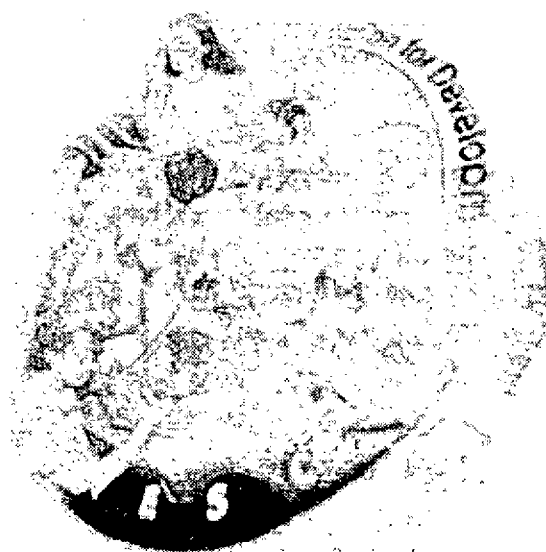


Sustaining Innovation in Education: Experiences in the Learning for a Sustainable Environment Project

Daniella Tilbury

Macquarie University



This paper provides a discussion about what education and development planners can learn about initiating and sustaining innovation at the teacher education level from the Learning for a Sustainable Environment project. It reflects upon how research processes can contribute to sustainable (long-term) developments within teacher education. Essentially, it seeks to address questions about how to make environmental education a permanent feature of teacher education practice and curricula.

The chapter begins with arguments why the issue of sustaining innovation has become an important one. It then identifies the principles and processes within the Learning for a Sustainable Environment project which support its innovative components on a long-term basis. The final section reflects upon the next stage of the project which is to involve the setting up of action research networks within different countries. It discusses how the principles and processes of sustainability identified, may be used to support the national process. The value of the Learning for a Sustainable Environment model for developments in education at the practical level is also briefly considered. The chapter argues that the action research network model used in Learning for a Sustainable Environment project provides a democratic, culturally relevant and sustainable approach to development in education at the cross-cultural level.

Sustaining innovation: Why is it important?

It is important to reflect upon how to sustain educational innovation for three reasons. Firstly, as educators, we still have a great deal to learn about the process of sustaining innovation. Questions about how to sustain innovation in the curriculum rarely constitutes the basis of educational research, although a number of studies have contributed to an understanding of the process of curriculum innovation through identifying factors that impede and determine successful curriculum development (Crandall *et al.* 1982, Huberman & Miles 1984, Cohen 1987, Louis & Miles 1990). Studies rarely provide long-term perspectives of curriculum development (Fullan & Stiegelbauer 1991), often neglecting questions about how to

support curriculum innovation in the longer term or what occurs once the innovation has been introduced.

At another level, the issue of how to sustain innovation is critical to environmental education. It is an issue which has also been neglected in the field and now needs to become a key concern for those seeking to introduce environmental education into mainstream education. This is particularly important since there is evidence, from research reviews and project reports, that curriculum initiatives in environmental education, at both school and university level are short-lived (see Tilbury 1997).

Findings indicating that environmental education projects have a limited impact on the curriculum are hardly surprising, given environmental education's grounding in an alternative worldview which challenges many contemporary models of education and schooling. Environmental education is an area of learning which provides focus to newer forms of personal, political and social learning as well as a critical pedagogy which questions schools' uncritical role in maintaining existing social conditions. Essentially, environmental education is seen to be in conflict with the predominant curriculum ideology and practice in schools and universities, making it difficult to integrate into existing structures (Stevenson 1987, Greenall Gough & Robottom 1993). Thus, it is not surprising to find that it has been difficult for environmental education to take root in the curriculum or to discover that much of its innovative components are developed outside mainstream education (Elliott 1991, Bachiorri 1994, Wong 1994, Lee 1995, Yeung 1996, Posch 1993, Tilbury & Turner 1997). Education needs research which will address issues about how innovations, such as environmental education, can find their place, and develop their role, within teacher education.

There is yet another reason why it is important for us to reflect upon how we can sustain innovation. The Learning for a Sustainable Environment project is now embarking into Stage Three, which involves developing the project at the national level in a number of Asia Pacific countries. At this stage, it is important to reflect upon what we have learned from the

international research effort and how we can use our experience to sustain the national process.

The Learning for a Sustainable Environment Project attempts to address environmental education needs in teacher education through a professional development process which involves teacher educators in practitioner research. The project follows the 'reflection-in-action' (Schon 1983) process which Hart (1990) believes offers possibilities for reconstructing teacher education - through its pragmatic constructivist worldview and critical theory approach. This practitioner research, commonly referred to as 'action research', acknowledges that innovation, not integration lies at the heart of environmental education initiatives (Tilbury 1997).

Hart (1990), at another level, interprets the constructivist epistemology of 'reflection-in-action' and its focus on the inter-dependence of teaching practices and contexts as philosophically consistent with an ecological worldview, and therefore with environmental education

Teacher education programs based on a reflection-in-action paradigm emphasise a process model of education where teachers (and teacher educators)... monitor and evaluate their own practice reflexively, that is, an action research model, a cyclical process in which teacher action-reflection-improved action is seen as a dialectic between theory and practice, much like the principle of reciprocal relationships is viewed in ecology (Hart 1990, pp. 14-15).

This thinking about the interdependence of research and professional development in environmental education, has guided the progress of the project and underlies the Learning for a Sustainable Environment model for teacher education.

The focus of the Learning for a Sustainable Environment Project is an action research network in which teacher educators involved in the research, share in the development of culturally sensitive teacher education modules. Teacher educators are asked to develop a series of activities to form a workshop module on environmental education for their own use. These modules are then passed onto other teacher educators in the region who adapt these modules in accordance with local cultural and educational needs. They and prepare action research case studies of their use of the materials and their own continuing professional development. The original authors also revise their modules following feedback from the trialists who act as critical friends. Essentially, the project's structures and action research *network* support not only the development of innovation but also a dissemination program - through supporting others trialing modules and encouraging them to share their experiences.

Embedded within the action research *process* itself, are emancipatory goals for teacher educators. Tesch (1990) defines 'emancipatory action research' as:

... a form of self-reflective inquiry undertaken by participants in social situations in order to improve the

rationality and justice of their own practices, their understanding of these practices and the situations in which the practices are carried out (Tesch 1990, p. 49).

Hillcoat (1996) argues that the role of emancipatory action research in empowering educators to undertake social action for an improved educational environment should not be underestimated. It is a form of critical research which aims to transform (and not just inform) practice. This form of inquiry is based on a critical paradigm which questions the hidden assumptions underlying research and attempts to close the gap between research and change by involving and empowering practitioners through the research act.

Initial reflections suggest that a number of principles embedded within the Learning for a Sustainable Environment research process itself, have influenced the success and sustainability of this initiative.

Holistic and ecological interpretation of educational change

This project has sought to maintain the ecological relationship between curriculum development, professional development and practitioner based research (UNESCO/NIER 1996).

The Learning for a Sustainable Environment project interprets innovation in environmental education not solely as a teaching innovation or a curriculum innovation but adopts a more holistic and ecological interpretation of educational change - linking professional development with curriculum development and resource development. This more holistic interpretation of change, which lies at the heart of Learning for a Sustainable Environment action research approach, is one of the reasons for the ongoing success of the project. It means that the project participants are given the scope to be able to get to the root of the issues surrounding environmental education. It provides them, not only, with necessary breadth to be able to select and explore from a range of multiple possibilities (Garbutcheon Singh 1998), but also the space and challenge to address the innovation in a holistic manner.

'The transformative ideals of environmental education require pedagogical approaches which are markedly different from traditional teaching styles'

The project's ecological view of change is reflected in its critical research method (see Hart 1990 cited above) as well as in its approach to pedagogical practices. The transformative ideals of environmental education require pedagogical approaches which are markedly different from traditional teaching styles. These include interdisciplinarity, problematising knowledge and values; active investigation of

issues; the development of motivation and skills to participate in change. Environmental education pedagogy is based upon a view of teaching as a creative and dynamic process in which pupils and teachers are engaged together in the search for solutions to environmental problems. This often requires an alternative relationship between the teacher and learner and a move away from didactic and teacher centred approaches to learning (Fien & Tilbury 1996).

This pedagogy has been engrained within the Learning for a Sustainable Environment project at two levels: (i) within the action research network process which permits interdisciplinarity; problematisation of knowledge and values; investigation of issues and active participation in the research; (ii) within its modules, which promote a critical and active pedagogy.

This ecological approach is important to project sustainability in that it supports participants when making changes at the practical level. This has been documented in the participants evaluations which reveal how these innovative and participatory process has enabled them to develop an increased sense of confidence and personal efficacy both as teacher educators and as environmental education researchers (Fien 1998). One of the participants, identified how many teacher educators involved in the project experienced a transformation from being an environmentalist into an environmental educator through this process (Kumar 1998). The significance of this ecological approach to change is best captured by another teacher educator, in her reflections:

Adapting and trialing the two modules helped our project team to review and expand our knowledge on the pedagogy of environmental education. It increased our skill in conducting workshops, especially in facilitating interactive activities. It also sustained our energy to promote environmental education in the Philippines (Galang 1996, p. 6).

Tilbury and Turner (1997) found that changes to teacher's pedagogical practices increase the chances of rooting environmental education innovation in the curriculum. They argue that environmental education initiatives need to provide more opportunities for teachers and teacher educators to acquire the confidence (and skills) for choosing participatory and active learning styles, if they are to be successful. This, they suggest increases the possibility of making environmental education a more permanent feature of school or University programs. This finding has also been supported by an NAAEE symposium (1995) on professional development. The symposium studied a variety of teacher education initiatives in environmental education, concluding that 'long-term, systematic change embodies not only content but also pedagogy' (Britt 1995, p. 4).

Responsive to context and culture

Reflecting upon their experiences in a South African teacher education initiative in environmental education, Schreuder and

Le Grange (1998) have identified a project's ability to be 'responsive to context and changing context' as a key factor which affects its sustainability. Underlying their reasoning is an argument that if these initiatives are to be successful then those who are to benefit from the project outcomes must see the research process and findings as relevant to their experience and needs.

The Learning for a Sustainable Environment Project model is built upon a process which is responsive to cultural needs and contexts. This process (described in Chapter 1) recognised not only the emergent nature of knowledge, the role of relevance in motivating and achieving success but also the importance of developing a culture of empowerment and authentic participation. This has enabled the Learning for a Sustainable Environment process to be seen as 'personally, professionally and culturally relevant' (Fien 1998) by participants and has served as motivation for them to become fully engaged in the research act. Similarly, Garbutcheon Singh (1998) believes that the active role played by teacher educators in influencing the research has led them to identify themselves as the major beneficiaries of the research. This, he argues, has committed them to finding really useful and innovatory solutions to practical problems and to take collaborative action for practical and structural solutions.

The Learning for a Sustainable Environment process has also been responsive to personal development needs, establishing it as a more important project focus than the production of resources (Fien & Corcoran 1996). Essentially, the project adopts a holistic outlook of educational innovation which enables personal as well as professional needs to be addressed. Kumar (1998), in her reflections, documents how the project has helped her increase confidence and personal efficacy as a teacher educator. This personal development component, would be identified by commentators, such as Hart (1998) and Garbutcheon Singh (1998), as another factor influencing the sustainability of this initiative.

'the key to sustaining innovation is embedded within the passions that drive teachers'

Both Hart (1998) and Garbutcheon Singh (1998) believe that the key to sustaining innovation is embedded within the passions that drive teachers. They argue for the type of research that not only requires the participation of teachers but which also invokes their personal interests and motivations and long-term goals.

In my most recent work with Canadian elementary school teachers, I learned that what drives teachers in schools is not a rationalised theory of curriculum but a deep sense of fundamental value about what is right to teach our children. In this inquiry. We asked teachers to describe their environment-related activities and to

reflect on their motivations for such activity, given the absence of a definite curriculum mandate... we found passionate accounts of the belief and values that inform teacher's work values (Hart 1998, p. 8).

Teacher educators as curriculum innovators

Underlying the Learning for a Sustainable Environment process is an assumption that innovation through environmental education does not occur by just giving teacher educators the knowledge or skills to teach environmental education in their classrooms but that teachers need to be supported in challenging the curriculum conflict and the structures within which they work. Just like environmental education attempts to give students the skills and confidence to participate in environmental change the environmental education research process, used in this project has provided opportunities for teachers educators to develop the confidence, and the skills, to participate in curriculum change (even if it is only initially at the individual professional level). The Learning for a Sustainable Environment experience has encouraged some participating teacher educators to take on board wider curriculum issues and to confront challenges (and obstacles) to developing their environmental education practice. This may be another factor influencing the sustainability of the initiative.

The project participants, in their personal reflections and project evaluations, document how the action research process and skills support the researcher involved in the curriculum change process not only within their institutions but also at the national level. Law (1998) documents how the process is 'a powerful learning experience' proving 'invaluable in getting environmental education set up in our curriculum' (p. 2) and in helping them reflect upon the wider role and place of environmental education. He explains how:

The feedback and subsequent adaptations to each module has introduced a New Zealand perspective to both the content and delivery. Introducing a New Zealand perspective to the modules had required both of us to research information, read more widely and become innovative in re-shaping and re-developing specific activities... *Developing a New Zealand perspective in both content and delivery has forced us to re-examine the general views, policies, guidelines and direction of environmental education in this country* (Law 1996, p. 11).

Networks and partnerships

Previous studies have documented how professional partnerships provide a valuable stimulus for introducing environmental education into school and university programs (Tilbury 1998). This project has revealed how local and international networks serve as structural frameworks for not only initiating but also supporting developments in environmental education.

Previous chapters have described how the Learning for a

sustainable environment project created a network of teacher educators in the region who shared in the development of prototype workshop modules for use in teacher education programs. Five years into the project, it appears that this network served not only to support but also disseminate good practice in environmental education. Initial evaluations of the project suggest that these partnerships are creating a new dialectical process, which involves many participants in deepening their understanding of and furthering contributions to environmental education. Kumar (1998, p. 5) records how the action research network assisted her in developing and building her capacity in EE - particularly as she found herself fulfilling different roles at different levels within the network. Her reflections and those of other participants, suggest that the partnerships developed by the international network and collaborative research processes worked as a safety net, supporting the innovative work in universities and sustaining change environmental education at the teacher education level.

'university and school partnerships in environmental education research, provide effective channels for the restructuring of teacher education and thus sustaining curriculum developments in the long term'

The role of networks and partnerships in sustaining change has been acknowledged previously. Jasbir Singh in her Keynote address to the Educational Research Association of Singapore (1997) highlighted the role of professional partnerships in sustaining educational development. These partnerships, she argued, offer the possibility of not only increasing the impact of environmental education initiatives but also the chances of continuity. Similarly, Schreuder and Le Grange (1998) believe that at another level, university and school partnerships in environmental education research, provide effective channels for the restructuring of teacher education and thus sustaining curriculum developments in the long term. These partnerships, they believe support change through building the capacity of teachers to cope with and change at professional level.

A democratic model for projects

The Learning for a Sustainable Environment research project adopts a perspective of educational change which critiques centrally driven technicist 'research, development, diffusion and adoption' (RDDA) model of educational change which are common in the Asia-Pacific region and other parts of the world. Robottom (1989) describes this RDDA approach to change as one which reduces the role of teachers (and teacher educators) to that of 'passive receivers' of centrally produced curriculum materials or technicians merely applying ideas of external experts. He argues that this approach undermines the development of skills for critical thinking and reflection as

well as the need for participants to be engaged in the process of change. The Learning for a Sustainable Environment project, through its action research model provides an alternative to this top-down approach to curriculum development and addresses what Robottom (1987) assessed as a prevailing 'lack of conscious, critical appraisal' in the area of environmental education. The project adopts the reflection-in-action perspective described by Hart (1990), which:

places emphasis on educational aims and consequences as well as the technical skills of teaching.... Teachers (and teacher educators) are also encouraged to contribute to the formulation of policy at classroom, local, and national levels, thus acknowledging the political nature of human interpretations of the ecological process of change (Hart 1990, p. 14).

The teacher educators involved in the project were given a role in knowledge production and curriculum development which generated significant levels of ownership on the part of the participants and constituted a move away from a centrally driven model of innovation.

Fien (1998) identifies the lack of ownership or control of the project by any one group, as key to the success of this approach and thus to the sustainability of the initiative. This, he argues, has resulted from (i) the drafting and revision process of the modules and (ii) from the multiple sources of funding for the project. Funding was obtained from a number of national and international organisations including UNESCO-ACEID; UNEP; NIER, Tokyo; The Japan Foundation; Ministry of Science, Technology and Environment, Thailand and AusAid amongst others.

The Learning for a Sustainable Environment process which required that various versions of the project modules be drafted, reviewed, analysed, revised and evaluated, in different forms and in different countries, meant there was no central control to the outcomes of the project. Fien (1998) believes that this model helped to provide an atmosphere of egalitarian co-operation amongst network members which also catered for the cultural and educational diversity in the region. The project required a framework for research which gave direction to the participants but was flexible enough to accommodate local concerns and priorities. The Learning for a Sustainable Environment model met these requirements through its ecological approach to change making it a more democratic and sustainable model to international development in education, than the top-down or centrally driven models.

In their reflections, Kumar (1998) and Charayananda and Wityawduikul (1996) refer to how having been involved in the project has enabled them to see the benefits of this model and its relevance to other disciplines at university level. The Learning for a Sustainable Environment model offers potential, as an approach to cross-cultural development in education, not only for those working within higher education but also in community, non-formal and formal education. The

action research network process can provide a more culturally sensitive, democratic and non-hierarchical approach to international efforts in education.

The next stage: Using the principles

Stage 3 of Learning for a Sustainable Environment project began in 1997 and required participants involved in the earlier stages of the project taking the role of national co-ordinators for the establishment of action research networks of teacher education in their own countries. It is important at this stage to reflect upon what we have learnt from the international research component and how we can use these experiences to support the National process. This paper has identified the principles and processes which have helped sustain the innovative components of the project. Ideally, these could be used in planning Stage 3 to enhance the potential and impact of the innovation at this level. This phase of the project could also contribute to refining the Learning for a Sustainable Environment processes and, perhaps, to identifying further factors which contribute to the success of innovation at the teacher education level.

The Learning for a Sustainable Environment Project is an example of how it is possible for the research process itself to contribute to innovation and how researchers can facilitate long term change in the curriculum. It provides a sustainable approach to cross-cultural development in education which is of relevance to other educational initiatives in teacher education and can potentially offer a model for change within formal and community education. By implication, participants involved in Stage 3 of the project, also have the possibility of broadening the project's scope to incorporate professional partnerships with others involved outside of higher education (e.g. for NGO's). The modules could also be modified for use with other target audiences at a later stage.

The Learning for a Sustainable Environment model offers potential for development and diffusion of educational innovations in a number of areas at a range of levels. The trialing process which involved participants in drafting, reviewing and evaluating modules, provided a relevant, non-threatening and accessible framework for introducing and disseminating innovative practice.

The research literature documents how many educational innovations do not succeed because participants fail to see the relevance or benefit of initiatives at a personal level (Fullan & Stiegelbauer 1991). In these circumstances, Fullan and Stiegelbauer (1991, p. 5) argue, change can be threatening and confusing. The model developed by Learning for a Sustainable Environment provides a stimulus for change through offering participants the flexibility to accommodate local priorities, the opportunity to develop personal meaning and adapt the modules to meet personal needs.

The project established an egalitarian and co-operative approach to change. It involved the participants in knowledge production and curriculum development - providing an

alternative model to externally driven models to educational development. More work needs to be done to explore the potential of the Learning for a Sustainable Environment processes in education, particularly as a model for cross-cultural development. ☺

References

- Bachiorri, A. 1994, 'Environmental education in Italy', unpublished paper presented at Colloquium *Trends in Environmental Education in Europe*, Bradford, England.
- Charanyananda, W. and Wityawduikul, L. 1996, 'Learning for a sustainable environment: Report and reflections', *Learning for a Sustainable Environment: Teacher Education and Environmental Education in the Asia Pacific Region Seminar*, National Institute for Educational Research, Tokyo.
- Cohen, M. 1987, 'Improving school effectiveness: Lessons from research', in V. Koehler ed, *Handbook of Research on Teaching*, Longman, New York.
- Crandall, D. Eiseman, J. and Louis, K. 1982, *People, Policies and Practice: Examining the Chain of School Improvement*, vols. 1-10, The Network, Andover.
- Elliott, J. 1991, 'Environmental education in Europe: Innovation, marginalisation or assimilation', *Environment, Schools and Active Learning*, OCED, Paris.
- Fien, J. 1998, 'Sustaining action research and professional development in teacher education for sustainability: A case study from Asia', *International Research in Geographic and Environmental Education*, vol. 7, no. 3, pp. 251-254.
- Fien, J. and Corcoran, P. 1996, 'Learning for a sustainable environment: Professional development and teacher education in environmental education in the Asia-Pacific region', *Environmental Education Research*, vol. 2, no. 2, pp. 227-236.
- Fien, J. and Tilbury D. 1996, *Learning for a Sustainable Environment: An Agenda for Teacher Education in Asia and the Pacific*, UNESCO, Bangkok.
- Fullan, M. and Stiegelbauer, S. 1991, *The New Meaning of Educational Change*, Cassell, London.
- Galang, A 1996, 'Report on module trialings: Philippines', *Learning for a Sustainable Environment: Teacher Education and Environmental Education in the Asia Pacific Region Seminar*, National Institute for Educational Research, Tokyo.
- Garbutcheon Singh, M. 1998, 'Sustaining on-site workplace teacher education through environmental education research', *International Research in Geographic and Environmental Education*, vol. 7, no. 3.
- Greenall Gough, A. and Robottom, I. 1993, 'Towards a socially critical environmental education: Water quality studies in a coastal school', *Journal of Curriculum Studies*, vol. 25, no. 4, pp. 301-316.
- Hart, P. 1990, 'Rethinking teacher education environmentally', *Monographs in Environmental Education and Environmental Studies*, VI, North American Association for Environmental Education, Troy, Ohio.
- Hart, P. 1998, 'Environmental education research: Challenging worldviews in teacher education', *International Research in Geographic and Environmental Education*, vol. 7, no. 3.
- Heck, D. and Fien, J. 1996, 'Module Report: Australia', unpublished paper presented at *Learning for a Sustainable Environment: Teacher Education and Environmental Education in the Asia Pacific Region Seminar*, National Institute for Educational Research, Tokyo.
- Hillcoat, J. 1996, 'Action research', in M. Williams ed, *Understanding Geographical and Environmental Education: The Role of Research*, Cassells, London.
- Huberman, M. and Miles, M. 1984, *Innovation up Close*, Plenum, New York.
- Kumar, P. 1998, 'Metamorphosis in environmental education: Personal reflections on the Learning for a Sustainable Environment project', unpublished paper presented at *UNESCO Symposium on the Learning for a Sustainable Environment Project*, Melbourne.
- Law, B. 1996, 'Learning for a sustainable environment: Innovations in teacher education through environmental education', unpublished paper presented at *Learning for a Sustainable Environment: Teacher Education and Environmental Education in the Asia Pacific Region Seminar*, National Institute for Educational Research, Tokyo.
- Lee, C.K.J. 1995, 'Environmental education in Hong Kong secondary schools: State of the art', *New Horizons*, vol. 36, pp. 63-70.
- Louis, K. and Miles, M. 1990, *Improving the Urban High School: What Works and Why*, Teachers College Press, New York.
- Posch, P. 1993, 'Research issues in environmental education', *Studies in Science Education*, vol. 21, pp. 21-48.
- Robottom, I. 1987, 'The dual challenge for professional development in environmental education', in A. Greenall ed, *Environmental Education: Past, Present and Future*, AGPS, Canberra.
- Robottom, I. 1989, 'Social critique or social control: Some problems for evaluation in environmental education', *Journal of Research in Science Teaching*, vol. 26, no. 5, pp. 435-443.
- Schon, D. 1983, *The Reflective Practitioner: How Professionals Think in Action*, Basic Books, New York.
- Schreuder, D. and Le Grange. L. 1998, 'Sustaining environmental education research and teacher education through partnerships between universities and schools: Thoughts from South Africa', *International Research in Geographic and Environmental Education*, vol. 7, no. 3.

- Singh, J.S. 1997, 'Partnerships for sustainable educational development: the commonwealth experience, in J. Blackmore and A. Toh Kwok ed, *Educational Research: Building New Partnerships*, Educational Research Association.
- Stevenson, R. 1987, 'Schooling and environmental education: Contradictions in purpose and practice', in. I. Robottom ed, *Environmental Education: Practice and Possibility ECT339 Environmental Education*, Deakin University, Geelong.
- Tesch, R. 1990, *Qualitative Research: Analysis Types and Software Tools*, The Falmer Press, Hampshire.
- Tilbury, D. 1997, 'Sustaining curriculum innovation: Experiences in environmental education', unpublished paper presented at UNESCO-ACEID Third International Conference, *Educational Innovation for Sustainable Development*, 1-4 December, Bangkok.
- Tilbury, D. 1998, 'Reconceptualising environmental education', in. C. Gayford and P. Dillon ed, *Educational Professional and the Environment*, Earthscan, London.
- Tilbury, D. and Turner, K. 1997, 'Environmental education in Europe: Philosophy into practice, *International Journal of Environmental Education and Information*, vol. 16, no. 2, pp. 2-14.
- NIER 1996, *Learning for a Sustainable Environment: Teacher Education and Environmental Education in Asia and the Pacific Final Report*, National Institute for Educational Research, Tokyo.
- Wong, B.K. 1994, 'The political dimensions of environmental education in Hong Kong', *International Research in Geographical and Environmental Education*, vol. 3, no. 1, pp. 4-18.
- Yeung, Pui-Ming 1996, 'Teaching environmental issues in school geography: The Hong Kong experience', *International Research in Geographical and Environmental Education*, vol. 5, no. 2, pp. 117-129.