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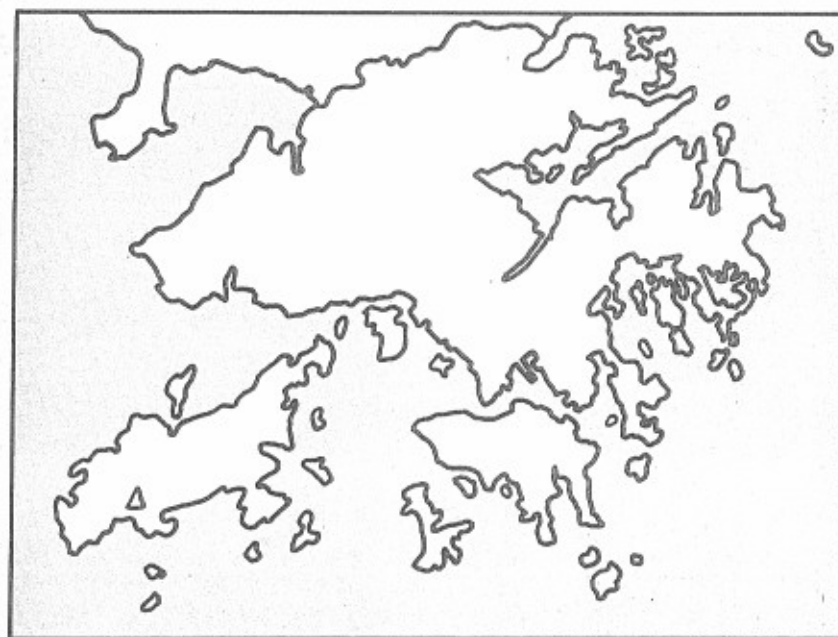
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Hong Kong Geographical Association 香港地理學會

## THE HONG KONG GEOGRAPHER



Vol. 9 No.2 April 1992  
Special Issue: Environmental Education



P.O. Box 97553, Tsim Sha Tsui, Kowloon, Hong Kong

## Words from the Editor

The papers in this issue of the Hong Kong Geographer deal with geography and environmental education. During the past decade we have seen a remarkable growth of interest in our environment and the need for people, especially young people, to learn about it. Hence, today's teachers have a special duty to foster the next generation's awareness of its responsibility for the planet. Geography, as an academic discipline, has inherited a commitment to the study of man-environment relationship. It has been an integrated science which studies natural ecosystems and of their anthropogenic transformation. Often, it is the geographic point of view which will help to develop in people a greater consciousness of their responsibility for human communities and their habitat. Therefore, geographic education is of paramount importance in the dissemination of environmental knowledge and in fostering environmental-friendly attitudes to our generation.

The Broad would like to thank the contributors of this issue, more specifically to Dr. Philip Stimpson, Dr. Yau Lai Lai Ling, Mr. Wong Kam Fai, and Dr. Luk Chiu Ming. Moreover, the publication of this issue is sponsored by the Manhattan Press (H.K.) Ltd. On behalf of the Board of Editors and the Hong Kong Geographical Association, I would like to extend our deep appreciation for this generous support.

Wong Koon Kwai  
Guest Editor

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# Geography, Environment and Education in the 1990s

by

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## Introduction

During the early part of 1991, we have been confronted by pictures of oil slicks in the Persian Gulf. Over 7,000 dugong, or sea cows, and many green turtles which inhabit those waters are in danger because they feed on the beds of sea grass off Bahrain which are likely to become contaminated by the oil spills. Kuwait City seems to be in permanent darkness as the smoke from oil well fires plows over the country and seemingly will continue to do so for some time. The daily temperatures have fallen by about 6 degrees Celsius and the people are experiencing unusually heavy rainstorms because of the effect on the micro climate of the region.

Few days, it seems, go by when we do not hear, or read, about some aspects of the environment. In Hong Kong, every motorist has received a pamphlet from the EDP pointing out the benefits of using unleaded petrol. Local newspapers run special environment pages each week. The themes which are brought before us are found at widely varying scales and in disparate locations. They have in common the feature that we are creating obstacles to our health and to the surroundings in which we live, and that we need to do something about it for our future happiness. Happiness is to be "Green" (Simmons, 1990). Green issues are at the forefront of public opinion and on the agenda of curriculum development. The challenge for geography in the 1990s will be to embrace more fully an environmentally sensitive approach.

In this paper, I want to outline some of the characteristics of an environmental approach in geography and to suggest that one new area in which we will be able to make a contribution to environmental education during the 1990s.



## Is Geographical Education Not the Same as Environmental Education?

Jonathon Porritt, Director of Friends of the Earth, commented to the annual conference of the U.K. Geographical Association in 1987 that "much of what goes on in the name of education today makes little contribution to protecting life on earth, indeed much of it promotes exactly those values which directly or indirectly undermine the life support systems on which we ultimately depend" (Porritt, 1988).

The central question which must be addressed at the outcome is by what right geographers claim environmental education as a part of their domain. The interest of geographers in the relationship between people and the environment is a long standing one. "Is not environment the stuff of geography? And thus is not geography environmental study par excellence" wrote Bailey in encouraging schools to take up the challenge of environmental education. The implication is that in geography we study the environment, and therefore it follows that geographical education is the same as environmental education. Kates (1987), however, has reminded us that, whilst people and environment is a central tenet of geography, it is sometimes ignored. Moreover, what are the guiding concepts which would drive an environmentally sensitive geography?

In geography there have been a number of paradigms which have determined and continue to determine the sort of geography we teach. For some of us, a regional framework contains the essence of geography; for others an earth science, spatial organization, humanistic or geography as human ecology standpoint is preferred. Not all embrace a green perspective. Geographical education can contribute to environmental education but this is not an inevitable outcome.

What, therefore, are the characteristics of an environmentally sensitive geography? In this paper I will dwell on three aspects: Interrelatedness; Concern with Environmental Health; and People Centredness.

## Interrelatedness

Interrelatedness is a way of thinking. It expresses an holistic view of our surroundings. An environmental perspective to geography teaching requires that we do not isolate elements of our world but that we encourage our pupils to see them in the framework of a wider whole. Synthesis and understanding interactions are goals in environmental study. The connectedness of things is something that we have tended to disregard. Our thinking is frequently fragmentalist rather than holistic (Greig et al., 1989).

This idea can be illustrated by looking at Mai Po in the north-west New Territories. The marshes at Mai Po derive their distinctive character from the interlinkage of a low lying mud flat in the intertidal zone located in an area with tropical climate. The muddy intertidal conditions in the Pearl Delta create an environment in which mangrove can flourish. Over time decaying leaves of the mangrove fall to the ground and enrich the muds. The muds act as a feeding ground for other animals. The living mangrove provides a habitat for birds which feed on the fish and other aquatic life brought in by the tide. The diversity of living forms and the potential productivity of the environment attract people who cut the mangrove, dam channels and create *gei wai*. Each element is to a greater or lesser degree dependent on the others. The interconnected, interacting whole gives far greater insight than the sum of the individual effects. Central is the notion that parts are only finally understandable if viewed in dynamic relationship with all other parts.

In an environmental perspective the symbiotic nature of our surroundings is of the essence in which mutual interaction and interdependence are distinctive features. In much of geography there is a tendency to study aspects of the landscape in isolation. The approach is often reductionist and thus insufficient emphasis is given to the interaction between components of the biophysical systems in which we inhabit.

For example, we may teach about the importance of condensation nuclei in rain formation or the significance of upwelling cold water off Namibia or Peru in reducing rainfall over the adjacent land areas. However these two concepts can be

looked at together. It seems that oceanic plankton give off dimethyl sulphide in aerosol form and these droplets form condensation nuclei for downwind cloud formation and rainfall (Simmons, 1990). Hence the nature of oceanic plant life can be critical for continental rainfall given appropriate atmospheric humidity.

There is also the emerging view that the surface temperatures of the Pacific Ocean are a critical factor in determining major features of the global circulation of the atmosphere. This factor is thought to be responsible for the up-welling of water off Peru, the intensity of which determines the El Niño phenomenon. The climatic change associated with this has had a major effect on the lives of the people in Pacific South America. The drought and famine it has brought has affected the economy and political stability of an already turbulent region. The demand for wealth generating development to solve these problems has placed stress on the physical environment through over-exploitation and pollution effects.

In the Aral Sea region of the Uzbekistan and Kazakstan Republic of the Soviet Union, there is a mighty inland sea "caught in the grip of some evil chemistry as its waters dry to salt and blow away as noxious dust to strike the people with illness and death" (Ellis, 1990). In 1918, it was decided to draw off the waters which fed the Aral Sea to irrigate the "white gold" of cotton. Since 1960, when the problem was first recognized, the surface area of the Aral Sea has shrunk by 40%. The town of Miyurak, a former fishing centre, is now 40 kilometres from the water. The loss of livelihood from fishing has not been replaced by jobs in farming; the soils from the muds of the sea bed are too toxic from the residues of sodium chloride and sodium sulphate. Environmentally the situation can only be understood if it is seen in entirety.

### Concern with Environmental Health

Economically and socially, the recent history of the Aral Sea has been a disaster for the people caused by a decision which failed to maintain a sustainable environmental system. The concern we have for our surroundings focuses on its ability to sustain life in the way we now know it.

Since the middle of the nineteenth century, levels of carbon dioxide in the atmosphere have risen by 28%. The rate of increase has continued to rise with a 10% increase in the last 40 years (Porritt, 1988). The oceans are unable to absorb carbon dioxide fast enough and deforestation limits the role of plants to take up carbon dioxide. The doubling time for carbon dioxide levels may be less than 50 years. Such an increase would result in a rise in global temperatures of between 1.5 and 5.5 degrees Celsius as solar heat radiated back to the atmosphere from the land is absorbed by the carbon dioxide. This is the heart of the "Greenhouse Effect".

Rises in temperature will lead to rapid melting of the ice caps and this in turn may result in higher sea levels by as much as 1.5 metres. The effects on the way of life of many people may be catastrophic. Pacific atolls may become submerged or suffer from salt water pollution as the water table rises and is subject to incursions by sea water. Palm plantations and the livelihood of those dependent on them will be at risk. Similarly in Bangladesh where the economy is already weakened by river flooding, typhoons and rapid population growth, the delta of the Ganges is likely to be threatened by inundation from the sea with consequent loss of farmland.

Climatic modelling suggests that the changes would not only be felt at the coast. In tropical regions rainfall is likely to increase. In Thailand and Sarawak, for example, where extensive tracts of rain-forest have been removed the ravages of soil erosion are likely to be exacerbated. In temperate areas of the globe which contain the "bread baskets" of the world, warming would lead to drought, drying of the soil and increased risk of soil erosion. The Great Plains and Ukraine may turn to semi-desert (Matthews, 1990). This may have serious implications for our ability to feed to world's population or at least consequences for the world price of grain.

Other changes to environmental health are less hypothetical because we suffer from their ill effects now. In industrialized countries, waste production increases in parallel with rises in the standard of living. In Hong Kong, we produce over 20,000 tonnes of solid and semi-solid waste every day (EPD, 1988). In the past, the most convenient way to dispose of this problem was

often to flush much of the waste into the sea — out of sight, out of mind. Despite considerable efforts to dispose of waste in an environmentally more sensitive way, each year in Hong Kong, beaches are closed, red tides are a regular occurrence and certain sea foods must be avoided. The risk of illness after bathing on certain beaches is often high. It is perhaps not an over-exaggeration to state that we are poisoning ourselves. The environment is under stress and at times cannot cope with the levels of waste we inflict; carrying capacity is exceeded. The problem is no longer out of sight and has a direct impact on our quality of life.

Closely related to the question of maintaining a healthy environment is the issue of resource development including the controversy surrounding nuclear power generation. For example: how should toxic wastes from nuclear power industry be disposed of? Is tidal power or wind power a realistic alternative? If we continue to use coal, what will be the environmental implications? These questions not only focus attention on how the environment can be maintained but also on the actions of people as decision makers.

### People Centredness

When we come to look at environmental health, we inevitably are brought to face with the tensions between the desires of people and the needs of a sustainable future for our surroundings. "The major problems in the world are the result of the difference between the way nature works and the way man thinks" (Bateson, 1973, p. 436).

The natural world is continually changing. For example, plant succession leads to changes not only in plant and animal life but in soils, hydrology and relief. Typhoons, and other natural hazards, can, over-night, result in major changes; however equilibrium is generally rapidly restored as feedback mechanisms seek to recreate balance. Moreover many plants and animals have taken on adaptations which enhance their ability to survive.

Mankind, however, is perhaps distinctive by the magnitude and the frequency of the changes it can bring about. People seem to have the tendency and desire to alter their surroundings

in line with their capabilities to do so. Often the impact is such that equilibrium is not re-established for long periods of time. The dioxin spill in Italy is pungent reminder of what we can do but it is not the only one. Bailey (1986) noted in the U.K. that there were lead mining sites where extraction had ceased one hundred years ago but where spoil heaps were hardly colonized by vegetation today.

The importance of people as decision makers is a critical aspect of environmental education. The symbiotic relationship between people and their surroundings is an ultimate truth but in the short term the ability of people to alter their environment is a potent one. We need to emphasize a biocentric viewpoint of mankind in which people are but one element among many in the plant's system each with its own intrinsic value.

In Hong Kong rapid economic success through hard work and the harnessing of technology may have made us feel that anything is possible. Technological solutions can mollify many problems in the short term but, in the long term, environmental health is dependent on the values and attitudes we have towards our environment. Environmental study is as much about personal change as social and environmental change.

Consequently whilst it is important that young people come to learn about the nature of their world and the process which shape it, it is vital that they are exposed to situations where they must think about their attitudes to the environment and why they should adopt some but reject others. We need our young people growing believing in the importance of building a sustainable environment. Children should leave school with feeling for the wonder and beauty of their surroundings, and with a realization of the loss that harm to their environment would bring about.

Whilst much of environmental education deals with problems, it is essential that we do not fail to emphasize the positive value of the environment. Above all environmental education looks to the future. What is and why it is are bases for deciding how it will be and how it ought to be. Stewardship is an essential value that we should seek to cultivate.



## Effecting an Environmental Perspective to Geography

It should be clear by now that environmental education is a perspective we can incorporate into our teaching of geography. What does it involve? This can be explained by looking at some topics from the lower secondary curriculum: the tropical rain-forest; farming on the Prairies; and farming in California.

The tropical rainforest is a Form Two topic. One approach is to stress the relationship between climatic and vegetation. In an environmental approach, we still need to teach about this relationship but this is within the wider context of the fragile nature of the rain-forest ecosystem, the effect of change in one part — for example deforestation — on the other parts of the system, the problem recovery if there is over-exploitation, and the benefits of maintaining diversity. The content is the same; the framework and purpose is different.

The Prairies of North America is a Form Three topic. Traditionally this has been used as a case study to illustrate the concept of extensive agriculture and the way farmers adapt their way of working where there are condition of intense winter cold. Both these ideas would be needed in an environmental focus on the potential conflict between the way farmers try to increase yields in a different environment and the likely risk of long term harm from such practices.

Similarly in California we teach about irrigated market gardening but this can be extended to look at the wider environmental implications of irrigation. By taking water out of rivers and diverting it into other drainage basins new farmlands are created but at the same time this results in deposition of sediment in the depleted streams which no longer have the power to clear their channels or flush salts from the soils of their floodplains.

In urban and industrial topics, environmental issue are often more directly addressed. However environmental problems are sometimes seen as inevitable outcomes of modern life; responsibility is not the individual's but "government's" as though government and the people were somehow unconnected. Children need to realize that people are not at the mercy of impersonal

forces and that commitment to the informed care and improvement of the environment is important (D.E.S., 1989). They need to be aware that whilst the current state of the environment is the result of past decisions and follies, its future depends on contemporary actions and decisions including, in some measure, their own.

## Environmental Education and AS Level Liberal Studies

It is likely that over the next few years that many of us will be involved in the new Environmental Studies Module of the AS level Liberal Studies Module. The intention is that sixth-form students will take two A levels and four AS level subjects. An AS level subject will occupy half the time taken by an A level and will be taught over the two years in the sixth-form. Three AS levels will be taken by all students: Chinese Language and Culture, English and Liberal Studies.

Liberal Studies contains six modules and students must select two. One of these is Environmental Studies. Liberal Studies is issue based with emphasis being placed on the way students organize information and the arguments they put forward to resolve issues. The emphasis is not on accumulating knowledge although knowledge will be needed for an informed view of the issues. It is, like A level geography, enquiry based.

In the Environment Module, there are three issues:

- (i) What are the implications if people continue to disrupt the world environment?;
- (ii) How are people to cope with the fact that the world's energy and natural resources are strictly limited and in danger of being exhausted?; and
- (iii) What can be done to improve the Hong Kong environment in the face of population and industrial growth?

The first issue concentrates on global warming, acid rain, ozone depletion, the over-use of pesticides and fertilizers and the reasons why we should protect endangered species. In the second issue, the focus is on the energy crisis, mineral depletion,

nuclear and alternative energy sources and on renewable resources. The third issue begins by looking at air, noise and water pollution and the question of waste disposal leading to a discussion of the ways we can protect our surroundings by setting, for example, country parks.

Many of these topics are familiar to us because we currently teach them at CE level. Geography teachers have now been involved in issues based teaching for half a decade. We can bring considerable experience on how to teach most effectively this sort of value laden content. The role-plays, debates, simulated inquiries and project work used in CE issues based teaching will be vital ingredients of the Liberal Studies Programme.

### Conclusion

In this review of geography and environmental education, I have sought to suggest that geographers have an important role to play depending on the perspective we give our lessons. The stuff of geography (to paraphrase Bailey) can be the same as environmental study. Geographers are making a valuable contribution to environmental education because they bring in a spatial dimension and they bring in reality. In the 1990s, one opportunity we will have to contribute to increased understanding of the environment will be through the Liberal Studies Environmental Module. Perhaps now is the time to make this our own.

### REFERENCES

Bailey, P. (1986) "A geographer's view: Contributions of geography to the school curriculum". *Geography*, 71(3):p.193-205.

Bateson, G. (1973) *Steps to An Ecology of Mind*. London: Granada.

E.D.P. (1989) *Environmental Education from 5-15. Curriculum Matters 13*. London: H.M.S.O.

Ellis, W. S. (1990) "The Aral: A Soviet sea lies dying." *National Geographic*, 177(2):p.73-93.

E.D.P. (1988) *Environment Hong Kong 1989*. Hong Kong: Government Printer.

Greig, S., Pike, G. and Selby, D. (1989) *Greenprints for Changing Schools*. London: Kogan Page for World Wide Fund for Nature.

Kates, R. (1987) "The human environment: The road not taken, the road still beckoning." *Annals Association of American Geographers*, 77,p.525-534.

Matthews, S. W. (1990) "Is our world warming?" *National Geographic*, 178(4), p.66-99.

Porritt, J. (1988) Education for life on earth. *Geography*, 73(1):p.1-8.

Simmons, I. (1990) Ingredients of a green geography. *Geography*, 75(2), p.98-105.

# Environmental Education through the Teaching and Learning of Geography

by  
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Environmental issues have increasingly occupied the attention of educators, legislators and the community in general, for example, issues such as pollution and resource conservation. The diversity of people interested in the environment has led to the introduction of environmental education into schools.

## Environmental Education: Definition and Objectives

Environmental education has been defined as

"a process aimed at developing a world population that is aware of and concerned about the total environment and its associated problems and which has the knowledge, attitudes, motivation, commitment and skills to work individually and collectively towards solutions of current problems and the prevention of new ones", (Stapp and Cox, 1979).

A UNESCO environmental education programme spelled out five major objectives for environmental education. They are the most suitable guidelines to help teachers implement and students achieve the goals of environmental education:

**Awareness:** to help students acquire an awareness of and sensitivity to the total environment and its allied problems;

**Skill:** to help students acquire the skills for working towards the solution of environmental problems and foster a dialogue among students;

**Knowledge:** to help students gain a variety of experiences with the total environment and acquire a basic understanding of the total environment, its associated problems and humanity's critically responsible presence and role in it;

**Attitudes:** to help students acquire social values, strong feelings of and concern for the environment and the motivation to actively participate in its protection and improvement; and

**Participation/Action:** to help students develop a sense of responsibility and urgency regarding environmental problems to ensure appropriate action to help solve these problems and avoid future problems "(UNESCO, Belgrade, 1975).

## Geography and Environmental Education

Geography has a contribution towards environmental education because "Geography is distinctive in its study of the spatial distribution and interaction of physical and human elements in the environment. Its integration approach enables students to have a balanced view of their own and other environments on a scale which they can see and understand" (Curriculum Development Committee, 1984, p.5).

Furthermore, the man-land approach of the present Hong Kong Certificate of Secondary Education Examination Geography Syllabus (Curriculum Development Committee, 1984, p.7),

"considers issues and topics in the light of the interaction between man and the land. It requires an investigation of the way in which the nature of the land influences man's activities and the way in which man modifies the nature of the land."

Thus, Geography is concerned with the **total environment** and geographers have always regarded the environment as a holistic study which includes both the biophysical components of the environment and people with their economic, social, cultural and political systems. Geography is a school subject about the total environment conducive to achieving the objectives of environmental education (Biddle, 1990).

## New Developments in Environmental Education

New technology has enabled people to improve their standard of living. Unfortunately, it can also lead to exploitation of resources resulting in depletion and related problems. Thus, the concept of

environmental education has changed from the 1970s to 1980s and a new perspective of environmental education has developed:

"Ultimately the behaviour of entire societies towards the biosphere must be transformed if the achievement of conservative objectives is to be assured. A **new ethic** embracing plants and animals, as well as people, is required for human societies to live in harmony with the natural world on which they depend for survival and well-being. The long-term task of environmental education is to foster or reinforce attitudes and behaviour compatible with this new ethic" (World Conservation Strategy of the International Union for Conservation of Nature and Natural Resources, 1980).

Greenall (1986) interpreted the new ethic as an obvious shift in orientation for environmental education from (1) a pre-occupation with controlling pollution and resource depletion for the primary benefit of the affluent in developed countries, to (2) a concern for conservation in terms of the basic principles of diversity, complexity and symbiosis in the ecosystem. Naess (1973) labelled these different orientations (1) shallow and (2) deep ecology respectively. He further explained that in deep ecology, anthropocentrism is replaced by the principle of biospheric egalitarianism. Thus, deep ecology seeks a transformation of values and social organization.

A person's orientation for environmental education described above will be reflected in his/her ideologies about human-environment relationships:

- (1) **Utopian environmentalism** Believers of this ideology tend to exploit concerns about the environment in order to gain support for utopian alternatives for the benefit of the affluent in developed countries.
- (2) **Radical environmentalism** Believers of this ideology tend to regard ecological problems as simply further evidence of the crises currently confronting the industrial society. Disparities in social justice and abuse of the environment may lead to disequilibrium and destruction of the ecosystem which are crises inherent in advanced capitalism.

- (3) Of course, there still exists **conventional environmentalism**. Believers of which maintain that ecological dangers can be avoided without major social and economic changes, provided people incorporate ecology into existing decision-making frameworks (Huckle, 1983).

### Environmental Education through the Teaching and Learning of Geography

A teacher's ideology of environmental education does not necessarily fall neatly into one of the above three categories, but it will be more inclined towards one of them. However, whatever his/her ideology of environmental education it will guide him/her in the selection of approaches, such as **WHAT (CONTENT)** to teach **about** the environment (ecosystems, pollution, fauna & flora); **HOW** to teach (**WHAT STRATEGY**), whether or not he/she will be teaching **in** the environment (by field or case studies); and for **WHAT PURPOSE**, whether or not he/she will teach **for** the environment. In fact, achieving the objectives of environmental education requires incorporation of all three approaches into teaching and learning of Geography. In teaching **about** the environment, students learn knowledge and skill; in teaching **in** the environment, students learn through field and local case studies; and in teaching **for** the environment, students clarify values and commit to act to sustain and/or improve the environment (Fien, 1988).

### Environmental Education at the Secondary Level Geography in Hong Kong

In the Syllabus Content of the Hong Kong Certificate of Secondary Education Examination Geography Syllabus (Curriculum Development Committee, 1984, p.8-11), Themes, Explanatory Notes, and Case Studies (if any) are lay out. An analysis of the Themes and Explanatory Notes helps the writer to identify the themes **about** the environment; and analysis of the Case Studies indicates whether the themes are recommended to be taught **in** the environment; an overall analysis helps to determine if the themes are specifically recommended or implied to be taught **for** the environment.



Table 1 indicates that all 26 themes in the syllabus are **about** the environment. 14 out of 26 (54%) are about Hong Kong and they can be studied **in** the environment; however, only 5 out of these 14 are recommended for field studies. Only 5 out of a total of 26 themes (19%) are specifically recommended to be studied **for** the environment. They are: "population problems and solutions", "overcoming constraints of agricultural activities", "conservation of energy resources", "urban problems and solutions", and "prevention of pollution", and 3 more themes may possibly be implied to be studied **for** the environment (Table 1).

Thus, Geography at the secondary level in Hong Kong is undoubtedly education **about** the environment. There are 14 themes about Hong Kong, but only 5 of them are recommended for field studies. However, how many of them are actually being studied in the field, or with local cases, (i.e., **in** the environment), in individual schools is unknown. Also, of the 5 themes specifically recommended to be studied **for** the environment, how well are they studied so that students will acquire "... the knowledge, attitudes, motivation, commitment and skills to work individually and collectively towards solutions of current problems and the prevention of new ones" is again unknown. The likely answer is that fewer themes are studied in the field (in the environment), and even less themes are well-studied **for** the environment. Obvious reasons are lack of time and opportunities for field work, the long syllabus and difficulty in changing students' attitudes, etc. However, there are more inherent reasons which I shall further explore below.

### Difficulties on Implementing Environmental Education

Major difficulties in implementing environmental education are teacher self-censorship, curriculum censorship, traditional methods of teaching and assessment (Maher, 1986). Many geography teachers favour education **about** the environment or even education **in** the environment, whether they advocate education **for** the environment depends on their belief about human-environment relationships mentioned in the section on new developments in environmental education. Generally teachers tend to avoid radical views, particularly when these views are controversial or in the minority. They will not like to be called "Greenie" or "Econut".

Themes	Themes <u>ABOUT</u> the environment	Themes recommended to be studied <u>IN</u> the environment	Themes specially recommended to be studied* <u>FOR</u> the environment
I. Land			
A. Land form	1. Mt. Bldging. 2. Rocks 3. Denudation 4. Rivers 5. Coasts	HK example(F.S.) HK example(F.S.) HK example(F.S.)	
B. Weather	1. Elements of climate 2. Climate of HK 3. HK weather maps	HK HK	
C. Ecosystems: Components & Linkages, eg. Rainforest & man's modifications			*
II. Population			
A. Factors affecting growth & size		HK	
B. Composition & structure		HK	
C. Distribution			**
D. Problems & solutions			
III. Man-land relationships			
A. Agricultural activities	1. Farming systems 2. Intensive & extensive farming 3. Overcoming constraints	HK(F.S.) HK	**
B. Manufacturing activities	1. Factors affecting industrial industrial 2. Changes in industrial development	HK	
C. Urban settlement	1. Urban processes 2. Urban land use & distribution 3. Functions of urban centres	HK(F.S.)	
IV. Issues Arising from man-land interaction			
A. Natural hazards (adjustment)			*
B. Energy resources (importance of conservation)			**
C. Urban problems (problems & solutions)		HK	**
D. Pollution (causes, preventive measures)		HK	**
E. Recreation (Importance of planning)		HK	*
Total	26	14 with 5 for field studies (F.S.)	**5 * 3

Table 1: Environmental Education at the Secondary Level (CSEE) Geography In Hong Kong



Schools are traditional places and changes in the curriculum and teaching methods take time. Curriculum contents about conflicting issues, such as exploitation of the environment which challenge existing socio-political and economic processes are dangerous issues and they must be diluted, avoided or even banned. Many environmental problems are conflicting issues which are invariably difficult to teach. Difficulty lies in how to present a balanced view, to emphasize student involvement and to get other teachers to initiate and cooperate. So non-traditional and active teaching methods must be developed and used.

Also, traditional methods of assessment cannot assess learning for environmental education effectively, namely, assessment of achievement of attitudes and participation/action objectives. In fact, assessment often hinders learning in this direction. Thus, new ways of assessment must be developed. Besides, the effect of assessment must be played down.

### Ways to Implement Environmental Education

Geography teachers are used to teaching about the major interacting parts of the total environment. However, environmental education is more than teaching **about** the environment, it is teaching **for** the environment and teaching **in** the environment. The challenge is for teachers to "environmentalize" their geography courses. In taking up this challenge, geography teachers must shift their emphasis from information giving as an end in itself to experience in values and attitudes identification, clarification, analysis and judging (Winder, 1986).

This shift of emphasis from information to attitudes, then to action in environmental education will be effective only when students become committed to act **for** the environment. This shift calls for active methods of teaching and learning. The following are some suggestions.

#### 1. Field Study

Field study is very effective because direct observation and experience carried out in the field or local environment will highlight the crux of the situation and require students to make judgment and decision. Also local experiences provide frames of reference

for studies of foreign places. The didactic interaction between the near and well-known and the remote and unknown is a basic prerequisite for the development of environmental literacy and the more general geographic world literacy (Billmann, 1988).

Field study includes field camp, field day or observation of the school and home neighbourhood. It can vary in scale, time duration and distance of field from school according to the age and need of students. The most essential elements are direct experience of one's locale such as observation and collection of data of people and land. An example of a short and informal field study in the school district for Form 1 students is to direct them to count up the separate numbers of private cars and buses passing by the main road in the school neighbourhood in a minute, then calculate the number of passengers each type of vehicles (private car and bus) that can effectively carry in a unit road space. They will then appreciate the fact that use of public transport can improve the environment by reducing air pollution, traffic congestion, petrol crisis, etc. (Yau and Kong, 1989).

#### 2. Project Work

Project work is a very effective method in environmental education because when it is well-conducted, it can be teaching **about**, **in** and **for** the environment altogether. In project work, students (individually or often in groups) study a topic/issue (own choice or teacher assigned) to some depth. Then critical local environmental issues are chosen. Students can make direct observations **in** the environment. It is more likely that they will develop strong feelings of concern **for** their environment and acquire a sense of responsibility and urgency to act to help avoid or solve problems. Project work can include many active learning methods, such as field study, survey, questionnaire, visit, interview, library and/or source-search for information, etc; it can include many active classroom techniques, such as discussion, debate, role play, simulation, etc.; and it can cover very practical, relevant and useful aspects of the environment and it can be broad and interesting enough for active participation by the whole school.

For example, in a "Clean Environment" school project, Form 1 students can cover the topic in the theme on "Cities as our

living places: Urban problems and possible solutions" (Curriculum Development Committee, 1983, p.25). Study topics can include kinds of pollution in Hong Kong, problems and solutions, their responsibilities and the right action; act-on aspects can include keep the classroom/school clean, design posters/mottoes to keep the city clean, draw up regulations for country parks, etc. (Yau and Kong, 1989). This "Clean Environment" project for Form 3 can be covered in the theme on "Manufacturing - Impact of manufacturing on the environment: pollution" (Curriculum Development Committee, 1983, p.84). In the study of this theme, using Hong Kong as a case, the study topics can include: the way industries cause pollution, the role played by industrialists in environmental conservation, etc. Learning activities can include field visit to Kwun Tong industrial district to identify the environmental problems and to conduct environmental tests, display of photographs and slides taken in the field, video viewing, discussion and completion of worksheets.

### 3. Active Classroom Techniques

There are many other active classroom techniques which can be used in learning environmental education (Milne, 1983 and Winder, 1986). They include acclimatization and sensory awareness experiences, value clarification strategies, investigation of present day issues, action research techniques, environmental inventories, orienteering camping, environmental work cards, visit to field study centres, developing school grounds as 'environments', pollution observation and detection experiments, media presentation of an environmental issue, constructing community displays, role play, gaming and simulations, town trails, conducting historical surveys, undertaking streetwork analysis, mental maps, visual analysis procedures, investigating the national estate and recycling projects. Teachers should consider incorporating some of the above techniques into the teaching of the total environment. Winder (1986) warned that activities should not be seen as ends in themselves, but as steps in the ultimately geographical purpose of emotional education.

### Environmental Learning Packages and Resource Materials

Learning packages have been developed in Hong Kong on procedures and activities for environmental education. Each

consists of a teacher's manual describing the procedure and activities and supplying the information and aids required to conduct the activities. These packages include "Cities as Our Living Places (pollution)" for Form 1 and "Farming in Hong Kong and Its Impact on the Environment" for Form IV and V developed by the Geography Section of the Education Department, (1987 and 1990); "Natural Disaster" and "Recreation" both for Form IV and V developed by the Curriculum Development Committee, (1987 and 1988); "Hong Kong Country Parks I", "Hong Kong Country Parks II", "Beach Pollution", ecology projects on "Hill Fires", "A visit to Pak Tam Chung Nature Trail" and "A Freshwater Stream Visit" developed by the Island House Conservation Study Centre, (1989, 1989, 1990, 1988, 1987 and 1987). All these are made available to schools and teachers should adapt and incorporate them in their teaching of the environment.

A useful collection of activities for environmental education edited by Fien (1989) for the 14-16 age range in Australia can be adapted for Hong Kong. It consists of 40 themes covering all aspects of life and development, such as farming, pollution and resources. The data for each theme is presented in the form of a short story about a real life person and a graphic spread of data consisting of maps, tables, photographs, diagrams and text. Students make a critical analysis and evaluation of the information given, understand and empathize with the development problems facing people in Third World countries, appreciate the interdependence between people, develop decision making skills through consideration of alternative approaches to developing and promoting a willingness to become involved in seeking solution to development problems.

The Environmental Protection Department, the Conservancy Association, Green Power, The World Wide Fund for Nature and the Island House Conservation Studies Centre are institutions in Hong Kong which work for the protection and conservation of the environment. They carry out researches and produce reports on the environment. These source materials are made available to schools. These institutions will liaise with schools to give talks on protection of the environment. Many of them involve schools in large-scale environmental protection activities.

## Approaches to Values (Attitudes) Teaching for the Environment

The affective domain (values and attitudes) of learning includes self concepts, emotions, values, decision making and action skills. In environmental education, the geography teacher must help students to develop skills in realistically analyzing phenomena and situations involving people and their environments, and to make constructive responses relating to them.

Several approaches to values teaching have been developed. They are values inculcation, values analysis, moral reasoning, values clarification and action learning (Table 2). They can be seen as a continuum in relation to the degree to which students are expected to be directly and deliberately involved in examining and acting upon their own values (with increasing degree running from "values inculcation" at the left to "action learning" at the very right). Table 2 lists these approaches each with their objectives, methodologies and advantages (Maye, 1984). Among them values inculcation is teacher-centred, but the other four approaches are student-centred and teacher-guided, requiring an investigative approach to be taken. These four approaches share some common features, including:

1. The implicit intention that students are assisted to develop their own appropriate set of values and related behaviour to enable them to participate constructively in their community life.
2. The use of stimulus materials to initiate student thinking, discussion and decision, and to provide the opportunity to consider their own values and make their own decisions for appropriate behaviour.
3. Emphasis is on the development of "skills" in valuing which can be transferred to other situations later in life.

More of the theory behind these four approaches to values education in relation to geography teaching is provided by John Huckle (1981). Here we shall explain in brief what each approach is about and how it is to be carried out.

	<div style="display: flex; justify-content: space-between; align-items: center;"> <span>Not expected</span> <span>Direct examination of student's own values &amp; commitment to act</span> <span>Expected</span> </div> <div style="text-align: center; margin-top: 5px;"> </div>				
Approaches	Values Inculcation	Values Analysis	Moral Reasoning	Values Clarification	Action Learning
Objectives	Is will adopt a pre-determined set of values	Exam. value positions of different people in a wide range of situations	Develop Is' moral growth which is both cognitive & developmental by making moral choices-Kohlberg	Recognize own values in relation to own behaviour, also others' values and behaviour	See self as an interacting member of social and environmental systems through values analysis & clarification, with the intention to act according
Methodologies	Moralizing Reinforcement Set rules Modelling Inspirational stories	Gather relevant evidence: newspaper articles, photos, maps, interviews, etc. Structured discussion of evidence	Unfinished moral dilemma stories, Is make & explain own choice, then Is discuss/debate possible solutions	Self-analysis techniques: semantic differentials, rating scales, ranking, voting, make value judgments, etc.	Collect evidence of a values related issue, Analyse & clarify own values, Seek solutions, Take action to implement (action strategy or problem solving strategy)
Advantages	Can transmit basic values of a society	Identify values-relevant behaviour of people, then infer their values	Characters forced to make a choice of solution which forms the basis for discussion	Make value choices in non-threatening situations	Balanced & comprehensive understanding of issue Action
Major Dis-advantages	Difficult to decide what basic set of values to adopt and who'll prescribe it				

Adapted from Brian Maye (1984) Developing valuing and decision making skills in the Geography classroom.

Table 2: Approaches to Values Teaching — Degree of Student Involvement in Examining Own Values and Actions, and an Outline of Objectives, Methodologies and Advantages of Each



In values inculcation, students are expected to adopt a pre-determined set of values, so methodologies, such as moralizing, positive and negative reinforcements, set rules, modelling and inspirational stories will be used. The advantage is that in a given society there is generally a set of basic values which needs to be transmitted to the next generation, but there may be the difficulty in deciding precisely what set of basic values to transmit and who will prescribe it.

In values analysis, students are directed to examine the evidence provided in the form of newspaper articles, photographs, maps, interviews, etc., to discuss the behaviours of different people in the situation and to infer their value positions from their behaviours.

The approach of moral reasoning is developed based on Kohlberg's belief that students' moral growth is both developmental (growth with age), and cognitive (growth with practice through making moral choices). So students will be given unfinished moral dilemma stories, they are required to help the characters in the story to make choices, then to explain their choices. Lastly, they discuss the consequences of each choice.

In values clarification, students are placed in situations and are required essentially to recognize their own values in relation to their own behaviour. Self-analysis techniques include: semantic differentials, rating scales, ranking, voting, making value judgments, etc. In this way, students practise making value choices in non threatening situations.

In action learning, students see themselves as interacting members of social and environmental systems. Students go through values analysis and values clarification, with the intention to act according to their own value choice. The procedures include collecting evidence of a values laden issue, analyzing and clarifying own values, making decision and taking action either directly or moving related groups to take action. This helps students to develop a balanced and comprehensive understanding of the issue and then take action.

If we are teaching environmental education for the environment, it is particularly important to help students to examine

and understand their own values so that they understand the underlying motives to their action and they are more likely to develop the motivation to act positively.

### Assessment of Learning in Environmental Education

Affective learning (attitudes and action) is very difficult to be measured by tests and examinations. It requires new ways of assessment in order to be effective. Even when questions are set to assess affective learning in tests or examinations, it is appropriate to present them in problem-solving situations and let students answer what they will do and why. Thus commouflaged, students will be less likely to give socially acceptable answers. In order to differentiate more finely students' degree of commitment to act appropriately, (Krathwohl et al., 1964) hierarchy of affective learning can be adapted in scoring. Yau & Kong's example of test questions puts protection against pollution in a situation for students to react and to indicate action at different levels of commitment (Yau & Kong, 1989).

An even better way of assessment of affective learning is replacing tests and examinations with assessment of projects students hand in. Better still, if real life situations are being presented and form the basis for student discussion or debate, and assessment is being made based on students' response in the discussion. However, the best way to assess affective learning is by observing how students respond in controversial real life situations. However, all these ways of assessment of affective learning should be more for the purpose of feedback to teachers and students as to how much students have learned and are committed to environmental protection rather than for grading purposes.

### Environmental Education — Where to Now?

Maher (1986) suggested that in order to promote education for the environment in a society which exploits the environment and in schools which form a part of the **status quo** and play a conservative role, a radical stance of environmental education must be designed. This form of environmental education would incorporate the need:



1. to make students aware of the living environment and our part in it;
2. to cover issues of global and local concern highlighting the role of ideologies, economics, politics and culture in these issues;
3. to be studied in ways which EMPOWER students in their relationships with their social and natural environment, and
4. to encourage the design and implementation of actions to expose and /or alleviate environmental problems.

Maher (1986) further emphasized that while the whole ethos and structure of schooling as well as its curriculum traditions are hostile to radical environmental education, teachers' needs must be a central concern of the strategies for environmental education. Teachers need to take definite steps to sustain themselves in their teaching of radical environmental education in the context of a conservative society and schools. Some of these steps must include:

1. Review the nature of schooling and question accepted curriculum orientations towards environmental exploitation.
2. Develop and promote a much broader vision of what is happening to the environment and how things could be if priority were given to ecological living. The best method is to support action groups working for environmental quality.
3. Build a personal environmental support system and formulate a more unified approach to counter censorship of radical environmental education and to question the distribution of power and wealth.

In conclusion, Geography teachers in their struggle when teaching for environmental education may well take heart in words of Anne Armstrong (an Environmental Studies Centre teacher in London):

My work in Hammersmith is very much based on compromise. For example, except with junior schools, I usually work in subject areas trying to squeeze my urban studies to fit the demands of the syllabus. I often choose gentle issues so that I am not seen to rock the boat too much... Just occasionally, when I am working with some particularly enlightened and stimulating teacher who has a class of special kids, we get a little nearer the ideal. On these occasions, I am warmed for months by the result and the enthusiasm that we all generate (Armstrong, 1983).

## REFERENCES

- Armstrong, A. (1983) "What is Urban Studies?" *Bulletin of Environmental Education*, p.143.
- Biddle, D. S. (1990) *Geographical Education: The Impact of School-based Curriculum Development and Environmentalism*. Speech presented at the Commission on Geographical Education, International Geographical Union, University of Hong Kong, August 6-10, 1990.
- Billmann, O. (1988) "The development of environmental literacy through geography." In Gerber, R. & Lidstone, J (Eds) *Developing Skills in Geography Education*. International Geographical Union Commission on Geographical Education with the Jacaranda Press, p.129-134.
- Curriculum Development Committee (1984) *Syllabus for Geography (form IV-V)* Hong Kong: Government Printer.
- Curriculum Development Committee (1987) *Natural Disaster*. Hong Kong: Education Department.
- Curriculum Development Committee (1988) *Recreation*. Hong Kong: Education Department.
- Fien, J. (1988) *Education for the Australian Environment*. Canberra: Curriculum Development Centre.

Fien, J. (Ed. 1989) *Living in a Global Environment: Classroom Activities in Development Education*. Australian Geography Teachers Ass. Inc.

Geography Section (1987) *Cities as Our Living Place for Form / Middle 1*, Hong Kong: Education Department.

Geography Section (1990) *Farming in Hong Kong and Its Impact on the Environment for Form IV & V*. Hong Kong: Education Department.

Greenall, A. (1986) "Searching for meaning: what is environmental education?" *Geography Education*, 5 (2), p.9-12, Australian Geography Teachers Association.

Huckle, J. (1981) "Geography and values education." In Walford, R. (ed.) *Signposts for Geography Teaching*, p.147-164 London: Longman.

Huckle, J. (1983) "Environmental education." In Huckle, J. (ed.) *Geography Education: Reflection & Action*. Oxford: Oxford University Press.

Island House Conservation Study Centre (1987) *A Visit to Pak Tam Chung Nature Trail*. Hong Kong: World Wide Fund for Nature.

Island House Conservation Study Centre (1987) *A Freshwater Stream Visit*. Hong Kong: World Wide Fund for Nature.

Island House Conservation Study Centre (1988) *Hill Fires*. Hong Kong: World Wide Fund for Nature.

Island House Conservation Study Centre (1989) *Hong Kong Country Parks I*. World Wide Fund for Nature, Hong Kong.

Island House Conservation Study Centre (1989) *Hong Kong Country Parks II*. Hong Kong: World Wide Fund for Nature.

Island House Conservation Study Centre (1990) *Beach Pollution* Hong Kong: World Wide Fund for Nature.

Krathwohl, D. R. Bloom, B.S. & Masia, B.B. *Taxonomy of Educational Objectives, The Classification of Educational Goals Handbook II: Affective Domain*. New York: David McKay Co. Inc.

Maher, M. (1986) "Environmental education: what are we fighting for?" *Geography Education*, 5(2), p.21-25, Australian Geography Teachers Association.

Maye, B. (1984) "Development valuing and decision making skills in the geography classroom" In Fien, J. Gerber, R. & Wilsor, P. *The Geography Teacher's Guide to the Classroom*, p.29-43 Melbourne: MacMillan Co. of Australia Pty Ltd.

Milne, A. K. (1983) "The role of Geography in environmental education: Curriculum challenges for the next decade." *Geographical Education*, 4, p.87-92.

Naess, A. (1973) "The shallow and the deep, long-range ecology movement: A summary" *Inquiry*, 16, p.95-100.

Stapp, W. and Cox, D. A. (1979) *Environmental Education Activities Manual*. Stapp, Farmington Hills, Michigan, Revised Edition.

UNESCO-UNEP (1975) *International Environmental Education Program*. Belgrade: UNESCO Publication.

Winder, R.B. (1986) *Education Ideas: Geography & Environmental Education*. N.S.W.: Department of Education.

Yau B. L. L. and Kong Y.P. (1989) 環保意識的培養：中一地理教學的一個例子 "地理通訊", 香港教育署第十八期, 一九八九年, 頁114-118.

# Environmental Education and Geography Teaching in Secondary Schools — Don't Let the Earth Strike Midnight!

by  
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## Can Geography Teachers Neglect Environmental Education?

Environmental education is becoming more and more important in the teaching of Geography. It can be seen in all levels of the secondary curricula. For instance, in the Syllabus for Geography (S.1-3), it states in the General Introduction that:

"The 3-year curriculum is thought of a spiral in which important concepts are returned to repeatedly, but each time in a more complex form. It is hoped that students will accumulate experiences throughout the three years to enable them to:

- (a) Identify the relations that exists between man living in society and the environment in which he lives;
- (b) comprehend concepts that are essential to the understanding of the relationships that exist between man and his environments; ..."

In the Syllabus for Geography (S.4-5), it also states in the General Aims and Objectives that:

"Student who have completed the course should be able to:

2. understand fundamental geographical concepts and ideas which form the structure of the discipline, and apply them to show an understanding of problems on a variety of scales; these concepts/ideas include:  
spatial location, spatial distribution, spatial association, environmental elements, environment system, environmental process, energy flow, distance decay, change over time, region, hierarchy, **man-land**

interactions, environmental perception, environmental quality, man as an agent of change, man as a decision-maker.

5. identify the causes and effects of specific **environmental problems in Hong Kong and elsewhere**, and suggest **solutions which require responsible action on the part of the whole community**;"<sup>2</sup>

Furthermore, in the A Level Syllabus, it also stresses the man-environment system:

"3.3 man-environment system: this expresses the way in which man interacts with the cultural and physical environment. It expresses the way in which man is able to organize the environment for his use with resultant landscape changes on the one hand, and be restricted by environmental constraints on the other.

- 6.3 aware of and committed to the need to maintain and **improve the quality of man-environment system** in Hong Kong and elsewhere."

From the above, we can conclude that Geography learning has put quite a great emphasis on the interrelationships between man and the environment (both physical and cultural). Therefore, as a Geography teacher, we have an undeniable role in promoting environmental education. In schools, we can try to do this through both the formal and informal curricula.

## The Formal Curriculum

Since 1987, the Geography Department of our school has decided to play a more active role in promoting environmental education through our teaching. In the first departmental meeting of that year (1987-88), we stated that our main objectives are:

1. to enable pupils to understand various concepts in Geography with a view to developing a geographical outlook.



2. to promote pupils' knowledge of the homeland and other parts of the world.
3. to develop skill basic to geographical studies.
4. to cultivate personal development and encourage attitude conducive to full participation in adult life.
5. **to promote pupils' concerns on environmental conservation.**

To meet this, we have tried to make new arrangements in our curriculum. When we design our worksheets, we put more emphasis on the topic.

For example in S.1, we plan to spend **three** teaching periods on the topic about "Pollution in Hong Kong" which should take up a half period as suggested by the C.D.C. syllabus.<sup>4</sup> Different kinds of learning activities, such as photo taking, role plays, map work, field work, etc., are employed to stimulate the students awareness of their environment. (Appendix 1: Sample of the worksheets used)

In the S.2 level, emphasis is put on the interaction between man and the natural landscape, for example, the impact of shifting cultivation on the tropical rain forest landscapes.

In S.3, particular attentions are paid on the topics on "Farming and the Environment", "Mining and the Environment" and "Manufacturing and the Environment".

In S.5, we have a complete study on the pollution problem in Hong Kong, as required by the HKCEE. However, we also try to give more attention on this. **Ten** periods are devoted to it as compared to the suggested seven periods.

Moreover, the issue is touched on by nearly all topics in the A level syllabus. The stress on the man-land interactions makes it unforgettable.

Also, we co-operated with two teachers from other schools<sup>5</sup> and took part in the School-based Curriculum Development

Scheme in 1988-89. The topic we chose was "Pollution and Environmental Conservation in Hong Kong". In this project, we designed a set of twelve worksheets for S.1-3 and fourteen worksheets for S.4-5. It consists of a great variety of teaching activities, resource materials, and worksheets in different styles and different levels of difficulty. Many of these have been integrated in the workbooks prepared for students. Fortunately, this teaching kit was highly appreciated by the Inspectorate and had been printed and sent out to every secondary school.

### The Informal Curriculum

Apart from the formal curriculum, extra-curricular activities (especially those organized by the Geography Society) should not be neglected because they form the major part of the informal curriculum.

Our Geography Society tries to arouse our fellow students' awareness on the environmental problems by two main ways, **indirect encouragement** and **direct promotion**.

#### 1. Indirect encouragement

Since October 1983, the Geography Society has published a monthly newsletter — the "Geography Bulletin". In this, we usually collect some articles on the topic of environmental problems and conservation. By giving these newsletters to our members, we hope that they would be aware of it.

Besides, when we organize field trips or outings to the countryside, we always ask the members to pay attention to the "Countryside Codes". Warnings will be given to those who disregard the "Codes" and sometimes penalty will be given as well.

#### 2. Direct promotion

In 1988-90, the Geography Society included environmental conservation as one of its major tasks.<sup>6</sup>



The fellow students' concerns on environmental conservation are also stimulated by organizing different types of activities. For example, a Photo Contest was held in March 1989. The theme of the Contest was "Beauty of our Environment and Man's Impacts on the Environment". In order to get everyone involved, the champion was selected by direct voting. During the same period, we also organized a field study on the pollution problems in Tuen Mun.

This year (1990-91), the Geography society has organized a carnival ( 地理同樂嘉年華 ) to promote the pupils' concern on environmental conservation. This includes a bulletin board display on "Save our Earth". Stall games, quiz and a "Waste Reuse Competition" ( 廢物利用創作大賽 ) all aim at one main theme — to protect our environment.

### Don't Let the Earth Strike Midnight!

In this age of information explosion, our students are receiving a lot of messages on environmental conservation through all types of media. They know much about it but they lack a systematic way of organizing such information into their resource library. They have heard of it but do not know the importance of the issue and may not know what to do.

Geography teachers, therefore, have an undeniable responsibility of helping our students to comprehend and to synthesize the diverseness of the information they received. Teachers should also play an active role to arouse students' awareness of the importance of conserving our environment. For the seek of the future survival of mankind, please give your hand!

### Notes

1. *Syllabus for Geography (Secondary I-III)*, p.8. Curriculum Development Committee, Hong Kong, 1983.
2. *Syllabus for Geography (Secondary IV-V)*, p.6. Curriculum Development Committee, Hong Kong, 1984.
3. *Regulations and Syllabus for Advanced Level Examination*, 1992, p.136. Hong Kong Examinations Authority.
4. *Syllabus for Geography (Secondary I-III)*, p.25. Curriculum Development Committee, Hong Kong, 1983.
5. Mr. Yeung Pui Ming, Kei Hau College (Lam Tin) and Mrs. Chan Leung Suk Ching, Carmel College (Ho Man Tin).
6. Four major tasks of the Geography society:  
"To participate"; "To arouse interest"; "To develop your potential" and "To protect our environment".

Date \_\_\_\_\_

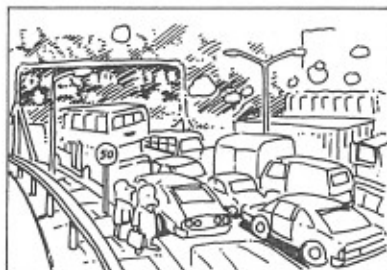
## PART FOUR LIVING IN CITIES — Urban Problems

(Reference : *Integrated Geography 1*, p.114-115;  
*New Comprehensive Atlas for Hong Kong*, p.33)

## A. WHAT URBAN PROBLEMS ARE THERE?

Figure 1 shows four current problems related to living in cities. For each problem identified, answer the following questions in the table.

Problem	What is the problem?	What are the factors which lead to the problem?
A		
B		
C		
D		



Problem A



Problem B



Problem C



Problem D

Figure 1

Date \_\_\_\_\_

PART FOUR LIVING IN CITIES  
— Environmental Walk : Tuen Mun

## A. Work to do

1. To observe and record the environmental condition in our school district.
2. To identify the pollutions in our school district.

## B. Steps

1. Divide in groups of SIX.
2. Follow the walking route indicated on the base map and observe the pollution problems at EACH stop.
3. Record the land use on the ground floor of each street unit and the type of pollution (if any) in Table 1.
4. Take photographs of all the types of pollution which can be found on the way and use the photographs as illustrations in the field worksheets.
5. Have a class discussion on the pollution problems, their causes and how they can be alleviated.
6. Complete Table 2.

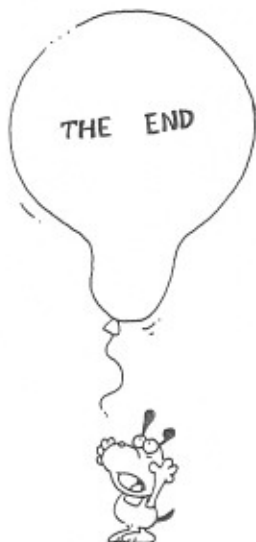
Pollution	Major Cause(s)	Possible Solutions
1.		
2.		
3.		

Table 2: Causes of and Solutions to Pollution Problems in the Area Studied

Date \_\_\_\_\_

PART FOUR LIVING IN CITIES  
— Pollution in Hong Kong: Poster Design

- A. Work to do
1. To design a POSTER to arouse people's concern on environmental conservation.
- B. Steps
1. Get a poster paper from the teacher.
  2. Design the poster and think up a slogan as well. (The slogan has to be included in the poster.)
  3. Hand in your work on or before \_\_\_\_\_ (date).
- C. Awards
- The teacher will choose THREE best designs and exhibit in the Geography Room. Each of the chosen designs will be given a souvenir.



## Managing Resources with Technology

by  
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### Resource Management and Information Technology

As one enters the last decade of the 20th century, two significant trends are clearly observable. One is the intensification of environmental concerns while the other is the emergence of an information age. Even kids of our society become aware of the deterioration of our surroundings and the gradual emphasis on the "green movement" in Hong Kong. For those who are at school, we begin to hear more and more about computers and jargons that are involved with high technology. Indeed, we are entering into a totally different society we used to live in.

This short paper attempts to address the issue of how technology can have an impact on managing our precious resources. The idea of a **geographic information system** (GIS) is introduced at the layman's level so that secondary school teachers can be quickly exposed to this new technology. In turn, geography students will have a chance to widen their horizons in the utilization of technology to manage our environmental resources.

In the literature on environmental studies, there is a distinction between "environmental management" and "resource management". Broadly speaking, the former label connotes a wider attention to virtually all aspects one can think of in relation to the surroundings one lives in. Along this line of thought, "environmental management" may include items like pollution controls, energy conservation, health concerns, wastes disposal, and all technological solutions to environmental problems. On the other hand, "resource management" offers a narrower scope that deals exclusively with how natural resources are being properly utilized. From the geographers' point of view, the distributional component can easier be seen with resource management issues. Therefore, discussions below will be devoted to **resource** management concerns.

There has been increasing coverage in the media and among academic circles that our world is entering the phase of information technology which has tremendous impact on the society. The intensity of the impact is equivalent to those brought about with the agricultural and industrial revolutions. With agricultural revolution, mankind began to shift from engagement in pastoral activities to a sedentary way of living. With industrial revolution, manufacturing production came to the forefront of a society's economy which greatly improved people's standard of living. With the current revolution in computer technology (labelled elsewhere as "computer revolution", "information revolution", and the like), we are just at the beginning of changing our lifestyles to accommodate the impact of computers into our daily lives.

Here in Hong Kong, our government has been active in persuading our industrialists to follow a "high-tech" approach in renovating Hong Kong's industries, thus paving the way for Hong Kong to perpetuate its economic lead in Pacific Asia. At the educational front, Hong Kong is on the verge of great expansion in programmes related to information technology, both at tertiary institutions and at technical institutes. A recent release by the government indicated that student intake of these programmes at UPGC-funded institutions will rise from the present 1,750 to around 2,700 by the academic year 1994-95 (Ming Pao, 9 May 1991). Likewise, enrollments of related programmes at technical institutes will be expanded from 1,730 for the year 1990-91 to 3,345 in 1991-92. The trend towards extensive computerization in all walks of life is crystal clear.

A related question thus comes to the fore: "How do faster but cheaper computers with stronger graphics capabilities help to revolutionize resource management?" One of the greatest difficulties that a resource manager faces is the vast amount of information (spatial information in particular) he or she has to handle to solve management issues. Usually, maps of various scales are in stock. To retrieve a map that one needs can be troublesome when rolls of maps are stored. Since most thematic maps carry one theme (thus one variable), there is a limit as to the number of variables one can handle when the job is done manually. The crux of the problem lies in the fact that conventional maps appear in paper format. When they are transformed into digital format, they can be computer-processed, retrieved, and

displayed as graphics on a computer screen. Here is where information technology helps resource management at the conceptual level.

### **The "Manual" Approach: A Rudimentary GIS**

A GIS can be defined as a computer-based system which is used to store and manipulate geographic information. Before a full exposition on it is made, one must not be mystified by such terms as "information systems". Like other high-tech terminologies, GIS is merely an acronym or a jargon term of some elementary geographic analyses. The closest equivalent in laymen's terms is "cartographic analysis". Mathematically speaking, one is making composite overlays of Venn Diagrams to select areas of interest. In a nutshell, a GIS operates on simple overlay principles and offers a variety of spatial and non-spatial analyses. Although a formal GIS is an automated tool, a rudimentary GIS is already in force even when operations are done manually. The following example from Star and Estes (1990) is an illustration of this point.

Suppose a planner is looking for a site to construct a new golf course. Three pieces of information are given to him for consideration: an air photo of the area, a topographic map of the region, and a blue-line map of the area showing land ownership. Since they are of different scales, the first task is to register them spatially onto plastic films. This job produces transparent overlays of data layers. In fact, a geographic database has already been formed.

Then come the various operations the planner has to perform. For example, he needs to first define areas unsuitable for golf course development. One common consideration is to go away from residential sites. If he decides that ten metres from developed strips should be delineated, a corridor of that width can be manually drawn along existing roads. Furthermore, the planner knows what kind of topography, hydrologic features, or types of natural vegetation most suitable for golf course development. He can easily identify these areas from the transparent plastic films and look for their intersections. Finally, a new "data layer" of proposed sites for the golf course can be made with the above considerations. Next, he can estimate the costs for subsequent



tasks like excavations, infilling, fertilizer applications after he arrives at the final outcome for the golf course site.

In other words, a GIS is a means to integrate spatial data acquired at different scales, times, and formats. While GIS is usually automated, its principles have well been utilized in geographic analyses done manually. In this sense, GIS is **no** high-tech at all.

### Elements of a GIS for Resource Management

As contemporary citizens, we cannot afford to be computer-illiterate. Since GIS is useful and now readily available, we need to be exposed to this new way of database organization, information processing and retrieval, plus various kinds of spatial data display. In the following, five functional elements of a general GIS will be discussed before arriving at more detailed examinations on specific uses with regard to resource management.

The first functional element of a GIS is data acquisition. One has to first identify and gather required data for subsequent analysis. For example, he may have to map the variables from air photos or gather them from field surveys. Historical data from archives have to be searched before final tabulation and spatial registration onto a map. Relevancy and reliability are important considerations.

Preprocessing is the second element of note. In simple terms, data gathered earlier have to be manipulated so that they can be entered into the GIS system. One common job is to convert data formats, usually from printed sources into the format consistent with the computer database. Another job is to identify the location of the spatial entities in a consistent fashion via ID's or codes. In other words, all data have to be preprocessed before entry into the database. Good quality control at this stage guarantees greater utility later.

While preprocessing is the preparatory work, the third element in a GIS involves actual database management. How the database is created and later accessed are the overarching questions to take note of. This has important bearings on the entry, update,

deletion, and retrieval of data. In serious projects, there also appear the issue of data security in terms of limited access of the database to specified users or be accessed in restricted time periods. Last of all, errors caused by human fault or machine malfunctions have to be kept to a minimum.

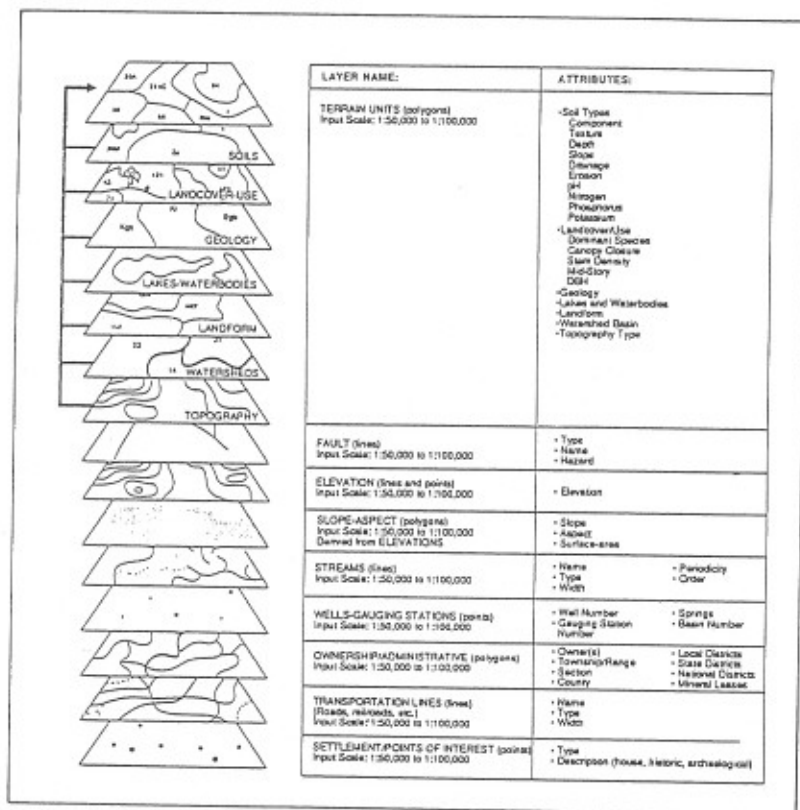
Next to be involved is the "geoprocessing" stage which includes manipulation and analysis of the data. They are the analytical operations which work with the database contents so that new information may be derived. For example, a single variable may be combined with another in some mathematical ways to create a new one for final display. The ability to transfer data or information between different GIS systems are also important. As no single GIS can do everything, one GIS may export data for statistical processing in other packages, then re-imported into it again or other GIS systems as "new" data. Of course, only more sophisticated GIS systems can be that flexible in manipulation and analysis.

Last of all, the fifth functional GIS element is product generation. Outputs from any GIS involves graphical display on the screen as "soft copies" while "hard copies" may appear as plotted maps on paper or film. Less common outputs may include tapes, disks, or cartridges which are standard to all systems. In terms of output formats, maps are most common. Simple graphics like bar charts and graduated circles are also commonly displayed. In some GISs, statistical tables of data are reported after queries are made into their spatial and attribute databases. So, in more advanced GISs, output formats will be of much variety.

Let us consider an analogy which has close resemblance to a GIS data organization often used in resource management. When one produces a colour map, he is actually drafting several flaps of objects in different colours. For example, one flap is contour lines in brown, another blue coverage for water bodies, a third one of black dots denoting settlement patterns, etc. In a computerized GIS, each variable is considered as an individual "data layer" which are spatially referenced in terms of points, lines, and polygons. Figure 1 shows GIS data layers commonly used in natural resource GIS applications. One particular feature to notice is the nominal categories one may assign to each data layer. For example, slope can be categorized into eight broad types ranging from North, Northeast, . . . to Northwest; elevation can be subdivided into high, medium, and low relief according to

some user-defined criteria. The attributes of each data layer are extremely important in later interpretations. So, they are often listed in carefully designed legends. Since we all use colour monitors, each category will be depicted in different colours as determined by the colour palette prescribed by the system or the user.

Figure 1: A Typical Resource Management GIS



Source: Star and Estes (1990), p.192

A whole variety of spatial operations can be performed on these data layers. The most common one is to first create a 3-dimensional wire-frame diagram from the elevation data layer. Commonly called a Digital Elevation Model (DEM), this gives a "real world" image of the ups and downs of the landscape under investigation. Then, another variable is "draped" onto the DEM to illustrate where exactly does each category of the variable appear on the landscape. For example, perspective views on land use variations in the real world can be much better comprehended than the case if depicted conventionally on a flat two-dimensional map.

A recent issue of the GIS World (Vol. 4(3): May 1991) carries a special issue on how GIS can be used to map the parks and various applications of GIS on natural resource management. Clearly, this trend is on the rise which warrants much attention by both academics and practitioners. The following are specific examples which are of wider utility in resource management.

Habitat analysis of endangered animal species is often carried out by park managers. In specific terms, the environmental requirements of those species are first listed out in terms of the data layers which exist in the database. For example, those species may prefer wetlands, muddy shores, and undisturbed locations. Then, one needs to single out wetlands from the land use data layer, muddy shores from the geology data layer, plus areas at least five kilometres away in radius away from all settlements in the population data layer. These selected areas are coded as "1" and elsewhere as "0" in each of these layers. When they are overlain to each other, those areas which are common to all three layers will be labelled as habitat areas for those species. Practical work on the protection of these areas can thus be planned.

Another common application is to assess environmental conditions when new projects are to be done within an area. Very often, a resource manager hopes to minimize the possible destruction a new project will bring in while recognizing the economic benefits such a project may produce. One example is to construct a new road which runs uphill to a potential site for a new accommodation area for a bird's eye view of the whole park. His aims may include a relatively flat site uphill, a location

where one can see the largest area of the park, and that the road should not be an eyesore to people downhill. From the DEM, he can identify where the relief is flatter for the site. Next, he has to use "viewshed" analysis which determines all locations visible from one or more potential viewpoints situated on that surface. The viewpoints can be hypothetical ones for considerations. By draping the line image file of roads (including the new road too) onto the DEM, the manager can determine whether the new road is visible or not by moving its viewing directions and angles. Finally, all the three data layers are overlain to obtain the desired area and the route for the new road.

To forest managers, hillfires are devastating events which bring about huge ecological and financial losses. Now, advanced GISs are put forward to simulate fire outbreaks according to favourable environmental conditions. In the database, environmental data like temperatures, wind speed and direction, relative humidity, etc. are stored. When a report on fire outbreak come, the manager pinpoints that location on the basemap data layer of the area. Simulation softwares can assist in the calibration of fire spreads in consideration of the environmental data. On the computer screen, the fire spreads are displayed with successive extensions according to time increments. Thus, the manager can decide how many personnel should be mobilized to fight the fire and where they should be despatched.

The list of GIS applications on resource management can be endless. The limit to them is only restricted by the ingenuity of the researcher or practitioner concerned.

### **Pedagogical Suggestions**

As stated before, this paper aims at a non-technical introduction to GIS technology as applied to resource management settings. For technical matters related to GIS setups (including data structures, basic hardware and software requirements), those interested may consult textbooks, references, and magazines concerning with GIS. Currently, there are various channels to acquire, refresh, or update latest developments in the area of GIS or Land Information Systems (LIS) in the territory. Within regular curriculum, the three geography departments in Hong Kong's tertiary institutions do offer courses on GIS. The Hong

Kong Polytechnic offers technical training on LIS with land surveying emphasis at both diploma and degree levels. For those who are out of school already, occasional lectures or short courses on these topics are offered by the extramural departments of the two universities. With anticipated rising demands for GIS professionals in Hong Kong, educational opportunities for those interested should be readily available.

Of more concern is the relevance of GIS instruction for geography teachers in secondary schools. Geographers are specifically trained to observe and interpret phenomena with a spatial dimension. Thus, GIS is one area where geographers may contribute. As new blood of geographers lies in the young cohort of students at secondary schools, their geography teachers have the responsibility to introduce GIS concepts in the teaching curriculum. The following are some guidelines to consider.

A fully computerized GIS is far beyond the financial capacity of a secondary school. However, a manual GIS approach is already suffice for illustrative purposes. First of all, transparencies should be available. Each transparency represents one data layer to work on. As a simple example, polygons are drawn to represent different nominal categories of that variable. If the variable is, say, population density, then different areas of high, medium, and low density are delineated. When one only needs to consider high density areas, the teacher can instruct the students to block out all non-high density areas by whatever means (either by inking these areas or cover them with non-transparent paper). This is actually blocking the unwanted areas. Repeat this process for all the variables one wants to consider in total.

When all required data layers are ready, then comes the part on GIS analysis. The concept of "overlay" can be demonstrated to the students by placing the pile of transparencies one over another. Since each of the layers is blocked for areas one does not want, areas which remain clear in the stacked transparencies will be the final result. In other words, after consideration of all variables of use, areas which eventually appear satisfy all specified conditions.

Another GIS concept often used is "distance buffer" which utilizes the idea of proximity in generating such zones of interest.



Again, this concept can be easily done by creating successive zones from polygons or bands from lines with some distance specifications. For example, consider a major road whereby all constructions of settlements are to be located. The distance buffer to be considered spans across five kilometres from each side of the road. Thus, a ten-kilometre linear band should be created. The students are then asked to generate this band alongside the road. The next step will be to block away all other parts of the area on the same transparency. This transparency can then be overlain with other data layers in the question.

One more concept that teachers can demonstrate manually is "search" related to the neighbourhood functions in GIS analysis. In formal GIS analysis, these functions evaluate the characteristics of an area surrounding a specified location. The location is the target (e.g. a fire station). The surrounding area is usually a circle prescribed by a specified radius (e.g. five kilometres). The third parameter to be involved is a task to perform (e.g. counting the number of people living there). In combination, the procedure is to count the number of people living within the radius of five kilometres away from the fire station.

The transparencies ready should include one which has locations of fire stations on which the student can derive a five-kilometre radius circle for each station. Then, there is a transparency showing the population distribution in terms of a dot map. When the two transparencies are overlain together, one can easily count the number of dots which denote the number of people who live within the circle radius of 5 kilometres. One is free to decide whether areas outside the circles need to be blocked. If there are a lot of circles there, such a need is evident. Besides such simple enumerations, there may be other complicated ones like taking averages, calculating variances to denote diversity, observing the most often occurring classes, maximum, or minimum values.

The following hypothetical example may help teachers to define a manual GIS problem to students. The problem is to determine areas which are most prone to landslides on Hong Kong Island. Six variables are hypothesized to be related to this issue:

1. Slopes greater than 40 degrees;
2. Areas higher than 300 meters;
3. Slopes classified as unstable;
4. Rainfall amount exceeding 2,100 millimetres per year;
5. Weathered soil surface; and,
6. Slopes facing northeast, east, and southeast.

Teachers may instruct students to prepare transparencies of those data layers and do the necessary blocking procedures. Overlays will produce landslide-prone areas. Thereafter, teachers may ask the students to produce distance buffers away from those outcomes. Thereby, the idea of vulnerability to landslides can be brought out. If possible, by extending a radius away from that landslide-prone site, the students may be asked to estimate characteristics of the circumscribed area by overlaying other data layers on socio-economic or physical variables.

Through such steps, essentials of GIS analyses can be conveyed to the students. When more and more potential geographers know GIS principles in the early parts of their education, formal and advanced GIS training later will be much easier and effective. The above expositions fully demonstrate the need to acknowledge the impact of technology on resource management in a GIS context. It is up to us to further this mission.

## REFERENCES

- GIS World*, (Vol. 4(3), May 1991 issue).
- Star, J. and Estes, J. (1990) *Geographic Information Systems: An Introduction*. Englewood Cliffs: Prentice Hall.



## Geography and Environmental Education: Some Concluding Reflections

by  
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We are all now well aware of the problems that our modern civilization poses for our environment and the risks that alteration of the environment poses for us. Undoubtedly, environmental issues have been brought into the forefront of public debate, and all aspects of people's use of the environment have widely discussed with passionate interest. It is generally agreed that environmental education is of paramount importance in ensuring the future existence of life on earth and the continuation of humankind in this planet. The articles in this special issue discuss the relationship between geography and environmental education from different perspectives.

### Overview of the Articles

The first article by Dr. Philip Stimpson touches on the theoretical perspective on the characteristics of an environmental approach in geography teaching. He stresses on the need of an holistic approach (i.e. the interrelatedness concept), a concern with environmental health, and the importance of people as decision makers in environmental issues. The symbiotic relationship between people and their surroundings is an ultimate truth. Geography teachers need to emphasize a biocentric viewpoint of mankind in which people are but one element among many in the planet's system each with its own intrinsic value. He concluded that environmental education is as much about personal change as social and environmental change.

Dr. Yau Lai Lai-ling's paper attempts to identify themes pertaining to the teaching **about** the environment (knowledge and skill), **in** the environment (field and local case studies), and **for** the environment (commitment to improve the environment). In order to be effective in teaching students to become committed to act for the environment, she urges that teachers must shift their emphasis from traditional information giving to values and

attitudes identification, clarification, analysis and judging. This shift calls for active methods of teaching and learning, such as through field study, project work, and active classroom techniques.

From the vantage point of a geography teacher, Mr. Wong Kam Fai has noted that environmental themes permeate the existing secondary geography curriculum. He presents examples of how to teach environmental awareness through the formal curriculum and by extra-curricular activities. He concluded that geography teachers have an undeniable responsibility of helping students to cope with the information explosion issue by teaching them how to comprehend and synthesize the diverseness of the information they received.

New technologies have great potential to help us solve our environmental problems. Dr. Luk Chiu Ming illustrates how Geographic Information Systems (GIS) can have an impact on environmental and resource management. GIS are computer-based techniques that have evolved as means for gathering, organizing, managing, manipulation, analyzing, and presenting information with spatial components. In order to arouse students' interest and to give them some idea of the present and future applications of this new technology for environmental management, Dr. Luk suggested that teachers should expose their students to GIS at a non-technical level as early as possible in secondary schools.

### Three Broad Perspectives

Given the context which has been described above, geography is no longer simply the teaching of facts and features of the various parts of the earth. Geographic education provides the analytical tools for the students to understand the world. Today, geography makes use of facts to study problems which are made manifest by overpopulation, resource depletion, urban sprawl, agrarian reform and land-use policies. In the light of the observations noted by the authors in this issue, I would like to highlight on three broad perspectives when teaching environmental issues.

First, there is a reconciliation of environment and economic development perspective. Modern environmentalism, in order to

sound the cry of warning and allure public attention, has emphasized the negative. Environmentalists believed that a concern with the environment is not only morally correct, but necessary to save civilization. Opponents, on the contrary, have tended to view environmentalism simply as a negative movement, opposed to progress, economic development, and the advance of civilization. With the issue of the World Commission on Environment and Development's report, *Our Common Future*, sustainability has become a key concept in current environmental debates. Sustainable development, as defined by the Commission, is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". It hence requires a fairer distribution of wealth within and among countries and groups in society. Although people might interpret this concept differently depending upon their underlying subjective or ideological view, it does point to a co-evolutionary path for economy and ecology. Such a co-evolutionary development would imply a simultaneous improvement of both the economic system and the environmental system. The world-wide support for the Commission Report suggests that the concept of sustainable development could move past such confrontation between economic growth and environmental protection. Geography teachers, too, can use the sustainability concept to guide students to analyze environmental problems and to identify ways to minimize the potential mismatch between economic development and environment.

The second perspective relates to the geographic discipline itself. The current fissiparous tendency throughout geographical studies has created an estrangement between physical and human geography. This trend, however, has adversely affected the intellectual and integrity of the discipline which, traditionally, has claimed to have a strong commitment to the study of both people and their environment and *ipso facto*, their interrelationships. In the past, much of the environmental work within geography was done by physical geographers. This approach has very clearly not solved our environmental problems and has been grossly insufficient in tackling the issues. Physical geography undoubtedly has increased our understanding of natural processes. However, many of the problems are clearly not of a physical nature. The problems are rooted in society, economy, and politics. For instance, biogeographers know where to draw

boundaries for nature reserves, but cannot keep the landless peasants from invading the reserves to grow food or cut wood. The answers to such questions are increasingly seen to involve reforms of land tenure and economic strategy and to necessitate the involvement of communities in shaping their own lives. Thus both sides of the geographic discipline should be involved, in fact this is essential if sound environmental management principles are to be developed. Moreover, the conservation commitment of geography in a rapidly changing world must adjust to such changes and itself be dynamic and forward looking.

Finally, we ought to examine environmental issues from a planetary perspective. In fact, we have entered an era characterized by syndromes of global change that stem from the interdependence between human development and the environment. As suggested by James Lovelock, the proponent of a startling new theory of life, *Gaia*, that the Earth, its rocks, oceans and atmosphere, and all living things are part of one great organism, evolving over the vast span of geological time<sup>2</sup>. From this perspective, we must not only concern with the health and well-being of humankind alone, but also the health of the planet as a whole. Like it or not, we are all global citizens, interconnected and interdependent upon one another. Environmental issues, such as acid rain, greenhouse effect and ozone depletion, transcend political boundaries. In fact, everyone is downwind or downstream from everybody. Therefore, as William Clark claimed that: "it is only as a global species—pooling our knowledge, coordinating our actions and sharing what the planet has to offer — that we have any prospect for managing the planet's transformation along the pathways of sustainable development."<sup>3</sup> Therefore, the intelligent management of the Earth as a whole is one of the great challenges facing humanity as it approaches the twenty-first century.

## Conclusions

The more we understand our planet's life-support system, the more likely it is that we can take positive, constructive actions to provide for sustainable uses of natural resources and the enhancement of environmental quality. Without this understanding, our range of viable alternatives may be unduly limited. From the environmental education point of view, learning of geography

contributes to the broadening of students' understanding of their habitat and of near and distant environments. It is essential that students be introduced progressively to the problems posed by people's occupation of their earthly habitat, for example their role, their powers, their weakness; the influence of world population growth, the nature and effects of irregular climatic variations. As geography teachers, we need to teach the subject in a relevant, compelling, and exciting way. It is our hope that the geographic perspective will inspire a passion for inquiry and learning, and an appreciation of nature that helps set our students on a healthy, enlightened course for the future.

### NOTES

1 World Commission on Environment and Development(1987) *Our Common Future*. Oxford: Oxford University Press.

2 Lovelock, J. (1988) *The Ages of GAIA*. Oxford: Oxford University Press.

3 Clark, W.C. (1989) "Managing Planet Earth." *Scientific American* Vol. 261 No. 3, p.46-57.

## News of the Hong Kong Geographical Association

### The Executive Committee, 1991-93

An election was held in the Annual General Meeting of March 1991 and the Executive Committee 1991-93 was formed. Including the co-opted members and representatives of the tertiary education institutes, the Executive Committee 1991-93 is composed of:

#### Chairman:

Dr. Li Si Ming, Hong Kong Baptist College

#### Vice Chairman:

Dr. Luk Chiu Ming, Hong Kong Baptist College

#### Honorary Secretary:

Mr. Yeung Pui Ming, SHK Kei Hau Secondary School

#### Honorary Treasurer:

Dr. Roger C. K. Chan, University of Hong Kong

#### Members:

Mr. Samuel Yiu-Sang Chan, Lai King Catholic Secondary School

Dr. Fung Tung, the Chinese University of Hong Kong

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Mr. Lam Kwok Keung, Education Department, Hong Kong Government

Mr. Leung Ngan Kwan, SHK Leung Kwai Yee Secondary School

Mr. Li Chi Kin, Sir Robert Black College

Dr. Philip Stimpson, University of Hong Kong

Dr. Wong Koon Kwai, Hong Kong Baptist College

Dr. Anthony C. O. Yeh, The University of Hong Kong

### Popular Science Lectures

The Hong Kong Geographical Association and the Hong Kong Science Museum jointly organized two public lectures. The details of these two lectures are as follows:

#### Lecture 1

Topic: Plate Tectonics and Mountain Building  
Speaker: Mr. C. M. Lee, Department of Civil and Structural Engineering, Hong Kong Polytechnic  
Date: Sunday, January 12, 1992  
Time: 2:00pm - 4:00pm  
Venue: Lecture Hall of the Hong Kong Science Museum,  
Tsim Sha Tsui East

#### Lecture 2

Topic: The Use of Satellite in Global Change Detection  
Speaker: Dr. C. P. Lo, Department of Geography and Geology, The University of Hong Kong  
Date: Sunday, February 16, 1992  
Time: 11:00am - 12:30pm  
Venue: Lecture Hall of the Hong Kong Science Museum,  
Tsim Sha Tsui East

### Public Lecture Series on the Three Gorges Dam and the Development of the Changjiang Valley

The Association organized a series of public lectures and seminars on the controversial Three Gorges Dam project and on

the development of the Changjiang Valley on March 25-29, 1992. This lecture and seminar series was jointly sponsored by the Department of Geography and the China Studies Course of Hong Kong Baptist College and the Hong Kong Society of Asia-Pacific Twenty-one. Delegates of the Hubei and Wuhan Geographical Associations and water conservancy experts of the Territory were being invited to give lectures on these topics and lead the seminars.

### Secondary Education Committee

#### 1. *Advanced Level Field Study Guide*

Preparation of the Advanced Level Field Study Guide is in its final stage. The manuscript will be released to members of the Association in March 1992 in conjunction with the public lecture series on the Three Gorges Dam.

#### 2. *Extra-mural Course on "How to conduct fieldwork in Geography"*

The Association, in conjunction with the Extra-mural Department of the University of Hong Kong, will offer the captioned course in the spring term, 1992. Arrangements have been made so that teachers enrolled in the programme will be able to receive refunds from the Education Department. Members of the Association are advised to read the relevant prospectus for details.

#### 3. *Projects to aid geographical teaching at secondary schools*

Currently the Secondary Education Committee is planning to launch two such projects. One is a newspaper cutting project on topics of interest to geography teachers. The other is a China case studies writing project specifically tailored to the Advanced Level Geography syllabus. Any enquiries or suggestions may be directed to Dr. Luk Chiu Ming, Vice-Chairman of the Hong Kong Geographical Association.



## Board of Editors

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## Notes to Contributors

The Hong Kong Geographer is published on a tri-annual basis by the Hong Kong Geographical Association. The Journal welcomes full-length articles, research notes, and comments and opinions on current development of Geography both in Hong Kong and abroad and the teaching of Geography at the secondary level. It also welcomes book reviews and field trip guides and publishes news of schools, colleges, universities and research institutes which may be written in English or Chinese. In the latter case, the editorial board reserves the right to ask the author to submit a typewritten copy of the paper or to bear the typesetting cost. Very tight financial restraints render this necessary.

All articles are to be submitted to:

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