. Environmental education should therefore tackle these fundamental factors so that the problems can be resolved or avoided. Various models and approaches have been used to strengthen the effectiveness of environmental education. The involvement of local people at all levels of the planning process and integration of their cultural values with incentives are seen as essential for environmental education.

The results described have been analysed and reviewed in terms of their potential to support a separate model for environmental education in developing countries. Chapter Nine discusses the "Integrative and Participatory Model" and its implications for people and environments in these places.

CHAPTER NINE

AN INTEGRATIVE AND PARTICIPATORY MODEL FOR ENVIRONMENTAL EDUCATION

"We will not learn to treat the world of nature as it needs to be treated until we learn to treat our fellow human beings as they deserve to be treated in the ancient coin of social justice."

Commoner, Barry 1973

9.1 INTRODUCTION

In this chapter, the results from surveys and interviews are used to develop and support an "Integrative and Participatory Model for Environmental Education (IPMEE) (see Figure 10). It meets the need for an environmental education model that facilitates conservation education in developing countries. The model is discussed with examples of programmes which illustrate how it can be applied.

9.2 THE NEED FOR A MODEL: IPMEE

In the past few decades, human beings have put unprecedented pressure on the natural environments. Population increases have led to excessive demands on shrinking resources, and in developing countries populations are expected to continue to soar (Goldsmith and Hildyard 1990). International tourism to these countries further exacerbates the problem. For example, many forests in Nepal have been denuded for fuelwood and building supplies in the name of tourist development. Nepal's popular tourist destinations such as the Annapurna and Khumbu regions are possibly already beyond carrying capacity. Carrying capacity is exceeded because of the resource requirements used to provide the needs of and services for tourists. Conserving and enhancing the resource base is an imperative step towards a sustainable future (World Commission on Environment and Development 1987).

A sustainable future must be one that includes development needs and environmental well-being but at the same time, ensures enhancement of the quality of life of local people. However, development activities often have disastrous environmental impacts, so they must

be conservation-based and must protect the structure, functions and diversity of the natural systems upon which our species depends (IUCN/UNEP/WWF 1991). The dilemma of development and environmental protection can be resolved with an educational strategy that addresses both human and ecological needs.

Environmental education programmes often operate on an *ad hoc* basis. Many developing countries have neither appropriate teaching resources nor trained educators, and programmes are often imported from developed countries. However, these programmes have often proved to be inappropriate because of differences between environmental problems and social needs of high and low technology nations.

An environmental education model should be adaptable to the extent that it can focus on local ecological, economic, cultural and social factors so that strategies employed can address the realities of local people. Such a model will be an effective tool if governments, non-governmental agencies, and local communities work together toward achieving a common goal of sustainable development and conservation.

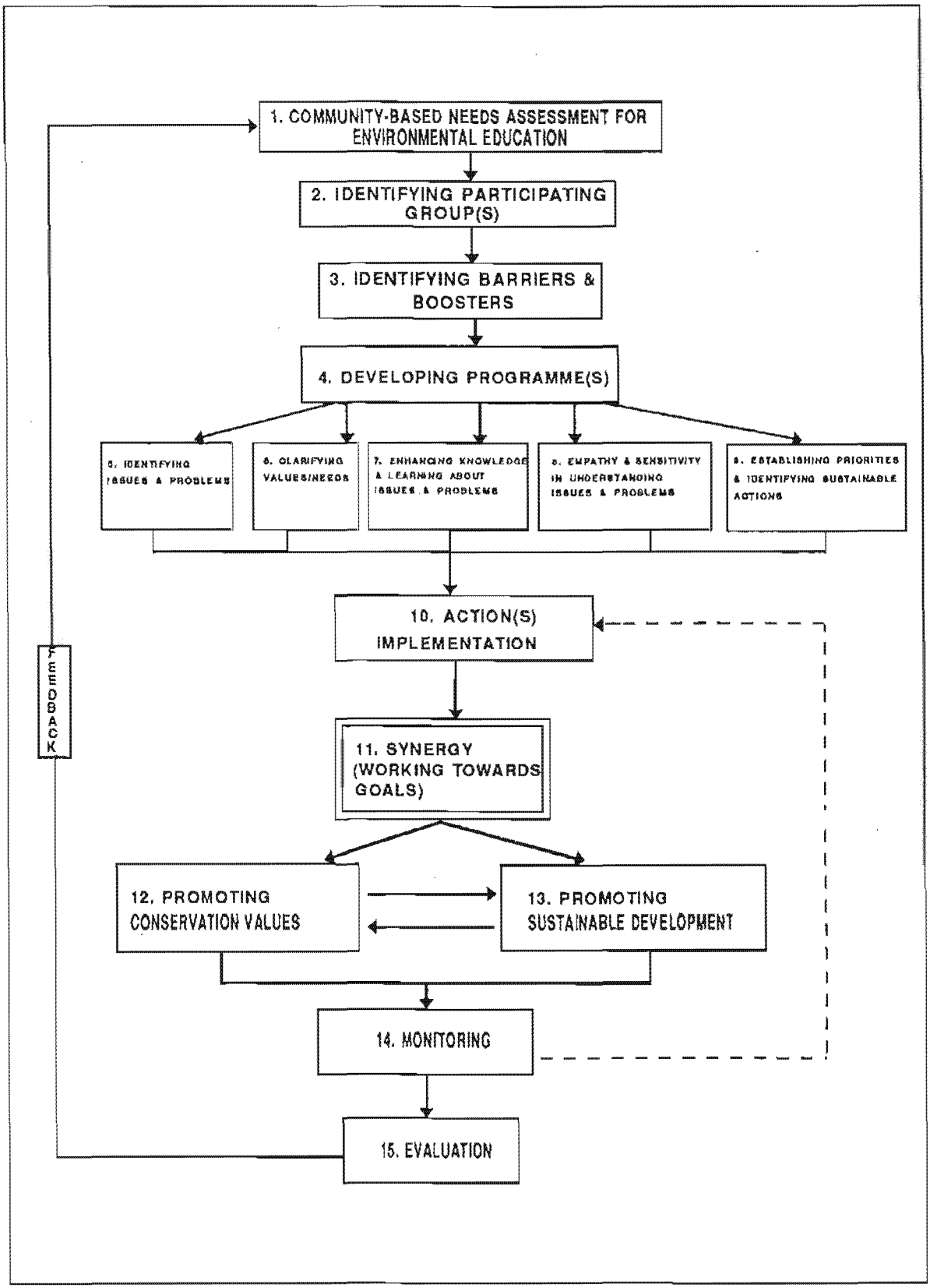

Figure 10 An Integrative and Participatory Model for Environmental Education

1. COMMUNITY-BASED NEEDS ASSESSMENT FOR EE

The first step of this model is a thorough assessment of community needs. In this model, the term "community' refers to the spectrum from small village level, school to national level communities. However, it is envisaged that the model will be most useful at the village community level.

The rationale behind the community-based needs assessment is that participating community groups are central to any environmental education programme and must determine their own needs and design and implement appropriate programmes. Educators must work as facilitators, rather than directors, and should play a catalytic role.

> *"Local people have to initiate and direct the programmes... it depends on the initiative of the locals to recognise and take advantage of the opportunities presented. If they don't respond, we are probably not addressing their goals and needs."*

> *"Long term connections or linkages with individuals living in the community is a common characteristic of successful projects."*

> *"Environmental educators should focus far less on concepts, philosophy and consciousness raising and far more on practical, day to day realities that affect people directly. They should become more technically capable and aware of such things as better environmental practices for crop production, cattle management, road building and energy conservation which they could pass on to people"* (W.L. 10).

According to the research findings, community needs will reflect the development issues and the need for conservation of the environment and of natural resources. An expert respondent commented that:

> *"Our experience in Africa has led us to the conclusion that 'development issues' and 'environmental issues' cannot be separated into convenient 'EE programmes' or 'development programmes', but that they need to be integrated far more"* (L.H. 19).

Each community must be encouraged to identify their own particular needs, rather than follow externally directed ideologies. This will ensure confidence in their participation.

Examples:

* Need to identify local issues and concerns to establish those relevant to EE
* Need to identify local natural and cultural resources
* Need for understanding of ecological processes
* Need for conservation of natural resources
* Need to identify local economic indicators and relationship of these to EE
* Need for integration of the components of sustainable development
* Need to identify the educational situation e.g. literacy rate, enrolment, drop-out rate, communication opportunities such as radio, television, newspapers, service centres, exhibitions, demonstration plots etc.

2. IDENTIFYING PARTICIPATING GROUP(S)[5]

Participating groups should be identified as precisely as possible. There may be one or several participating groups for whom an environmental programme is designed. A wide spectrum of groups have been identified by the panel of experts and were discussed in chapter eight. It is important to identify those participating groups which have greatest influence in the community and those directly affected by environmental problems. A member of the review panel suggested that:

> *"... the best results (although they will take time to accomplish) will be achieved with recognised community leaders"* (L.H. 19).

Examples:

* Local resource consumers: farmers, householders, protected area dwellers
* Non-local resource consumers: domestic and international tourists
* Resource Producers: entrepreneurs, business people, industrialists etc.
* Decision makers: politicians [national, regional and local levels], legislators, administrators, bureaucrats
* Special interest groups: conservation clubs, flora/fauna protection groups
* Community partners: community leaders, religious leaders, women, rural/urban dwellers, students, teachers
* Aid agencies: World Bank, Asian Development Bank, USAID, SATA, WWF, UNESCO, UNEP, WHO, FAO, UNICEF, UNDP, ILO, etc. (see Appendix X for abbreviations)
* Children
* Natural Resource Specialists: foresters, fishery officers, agricultural extension workers, conservation officers
* Media: journalists, media commentators, editors

[5] The terms 'target group' and 'participating group' are used as synonyms in this study. This follows a suggestion by the review panel.

3. IDENTIFYING BARRIERS & BOOSTERS TO SOLVING ENVIRONMENTAL PROBLEMS

The term "barriers" is used in the environmental literature (e.g. Ham and Sewing 1988; Trudgill 1990) to mean the obstacles which prevent the creation through environmental education of a better environment. Progress towards solving environmental problems is often frustratingly slow despite people's heightened awareness. This model identifies the common barriers that prevent solution of environmental problems. The most commonly found barriers are lack of knowledge, inappropriate education, lack of technological solutions to environmental problems, limited or lack of money, constraints imposed by social structures, lack of political will and, deep seated cultural beliefs.

Once the participant groups have been identified, it is essential to identify the barriers to solving environmental problems while attempting to meet the needs of local people. This model requires the identification of barriers and boosters before developing the programmes. Boosters are those phenomena that should increase or improve the effectiveness of educational programmes.

One of the most serious barriers is the level of basic human need fulfilment that exists in developing countries. For instance, conservation is a luxury that many developed countries can afford because their basic needs are met. In developing countries, most of the population are struggling to meet basic needs of food, shelter, and safety. If the choice is conservation or starvation, there is really no choice at all. One of the member of the review panel highlights the problem in the following statement:

> *"... most people can understand the need for conservation, but it is not their highest priority. They do not consider conservation to be important to their day to day survival"* (P.S. 2).

Until basic needs are met, it is a futile hope to expect concern for environmental issues as expressed by today's conservationists and environmentalists. In other words, the conflict between conservation and preservation objectives cannot be fully solved until the issues of social justice are resolved.

The review panel for the IPMEE suggested that it is also important to identify the boosters

which promote environmental education.

> *"Not only barriers but also boosters can be identified, in which case existence of local/traditional knowledge can be mentioned...."*(U.B. 16)

In many traditional society's boosters can be their existing cultural values through which nature conservation in some forms has been practised for centuries (see chapter five). These existing cultural values can provide opportunities to develop environmental education programmes based on a society's inherent strengths or extrapolations of these practises which can then be readily understood. For example, one of the panel members commented that:

> *"... traditional nature conservation strategies through application of cultural and religious values could be effective to maintain environmental and social stability"* (U.B. 16).

Barriers Examples:

* Lack of knowledge about environment/ecology
* Lack of technological solutions to environmental problems
* Lack of or limited money
* Social structures/constraint
* Lack of political will
* Deep seated cultural and religious beliefs)
* Ideological differences at interpersonal levels.
* Economic disincentives
* Lack of local credibility for solutions proposed by environmentalists
* Apathy and sense of powerlessness

Boosters Examples:

* Existence of local/traditional knowledge
* Positive effects of cultural beliefs and practices including religion
* Alternative resources for economic stability
* Good supply of labour
* Strong parent(mother)- child communication
* Strong sense of community at village level

4. DEVELOPING ENVIRONMENTAL EDUCATION PROGRAMME(S)

As previously stressed, environmental education programmes must be developed in consultation with the participating groups. To be effective, they will concentrate on the

problems and needs of local people. Informal programmes should utilise existing knowledge, and local environmental networks so that they will be appropriate, cost effective, and durable. For example, the Rithi Thiti Samiti[6] of the Gurung villages of western Nepal could work to foster environmental education programmes alongside on going environmental management strategies. This statement is supported by expert opinion, which advocated:

> *"... using existing networks especially traditional ones which are well developed... existing groups in the long run are the best to work with"* (J.B. 21).

School-based environmental education should start at the earliest phases of primary education and include the wider possible variety of environmentally related activities and foci. This is because:

> *"Much of our consumer oriented, 'Earth careless' attitudes are instilled in infancy and youth. We need to instil a new approach from the earliest stages of education"* (G.B. 6).

Examples:

* Formal education through school/university
* Informal education through dissemination of information (radio, television, newspapers, brochures), extension (community groups, one to one communication) and training (workshops, seminars, village meetings, study tours), adult literacy programmes and education for out of school children and youth; education for girls and women)

5. IDENTIFYING ISSUES AND PROBLEMS

Understanding and appreciating the environmental perceptions of the participating group(s) is vital in identifying the issues and problems. An expert from the review panel commented that:

> *"Environmental educators need to understand local perceptions since they are often part of the problem"* (W.L. 10).

The underlying causes of environmental issues and problems need to be identified. Hence,

[6] Rithi Thiti Samiti is a traditional resource management committee that consists of respected village leaders experienced in social and development activities in the Gurung villages.

it is important to work with participating groups in identifying these issues and problems. The examples in this section are drawn from both social and biological considerations.

Examples:

* What are the causes of deforestation?
* Where/when does soil erosion occur?
* Who/what is causing pollution problems?
* How can we conserve species/avoid extinction of plants or animals?

6. CLARIFYING VALUES/NEEDS

The self-defined goals of people (e.g. use of natural resources for fuelwood for heating, cooking and lighting) reflect needs and values. Without addressing these needs, conservation of natural resources is often difficult to achieve.

Environmental education programmes must consider cultural and spiritual values as well as the goals of conservation. However, one of the participating groups for environmental education programmes will be tourists, both domestic and international. They are indirect resource consumers who have a significant impact on the environment. For example, the Annapurna region in Nepal receives more than 40,000 international tourists per year, equalling in number the local population, and these visitors contribute to the depletion of natural resources. Experts from the review panel stated that consideration of this group of resource users is important:

> *"... since they come to the region for a short period of time and their aim is to make their visit a memorable one. They often tend to ignore and do not give much attention to undesirable impacts they have created on natural resources of the region"* (S.T. 13).

> *"They will obviously not share the same values and needs as local people. Therefore, it is important to consider these differences during the development of environmental education programmes"* (B.J. 18).

Examples:

* Clarification of local peoples' basic needs in the light of their natural, social and economic environments
* Clarification of local peoples' needs in the light of spiritual values
* Clarification of local perspective of problems
* Clarification of the relationships of local values/needs with Regional and National Needs

7. ENHANCING KNOWLEDGE AND LEARNING ABOUT ISSUES AND PROBLEMS

The process of learning about environmental issues starts from small issues and can lead to an understanding of global problems. It is helpful if individuals believe they themselves can make a difference. An expert from the review panel in this study stressed in reference to global problems that:

> *"... people may understand these things very well but they don't see the problem of littering for example. Changes in technology [occur], for example, from woven baskets to plastic bags but people throw them [plastic bags] away not understanding that they don't disintegrate. So I am saying that very basic issues need to be dealt with first before people [come to] understand a wider picture"* (J.B. 21).

Participating groups should look ahead to the future as well as learning from the mistakes of the past once they learn to identify the issues and problems in their environment. This will enable them to improve the effectiveness of the programmes.

Examples:

* Developing environmental awareness in people of all ages
* Increasing knowledge about interrelationships within the natural environment e.g. cutting firewood and landslides
* Understanding of impacts of tourism on daily lives of local people
* Increasing people's communication skills in dealing with agencies concerned with environment
* Relating traditional beliefs and culture with nature conservation

8. EMPATHY & SENSITIVITY IN UNDERSTANDING ISSUES & PROBLEMS

The acceptance of needs is an important component of the framework of this model. The prospect of sustainable development is only possible by first servicing the needs of local

communities but not without question, and not through compromising principles or practices of sound environmental resource management. An expert from the review panel put his view that:

> *"My comment is that more and more I see the prospect of conservation and sustainable development compromised by an unquestioning approach to servicing the needs of local people"* (B.J. 18).

It is essential to facilitate the environmental education process through optimising local participation. In order to do this, environmental educators need to be empathetic towards the local community and understand how it functions. Without such empathy and understanding it is unlikely that anything substantial will be to achieved.

Examples:

* Attitude of concern
* Acceptance of needs
* Acknowledgement of/ appreciation of country view points
* Mutual learning
* Skills of evaluation
* Negotiation and consensus building

9. ESTABLISHING PRIORITIES AND IDENTIFYING SUSTAINABLE ACTIONS

Establishing priorities and identifying sustainable actions requires careful consideration since there may be many priorities but limited resources. Hence, it is essential to identify the important priorities in order to use the available resources wisely and provide maximum benefits to the community. For example, identification and revival of traditional environmental knowledge as well as appropriate technology or alternatives that promote conservation and sustainable development.

> *"... the whole philosophy of "alternatives" needs to be more strongly identified and advocated in the education process, to the extent that the word alternatives may be an appropriate addition in the model"* (B.J. 18).

External aid may be necessary to sustain and boost some environmental education programmes, but the essence of this model is the role of local people who may initiate self-help programmes to improve the state of the environment. While aid agencies such as the World Bank and the developed countries will have a significant role in providing major conservation-based aid programmes such as agroforestry (Burch, David 1987; Burch,

William 1991), grassroots environmental education programmes will be effective in a multitude of other, but none the less important ways.

- Identification and evaluation of appropriate traditional knowledge/practices
- Evaluation of appropriate new technologies
- Identification of alternatives

Examples:

* Establish forest/fodder nurseries
* Establish afforestation/reforestation programmes
* Forest management/conservation
* Habitat and watershed management
* Use alternative energy sources (e.g. electricity, solar, kerosene)
* Community identified development projects (e.g. installation of drinking water supplies in village(s)
* Establishment of health clinics
* Construction of school buildings
* Small scale income generating activities
* Wildlife management
* Conservation-based research and training

10. ACTION(S) IMPLEMENTATION

The model stresses the need to put theory into practice. One of the experts of the review panel suggested that:

> *"Particular emphasis needs to be given to translating awareness into understanding and understanding into practical action"* (M.B. 3).

Implementation of actions should be initiated from a combination of grassroots support and top down direction, so that results will be sustainable through achieving the support of both approaches. If there is an absence of one or the other, programmes are often jeopardised.

Some aspects of a programme may be structured and pitched differently from one target group to another. For example, where local people may learn strategies for reducing their use of fuelwood, tourists may learn strategies for being more self-reliant in cooking and heating, thus reducing their impact on local fuelwood resources. For instance, the Annapurna Conservation Area Project (ACAP) in Nepal has tried to 'force' tourists to use kerosene in the Annapurna Sanctuary so that the cutting of trees for firewood can be reduced. It has also developed alternative energy programmes such as micro hydro-electricity for villagers and tourist hotels. If successful, this will help to save forests.

Examples:

* Use of a combination of (bottom up), "grassroots" and (top down), directive, as well as mass education action strategies
* Generating confidence through success in small projects

11. SYNERGY

"Synergy" is defined by English and English (1958) as 'exerting force together or in combination, or upon the same point'. Environmental education programmes must show a direct and contributing support for local people's objectives and priorities, at the same time that they seek achievement of their own objectives.

> *"The important point here is that people have their own values and priorities. We should spend less time trying to change them and more time learning about why they have these objectives and priorities. In many cases they have legitimate reasons and if we find ways of contributing to their goals [we find] ways) which also meet our goals"* (W.L. 10).

Devlin (1975) argued that people in possession of knowledge and understanding of the fragility of the commons will act towards a collective maximum. Such 'perfect' spread of knowledge of the consequences of inappropriate behaviour is unusual. Consequently, it is more important that social arrangements are possible through which the free, rational and even selfish choice of individuals will not be incompatible with the collective maximum (ibid). Such propositions are traced clearly in anthropological literature. For instance, Ruth Benedict, as reported by Devlin (1975) found that:

> *"... 'goodness' was a product of the function of individual behaviour wherein the individual, by the same act and at the same time, serves his[sic] own advantage and that of the group. It is not because people are unselfish and put social obligations above personal desires, but because the social arrangements have made these two identical."*

In societies, if people are not working in ways which serve mutually for their personal and collective benefits, the ultimate outcomes will be unsatisfactory. It may achieve their interests in the short term, but may ruin their collective long term interests. I put the argument here that if people with the same or different interests work together in the best interest of conservation and development, then there will be direct and indirect benefits to all of them. Hence, the "Integrative and Participatory Model" for environmental education will foster synergic relationships between local peoples and conservation agencies. For the

purpose of this model, the desired outcome is to fulfil sustainable development needs at the same time as achieving conservation of natural resources. While identified as a specific step in the model, the general concept of synergy, is inherent in all its phases.

Previous steps in the model are thus integral and supportive of synergic relationships. The notion of "synergy" is the essence of this study and the model itself.

Examples:

* Working together to achieve common goals
* Co-operative efforts rather than coercive efforts
* Establishing structures which ensure the attainment of desirable goals/outcomes not withstanding the motives/actions of the groups/participants. (The point about synergy [synergic processes] is that no purposive action is necessary. Even self interested activity will achieve the desired groups or societal outcomes, providing the 'structures' are appropriate).

12. PROMOTING CONSERVATION VALUES

To conserve means to save for future use. Conservation is the wise use and management of natural resources of the Earth to ensure their long-term survival (IUCN/UNEP/WWF 1980; National Planning Commission/Nepal and IUCN 1988; O'Connor, Overmars and Ralston 1990). The need for conservation is well documented in the World Conservation Strategy (IUCN *et al* 1980) both in economic and ecological terms and in the wider dimensions of human and environmental welfare (McNeely 1988, WCED 1987).

The issues of resource sustainability and maintenance of biodiversity are both human and environmental problems (O'Connor *et al* 1990). It is vital for environmental education to promote conservation values. These values are identified in the context of development issues. A member of the review panel commented that:

> *"A better response might be expected if the participating groups believe that environmental conservation is integral to sustainable development"* (L.H. 19).

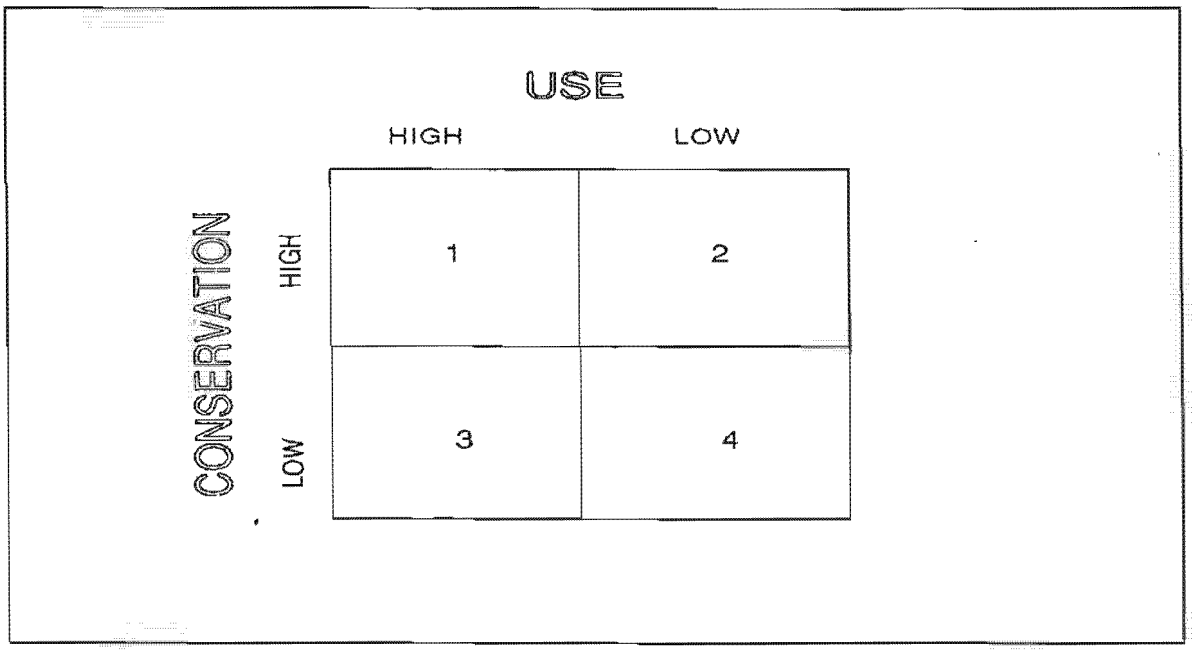

Figure 11 Trade-off Matrix for Resource Conservation and Use

Adapted from Devlin (1976)

Devlin (1976) used the concept of a trade-off matrix (Figure 11) to illustrate the dilemma of preservation and use in New Zealand's national parks. In developing countries such as Nepal, the dilemma of conservation and use of natural resources by local people and international tourists is similarly problematic. In this figure, cell 4 with low conservation and low use is the worst possible situation. It means that few local people and few international tourists are meeting their needs at great environmental cost. Cell 1 is the best possible situation, and to get from 4 through 3 to 2 and finally 1, depends on the "trade offs" management agencies are prepared to accept (Devlin 1976).

Information about the relationships represented in Devlin's matrix is urgently needed. Most importantly, responsible people for conservation of natural resources must examine who the resources consumers are, find out what their needs are, find out why international visitors come to protected areas, and what their expectations and motivations are, and investigate the relationships if any, between these variables. Such information is essential to the development of environmental education strategies which minimise the effect of compromises on both resource use demands. It can also be used to develop policy

decisions and conservation strategies which minimise the effect of compromises on both resource use demands.

Hence, the bottom line is who *wins* and who *loses*. It is obvious that local people cannot make decisions which see them *worse off* than prior to the decision for action. Therefore it is essential to foster a win - win situation. In this model, it is emphasized that high conservation and high use (cell 1) must be possible and will therefore meet the needs of people and also enhance the values of conservation. This gives equal weight to the demands of both conservation and use. Promotion of conservation values is thus essential for the welfare of human beings in that it helps to foster sustainable development. Devlin (1993) suggested that people need to see own valley or sub-system as a microcosm, but one which is part of the whole system. "The zero-sum mentality of 'I can only win if you lose' is, in this scenario, replaced with 'I can only win if you win too'. Thus use and conservation become compatible and consensus replaces conflict" (Devlin 1993).

Examples:

* Promotion of the concept of the biosphere as a net work of life-support systems
* Promotion of importance of conservation of biological diversity
* Promotion of nature conservation as a daily activity
* Conservation as an "ethic" which permeates daily life and individual behaviour
* Connecting cultural traditions and values to environmental protection

13. PROMOTING SUSTAINABLE DEVELOPMENT

The Brundtland Commission defined sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'(WCED 1987). Sustainable development seeks not just to improve people's quality of life. - Rather it emphasizes meeting the basic needs of the poor, advocates cultural sensitivity, and encourages 'grassroots' participation in development processes (Barbier 1987). A member of the review panel emphasised, relation to the IPMEE model, the importance of:

> *"... training and education, problem solving, capacity building... [there] will be strong overlaps between the work of your programme and other aspects of development being sought by the community"* (L.H. 19).

The goals of sustainable development are the survival and well being of people and all other species (Engel 1990; IUCN/UNEP/WWF 1991). It is a complex concept which incorporate ecological, social, cultural and economic principles, each of which is applicable in one way or another to all development activities. Sustainable economic activity should preserve the environment (McClaren 1992).

It is clear that real improvement cannot occur in developing countries, or anywhere else, unless educators teach sustainable development alongside conservation of natural resources. The primary role of a conservation/environmental education for developing countries is to build the institutional frameworks needed to solve conservation problems and facilitate the sustainable development of renewable natural resources (Roth 1987; Disinger 1990).

Examples:

* promoting ecological sustainability
* promoting social sustainability
* promoting cultural sustainability
* promoting economic sustainability

14. MONITORING

Step fourteen recognises the importance of monitoring and continued feedback following programme implementation (step ten). In developing countries, programmes are often not fully implemented or are jeopardized by sudden changes in administration (for example, of teachers, educators and bureaucrats). Therefore, it is important to reassess actions and institute changes as required. An unsolicited compliment makes the point:

> *"... your model does reflect a logical, directional flow and progression. In particular I like your recognition of the importance of monitoring and its continual feedback into programme implementation"* (W.L. 10).

Example:

* Ongoing measurement of actions and changes as required (back to 10)

15. EVALUATION AND FEEDBACK

The final step of this model is evaluation and feedback. Once a programme has been completed, the results can be evaluated both quantitatively and qualitatively. The nature

of education however, makes measurement of outcomes difficult to. Nevertheless, evaluation and feedback provide opportunities to modify those components which have drawn negative feedback. This will help to strengthen future programmes and help to make them more effective.

* Qualitative evaluation of achievement in terms of established objectives
* Quantitative evaluation of achievement in terms of established objectives

Examples

* Participating groups (identification of the needy people, number of people benefiting, problems or needs being solved)
* Change in attitude and behaviour
* Environmental improvements (decrease in deforestation, reforestation programmes, wildlife management
* Quality of life (basic needs, clean drinking water, sanitation)

9.3 ENVIRONMENTAL EDUCATION PROGRAMMES

To be in any way useful, a model must link theory to practice. In this case, actions must be implemented at community levels to promote conservation and sustainable development. A single or a series of environmental education programmes can be developed based on the model described above.

It is intended that the "Integrative and Participatory Model for Environmental Education" will be applied in developing countries such as Nepal and Bhutan. Once participating groups have been identified, environmental education programmes can be designed that are compatible with the specific (idiosyncratic) cultural, social and environmental needs of the local in which implementation will take place. Methods of application and channels of dissemination must also be compatible with the needs of participating groups.

9.3.1 Formal Environmental Education

Formal environmental education programmes should reflect both theoretical and practical issues about the environment (Table 14). It is a fruitful strategy to integrate environmental contents into the school curricula. Teachers can use the local environment as a resource for environmental education. This can have two benefits. First, little cost is involved for considerable educational gain. Second, it involves local environmental issues so that

students can gain meaningful first hand experiences.

Participating Group	Objectives	Potential programmes
Students: - primary - secondary - tertiary	- To illustrate how ecological processes function and to examine the interrelationships between human beings and the natural world by using concrete examples such as trees, wildlife, etc. - To gain first-hand experience of the environment, raise awareness, understanding, sharing experience and developing an environmental ethic as well as practical actions	- School leaving certificates in environmental learning - Whole year or part year units of learning in an Ecological process: Energy Flow, Diversity, Community, Interrelationships, Change and Adaption - Environmental problems at local or national level (deforestation, soil erosion, depletion of wildlife etc.) - Specific projects by schools e.g. practical actions: drawing, writing poetry, describing food web, recycle, reuse, reduce, planting trees, organising clean up campaigns, holding special events etc.

Table 14 Formal Environmental Education

Teachers can use local environmental issues such as deforestation, soil erosion, water pollution, personal health, sanitation and so on to begin the process of environmental education. Awareness and experience of local environmental issues can develop in young people a sense of responsibility to mitigate current conservation problems and prevent new ones occurring in the future.

Teachers can illustrate how human life is dependent on the natural environment, thus the need for conservation by present generations as well as those that follow. Ultimately, students can work together independently of school on action oriented, productive real life projects such as recycling of paper, cleaning the school surroundings, establishing a forest nursery and tree plantations.

9.3.2 Informal Education

9.3.2.1 Extension Programmes

Informal education through extension programmes is an appropriate approach to

environmental education in rural communities. One of the goals of extension programmes is to involve local people in decision making for managing their resources prudently and sustainably. Programmes should include participation incentives such as those listed in Table 15 below.

Participating Group(s)	Potential Incentives
Women Farmers Villagers	- Provision of services (health care, family planning etc.) - Distribution of improved seeds, saplings - Environmental literacy campaigns (e.g. reading, writing)

Table 15 Extension Programmes

A successful example of informal environmental education is the Annapurna Conservation Area Project in Nepal. Extension workers visit homes of the local people to talk about their role in nature conservation and local resource management. Extension and conservation workers conduct their activities in tune with local community rhythms and whenever people need assistance. Although it is a time consuming process, it is expected that the outcomes will be durable.

9.3.2.2 Training Programmes

One of the most urgent tasks of environmental education is to offer training opportunities to those people who are already involved in the field of environmental conservation.

> *"It is essential to provide training opportunities to local people. Training local people help to tap community knowledge and equip them with communication skills to pass it on through community leadership, agricultural/forestry practices and school/youth leadership"* (P.L. 9).

Benefit can be gained from a variety of training courses provided they are directly relevant to the needs of participating groups. Training programmes should be made accessible to all, from the grassroots level (local people) to decision makers and politicians. Some possible training needs are listed in Table 16 below.

Participating Groups	Potential training components
Community leaders Religious leaders	- The philosophy of nature conservation - Leadership skills - Communication skills - Revival of traditional conservation techniques - Religion and conservation - Promoting social and communal sanctions - The role of community leaders/religious leaders in conservation and sustainable development - Traditional resource management
Teachers	- Designing curricula and textbooks for EE - Production of resource (teaching) materials - Effective communication skills - Programme planning (e.g. camps, visits, events)
Extension Workers	- Short courses on conservation, communication, rural development, cultural ecology, community forestry, ecology, computing, conservation education/outdoor environmental education, rural sociology, appropriate technology, interpretive studies etc. - Production of extension materials
Local people Subsistence farmers	- Sustainable farming, horticulture, vegetable garden, forestry/agroforestry - Income generating activities (bee keeping, poultry, souvenirs for tourists, cottage industry) - Impacts of tourism - Animal husbandry - Soil conservation,
Politicians	- Formulation of legislation, rules and regulations for conservation - Sustainable economic development - National and international cooperation - Politics and environment
Journalists	- Short courses on journalism, the role of media - Environmental reporting
Entrepreneurs Industrialists Business people	- Impacts of industries on the environment - Pollution problems - Environmental Impact Assessment (EIA)
Tourists	- Code of conduct in nature/culture conservation - Impacts of tourism in destination areas (e.g. cultural and ecological) - Ecotourism

Aid agencies	- Local environmental problems and issues - Local socio-economic profile _ Local needs

Table 16 Training Programmes in Environmental Education

9.3.2.3 Information

Information on conservation is most widely needed for illiterate rural societies. Although easily disseminated via television, radio and newspapers, such information will not reach people without access to these facilities. Illiteracy compounds the problem. For instance, people in Nepal use newspapers or brochures to start fires instead of digesting the conservation messages in their pages. Hence, any conservation education strategies must be based on the realities of the literacy levels identified in the participating groups. Literacy campaign is important in order to disseminate conservation messages more effectively.

Information on conservation should be useful, applicable and accurate. Environmental education programmes should reflect the cultural and religious values of the target people and the strategies should integrate the traditional methods of resource management and nature conservation as Table 17 suggests.

Participating Group(s)	Potential Activity
* Local people * Local priests [e.g. Buddhist monks, Jakris, Lamas, Gyabries] * Influential Community leaders	- Worship forests (sacred trees, plants, animals) - Visit culturally significant sites (lakes, temples, monasteries) - Plantations of trees - Introduction of appropriate technologies - Income generating activities - Firewood conservation/ improved stoves - Health and sanitation (family planning, construction of pit toilets - Environmentally sound, financially sustainable, socially desirable small scale development projects (drinking water, electricity, irrigation, swing bridges, trail improvement etc.) - Forest management - Village clean up campaign

Table 17 Environmental Education through Information

9.4 SUMMARY

It can be fairly claimed that the proposed model was well received and supported by the panel review team. Their criticisms and suggestions were extremely useful in the clarification of the issues raised by the model. This chapter has introduced and explained the "Integrative and Participatory Model for Environmental Education" in developing countries. It has illustrated the model with examples of each of its various components. Application of the model is discussed in terms of formal environmental education, extension programmes, training of participating groups and dissemination of information at all levels.

CHAPTER TEN

SUMMARY AND CONCLUSIONS

If you are planning one year ahead
plant rice
If you are planning ten years ahead
plant trees
If you are planning a hundred years ahead
educate the people.

Old Chinese Saying

The results obtained from this study strongly support the research hypotheses. The research problem was to evaluate selected environmental education models and develop an environmental education model to facilitate conservation education in developing countries. The development of such a model can provide a pathway towards solving the immediate environmental problems that directly impact upon quality of life in the countries concerned.

In contemporary times, environmental education in developed countries has been widespread through the formal schooling system. However, it is not just another subject. Nor is it simply a synonym for nature study, outdoor education or conservation education. Modern environmental education permeates formal curricula, touching on all subjects in both the social and physical sciences.

In developing countries, formal environmental education is at a pioneering stage. Although local people have been practising environmental education traditionally for centuries, this has yet been not recognised in formal education.

The literature on environment and development in developing countries suggests that environmental problems such as deforestation, soil erosion, pollution, population growth and diminution of biological diversity, are widespread and have direct impacts on people. Third world countries are increasingly plagued by unrestrained population growth. These countries expanded their agricultural production to feed their growing population at great

environmental cost. The expansion of agricultural lands, often at the expense of forests has created further problems. Furthermore, these problems are constantly aggravated by other physical development in the quest for improved quality of life. However, development often meant the destruction of environments for little more than short-term economic gain.

Traditional cultural and religious values must be the cornerstone of environmental education, and this should include traditional methods of nature conservation or resource management. Understanding of these values provides insight into the views of local people and their attitudes to, and relationships with their natural environment. Much environmental information will essentially remain hidden unless educators understand the local cultural values which embrace these environmental understandings. Integration of these values not only strengthens environmental education but also revives traditional values where they have been weakened.

The principal objective behind the evaluation of selected models for environmental education was to identify their effectiveness for developing countries and to highlight their essential elements. Although most of the models were developed from the perspective of developed countries, the review and evaluation of these models provided an excellent conceptual framework for the development of an environmental education model for developing countries.

The results have revealed that in developed countries, environmental problems are caused through the unsustainable and exploitative use of resources. These problems are the cumulative result of the actions of individuals and industrialists in society who act with their individual and short term interests foremost in mind.

The solutions for environmental problems at international level are beyond the control of local people. Since many environmental problems such air and water pollution transcend national as well as neighbourhood boundaries, there is a need for international as well as regional co-operation so that sound environmental policies and management strategies can be developed. Local people and most importantly, influential local community leaders must be encouraged to develop and implement environmental education programmes. In

traditional societies collective decisions at local level are often made by community leaders. They can therefore play a vital role in the process of environmental education.

In developing countries, the resource base is deteriorating because of widespread poverty and lack of alternatives for meeting people's basic needs. Poverty is an agent for environmental problems. As traditional societies try to escape the cycle of poverty, severe environmental problems develop and nature moves from ecological equilibrium to disequilibrium. In Nepal, deforestation and soil erosion are symptoms of this spiralling disequilibrium. These problems have in places reached catastrophic levels.

One of the findings of this study is that environmental educators and conservation agencies in developing countries must be thoughtful about the problems and realities of local people. It is now clear that unless basic needs are met, nature conservation is not considered important. Conservation agencies can not expect people to save forests and wildlife while they are struggling to merely sustain themselves. Educational efforts must be supported by appropriate incentives, and must reach beyond the formal education system to include all those who are affected by immediate environmental problems.

The notion of "synergy" is the essence of this study. Synergic processes can be fostered by providing appropriate social 'structures'. Of utmost importance is the need to establish structures which ensure the attainment of desirable goals/outcomes without seemingly opposing the motives or actions of the participating groups. Hence, the rationale behind the synergic process is co-operative endeavour not conflict or overtly coercive activity. The greatest need is to ensure that educational strategies enable individuals to achieve their goals while not compromising essential conservation values and sustainability goals. The "Integrative and Participatory Model for Environmental Education" (Figure 10) stresses that such goals can be achieved through cooperative efforts.

The "Integrative and Participatory Model" presented for environmental education in developing countries is thus not a blueprint for environmental education but rather it shows an alternative framework of ideas for solving environmental problems and conserving natural resources. The problems will only be resolved if people from all walks of life work co-operatively. Hence, it is possible to foster synergic relationships between local people

and nature conservation agencies to achieve the goals of conservation and sustainable development. While it is perhaps arrogant to expect that production of a model will alone go very far towards the achievement of this goal, it is nevertheless encouraging to be able to acknowledge that the panellists who provided the foundations for the model are in agreement that such achievements are possible.

The challenge for environmental educators and nature conservation agencies is to turn this possibility into a reality. It is up to those people who possess the specialist knowledge, and skills, in association with the local people who themselves have a great deal of wisdom with which to manage their own resources. As Prince Gyanendra Bir Bikram Shah, a Nepali conservationist says "... Conservation is not only for people but is also, to a considerable extent, by people.... After all, what is conservation - if not for people? It must be viewed only as a means, the end being the improvement of the quality of our existence."

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APPENDICES

APPENDIX I
DEFINITIONS OF TERMS

Conservation

Conservation is the wise use and management of natural resources for the benefit of present and future generations.

Environmental Education

Environmental education is the process that fosters greater understanding of society's environmental problems and also the processes of environmental problem-solving and decision making.

Expert(s)

Environmental education expert is defined as anyone who has both theoretical and practical understanding about environmental education.

Model(s)

A model is an abstraction or simplification of a system, or the formalisation of our knowledge about a system (Hall and Day 1977).

Programmes

Activities or components of environmental education, e.g. formal education in schools or informal education such as workshops, public lectures, television, video, radio, etc.

Local People:

People from village level including indigenous people.

APPENDIX II

LIST OF SOURCES

- List of participants from the First International Environmental Education Conference, 1991, Palmerston North, New Zealand. Conference Theme: "Our Common Future- The Way Forward".

- Residents, People and National Parks, 1991, edited by Patrick C. West, Associate Professor of Natural Resources/ Environmental Sociology and Samuel T. Dana, Professor of Outdoor Recreation at the University of Michigan, School of Natural Resources.

- List of participants from the Environment Conference 1991, Lincoln University, New Zealand.

- List of participants from Protected Areas in Mountain Environments (Parks, Peaks and People): International Conference, Hawaii, Volcanoes National Park, 1991.

- List of participants from Environmental Education in Asia and the Pacific, UNEP Bulletin No 22, June 1981.

- List of experts from Report of a Regional Meeting of Experts to Develop a Programme of Action for Environmental Education and Training in Asia and the Pacific 11-15 November 1985, Bangkok, Thailand, UNEP, 1986.

- List of experts from Environmental Education Strategy for Nepal, by Ukesh Raj Bhuju, 1990.

- Culture and Conservation: The Human Dimension in Environmental Planning, 1985, edited by Jeffery A McNeely and David Pitt.

- List of participants from Teaching Conservation: Proceedings of a Seminar on Teaching Conservation Overseas. Held at Homerton College, September 1986. Edited by Simon Albrecht and Janet Seeley.

- List of recommended people (experts) contributed by my supervisor, Dr P.J. Devlin, Department of Parks, Recreation and Tourism, Lincoln University, Canterbury, New Zealand, 1992.

Lincoln University

Te Whare Wānaka O Aoraki

APPENDIX III

LETTER AND QUESTIONNAIRES

21 April 1992

Dear

Namaste!

My name is Hum Gurung. I am currently a Masters student in Parks and Recreation Management at Lincoln University, New Zealand. I was working with the Annapurna Conservation Area Project in Nepal prior to postgraduate study and my **thesis** topic will be of benefit to my future work in Nepal.

My thesis research topic deals with environmental education in developing countries. I intend to evaluate the nature of environmental education and, in particular, environmental education models. The models will be distributed for review to a selected group of expert people in New Zealand and overseas. I must accomplish this research by the end of 1992.

I am seeking your assistance for this research project. I would like to invite you to join a small panel of experts to answer questions, provide information and then later, to review my proposed models. I would be greatly appreciative if you will accept my invitation and respond to me at your earliest convenience. I hope that you will find this request interesting and challenging. I am looking forward to hearing from you.

Thank you very much for your assistance.

Sincerely,

Hum B. Gurung
Department of Parks, Recreation and Tourism

Dr P.J. Devlin
Ms. P. Lynch
Supervisors

Department of Parks, Recreation and Tourism

ENVIRONMENTAL EDUCATION

AN EXPERT SURVEY
1992

Department of
Parks, Recreation &
Tourism
Lincoln University

Lincoln University

Te Whare Wānaka O Aoraki

DEPARTMENT OF PARKS, RECREATION AND TOURISM
P O Box 84
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ENVIRONMENTAL EDUCATION
AN EXPERT SURVEY
1992

I am seeking the assistance of a small group of environmentalists, conservationists, teachers, environmental educators and practitioners through various areas of the world who are expert in the field of environmental education. As an expert in this area you are invited to offer your ideas and experience of the multidisciplinary area of environmental education.

Please complete the questionnaire and post it back to me in the return addressed envelope provided by the date indicated. It is not possible to obtain postage stamps for all countries involved. Thank you for being prepared to accept this cost.

Any additional comments you would like to give on a separate sheet(s) of paper will be most welcome.

Your reply will be treated confidentially. If you have any enquiries or concerns regarding the research and questionnaire, please feel free to contact me or my supervisors.

Thank you very much.

SECTION A

This section deals with environmental problems in **the country in which you live** and the ways in which environmental education can contribute to the resolution of these problems.

1. In general what are the environmental problems in your country? Please list the problems and then rank them from most important to least important(1= most important).

Problem	Rank
a._____	[ ]
b._____	[ ]
c._____	[ ]
d._____	[ ]
e._____	[ ]
f._____	[ ]
g._____	[ ]
h._____	[ ]
i._____	[ ]
j._____	[ ]

2. What are the causes of the above environmental problems? Please list the most significant causes.

3. What do you see as the specific role that environmental education has in helping to resolve these environmental problems?

4. In your opinion, what might the outcomes of environmental education be? Please rank the outcomes from most important to least important(1= most important).

	Rank
a._____	[ ]
b._____	[ ]
c._____	[ ]
d._____	[ ]
e._____	[ ]
f._____	[ ]
g._____	[ ]
h._____	[ ]
i._____	[ ]
Others(specify)_____	[ ]
_____	[ ]
_____	[ ]

SECTION B

This section deals with environmental education in developing countries. If you have not had first-hand experience in developing countries please answer the questions based on your general experience with environmental education.

5. Please identify target groups (in order of priority) which you think may benefit from an environmental education programme in developing countries. Please state your reasons for your order of priority.

6. Which of the following do you think are the most important approaches for environmental education in developing countries? Please rank them from most important to least important(1= most important).

	Rank
a. Access to information	[ ]
b. Informal education	[ ]
c. Training of personnel	[ ]
d. Research and experimentation	[ ]
e. Teaching materials	[ ]
f. Technical and vocational education	[ ]
g. General school/university education	[ ]
h. Specialist training	[ ]
i. International and regional co-operation	[ ]
Others(specify)_____	[ ]
_____	[ ]
_____	[ ]

7. Which of the above environmental education approaches can best influence the target groups you have identified? Please write the target groups on the left and the letter corresponding to approaches in Q.6 in the brackets on the right.

Target group	Possible environmental education approaches (provide letter from above list)
_____	[ ]
_____	[ ]
_____	[ ]
_____	[ ]
_____	[ ]
_____	[ ]
_____	[ ]
_____	[ ]
_____	[ ]

SECTION C

This section deals with the environmental education models and processes which have been applied both in **developed and developing countries.**

8. Which environmental education model(s) (e.g. Spaceship Earth model) are used in your country and/ or in a developing country with which you are familiar? Please briefly describe and comment on the model(s) and name the country to which they relate. (You may not be able to identify a model as such, but a description of approaches you have encountered would be helpful.)

9. What are the essential elements of the model(s) that are effective frameworks for environmental education in the countries above?

10. In your view what are the strengths and weaknesses of the model(s)?

SECTION D

The purpose of this section is to get your views on the involvement of **local people in developing countries** in the planning of environmental education for resource management.

11. Please comment on the importance of involving local people in the planning of environmental education and the strategies you have encountered or heard about which would help ensure that this takes place.

12. If local people are incorporated into environmental education planning how and at what stages of the planning should they be involved?

13. In what ways can cultural values (e.g religious rituals, spiritual beliefs and traditional conservation skills) be incorporated into environmental education (please give specific examples where possible)?

14. Given your response to Q. 13 what methods are best used to foster inclusion of cultural values in local environmental education programmes?

15. In your opinion, what incentives are effective in encouraging local people to participate in environmental education programmes in developing countries? Please list the types of incentives(if any).

General Information

16. Would you please describe your association(if any) with environmental education in developing countries?

17. Would you please describe your association with environmental education in your own country?

Your name:_____

Address: _____

_____

Phone:_____ Fax:_____

Electronic mail:_____

Final comments will be appreciated.

Thank you again for the time and judgement you have used in completing this questionnaire. Please mail the questionnaire to me by **the end of May 1992.**

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APPENDIX IV

EXPERTS' BIOGRAPHY

Ms. Bev Abbott is a Principal Conservation Officer (Education) with the Department of Conservation, Wellington, New Zealand.

Mr. Ukesh Raj Bhuju is a country representative of the WWF Nepal programme.

Mr. Mark Boulton is Director of the International Centre for Conservation Education, United Kingdom.

Dr Jenny Bryant is a writer and consultant for UNEP/ESCAP/ SPREP on environmental education in Fiji.

Dr Graeme Buchan is an environmental physicist and senior lecturer in Lincoln University, New Zealand.

Mr. Gordon Cessford is a Social Scientist with the Department of Conservation, Wellington, New Zealand.

Mr. Steve Cutler is a biology and outdoor education teacher at Pleasant Point High School, New Zealand.

Professor E. Decker is a trainer and educator for environmental education in the United States of America.

Mr. Mike Edginton is currently working for environmental protection in Solomon Islands.

Ms. Deidre Francis is a lecturer in Conservation, Wildlife Management, Ecology, Forestry Extension, Social Forestry and Public Relations at Bhutan Forestry Institute, Taba/ Thimphu.

Dr Chandra P. Gurung is Acting Member Secretary for the King Mahendra Trust for Nature Conservation, Nepal.

Dr G.M. Hornby teaches science programmes in secondary schools in the United Kingdom.

Dr Lynn Hurry is a consultant in both environmental and development education in South Africa.

Mr. Bruce Jefferies is a Conservation Management Advisor to the government of Papua New Guinea.

Mr. Warren Jowett is Principal of Mackenzie College, Fairlie, New Zealand.

Mr. Wayne D. Lamphier is an environmental consultant specialising in watershed management and hydro-electric development planning in developing countries.

Mr. Barry Law is a lecturer in Outdoor and Environmental Education at Christchurch College of Education, Christchurch, New Zealand.

Mr. P.H.C. Lucas is chairperson of the IUCN Commission on National Parks and Protected Areas Management in Switzerland.

Dr Milton McClaren is associate professor at the Faculty of Education, Simon Fraser University, Canada.

Mr. Bert McConnell is a senior lecturer in Outdoor and Environmental Education at Christchurch College of Education, Christchurch, New Zealand.

Dr Margaret O'Brien is a researcher in the field of environmental education.

Dr Badri D. Pande is the coordinator of the environmental education programme in Nepal as part of National Conservation Strategy Implementation Project.

Dr Graeme Scott wrote a Ph.D. thesis on School-based Environmental Education in New Zealand: Conceptual Issues and Policy Analysis.

Mr. Mingma Norbu Sherpa is a Bhutan representative for WWF.

Mr. Peter Smith is an environmental education and science teacher at Lincoln High School, New Zealand.

Mr. Shailendra B. Thakali is a Conservation Education and Extension Officer with the Annapurna Conservation Area Project in Nepal.

Mr. Christopher Tobayiwa works in informal environmental education in Zimbabwe.

Mr. Martin Toop is a lecturer in science at Christchurch College of Education, Christchurch, New Zealand.

Ms. Miriam Torres is assistant of the Public Conservation Awareness Programme at the Peruvian Foundation of Nature Conservancy in Peru.

Mr. Batu K. Uprety is an ecologist and member of the Nepal Environmental Conservation Group.

APPENDIX V

EXPERTS' COMMENTS

"The development of methods for comparing the effectiveness of different approaches to EE is one of the big challenges. There has been far too little emphasis placed on evaluation of outcomes and evaluation of programmes in the history of EE development".

"One guru says he knows his approach is working when he observes kids' faces, but that is inadequate from research perspectives".

"You may have to take an early decision about whether to focus on formal education or whether to attempt to cope with other sectors".

"I am much more inclined to think that EE does not stand easily by it self in New Zealand. It has permeated into every sphere of Education, Society, and may be does not have an identifiable structure in it self. However, EE as a single entity may work well in developing countries and where environmental degradation is advanced".

"Regrate this arrive at very busy time- so did not have as long to consider this is as I would have liked".

"It is a vitally important field and congratulations for this great idea".

"EE too often has a narrow and elitist focus. The urban middle to upper class and better educated youth attempt to convert those they don't understand to their way of thinking, under the banner of consciousness raising".

" I can appreciate your interest and time taken to develop this questionnaire but did you consider who is paying for our time and be involved in your work? The questions you ask, perhaps about models of environmental education, have unsolved some of has in months, if not years of thinking. I still do not have answers although feel I can see some light of the end of the tunnel. I will send an information as I write it up over the next year and if you are still in Lincoln".

"I think your questionnaire has very rigid questions. The questions imply a narrow definition of EE, and a narrow interpretation of how it can be enacted. EE is everything, not just a separable subject or approach".

"That EE needs to include a huge range of topic areas including some work on root causes of human individual demands accumulative, political and economic power plays that compound environmental degradation".

Lincoln University

Te Whare Wānaka O Aoraki

APPENDIX VI

FOLLOW-UP LETTER

22 May 1992

Dear
Namaste!

Last month I sent you a letter of invitation and a research questionnaire on environmental education. I hope you have received them by now.

HAVE YOU COMPLETED AND RETURNED YOUR QUESTIONNAIRE?

If you have, please discard this reminder. If you have not, would you please do so at your earliest convenience? It is very important to me that you respond and return your questionnaire. Your views will be valued and appreciated in my research project.

I look forward to receiving your completed questionnaire.

Thank you once again for your assistance.

Sincerely,

Hum B. Gurung
Department of Parks, Recreation and Tourism

APPENDIX VII

REASONS FOR DECLINING INVITATION

1. "I feel that I have not the right expertise to be involved in your programme".

2. "He said he looked at your questionnaire and he felt most of the questions were not in his area of expertise".

3. "... has left our Ministry and I am the Head of the Public Education Department. I am sorry I have to decline your invitation to join a small panel of experts".

4. "Thank you for your letter and survey. However, as much of the survey concentrates on developing countries, we are unable to answer this. We do hope that the enclosed information pack is of some use and we wish you well with your research project".

5. "Thank you for inviting me to be part of your study. Unfortunately I will have to decline as I am away on ... leave from Aug. 1992- Feb. 1993".

6. "... out of the country until fall. Sorry that he is unable to reply".

Lincoln University

Te Whare Wānaka O Aoraki

APPENDIX VIII

LETTER AND A PROPOSED MODEL

30 October 1992

Dear
Namaste!

Thank you very much for accepting my invitation to join a small panel of experts to answer questions, provide information and to review my proposed model for environmental education in developing countries.

I was very pleased to receive your first completed questionnaire. Your views and comments were extremely useful for my research work.

I have enclosed the model and descriptive examples for your review. I will be most grateful if you would kindly write your comments and criticisms of the model on the pages enclosed. In your review please consider what has been overlooked as well as what has been included, and make any other comments you feel necessary.

As you are aware I am hoping to complete this phase of research work by the end of November. I would appreciate your prompt reply. Please return this material to me in the self-addressed envelope at your earliest convenience.

Thank you once again for your help and co-operation.

Sincerely,

Hum B. Gurung
Department of Parks, Recreation and Tourism

Dr P.J. Devlin
Ms. P. Lynch
Supervisors

Department of Parks, Recreation and Tourism

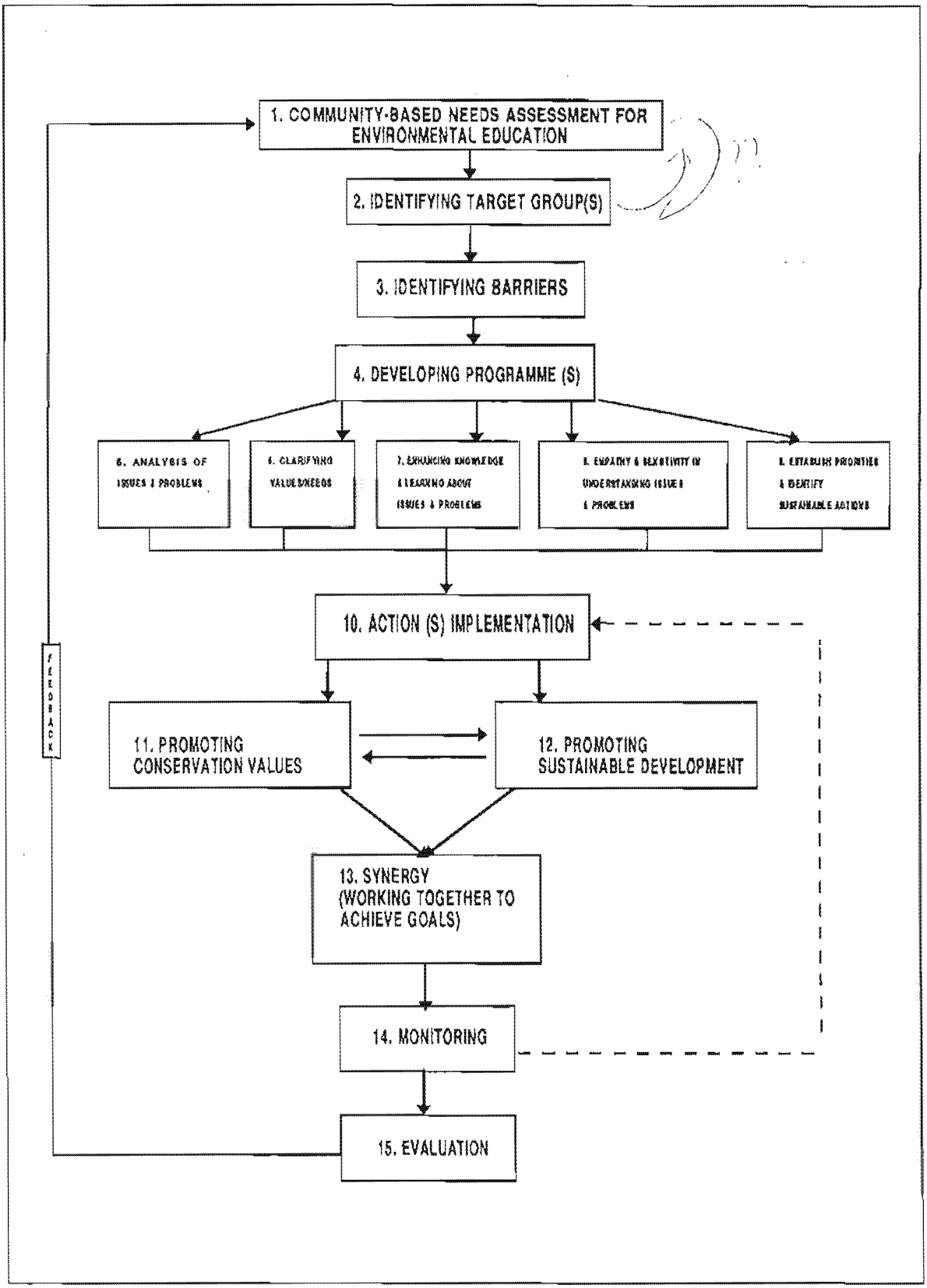

Figure 2 An Integrative and Participatory Model for Environmental Education

1. COMMUNITY-BASED NEEDS ASSESSMENT FOR ENVIRONMENTAL EDUCATION

Examples:

- Need for identifying Local or National Issues and Concerns
- Need for understanding of ecological processes
- Need for conservation of natural resources
- Need for integration of the components of sustainable development

2. IDENTIFYING TARGET GROUPS

Examples:

- Local resource consumers: farmers, householders, protected area dwellers,
- Non-local resource consumers: domestic and international tourists
- Resource Producers: entrepreneurs, business people, industrialists etc.
- Decision makers: politicians(national, regional and local levels), legislators, administrators, bureaucrats, etc.
- Special interest groups: journalists, conservation clubs, etc.
- Community partners: community leaders, religious leaders, women, rural/urban dwellers, students, teachers, etc.
- Aid agencies: World Bank, Asian Development Bank, USAID, SATA, WWF, UNESCO, UNEP, WHO, FAO, UNICEF, UNDP, ILO, etc.

3. IDENTIFYING BARRIERS TO SOLVING ENVIRONMENTAL PROBLEMS

Examples:

- Lack of knowledge about environment/ecology
- Lack of technological solutions to environmental problems
- Limited or lack of money
- Social structures/constraints
- Lack of political will
- Cultural (deep seated belief systems)
- Ideological differences at interpersonal levels.

4. DEVELOPING ENVIRONMENTAL EDUCATION PROGRAMME (S)

Examples:

- Formal education through school/university
- Informal education through dissemination of information (radio, television, newspapers, brochures), extension(community groups, one to one communication) and training (workshops, seminars, village meetings, study tours)

5. ANALYSIS OF ISSUES AND PROBLEMS

Examples:

- What are the causes of deforestation?
- Where/when does soil erosion occur?
- Who/what is causing pollution problems?

6. CLARIFYING VALUES/NEEDS

Examples:

- Clarification of local peoples' basic needs in the light of their natural, social and economic environments
- Clarification of local peoples' needs in the light of spiritual values

7. ENHANCING KNOWLEDGE AND LEARNING ABOUT ISSUES AND PROBLEMS

Examples:

- Developing environmental awareness in people of all ages
- Increasing knowledge about interrelationships within the natural environment e.g. cutting firewood and landslides
- Understanding of impact of tourism on daily lives of local people
- Increasing people's communication skills in dealing with agencies concerned with environment

8 EMPATHY AND SENSITIVITY IN UNDERSTANDING ISSUES AND PROBLEMS

Examples:

- attitude of concern
- acceptance of needs

9.ESTABLISH PRIORITIES AND IDENTIFY SUSTAINABLE ACTIONS

- Identification of appropriate traditional knowledge/practices
- Evaluation of appropriate new technologies

Examples:

* Establish forest/fodder nurseries
* Establish afforestation/reforestation programmes
* Forest management/conservation
* Habitat and watershed management
* Use alternative energy sources (e.g. electricity)
* Community identified development projects(e.g. installation of drinking water in village(s)
* Health clinics
* School buildings (systems)
* Small scale income generating activities
* Wildlife management
* Conservation-based research and training

10.ACTION(S) IMPLEMENTATION

Examples:

* Use of combination of a "grassroots", top down and mass education action strategies

11. PROMOTING CONSERVATION VALUES

Examples:

* Promotion of the concept of the biosphere as life-support systems
* Promotion of importance of conservation of biological diversity
* Promotion of nature conservation as a daily activity

12. PROMOTING SUSTAINABLE DEVELOPMENT

* promoting ecological sustainability
* promoting social sustainability
* promoting cultural sustainability
* promoting economic sustainability

13. SYNERGY

"Synergy" is defined by English and English (1958) as "exerting force together or in combination, or upon the same point." For the purpose of this model, the desired outcome is to fulfil the needs of people and to achieve the conservation of natural resources. Fulfilment of the basic human needs and promotion of conservation values as well as sustainable development will take place if this synergic relationship is fostered.

14. MONITORING

Examples:

* On going reassessment of actions and changes as required (back to 10)

15. EVALUATION AND FEEDBACK

Examples:

* Qualitative evaluation
* Quantitative evaluation

Lincoln University

Te Whare Wānaka O Aoraki

APPENDIX IX

THANK YOU LETTER

30 October 1992

Dear
Namaste!

This is a brief note to thank you for contributing so generously to the first stage of my questionnaire on environmental education for developing countries.

The importance which was given by respondents to various aspects of process to establish environmental/conservation education programmes has helped me to establish a model which might be suitable for developing countries.

I have drawn a small sample from the original panel and have requested their evaluation of the model and the brief guideline notes which describe it. Further comment from you is not therefore essential. If however, you would like to retain a working role with the process I would be very happy to post you the materials.

Once again, I would like to thank you for your original contribution.

Sincerely,

Hum B. Gurung
Department of Parks, Recreation and Tourism

APPENDIX X

ABBREVIATIONS

ACAP	ANNAPURNA CONSERVATION AREA PROJECT
ADB	ASIAN DEVELOPMENT BANK
ARCPS	ACTION RESEARCH AND COMMUNITY PROBLEM-SOLVING
EE	ENVIRONMENTAL EDUCATION
EEA	ENVIRONMENTAL EDUCATION AOTEAROA
FAO	FOOD AND AGRICULTURE ORGANISATION
IEEP	INTERNATIONAL ENVIRONMENTAL EDUCATION PROGRAMME
IPMEE	INTEGRATIVE AND PARTICIPATORY MODEL FOR ENVIRONMENTAL EDUCATION
ILO	INTERNATIONAL LABOUR ORGANISATION
IUCN	INTERNATIONAL UNION FOR THE CONSERVATION OF NATURE AND NATURAL RESOURCES (THE WORLD CONSERVATION UNION)
PLT	PROJECT LEARNING TREE
PW	PROJECT WILD
SATA	SWISS ASSOCIATION FOR TECHNICAL ASSISTANCE
UNDP	UNITED NATIONS DEVELOPMENT PROGRAMME
UNEP	UNITED NATIONS ENVIRONMENT PROGRAMME
UNESCO	UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANISATION
UNICEF	UNITED NATIONS CHILDREN'S FUND
USAID	UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
WCED	WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT
WHO	WORLD HEALTH ORGANISATION
WWF	WORLD WIDE FUND FOR NATURE