

TEACHING *for a* SUSTAINABLE WORLD

INTERNATIONAL EDITION

UNITED NATIONS ENVIRONMENT PROGRAMME
UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANISATION
INTERNATIONAL ENVIRONMENTAL EDUCATION PROGRAMME

COMMUNITY *based* ENVIRONMENTAL EDUCATION

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INTRODUCTION

It is generally agreed that the most important and challenging kind of environmental education is 'education for the environment' in which teachers and students engage in critical studies of environmental issues in their own locality. This kind of environmental education entails critique of the assumptions and values underlying alternative and often opposing proposals for action in respect of environmental issues. There are a number of requisite conditions to 'education for the environment', for example:

- a capacity to engage in studies outside the classroom;
- a willingness to base a curriculum on the investigation of a probably controversial environmental issue;
- a recognition that the local community is the appropriate source of environmental issues upon which to base a curriculum;
- a preparedness to adopt a politicised view of environmental problem solving and curriculum work;
- a recognition of the need for creating the conditions for students to critically appraise the assumptions and values underlying environmental action proposals;
- a willingness to consider the role that curriculum can play in social change aimed at environmental improvement.

This workshop illustrates an instance of community-based education for the environment, explores some of the different meanings embedded in material designed with education for the environment in mind, and invites participants to consider some of the practical and theoretical implications of adopting this approach to environmental education in their own educational settings.

OUTCOMES

It is expected that participants in this workshop will:

- identify a number of local environmental issues;
- observe a pictorial account of an actual instance of 'education for the environment';

WORKSHOP OUTLINE

- engage in a critical analysis of this account — by deconstructing its meanings and reconstructing alternative meanings for the same pictorial account;
- gain an appreciation of the way in which media depictions of environmental and environmental education events are in fact reconstructions for public consumption;
- connect these understandings with their own educational experiences; and
- invoke these experiences and understandings in working towards an improved set of principles qualifying 'education for the environment'.

The workshop will involve participants in small groups in constructing a number of alternative interpretive accounts of an instance of 'education for the environment'

qualifying 'education for the environment'.

MATERIALS REQUIRED

OVERHEAD TRANSPARENCY MASTERS

- OHT 1: Three Approaches to Environmental Education
OHT 2: Workshop Objectives
OHT 3: Education for the Environment
OHT 4: Professional Development in Environmental Education

RESOURCES

- Resource 1: The Environmental Education and Computer Conference Project: Two Case Studies

READING

- Reading 1: Five Principles for Professional Development in Environmental Education.

ADDITIONAL READING

- Boal, A. (1979) *Theatre of the Oppressed* (trans. C. A. and M. O. A. McBride), Urizen Books, New York.
- Robottom, I. and Muhlebach, R. (1989) Expanding the Scientific Community in Schools: A Computer Conference in Science Education, *Australian Science Teachers Journal*, 35 (1), 39-47.
- Schreuder, D. (1994) The Schools Water Project (SWAP): A Case Study of an Action Research and Community Problem Solving Approach to Environmental Education, *Australian Journal of Environmental Education*, 10, 35-46.
- Wagner, G. (1979) *Dorothy Heathcote: Drama as a Learning Medium*, Hutchison, London.


ACTIVITIES

1. INTRODUCTION: ENVIRONMENTAL GRIPES AUCTION

In this warm-up activity, environmental concerns are 'auctioned' to identify the environmental concerns most worrying the participants.

- Distribute (or ask each participant to provide) a slip of paper 5cm square.
- Ask participants to write down a one- or two-word statement identifying a particular environmental issue that they are aware of, or concerned or amazed about.
- Collect the 'gripes' and read each one out, in turn, as one by one, they are put up for auction.
- Auction instructions: Each person has 100 points to spend and cannot bid over this. A record should be kept of the number of points each gripe is sold for. When the auction is over, the people who have purchased cards explain why their particular 'gripe' is important, and how it is likely to affect their lives and those of others.
- Discussion may be held about why the gripe attracting the greatest number of points is of such high interest and concern to the group.

2. EDUCATION FOR THE ENVIRONMENT

- Use OHT 1 to differentiate the three kinds of environmental education: 'education *about* the environment', 'education *in* the environment', and 'education *for* the environment'.
-  **Invite discussion** about the meanings embedded in this trichotomy.
- Use OHT 2 to outline the objectives of the workshop.
- Use OHT 3 to outline the characteristics of 'education *for* the environment'.

3. THE CASE STUDIES

- Explain the context of the environmental education work in the three points in the introduction to the two case studies (Resource 1). Ask participants to read the case studies, noting the images contained in the photographs.
- Ask participants to work in small groups to analyse the case studies using the characteristics of education *for* the environment on OHT 3.
- Introduce to the group the next task of *deconstructing the case study presentation* by pointing out the role of:
 - the image of each individual photograph;
 - the sequence of images in the case study; and
 - the commentary in presenting a 'story' of a particular kind — in reconstructing the actual events for public consumption.
- Invite discussion among the group about such questions as what messages are included in the presentation as given, and what alternative messages are *not* included. For example, what additional or substitute commentaries could be allocated to each slide, and what differences in order of presentation of the slides would be possible? What impact do these alternatives have for the meaning of the overall presentation?

4. RESPONDING TO THE CASE STUDIES THROUGH DRAMA

Educational drama is one way of responding to analytical questions such as these in a concrete and practical way. Educational drama may provide a useful way of transcending cultural barriers in environmental education. The drama methods selected for this workshop have been used successfully in South America, Europe and China (see Boal 1979; Wagner 1979).

Participants work in groups of 5-6 and require their copies of the case studies in Resource 1.

A. Create a 'Tableau' to Represent the Message in a Chosen Image

- Ask each group to examine the photographs in Resource 1 and to select an image that is capable of more than one interpretation.
- Label two members of each group A and B.
- Person A is given the task of organising other group members into a human 'tableau' (a human still photograph or human sculpture) to represent the message of the chosen image exactly as it is. Person A may well be a part of the tableau.
- Each group member should have an opportunity to work around and examine the human tableau. Then dissemble the tableau.
- Each group is to compose a new single written caption which captures the essence of its tableau.
- To debrief, ask members from each group to articulate the decisions made regarding the choice of image, the arrangement of the tableau and the caption.

B. Creating a 'Tableau' to Represent an Alternative Message of the Chosen Image

- Participants work in the same groups with the same image as chosen in Activity 4A.
- Person B is given the task of organising other group members into another human tableau to represent the chosen image as it might be - that is, to convey a message of a different kind. Person B then becomes part of this tableau.
- After each group member has had the opportunity to walk around and examine the human tableau, dissemble the tableau.
- Each group composes a new single written caption which captures the essence of this new sculpture.
- To debrief, ask members from each group to articulate the decisions made regarding the choice of slide, the arrangement of the tableau, and the caption.

C. Displaying and Analysing the Tableau

- Ask each group to quickly reconstruct its first and then its second tableau for all other groups to view.
- Invite each group to articulate differences between the first and second captions and their justifications.
- Invite discussion on the following questions:
 - What are your thoughts and feelings about the first and second representations?
 - What has been included in the first representation that has been excluded in the second representation (or vice versa) and why?

- Explain why you have depicted aspects of the representation (e.g. the teacher's role, students' role, the social context, perceptions of the environment, the use of materials) in these particular ways rather than in other ways.
- What is the relationship between these depictions and the context within which they occur - your own personal histories and experiences, your understanding of certain environmental issues, the social contexts of schools with which you are familiar?
- What do you think might be the implications of engaging in these kind of activities with students of your own?

5. EVALUATION

Participants have now had an opportunity for assessing the above activities in terms of their feasibility in educational settings.

We are proposing a self-evaluation in the form of an appraisal of the above experience in terms of the sense in which it is consistent with the principles of professional development in environmental education set out by Ian Robottom (1987) in Reading 1.

- Use Reading 1 and OHT 4 as the basis of a mini-lecture on the characteristics of effective professional development in environmental education.
- As a group, appraise the ideas embedded in the principles on OHT 4. How was each of these principles used in this workshop? Are they really feasible? Can you think of ways of improving these statements of principles?
- *Follow-up Activity:* Participants develop their own photographic record (slide collection) on an environmental issues of interest or concern to them. Using this material, repeat the above activity in basically the same critical way.



OHT 1

THREE APPROACHES TO ENVIRONMENTAL EDUCATION

EDUCATION *ABOUT* THE ENVIRONMENT

- Provides understanding of how natural systems work
- Provides understanding of the impact of human activities upon them
- Develops environmental investigation and thinking skills

EDUCATION *IN* THE ENVIRONMENT

- Gives reality, relevance and practical experience to learning through direct contact with the environment
- Develops important skills for data collecting and field investigations
- Develops aesthetic appreciation
- Fosters environmental awareness and concern

EDUCATION *FOR* THE ENVIRONMENT

- Builds on education *in* and *about* the environment
- Develops an informed concern and sense of responsibility for the environment
- Develops an environmental ethic
- Develops the motivation and skills to participate in environmental improvement
- Promotes a willingness and ability to adopt lifestyles compatible with the wise use of environmental resources

OHT 2

WORKSHOP OBJECTIVES

- Identify a number of local environmental issues
- Observe a pictorial account of an actual instance of 'education *for the environment*'
- Engage in a critical analysis of this account by deconstructing its meanings and reconstructing alternative meanings for the same pictorial account
- Gain an appreciation of the way in which media depictions of environmental and environmental education events are in fact reconstructions for public consumption
- Connect these understandings with their own educational experiences
- Invoke these experiences and understandings in working towards an improved set of principles qualifying 'education *for the environment*'



OHT 3

EDUCATION FOR THE ENVIRONMENT

For environmental education to be education *for* the environment, there needs to be:

- A capacity to engage in studies outside the classroom
- A willingness to base a curriculum on the investigation of a probably controversial environmental issue
- A recognition that the local community is the appropriate source of environmental issues upon which to base a curriculum
- A preparedness to adopt a politicised view of environmental problem solving and curriculum work
- A recognition of the need for creating the conditions for students to critically appraise the assumptions and values underlying environmental action proposals
- A willingness to consider the role that curriculum can play in social change aimed at environmental improvement

OHT 4

PROFESSIONAL DEVELOPMENT IN ENVIRONMENTAL EDUCATION

Professional development in environmental education should be:

1. Enquiry-based
2. Participatory and Practice-based
3. Critical
4. Community-based
5. Collaborative

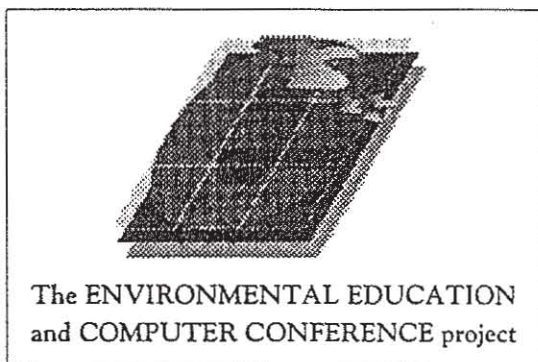
RESOURCE 1

THE ENVIRONMENTAL EDUCATION AND COMPUTER CONFERENCE PROJECT: TWO CASE STUDIES

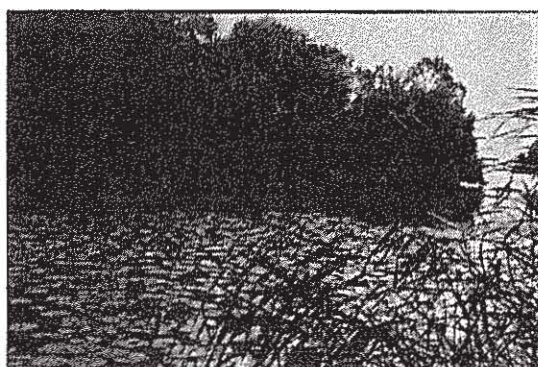
INTRODUCTION

The project illustrated here was coordinated by Deakin University, involved five coastal schools, and had three interactive characteristics:

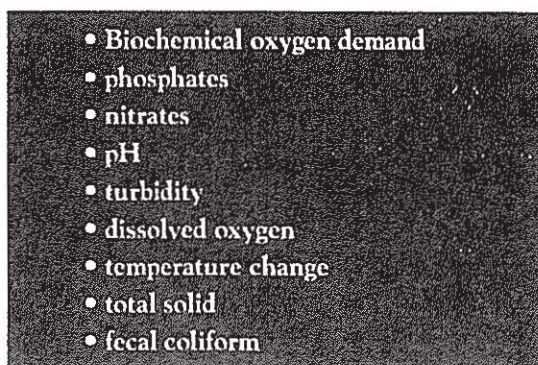
- (i) environmental education work involving monitoring of water quality;
 - (ii) a computer conference as a forum for participating schools to interact with each other, sharing opinions, inquiries and results with Australian and overseas schools engaged in similar water quality work; and
 - (iii) a participatory research approach on the part of the project coordinators, teachers and students.
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1. Although this project originally involved schools along the 'west coast' of Victoria, similar experiences have been reported in other countries (eg. USA and South Africa). Each school enjoys proximity to a magnificent marine setting, but their environmental education activities were initially concerned with freshwater quality. This case study reports on the activities of three of the five schools.



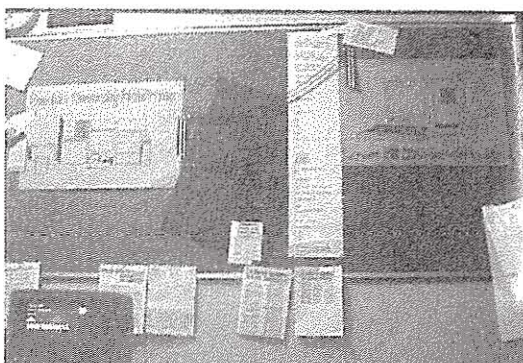
2. **Case Study 1**
One school identified three sites along a local river for their studies of water quality. The school borders a river with a history of pollution problems. This is a photograph of one of the study sites.



3. The school conducted tests of nine different parameters of water quality.



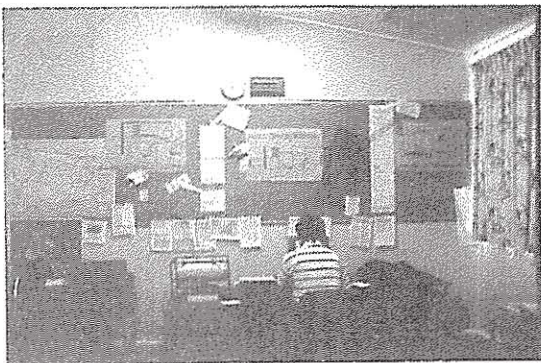
4. Students in different year levels were involved in the sample and analysis of the water. Here, some Year 10 students receive preliminary instructions from their teacher prior to beginning sampling and testing.



5. One of the interesting features of this project was that different teachers found different 'homes' for the environmental education work in their curriculum - for example, general science, technology studies, computing, etc.



6. Older students were able to work more independently on their collection of water samples. This student is collecting invertebrate fauna for additional study. Students from the school keyed their data into an international computer conference that was housed at the University of Michigan under the coordination of Professor Bill Stapp.

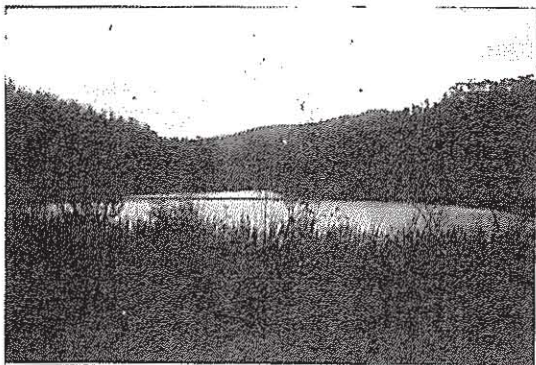
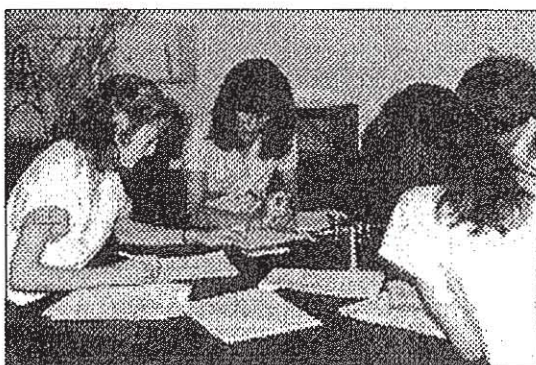


7. The international computer conference allowed each participating school to 'talk' with any of the 100 or so other participating schools. The benefits of such interaction were that students at any school could compare their data on any parameter with those from schools in other locations.

Mar 09/88 07:31

91:4) Randy Raymond:- Great response Mark!!! Welcome to the conference Lorne, I am teacher of Science at Detroit Country Day School and I was in the first exciting to see how the students' attitudes change as well. I am very interested in learning more about the water supply of your area. What types of activities take place on the reservoir created for the water supply...

		Q-value
diss O ₂ :	112% sat. 11mg/L	98
fecal coliform	100 colonies/100mL	45
pH:	6.5	75
B.O.D.	10 ppm	33
temperature	-0.5 °C change	92
tot.phosphorus	1.1 mg/L	39
nitrites	0.55mg/L	98
turbidity	1m	33
total solids	770mg/L	20
Overall Water Quality Index		62.7



8. This is similar comparative data for the parameter of total solids. Other uses that students put the computer conference to included the exchange of geographical context information, exploration of alternative methods for data collection and analysis, establishment of new networks, as well as simply making new 'electronic pen friends'

9. On the basis of computations involving all nine water quality parameters, students were able to come up with a single overall comparative index of water quality for their particular sample sites, and to place that index in an international context.

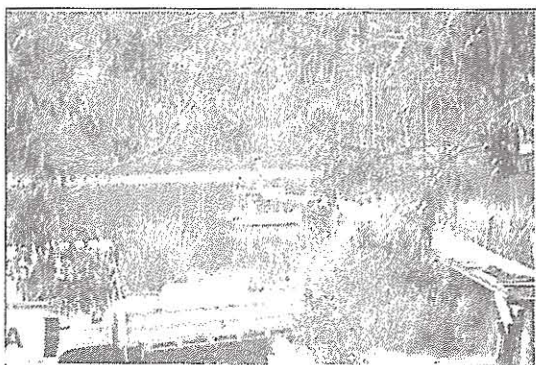
10. Overall, however, the proportion of total project time spent on the computer conference was disappointingly low - lower than the teachers expected. There were a number of technical problems associated with establishing and maintaining the computer link with overseas schools; and in a sense the more conventional approach of using the library rather than the computer conference as a resource remained dominant.

11. Case Study 2

Another school, at a holiday resort town, was interested in examining the water quality of the town's domestic water supply. At the beginning of the previous Summer holidays, the townsfolk had been advised by the local water board to boil their drinking water. This implied warning came with no explanation.



12. After doing some early analysis of tap water throughout the town, the teacher and students decided to sample some of the water at its source - the town's reservoir. Here the teacher is briefing the students at the reservoir about what they are required to do.



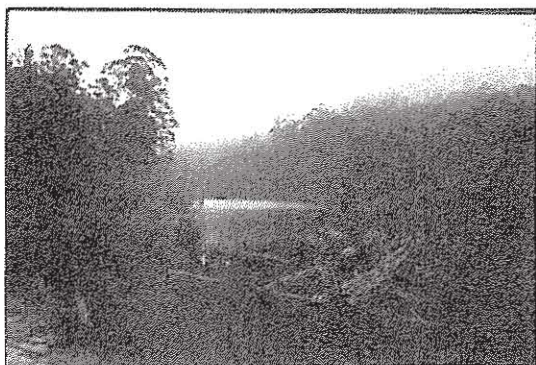
13. On the day they arrived at the reservoir, a team from the local water board was also present, collecting water samples from a sampling station at the end of the pier.



14. The teacher and students began to walk out along the somewhat rickety pier to get to the sampling station. However, before they got much further than where they are in this photo they were ordered in a forceful and somewhat aggressive manner to remove themselves from the pier. Not wanting to be involved in a dangerous conflict, they wisely did so.



15. However, they were not easily deterred, and only two days later they revisited the reservoir with the intention of resuming their water sample collecting, hopefully without the intervention of the water board. However ..., the pier had been removed and burnt!



16. The significance of this was not lost on the students, who tended to perceive the demolition of the pier as an attempt by the apparently defensive water board to prevent ready access by the students to the sampling point. The political character of environmental education was emerging in concrete terms for these students.



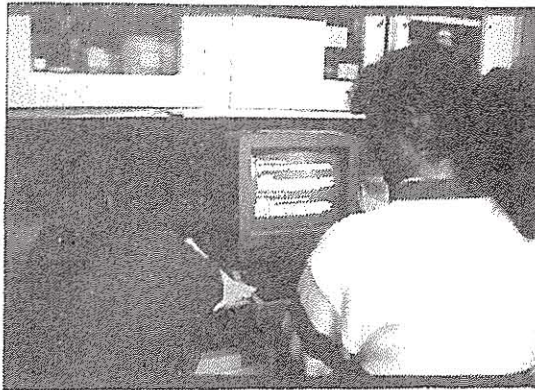
17. The students' determination to continue their study into this increasingly suspicious situation was not reduced, and they turned to collecting water samples from the more difficult locations of the water's edge ...



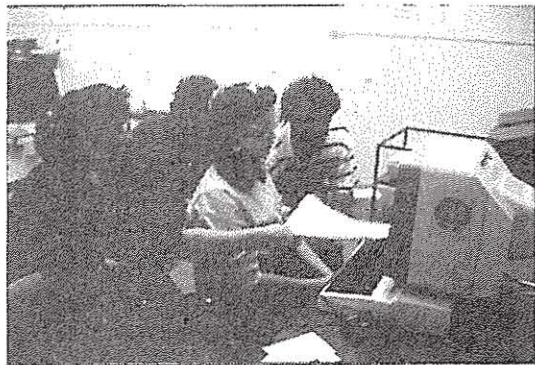
18. The reservoir spillway. It should be pointed out that the perception that the water board had destroyed the pier in order to prevent student access to the sample point was only surmise. The water board may well have acted with the morally loftier motive of concern for safety, - the pier was, as stated earlier, quite rickety.



19. Once obtained, the water samples were analysed either in the field or, as shown here, in the school science laboratory.



20. Data arising from analysis of water quality were then keyed into the computer conference. The simple set up here was very workable: the computer was located in the teacher's preparation room adjoining the science lab, so the students could work away in a relatively quiet and secure setting.



21. Usually within two days, a number of responses to Australian student's entries were received from America and Germany. In this way, the computer conference served as an alternative source of advice and support to the more conventional one (the classroom teacher and the library). The computer conference acted as a larger, international classroom, placing students in the isolated Australian schools in direct contact with students elsewhere in the world. Thus the computer conference acted to expand the 'student scientific community' available to students.

READING 1

FIVE PRINCIPLES FOR PROFESSIONAL DEVELOPMENT IN ENVIRONMENTAL EDUCATION

Source: Robottom, I. (1987) The Dual Challenge for Professional Development in Environmental Education, in *Environmental Education - Past, Present and Future. Proceedings of the Third National Environmental Education Seminar and Workshops*, Australian Government Publishing Service, Canberra, pp. 80-82.

1. Professional development in environmental education should be enquiry based.

Professional development activities in environmental education should encourage participants at all levels to adopt a research stance to their own environmental education practices. Current practices in environmental education (teaching, curriculum development, inservice activities, teacher education activities, institutional organisation ...) should be regarded as problematic - as having the potential for improvement through participant research.

2. Professional development in environmental education should be participatory and practice-based.

Environmental education practices are shaped (guided or constrained) by the theories of practitioners themselves, and by the theories of others built into the structures and relationships of the institutions within which practitioners work. Environmental education problems are matters concerning the practices of individuals and groups: they occur when there are gaps between what practitioners think they are doing and what they are actually doing (these are problems of 'false consciousness'); and they occur when there are gaps between what they want to do and what they are actually able to do in their particular setting (these are problems of 'institutional pressure'). In either case, it is essential that the practitioner be directly involved in addressing these problems, because what is to count as a 'solution' will only become clear through a process of working through the relationship of theory and practice. Professional development courses consisting solely in prior 'training in the disciplines' conducted outside the work contexts of practitioners are of limited help in resolving these practical problems. Approaches to professional development that impose a division of labour between 'practitioners' and 'researchers' should be abandoned.

3. Professional development in environmental education should be critical.

Professional development in environmental education should entail a critique of the environmental and educational values and assumptions that inform existing environmental education policies, activities and

organisational relationships. It is through processes of enlightenment about the values informing and justifying policies, activities and organisational relationships that change in these registers is made possible as practitioners come to an understanding of the field through their critical enquiries and develop their own theories about environment and education.

4. Professional development in environmental education should be community-based.

Environmental education problems are doubly idiosyncratic: the *environmental* issues that form the substance of environmental education work are usually specific in terms of time and space (this is simply to say that environmental conditions in different parts of the world are different); and *educational* problems are rarely susceptible to universal solutions (this is to say that the ecology of classrooms differs from classroom to classroom).

5. Professional development in environmental education should be collaborative.

There are two reasons for collaborative work in professional development in environmental education. Firstly, recognition of instances of false consciousness or institutional pressure often requires the assistance of colleagues working in similar circumstances (several heads are better than one). And secondly, many of the forces acting against improvement in environmental education are political in character, and collective action is usually more productive than individual efforts in the context of political struggles. (Examples of the political character of the forces shaping environmental education are: the tendency of schools (and governments) to favour a 'safe' form of environmental education like the teaching of basic ecological principles rather than the investigation of controversial local environmental issues; the tendency of textbook agents and educational consultants to favour the teaching of substantive content (information about the environment) rather than to encourage a critical, enquiry-based form of environmental education - because to do otherwise would be to threaten the relevance of their own expertise; the struggle for resources engaged in by interdisciplinary subject-based curriculum).