

The First Ten Years: A Review of the *Australian Journal of Environmental Education*

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Introduction

There is an increasing number of postgraduate students throughout Australia addressing contemporary education issues in environmental education in courses at various tertiary institutions.

We felt that a review of the *Australian Journal of Environmental Education*, now in its tenth year, would help to support this growing number of postgraduate students, and would provide a foundation of research material for environmental educators more generally.

Approximately eighty articles have been reviewed and organised into the following categories:

1. *Community participation and education*: this category includes articles about environmental education in community settings (rather than educational institutional settings), or articles in which a description of the community is necessary to understanding environmental education programs in formal education.

2. *Conservation education*: this category includes articles in which the main substantive messages are about conservation and interpretation issues, rather than about teaching and curriculum issues directly.

3. *Literature/book reviews*: these articles are reviews of contemporary publications in the field of environmental education.

4. *Philosophy/policy*: these articles are examples of philosophical research at the levels of language (especially policy analysis), organisation (for example, the national curriculum), and practice.

5. *Professional development*: this category includes articles on the topic of professional development for teachers of environmental education—at either pre-service or in-service (mid-career) levels.

6. *Research/evaluation*: the emphasis in these articles is on methodology, design and method, including examples of methodology-in-action.

7. *Teaching practice*: these articles report examples of pre-school, primary, secondary and tertiary activities and programs in environmental education.

Obviously there will be some overlap between some of these categories; where this is the case, cross-referencing will indicate multiple entries.

In addition to locating the reviewed articles into these categories, we have listed all articles published in the ten years of the journal in alphabetical order of first-named author, with publication details and a short abstract.

Summary of Review

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
1	Gilligan						Dzanger & Floyd	Lindenmayer, Tanton, Linga & Craig			
2	Christie	Roberts	Gilligan Hegerl Ingram Skeat					Lindenmayer, Tanton, Linga & Craig			Orams
3				Fisher	Greenall Malcolm		Gough Muhlebach	Greenall- Gough Murdoch	Griffin Seiffert		Greenall- Gough Malone
4	Gough Henry Linke Robottom (a)	Fisher Greenall McRae	Hutton Maher Sylvan	Blake & Cock Di Chiro Foreman	May Maher	Brookes Colquhoun	Hale Hart Pesch	Eirington Fien Fien, Greenall- Gough, Hunt, Malcolm & Gough Gough Huckle Skamp	Fien Greenall- Gough Russell Spork	Dowling Gunnell & Dyer (b) Hicks Jickling	Hoffman Mortari Trainer

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
5						Robottom	Medina	Fien	Kean Robottom	Robertson	
6		Fien		Foxman Johnson & Fensham	Beckmann	Newman Thomas	Peach	Cough Murphy, Watson & Moore	Cooke Robottom Spork Wals	Blakie Jickling Robertson Thomas	Janse van Rensburg Shreuder Sonneborn
7	Henry Linke Robottom (a) Robottom (b) Walsh		Cox Danikhenko Ellis Hutton Hoeppe & Knight Maddock	Blake & Cock Davis	Tooth, Wager, Proellock, Card, Braddock & Butler Vince	Brookes	Disinger & Floyd Fensham Hale Hart Medina Pesch Sutti	Errington Murphy, Watson & Moore Skamp	Fien Cooke Kean Thomas Wals White	Blakie Dowling Gunnell & Dyer (a) Hicks Selby Thomas	Shreuder Sonneborn

1 Community participation and education

See also *Teaching practice*: Disinger, J.F. and Floyd, D.W. 1990, 'Into the 1990s: EE in the USA', vol. 6, pp. 1-14.

See also *Conservation education*: Gilligan, B. 1986, 'Politics of Protection—Wetlands', vol. 2, Special Wetlands Edition pp. 25-27.

Lindenmayer, D., Tanton, M., Linga, T. and Craig, S. 1991, 'Public Participation in Stagwatching Surveys of a Rare Mammal—Applications for Environmental and Public Education', vol. 7, pp. 63-70.

This paper identifies the value in public participation and environmental education in stagwatching for increased public awareness, concern and understanding of forest biology and conservation. The case study of a stagwatching program is documented to illustrate the capacity for this style of program to be modified and adopted for teaching a range of topics about Australian forests. The authors conclude that public response was extraordinary and indicative of strong support and concern for forest and wildlife management, a concern which should be considered when management agencies are making decisions on forest conservation and management.

2 Conservation

Christie, E.K. 1984, 'Arid Land Management', vol. 1, no. 1, pp. 5-10.

Christie advocates that the management of arid lands for sustainable yield requires studies into the physical and biological environment. It is proposed that this involves the 'accurate estimation' (p. 5) of grazing capacity taking into account the various fluctuations that occur in such regions. Estimates for such grazing capacity are stated to require maximal or near-maximal production along with vegetation and soil stability. Christie provides an explanation of the 'basic ecological components' for arid grazing land management as well as providing policy makers with 'essential information' (p. 5) as a basis for land administration decisions.

Cox, M. 1986, 'Steak de March au Wetland Sauce', vol. 2, Special Wetlands Edition, pp. 41-42.

Malcolm Cox describes the cartoon as a mechanism for teachers to present complex environmental issues in a way that is engaging to students, involves the clarification of related concepts and values, and encourages students to present their own ideas. He investigates one cartoon which depicts a wetlands scene on a dinner plate which is about to be consumed by a human. His investigation generates ideas for possible approaches to using cartoons in the classroom as well as providing a discussion on the limitations of such a device.

Gilligan, B. 1986, 'Politics of Protection—Wetlands', vol. 2, Special Wetlands Edition, pp. 25-27.

Gilligan asserts that effective management of any natural resource is essentially a political act with education providing a 'workable approach to protective management' (p. 25). Brian Gilligan states that protection of the environment requires community action targeting local, state and federal governments. He discusses the role of the educator and proposes a 'Political Continuum Model of Community Views on a hypothetical environmental issue' (p. 25). An argument is put forward as to the position of the educator along the horizontal axis of the model that portrays development activists at one extreme and environmental activists at the other.

Hegerl, E.J. 1986, 'Human impacts on the tidal wetlands of Southern Moreton Bay', vol. 2, Special Wetlands Edition, pp. 21-24.

A description of the pressures and issues surrounding the Southern Moreton Bay is provided with some discussion about recreational and educational usage of the area. The area is described as a major recreational resource particularly for boating and fishing, and the tidal wetlands provide a stopover point for at least twenty three species of trans-equatorial migratory wading birds. The threat of urbanisation and associated impacts is outlined, along with a discussion about the impact of environmental education activities, with suggestions for management strategies to reduce damage.

Ingram, G. 1986, 'The Character of Australian Wetlands', vol. 2, Special Wetlands Edition, pp. 15-16.

This short article describes wetlands concentrating on the physical characteristics. Ingram highlights the variability of wetlands and stresses the rapidity with which they can change. He warns that there is danger in perceiving all wetlands as distinct and unchanging and that 'their boundaries can defy the legislator's pen, and the manager's plan ...' (p. 15).

See also *Community participation and education*: Lindenmayer, D., Tanton, M., Linga, T. and Craig, S. 1991, 'Public Participation in Stagwatching Surveys of a Rare Mammal—Applications for Environmental and Public Education', vol. 7, pp. 63-70.

Orams, M. 1994, 'Creating Effective Interpretation for Managing Interaction Between Tourists and Wildlife', vol. 10, pp. 21-34.

Ecotourism associated with wildlife is becoming increasingly popular. The effects on wildlife of this increasing popularity are causing concern. Environmental interpretation programs, according to Orams, may be a means of minimising negative effects if they are able to change

tourists' behaviour. This paper reviews relevant theories of learning and offers guidelines for the creation of effective interpretation programs in the context of tourist—wildlife interaction.

Roberts, B. 1985, 'Land Ethics—Who Needs Them?', vol. 1, no. 2, pp. 8-12.

Roberts sees erosion and salinity as a significant environmental problem in Australia. He outlines aspects of the history of land degradation and speaks of the absence of effective political lobby for soil conservation. Roberts sees that ecological education has a significant role in solving this problem and he investigates various attitudes and philosophical views about the land. He concludes by listing fifteen points which are stated to be a response to what should be taught in Australia in response to the call for a land ethic.

Skeat, A.J. 1986, 'Wetland management—Kakadu National Park', vol. 2, Special Wetlands Edition, pp. 17-20.

Skeat describes the wetlands of Kakadu National Park and the issues, influences and management of this area. The management of wetlands in Kakadu is described as complex due to: the location of a uranium mine within the East Alligator River catchment; the range of alien flora and fauna species; the large number of tourists; and the changeable nature of the environment. Skeat states that another major consideration is that a large part of Kakadu is owned by Aboriginal people who have a strong bond with the land, spiritually, economically and physically.

3 Literature/book reviews

Fisher, F. 1987, 'Content without Context: The problem with Science', a review of *A Natural Legacy. Ecology in Australia*' (Second Edition), edited by H.F. Recher, D. Lunney and I. Dunn, Pergamon Press, Rushcutters Bay, N.S.W. in vol. 3, no. 1, pp. 28-29.

Fisher states that this text provides the Biology or Environmental Science student with an overview of what the naturalist studies in the Australian context. He states that texts that focus on content only, such as this publication, do not 'demonstrate why nature is a legacy' (p. 29). Nor does it 'raise readers' attention to the contexts humans bring to nature' (p. 29).

Greenall, A. 1988, a review of *Education, ecology & development: The case for an education network*', edited by Colin Lacey & Roy Williams, The World Wildlife Fund & Kogan Page, London. 1987, in vol. 4, pp. 37-39.

Greenall describes the collected papers making up this volume as intending to respond to 'some of the issues to be found in the

examination of the relationship between environment, development and public education (p. 37). The publication's intent is stated to contribute to discussions about a 'coherent philosophy for education that unites a wide range of radical, socialist and ecological approaches' (p. 38) in response to Britain's proposed 'National Curriculum'. She focuses principally on papers by David Pepper, John Huckle and Colin Lacey.

Greenall Gough, A. 1994, 'American Views on Ecology, Education and a Postmodern World', a review of *Critical Essays on Education, Modernity, and the Recovery of the Ecological Imperative* and *Education, Cultural Myths, and the Ecological Crisis: Toward Deep Changes* both by C.A Bowers and *Ecological Literacy: Education and the Transition to a Postmodern World* by David Orr in vol. 10, pp. 113-118.

In this article Greenall Gough discusses three books recently published in America. Two of the books reviewed are by C.A Bowers and are titled *Critical Essays on Education, Modernity, and the Recovery of the Ecological Imperative* and *Education, Cultural Myths, and the Ecological Crisis: Toward Deep Changes*. The third book is by David Orr and is called *Ecological Literacy: Education and the Transition to a Postmodern World*. The common thread between these three books are that they provide a current view of American academic thinking on educational relationships between humanity and the ecological crisis. After a lengthy discussion about each of the books the reviewer concludes that 'while there is much to commend in these texts in terms of their social analysis and their critiques of modernist science and its detrimental effects on the environment, they must be read in caution'.

Greenall Gough, A. 1991, 'Exploring Green Issues: Curriculum and School Organisation', a review of *Greenprints for Changing Schools* by S. Grieg, G. Pike and S. Selby and *Educating for Peace: Issues, Principles, and Practice in the Classroom* edited by David Hicks, in vol. 7, pp. 17-122.

In this article Annette Greenall Gough reviews the two books: *Greenprints for Changing Schools* by S. Grieg, G. Pike and S. Selby and *Educating for Peace: Issues, principles, and practice in the classroom* edited by David Hicks. Greenall Gough states in her overview that both these books provide discussions on the purposes, relevance and changing face of education and curriculum. Both books advocate a holistic world view rather than a fragmentationalist one, and a holistic curriculum as the basis for education. Both authors, according to Greenall Gough, argue for a different future for education one which is more holistic, more human, more socially critical, more participatory and more democratic.

Griffin, J. 1992, Review of *Water* by the Inner City Education Centre, in vol. 8, pp. 171-172.

This review is conducted on a resource kit developed by the Inner City Education Centre with support from the Water Board, NSW named *Water*. A positive feature of the kit, according to Griffin, is its integration of issues regarding water conservation with an Aboriginal perspective of water use. Unfortunately due to a lack of good editing, written expression or knowledge of educational objectives the activities contained in the kit booklets are poorly described or show little evidence of action orientated activities. Although the second booklet (aimed at Secondary schools) is clearer and encourages active participation it is not clear whether it aimed at teachers or students. Overall, Griffin believes the kit would be useful to teachers as a resource but indicates that better reviewing and editing would have increased its usefulness.

Gough, N. 1990, 'Annual Review of Environmental Education No. 3—Review of 1989', a review of the UK *Annual Review of Environmental Education*, in vol. 6, pp. 105-108.

The author compiles a report on the current 1989 review of the 'Annual Review of Environmental Education' which is a guide of the present progress of environmental education in the UK. The author states the AARE '89 report is a wealth of information and serves as a signpost of Britain's plethora of environmental organisations and resources. The editorials of the AARE '89 report looks specifically at the effects of the National Curriculum and the British Education Reform Act on the shape of environmental education in schools in the UK. The author eludes to the lessons that Australian environmental educators may learn from their UK colleagues and heeds warnings of becoming too accommodating and accepting of apparent government support of environmental education, by stating 'they are likely to be Trojan horses'.

Malcolm, S. 1989, a review of: *Standing up for your Local Environment: An Action Guide* (2nd Edition), by Jenny Barnett & Rosemary Ward, with illustrations by Veronica Holland, Victorian National Parks Association, Melbourne, Vic., 1988, in vol. 5, pp. 39-40.

Steve Malcolm describes this publication on community action as drawing together 'a considerable body of useful information and advice' (p. 39) which can be used by schools, tertiary institutions, and individuals and groups, wanting to address specific environmental concerns.

Malone, K. 1994, a review of *Managing to Be Green* by Eve Ash and Peter Quarry, distributed by Seven Dimension Pty Ltd, South Yarra, Victoria, in vol. 10, pp. 119-121.

This article reviews the training package 'Managing to Be Green'

distributed by Seven Dimension and produced by Eve Ash and Peter Quarry. The package contains three videotapes, a video guide with training session plans and worksheets for Managers and Staff and Workers and Kathleen Ralston's book *Working Greener*. The kit is aimed at the private and public market and is promoted as a professional development tool for greening industry. The reviewer concludes the training kit as reinforcing the individualistic position that 'it is a moral and ethical responsibility for individuals to change behaviour for the good of the earth, those who don't are compromising our children's future'. In the view of the reviewer this position disregards the social and political constructs of being environmentally conscious and fails to address issues of inequality in the workplace.

Muhlebach, R. 1990, 'Environmental Education & the Visual Message: A Cultural Perspective', a review of *Environmental Education & the Visual Message* by Nancy. C. Ratner, in vol. 6, pp. 109-112.

The reviewer reports on the book *Environmental Education & the Visual Message* written by Nancy. C. Ratner from Ohio State University, Ohio. Quoting from the book, the reviewer states the intent of the document, that it be 'a guide for developing effective visual messages [for] primarily professionals who train environmental educators and natural resources communicators' is realised by *Environmental Education and the Visual Message*. The reviewer states that although the book does not say anything new about the field it certainly serves as a valuable 'time saver' for anyone wanting a brief overview and sound directional advice on producing and implementing an environmental message using the visual media.

Murdoch, K. 1991, 'Making Connections through Environmental Education', a review of *Literacy for Life* by H. Dufty and D. Dellasta and *The Informazing Resource Book* by M. Clyne, R. Griffiths and R. Nelson, in vol. 7, pp. 123-126.

In this article Kath Murdoch reviews two books; *Literacy for Life* by H. Dufty and D. Dellasta and *Informazing Resource Book* by M. Clyne, R. Griffiths and R. Nelson. Environmental Education, writes Murdoch, was integral rather than the focus of these two books but both share the broad goal of empowering students for life through literacy. In the review Murdoch describes the main strengths of each of the books and indicates how they could be used by teachers (and specifically environmental educators) as valuable resources for enhancing their classroom teaching.

Seiffert, M. 1992, 'Reclaiming the Past to Find the Future', a review of *Taming the Great South Land: A History of the Conquest of Nature in Australia* by William J. Lines and a video *Like Nowhere Else* produced by

Film Australia for the Department of the Arts, Sport, the Environment, Tourism and Territories, in vol. 8, pp. 167-170.

This review is of the book *Taming the Great South Land: A History of the Conquest of Nature in Australia* by William J. Lines and a video produced by Film Australia for the Department of the Arts, Sport, the Environment, Tourism and Territories called *Like Nowhere Else*. Seiffert is very positive about both publications and their potential for use in educating students, teachers and the general public about the extent of degradation inflicted on the Australian environment due to people's interaction with it. Together Seiffert notes, these publications provide a series of views of the past which help to recognise the present so that we might plan and work for the future.

4 Philosophy/policy

See also *Teaching practice*: Blake, T. and Cock, P. 1987, 'Environmentalism & Education', vol. 3, no. 1, pp. 3-9.

Brookes, A. 1989, 'Outdoor Education: Environmental Education Reinvented, or Environmental Education Reconceived?' vol. 5, pp. 15-23.

This paper discusses the relationship between outdoor education and environmental education. Brookes proposes that outdoor education can provide affective and effective forms of environmental education but teachers need to develop a 'critical understanding of the ways in which conceptions of learning can be...reformulated in this relatively unconstrained learning environment' (p. 22).

Colquhoun, D. 1989, 'Emancipatory Health Education & Environmental Education: The Emergence of the New Public Health', vol. 5, pp. 1-8.

Derek Colquhoun traces developments in the relationship between health education and environmental education within the school curriculum and suggests a closer relationship to build upon basic principles common to both subjects. It is stated that re-definition of these two subject areas has in part resulted from public interest in the 'new public health' (p.1). He proposes that this emergence has been an attempt to place health on the political agenda. Health educators are beginning to 'reflect upon, and critique, their subject and its relationship to other areas of the curriculum' as they become dissatisfied with the 'behaviourally orientated conventional health education' (p. 7).

Di Chiro, G. 1987, 'Applying a Feminist Critique to Environmental Education', vol. 3, no. 1, pp. 10-17.

The author sees that a feminist analysis of environmental education would add to the understanding of underlying causes of environmental problems. The social nature of environment is discussed and Di Chiro

provides a feminist perspective for environmental education and a feminist analysis of environment. She argues for the adoption of a critical feminist perspective in response to the perceived socio-environmental crisis. She states that environmental education must play a part in finding solutions to environmental problems and also 'be involved in self critique with regard to its role in sustaining those social structures and relations that cause or support environmental problems' (p. 10).

Dowling, R. 1993, 'Environmental Education in New Zealand', vol. 9, pp. 21-32.

This paper gives a summary of the current state of environmental education in New Zealand. Drawing on the past origins of environmental education in New Zealand, Dowling provides both an historical overview of the development of environmental education in the public domain and in the formal education sector. The author then gives a summary of the influence of the National Curriculum on environmental education and possible future directions for development. The paper concludes with a proposal for increased commitment by the Ministry of Education and Ministry of Environment to environmental education.

See also *Teaching practice*: Errington, E. 1991, 'Role Playing and Environmental Issues', vol. 7, pp. 1-16.

Fien, J., Greenall Gough, A., Hunt, G., Malcolm, S. and Gough, N. 1991, 'Contemporary Issues Forum: A National Curriculum for Environmental Education? Politics, Problems and Possibilities', vol. 7, pp. 88-116.

Introduced by John Fien, this section is the compilation of a number of panel presentations on the contested terrain of environmental education within the national curriculum by four notable commentators in the field of environmental education. Annette Greenall Gough addresses the political expediency of previous national initiatives in environmental education and reconceptualises the 'snakes and ladders' metaphor to describe the continuous waves of environmental education. Greg Hunt, who was convenor of the mapping team for the national curriculum in environmental education, gives an overview of the outcomes of this process and his personal views on the path the national curriculum is taking. Steve Malcolm, the third presenter, writes on the present state of environmental education in schools. By accessing school programs through his position as Executive Officer of the Victorian Environmental Education Council, Steve is able to provide an interesting perspective on the contestation between community-locally controlled and developed curriculum with centrally developed curriculum. The final presentation is a paper written by Noel Gough who gives a philosophical account of the dominant discourse accompanying the national curriculum. He advances the view that critical environmental educators should be wary of accepting

and accommodating the dominating discourse but should be engaging in alternative or interrupting discourses.

Fien, J. 1992, 'Understanding the Macro-context of teaching Environmental Education: A Case Study from Queensland, 1989-1991', vol. 8, pp. 77-114.

This paper, according to Fien, outlines a range of concepts for analysing and critiquing the socio-cultural and education system features which comprise the macro-context of teaching environmental education. Great variety and opportunities and constraints for environmental education are found at the state political and education systems levels of context. This article describes one particular social and political context, namely Queensland, and provides a host of questions which are relevant to environmental educators throughout Australia concerning the possibilities and constraints of environmental education implementation. The paper is the first of a number of papers contained in a Contemporary Issues Forum entitled *Researching the Policy-practice Interface: case studies in environmental education*.

Fien, J. 1991, 'Towards School-level Curriculum Inquiry in Environmental Education', vol. 7, pp. 17-30.

This article provides ideas for schools and teachers for translating policy documents into a school-level framework or guide that is practical and accessible in the classroom. Based on the booklet *Education for the Australian Environment* (Fien 1988) produced by the author as a part of the Bicentennial Australian Studies Schools Project (BASSP), the article provides seven guiding principles for a socially-critical approach to environmental education in Australian schools. Each principle is explicated under the headings of: A). Some leading curriculum and policy questions; and, B). Some curriculum ideas. These questions provide the guideline for school-based curriculum inquiry which can enrich policy into action programs and contribute to professional development of participants.

Fisher, F. 1985, 'Overcoming Despair and the Alienation it Produces', vol. 1, no. 2, pp. 16-20.

Frank Fisher reflects upon his own process of re-assessment of environmental work as he prepares for and attends a 'dispair workshop'. He establishes a number of concerns and puts forward a philosophy which is based on an understanding of 'Deep Ecology' and considers and goes beyond General System Theory.

Foreman, B. 1987, 'Introspective ... in a Field Study Centre', vol. 3, no. 1, pp. 26-27.

Brian Foreman, Principal of the Arbury Park Outdoor School in South Australia, reflects upon the Centre's practices and its ability to provide 'frameworks for developing the critical attitude and action components implicit in Environmental Education' (p. 26).

Gough, N. 1984, 'Environment and Ethics: An Educational Perspective', vol. 1, no. 1, pp. 16-20.

Ethics are considered in the context of moral considerations and value judgements in environmental investigation and education. Gough examines methods for transmitting environmental ethics. These are stated to be—learning to be 'altruistic partly by being told that we ought to be altruistic by others, partly by seeing examples of altruism in practice, and partly by actually performing altruistic acts' (p.18). He critically examines the involvement of these methods in several approaches for moral education including values classification and the cognitivist approach.

Gough, N. 1991, 'Narrative and nature: Unsustainable Fictions in Environmental Education', vol. 7, pp. 31-42.

The article, according to the author, examines critically the 'selected fictions' on which an environmental education interpretation of reality is based—to examine the ways in which our perceptions of environmental problems and issues are 'conditioned by our position in space and time'. The author advocates narrative inquiry as a distinctive field of education research which would be beneficial to determining a sustainable fiction in environmental education. Drawing on contemporary writings in poststructuralism the author presents three constructive approaches to environmental education.

Greenall, A. 1985, 'A New Beginning for Environmental Education in Australia', vol. 1, no. 2, pp. 13-15.

Greenall states that the National Conservation Strategy for Australia (NCSA) gives 'a new direction, focus and hope for the future of environmental education in Australia' (p. 13). She outlines the objectives and actions of this strategy. A description of the structures that support a role for environmental education within the federal government and the 1984 Labor Party Platform policy are provided along with a brief history of relevant activities and events leading up to the development of the NCSA. Greenall calls for a higher environmental education profile as well as political action on the part of government and non-government organisations.

Greenall Gough, A. 1992, 'Sustaining Development of Environmental Education in National Political and Current Priorities', vol. 8, pp. 115-132.

This paper is the second in a number of papers contained in a Contemporary Issues Forum entitled: *Researching the Policy-practice Interface: case studies in environmental education*. The purpose of the paper according to the author is 'to explore the relationship between national economic and political priorities and environmental education policy formulation and curriculum strategies'. Placed within the historical context of developments in environmental education in Australia from 1970 onwards, the paper argues that emphasis for environmental education development has been sustain environmental education rather than question why, what and how this development should occur. Greenall Gough cites feminism, individualism and sustainable development as three contemporary movements that need further exploring in environmental education and sets the challenge for environmental educators to provide strong direction in policy development in these areas.

Gunnell, P. and Dyer, K. 1993, 'Humans and Nature: A Spectrum Not a Dichotomy', vol. 9, pp. 53-70.

In this article Dyer and Gunnell argue that anthropocentrism and biocentrism which have been presented in current literature as a dichotomy lie on a continuum, a spectrum of human views of nature. The consequence of this conclusion is that we can not avoid anthropocentrism by a simple act of will but that the degree of orientation to anthropocentrism or biocentrism is dependent on a variety of 'life circumstances'. In light of these differing outlooks environmental educators need to be aware that we can escape from a least a minimal anthropocentrism in our teaching and that it is unrealistic to believe that people's beliefs and values can change miraculously.

See also *Teaching practice*: Hale, M. 1990, 'Recent Developments in Environmental Education in Britain', vol. 6, pp. 29-44.

See also *Teaching practice*: Hart, P. 1990, 'Environmental Education in Canada: Contemporary Issues & Future Possibilities', vol. 6, pp. 45-66.

See also *Teaching practice*: Henry, J.A. 1984, 'Towards Education for the Environment', vol. 1, no. 1, pp. 14-15.

See also *Teaching practice*: Hicks, D. 1993, 'Reclaiming the Future: What Every Educator Needs to Know', vol. 9, pp. 71-84.

Hoffman, N. 1994, 'Beyond Constructivism: Goethean Approach to Environmental Education', vol. 10, pp. 71-90.

Drawing on the work of German philosophers Friedrich Nietzsche and Martin Heidegger and the scientific methods of the poet Johann von Goethe, Hoffman provides a critique of the constructivist position in environmental education. He provides a preliminary outline for a Goethean Environmental Education as a new approach to environmental

education which is not bound up in the earlier paradigms of knowledge which have lead to the environmental problems we presently face.

Huckle, J. 1991, 'Education for Sustainability: Assessing Pathways to the Future', vol. 7, pp. 43-62.

Huckle in this article uses a framework of critical theory to examine the new moves toward 'education for sustainability'. Drawing on the work of Turner and O'Riordan, the author builds on modern views and debates of environmentalism (the red-green) and notions of sustainable growth and sustainable development to provide a pathway for environmental education for sustainability. He concludes with the view that to realise 'Our Common Future' we may need to take environmental education in relatively new directions.

Hutton, D. 1986, 'Social Ecology and Environmental Education', vol. 2, Special Wetlands Edition, pp. 11-13.

This paper describes social ecology as a philosophy which 'does not stop with industrialism's obsession with economic growth and 'man's' dominion over nature but ... looks at the overly human-centred nature of philosophy ... the epistemologies inherent in scientific rationality and patriarchy's preoccupation with domination' (pp. 11-12). Hutton discusses social ecology and education and the implications for classroom practices.

See also *Research/evaluation*: Jickling, B. 1993, 'Research in Environmental Education: Some Thoughts on the Need for Conceptual Analysis', vol. 9, pp. 85-94.

Linke, R.D. 1984, 'Reflections on Environmental Education: Past Development and Future Concepts', vol. 1, no. 1, pp. 2-4.

Russell Linke's article (based on his concluding remarks at the 1982 Australian Association for Environmental Education Conference) examines environmental education in terms of its progress in Australia and the problems he perceives remain in the field. The article, which is only three pages in length, only briefly touches on issues to do with philosophy and teaching and learning. Linke provides a more comprehensive account in *Environmental Education in Australia*, (1980, George Allen and Unwin, Sydney, NSW).

McRae, K. 1985, 'An Environmental Ethic for Outdoor Education: Dilemma and Resolution', vol. 1, no. 2, pp. 2-7.

This paper develops an argument for a 'justifiable' environmental ethic based on the notion that the interests of individual members of the natural community, including humans, are 'secondary to the good of the total community'. Accordingly, humans are seen to 'protect the natural

environment because the entities of nature are "fellow-travellers", members of the same moral community' (p. 2). McRae argues that any program which involves the use of the natural environment for leisure purposes should have considered an environmental ethic which has a philosophical justification and is likely to 'guarantee the protection of the various natural environments in which the leisure activities take place' (p. 2).

Maier, M. 1986, 'Environmental Stewardship: 'Where There's a Will, is There a Way?', vol. 2, Special Wetlands Edition, pp. 7-9.

Maier provides a description for stewardship and identifies three types of stewardship: development or market-place; professional; and radical. These three divisions are stated to distinguish the range of views of stewardship held by its supporters and these views 'enable debate about the differing perspectives on our profound ecological dilemma' (p. 9). The impact of this philosophy on education is discussed although it is seen as 'a long way from the establishment of a coherent environmental paradigm' (p. 9).

Maier, M. 1988, 'The Powers that be: Political Education through an Environmental Study', vol. 4, pp. 1-8.

Maier sees environment as a social, political, economic and ecological concept. She addresses the issue of environmental conflict which is seen as an interplay of values, power, policy and decision making at all levels. Maier uses a case study to demonstrate some ways of achieving political literacy and also to address what environments are and the nature of environmental conflict.

May, M. 1988, 'Towards a new cosmology of environment', vol. 4, pp. 9-21.

Murray May reviews a number of perspectives which he states challenge attitudes towards the environment. He concludes that any idea of 'living in harmony with nature is central to any view spiritually' (p. 9).

Mortari, L. 1994, 'Educating Ourselves to Think with a View to "Ecologically Inhabiting the Earth" in the Light of the Thought of Hannah Arendt', vol. 10, pp. 91-112.

In this paper by Mortari, the thoughts of Hannah Arendt are revealed as having a fundamental role in the reawakening of the relationship between humans and nature. The human-nature relationship is the central theme of the paper and the consideration of the human condition is connected to a perspective of natality. In the words of Mortari 'thinking from the consideration of the human being as a natal being, contributes to developing the awareness that taking care of our life means taking care of the Earth'. Through a new understanding of our

relationship to nature Mortari proposes that development for reform in environmental education can evolve.

Posch, P. 1990, 'Educational Dimensions of Environmental School Initiatives', vol. 6, pp. 790-92.

This paper describes the central ideas, features and philosophies of the International OECD/CERI Project 'Environment and Schools Initiatives'. The author then discusses some of the implications of the project for the understanding of teaching and learning in schools. By involving teachers and students in action research the author proposes there is the potential to generate and use knowledge to gain high levels of consciousness of pressing environmental and societal needs.

See also *Teaching practice*: Robottom, I.M. 1984, 'Why Not Education for the Environment?' vol. 1, no. 1, pp. 11-13.

Russell, D. 1992, 'The Climate Change-Social Change Relationship', vol. 8, pp. 27-32.

In this article David Russell gives insight into his thinking on the use of dominant discourses to understand our ecological dilemma. His case in hand is 'Climate Change' but the concepts he introduces are applicable across many environmental issues. To have ownership over environmental 'problems' Russell believes the general public need to be informed by exposure to new meanings of ecology. Russell states 'the need for new meaning systems'—arising out of our new ways of relating and languaging with each other and with what we currently understand as our ecology—will give rise to new ways of thinking'. He concludes with the view that we should be optimistic that these new ways of thinking are becoming evident and are appearing through a variety of mediums.

Skamp, K. 1991, 'Spirituality and Environmental Education', vol. 7, pp. 79-87.

According to the author of this paper, 'spirituality has been argued to be central to our relationship to the environment' and that 'environmental educators need to be aware of this spiritual dimension'. In this paper the author attempts to develop an argument that the important action component of education for the environment is an extension of one's desire to nurture and this desire comes from an integrated spiritual connectedness with ourselves and our environment. Drawing on the work of C. Birch and J. Lovelock, Skamp develops a connection between Christian values and environmental concern and action. To summarise his work Skamp looks at the book *Earthrights* by Grieg, Selby and Pike and identifies examples of teachers encouraging students to reflect and act on their spirituality.

See also *Research/evaluation*: Spork, H. 1992, 'Environmental

Education: A Mismatch Between Theory and Practice', vol. 8, pp. 147-166.

Sylvan, R. 1986, 'A Deep Ecological Approach to Wetlands', vol. 2, Special Wetlands Edition, pp. 3-5.

Richard Sylvan proposes that 'deep ecology is a philosophical approach well attuned to environmental education' (p.3). He argues that this view provides the opportunity for wetlands to be valued in ways other than as utilitarian. Environmental education adhering to this philosophical approach is stated to seek meaning in the natural world itself. Sylvan says that such an approach 'would shift concentration from technological and management sciences, to include concerns with living, with less damaging and consumptive lifestyles ...' (p. 4).

Trainer, T. 1994, 'If You Really Want To Save The Environment', vol. 10, pp. 59-70.

In this article Trainer identifies two radically opposed views about sustainability, namely the 'limits to growth' argument and the 'alternative conserver society' argument. He believes that environmental education plays a crucial role in developing public understanding of these two themes and that these should be a priority. In this paper Trainer gives a summary of the contemporary environmental positions; limits to growth, ecologically sustainable development (green economics) and gives as the solution to the crisis, radical conserver society. He then identifies a role for environmental action and environmental education in the long term plan he provides for social change.

5 Professional development

See also *Philosophy/policy*: Fien, J. 1991, 'Towards School-level Curriculum Inquiry in Environmental Education', vol. 7, pp. 17-30.

Kean, J. 1992, 'Education for Action: A Practical Demonstration of Reflected Action on the Urban Environment', vol. 8, pp. 17-26.

This article by Kean describes the Newcastle Architecture Workshop. The Workshop which was set up in 1977 is a independent, charitable organisation staffed by teachers, planners, architects and landscape architects. The workshop combines both an Urban Studies Centre and a Community Technical Aid Centre and provides practical assistance to individual schools through support in curriculum development and an emphasis on participative action research. It is an independent agency which can be the stimulus and support system for action in schools and in the community. At a time when many teachers are feeling adequately equipped to provide environmental education in schools, the Newcastle Architecture Workshop and other independent agencies, according to

Kean, can provide stimulus, support and act as a catalyst for action.

See also *Teaching Practice*: Medina, A. 1990, 'Formal Environmental Education in Latin America and the Caribbean', vol. 6, pp. 67-78.

See also *Research/evaluation*: Robertson, A. 1993, 'Eliciting Students' Understandings: Necessary Steps in Environmental Education', vol. 9, pp. 95-114.

Robottom, I. 1992, 'Matching the Purposes of Environmental Education with Consistent Approaches to Research and Professional Development', vol. 8, pp. 133-146.

The aim of this paper, according to Robottom, is to address the issue of the coherence of three dimensions of environmental education activities—its substantive purposes; the research informing its policy, organisation and practices; and the professional development processes supporting its practitioners. He argues that: (i) that the *purposes* of environmental education are socially transformative; (ii) that the dominant approach to *research* in the field is behaviourist and deterministic; and (iii) that within a context of socially transformative environmental education, role that the dominant behaviourist approach to research plays in *professional development* needs to be critically examined. The author draws on an international project (OECD-CERI Environmental and Schools Initiatives project) as an example of an environmental education program that has been developed to explore the relationships between purpose, research and professional development in environmental education. This paper is the third in a number of papers contained within the Contemporary Issues Forum: *Researching the Policy-practice Interface: case studies in environmental education*.

Robottom, I. 1989, 'Teacher Education in Environmental Education: The "Grip of Print" and Other Lessons from Distance Education', vol. 5, pp. 8-14.

Robottom outlines a teacher education course in environmental education which is offered as a distance education program at Deakin University. The paper provides an overview of the course and its context and issues that arise. The paper concludes by posing a question about the possible role such distance education programs have, because of their very nature, in creating and maintaining power relationships in teacher education.

6 Research/evaluation

Beckmann, E. 1988, 'Interpretation During a School Visit to a Nature Reserve—Results of a Survey of A.C.T. Year 9 Students', vol. 4, pp. 22-30.

This is a report on a pilot study of a school visit to Tidbinbilla Nature Reserve in the A.C.T. The author undertakes an evaluation using a pre/post questionnaire to elicit information about the participating students and the cognitive and affective outcomes of their experience at Tidbinbilla.

Blaikie, N. 1993, 'Education and Environmentalism: Ecological World Views and Environmentally Responsible Behaviour', vol. 9, pp. 1-20.

The paper reports on the results on a study conducted by the author on the extent to which students are committed to an Ecological World View (EWV) and how this relates to environmental behaviour. The paper gives a brief summary of the research study, a description of the sample and the results. The research consisted of a questionnaire of a sample of students attending classes at The Royal Melbourne Institute of Technology. In conjunction with the questionnaire a series of interviews were conducted with students from each of the faculties. The conclusions summarised by Blaikie revealed there was a wide range of commitment expressed by university students to EWV and that levels and differences of commitment changed according to faculties in which students were enrolled. Overall, Blaikie notes, tertiary courses appear to reinforce prior levels of behaviour and environmental commitment and that these levels do not differ to other members of the community.

Fien, J. 1985, 'Research Directions in Social and Environmental Education', vol. 1, no. 2, pp. 21-23.

Fien examines social and environmental education in Australian research. He outlines the factors that have led to 'useful fragments amongst a general failure to develop an adequate research base for effective decision making and curriculum planning (p. 21). Fien expresses a need for social educators and environmental educators to work together and puts forward a number of practical ways that this may occur.

See also *Philosophy/policy*: Foreman, B. 1987, 'Introspective ... in a field study centre, vol. 3, no. 1, pp. 26-27.

See also *Research/evaluation*: Geake, J. 1992, 'Fractal Computer Graphics as a Stimulus for the Enhancement of Perceptual Sensitivity to the Natural Environment', vol. 8, pp.1-16.

See also *Philosophy/policy*: Gough, N. 1991, 'Narrative and nature: Unsustainable Fictions in Environmental Education', vol. 7, pp. 31-42.

Johnson, B. and Fensham, P. 1987, 'What student's perceptions tell us about teaching environmental education', vol. 3, no. 1, pp. 22-25.

This paper reports on research carried out in Victorian primary and secondary schools on students' responses to word associations and environmental photography. The word associations are stated to be useful

in 'gaining a general picture of cognitive learning that links in the students' minds' (p. 22).

Janse van Rensburg, E. 1994, 'Social Transformation in Response to the Environmental Crisis: The Role of Education and Research', vol. 10, pp. 1-20.

In this article the author reports on a research project undertaken in South Africa in 1992. The paper examines the role of research and environmental education in social transformation. From the research the author distinguishes four orientations to research in/and environmental education. Through an exploration of the conceptualisation of these four orientations she reveals that the modernistic assumptions from which they are based limit their potential for social transformation. According to van Rensburg, 'the study reflects on a time and a region in which educators, researchers and policy-makers are seeking new ways to ameliorate critical socio-ecological conditions. Thus it seems important to assess which ways and forms of research and education are most likely to stimulate, inform, or contribute in some other way to, social transformation'. This provides a clear and analytical perspective of a reconceptualisation of education and research for social change.

Jickling, B. 1993, 'Research in Environmental Education: Some Thoughts on the Need for Conceptual Analysis', vol. 9, pp. 85-94.

In this paper Jickling considers a number of broad and challenging questions about the concepts central to the field of environmental education. He writes 'as environmental educators, we must understand that our field is full of inherently difficult concepts which exist as abstractions in the minds of men and women'. He argues that to fully understand the nature of the questions we ask when doing research in environmental education we need to be clear about what environmental education is. This, he states, needs to be done by clarifying and stating one's own knowledge of central concepts, a form of conceptual analysis. He illustrates his discussions by looking at the closely associated terms sustainable development education and education for sustainable development. He concludes his discussions by stating that 'to evaluate the status of environmental literacy it is clear that researchers will need to engage in the *a priori* task of understanding what environmental literacy is'.

Murphy, M., Watson, R. and Moore, S. 1991, 'Encouraging Water Saving; the Role of Knowledge, Attitudes, and Intention', vol. 7, pp. 71-78.

This paper reports on the results of a research study on the role of cognitive or information processing models on behaviour change. Using a multiple choice questionnaire based on the five behaviour predictors identified in Ajzen and Fishbein's Rational Action Model, which suggests

that social factors are as important in predicting behaviour change, the researchers gathered data from students, parents and teachers from primary and secondary schools in Melbourne's metropolitan area. A summary of the results indicate that social factors must be considered in the development of educational programs and that knowledge-based cognitive and the Rational Action models are not sufficient in explaining behaviour change.

Newman, P. 1989, 'Undergraduate Environmental Science—The Murdoch Story', vol. 5, pp. 32-38.

Newman outlines the development of an undergraduate degree in Environmental Science. His approach is biographical and he provides an historical account of this experimental degree program as well as raising some issues in relation to accommodating future developments and changes.

See also *Philosophy/policy*: Posch, P. 1990, 'Educational Dimensions of Environmental School Initiatives', vol. 6, pp. 79-92.

Robertson, A. 1993, 'Eliciting Students' Understandings: Necessary Steps in Environmental Education', vol. 9, pp. 95-114.

This paper reports on the findings of a study by Robertson conducted in South Africa in 1992. The study was based on a constructivist epistemology using qualitative and interpretative research methodologies. The rationale behind the study was to define how student teachers conceptualise environmental education and that depending on this conceptualisation will promote environmental education in different ways. After giving students an open-ended questionnaire to define viewpoints, a select group were further interviewed to determine how these viewpoints were conceptualised. The paper gives an account of the viewpoints elicited during these interviews and the relevance of the findings to teacher education and professional development courses in environmental education.

See also *Professional development*: Robottom, I. 1992, 'Matching the Purposes of Environmental Education with Consistent Approaches to Research and Professional Development', vol. 8, pp. 133-146.

See also *Teaching practice*: Schreuder, D. 1994, 'The Schools Water Project (SWAP): A Case Study of an Action Research and Community Problem Solving Approach to Curriculum Innovation', vol. 10, pp. 35-46.

See also *Teaching practice*: Sonneborn, C. 1994, 'The Green Fridge Quest—Tertiary Environmental Education for ESD', vol. 10, pp. 47-58.

Spork, H. 1992, 'Environmental Education: A Mismatch Between Theory and Practice', vol. 8, pp. 147-166.

This article is the final in a Contemporary Issues Forum entitled;

Researching the Policy-practice Interface: case studies in environmental education. The author reports on the results of a research project conducted in Queensland in 1990. With a survey-based study the research was undertaken with the aim of determining the mismatch between theory and practice in Australian schools. The results of the research support commonly held concerns that environmental education in Australian schools is operating in a form largely contrary to widely recognised definitions and philosophies. The cause of this discrepancy, according to Spork, is due to a lack of professional preparation and development of teachers in environmental education. A view which Spork notes has been supported by similar research in this area. The paper provides a summary of the research results and the analysis that lead the author to come to these startling conclusions.

Thomas, I. 1989, 'Evaluation of the Master of environmental science program', vol. 5, pp. 24-31.

This report documents an evaluation of a tertiary program using a case study approach. Ian Thomas outlines the background and structure of the program as well as providing details of the evaluation approach and outcomes.

See also *Teaching practice*: Thomas, I. 1993, 'Australian Tertiary Environment Courses: A Status Report', vol. 9, pp. 135-145.

Wals, A.E. 1992, 'Young Adolescents' Perceptions of Environmental Issues: Implications for Environmental Education in Urban Settings', vol. 8, pp. 45-58.

This article is a summarised account of a research study into Young Peoples' perceptions of pollution. Wals states in his introduction that unlike teachers in other discipline areas environmental educators have little understanding of students perceptions of environmental issues or how students see themselves within their environment. Through his research Wals was able to categorise students perceptions of environmental issues into three main perspectives; the personalistic view, the technocratic view and the politicised view. He summarises these perceptions and provides an informative table describing how they relate to a specific environmental issue namely pollution. In conclusion Wals writes, as a way of keeping students from being bogged down in issues and involved in creating solutions in cooperation with communities schools should focus on manageable local issues of the students' interest.

7 Teaching practice

Blake, T. and Cock, P. 1987, 'Environmentalism and Education', vol. 3, no. 1, pp. 3-9.

This article examines the 'tension between the development of an

holistic understanding of the diverse relations linking people and environments and the dominant, technocratic orientation of tertiary environmental studies programs' (p. 3). The authors describe how the Graduate School of Environmental Science at Monash University, worked with these tensions. The school is said to incorporate a 'more interdisciplinary, critical environmentalism that confronts prevailing ideologies of science and social practice' (p. 8).

See also *Research/evaluation*: Blaikie, N. 1993, 'Education and Environmentalism: Ecological World Views and Environmentally Responsible Behaviour', vol. 9, pp. 1-20.

See also *Philosophy/policy*: Brookes, A. 1989, 'Outdoor Education: Environmental Education Reinvented, or Environmental Education Reconceived?' vol. 5, pp. 15-23.

See also *Conservation education*: Cox, M. 1986, 'Steak de March au Wetland Sauce', vol. 2, Special Wetlands Edition, pp. 41-42.

Danilchenko, B. 1986, 'Wetlands studies: An arts-aesthetic view', vol. 2, Special Wetlands Edition, pp. 35-36.

This article describes a joint environmental education project in a wetlands setting with an arts-aesthetic approach. This approach is stated to broaden vision of knowledge in environmental education. The project aims to: provide an alternative to the traditional empirical approach, with emphasis on creation and expression; provide opportunities that concentrate on learning about and for the environment; provide experiences that 'open doors to a new awareness and levels of sensory perception' (p. 35); and foster technological skills and sensitivity to the qualities and needs of the environment.

Davis, P. 1987, 'Energy Education for the Environment', vol. 3, no. 1, pp. 18-21.

This paper examines some of the reasons behind the dominance of learning *about* energy rather than 'energy education for the environment' (p.18). Davis looks at difficulties facing teachers who wish to 'lead a valid study of energy sources' (p. 18).

Disinger, J.F. and Floyd, D.W. 1990, 'Into the 1990s: EE in the USA', vol. 6, pp. 1-14.

In this article activities in environmental education in the United States during the 1980s are summarised, in terms of audiences involved—formal (school), college/university, and non-formal. Discussions focus on specific programs and materials, in summary fashion. Trends are noted, and speculative projections into the 1990s are offered.

See also *Philosophy/policy*: Dowling, R. 1993, 'Environmental Education in New Zealand', vol. 9, pp. 21-32.

Errington, E. 1991, 'Role Playing and Environmental Issues', vol. 7, pp. 1-16.

The author illustrates through a number of examples of role play investigation on selected issues, how role play can be useful in providing teachers of environmental education a means of engaging students in active learning experiences, clarifying values, working in social situations, pursuing real problems, and being socially critical. To introduce the potential of role play the author discusses and introduces role play within current environmental education theorising and environmental education policy statements.

Ellis, H. 1986, 'EE & TV: Getting the Message Across', vol. 2, Special Wetlands Edition, pp. 37-40.

Howard Ellis describes how video can be a useful environmental education resource. His personal experience in producing a local wetlands case study is documented from inception at final product. The issues described are related to the National Conservation Strategy and human impact on the wetlands area being studied.

Fensham, P.J. 1990, 'Developments & Challenges in Australian Environmental Education', vol. 6, pp. 15-28.

This article reviews the place of environmental education in the Australian school curriculum heading up to the 1990s. Looking specifically at Post Compulsory Curriculum in Victoria the author traces the development and support for environmental education alongside other post-compulsory curriculum subjects. The article finishes with a summary of the challenges that lay ahead for environmental education in the 1990s.

See also *Philosophy/policy*: Fien, J. 1992, 'Understanding the Macro-Context of Teaching Environmental Education: A Case Study from Queensland, 1989-1991', vol. 8, pp. 77-114.

Geake, J. 1992, 'Fractal Computer Graphics as a Stimulus for the Enhancement of Perceptual Sensitivity to the Natural Environment', vol. 8, pp. 1-16.

This article reports on a research project conducted in NSW in 1990. The project was undertaken over a eight week period using fractal computer graphics. The aim of the project was to determine the educational capacity of fractal computer programs to link environmental education with other curriculum subjects such as; mathematics and traditional sciences. Geake concludes that exposing students to fractal computer graphics can increase students sensitivity to the natural visual environment.

Gunnell, P. and Dyer, K. 1993, 'Environmental Studies: Lessons from a Quaternary Perspective', vol. 9, pp. 33-52.

This paper by Gunnell and Dyer argues that 'the Western industrial culture which endorses a positivist, mechanistic and reductionist world view has given rise to the environmental crisis in which we find ourselves and that this has been reflected in every aspect of our formal educational system. The paper outlines the potential in a shift from education *about* the environment evident in the majority of environmental studies courses to a curriculum which can contribute to social change, namely education *for* the environment. Embedded in this shift is the possibility for alternative ways of learning and discovering the ways in which science is socially constructed. The challenge according to Gunnell and Dyer, is to provide a curriculum which undermines the epistemological/positivist culture and promotes an alternative ecological paradigm.

Hale, M. 1990, 'Recent Developments in Environmental Education in Britain', vol. 6, pp. 29-44.

This article reviews the state of environmental education in Britain leading up to the 1990s. The paper concentrates on formal education. It has specific references to the implementation of the National Curriculum in England and Wales and the opportunities it provides for programs of study in environmental education for students between the ages of five and sixteen.

Hart, P. 1990, 'Environmental Education in Canada: Contemporary Issues & Future Possibilities', vol. 6, pp. 45-66.

The paper develops an argument for reform in current environmental education practices within Canada. After setting the context of Canadian Education, the paper attempts to capture the essence of environmental education activities by means of some broadly-based Canadian contributions to the field and by two specific examples. Through these examples the author seeks to identify a number of tensions and contradictions in the contemporary theory and practice of environmental education. The paper concludes with the proposal that socially critical environmental education could be a means by which to reconceptualise environmental education in Canada.

Henry, J.A. 1984, 'Towards education *for* the Environment', vol. 1, no. 1, pp. 14-15.

Henry poses the question: 'What presuppositions about teaching and curriculum are embedded in the developed conception of environmental education as education *for* the environment?' (p. 14). It is proposed that a curriculum that supports education *for* the environment is important, but of greater importance, is a form of teacher-pupil interaction which

supports the curriculum and 'emphasises the development of awareness, attitudes and values, together with the development of problem-solving and decision-making abilities' (p. 14). Henry believes that such an approach 'is predisposed to involvement in issues of a controversial nature' (p. 14). He discusses the implications of this approach to classroom practice.

Hicks, D. 1993, 'Reclaiming the Future: What Every Educator Needs to Know', vol. 9, pp. 71-84.

In this article David Hicks engages the reader in a debate about the importance of educating for the future. He asks the question 'If all education is for the future, where is the future in education?' To illustrate his argument for 'reclaiming the future' he provides a proposal under the headings of: approaching the millennium; educating for the future; envisioning the future; and moving forward. He concludes his paper with a quote from Meadows which recognises the importance of a socially critical approach to learning 'it requires the courage to admit and bear the pain of the present world whilst at the same time keeping a steady eye on our vision of a better future'. This article is a summary of a keynote address given by the author at the Australian Association for Environmental Education conference in Perth, 1992.

Hoepper, B. and Knight, J. 1986, 'Controversy in the Classroom—The Boondall Wetlands Issue', vol. 2, Special Wetlands Edition, pp. 29-30.

Hoepper and Knight describe the Boondall wetlands development program as a critical teaching experiment where students were encouraged to reflect upon the nature of controversy, investigation processes and the quality of decision making. The project was undertaken by sixty-five Year 4/5/6 students. The idea, the school setting and the program are all outlined with a brief discussion about the outcomes.

See also *Philosophy and policy*: Hutton, D. 1986, 'Social Ecology and Environmental Education', vol. 2, Special Wetlands Edition, pp. 11-13.

See also *Professional development*: Kean, J. 1992, 'Education for Action: A Practical Demonstration of Reflected Action on the Urban Environment', vol. 8, pp. 17-26.

See also *Philosophy/policy*: Linke, R.D. 1984, 'Reflections on Environmental Education: Past development and future concepts', vol. 1, no. 1, pp. 2-4.

Maddock, M. 1986, 'Teacher Training using Wetlands', vol. 2, Special Wetlands Edition, pp. 31-33.

This article describes a student teacher training program which utilises local field centres in the Newcastle region. Assumptions about the

relationship between science and environmental information and attitudes to conservation are briefly discussed. Maddock also questions the effectiveness of Field Study Centres, provides a discussion about the role of the teacher and describes relevant components of the Diploma in Education program at the University of Newcastle.

Medina, A. 1990, 'Formal Environmental Education in Latin America and the Caribbean', vol. 6, pp. 67-78.

This paper gives a 'snapshot' of the state of environmental education implementation in Latin American and Caribbean school systems at the beginning of the 1990s. The author highlights three projects to give examples of programs which respond to local teachers' needs through workshops and training by non-government organisations. He then identifies the need for broad-based teacher training programs and the development of ongoing support structures for teachers which concentrate on evaluation and community involvement.

See also *Research and evaluation*: Murphy, M, Watson, R, and Moore, S. 1991, 'Encouraging Water Saving; the Role of Knowledge, Attitudes, and Intention', vol. 7, pp. 71-78.

See also *Philosophy/policy*: Posch, P. 1990, 'Educational Dimensions of Environmental School Initiatives', vol. 6, pp. 79-92.

Robottom, I.M. 1984, 'Why Not Education *for* the Environment?' vol. 1, no. 1, pp. 11-13.

Robottom outlines the disparity between statements at various international and national fora including the Curriculum Development Centre focusing on education *for* the environment, and environmental education in practice which is predominantly education *about* the environment. The article puts forward a discussion as to the reasons why education *about* the environment has such dominance in practice. This is explained in terms of 'taken-for-granted presuppositions about teaching and curriculum' (p.11). (For further reading see: Henry, J.A. 1984, 'Towards Education for the Environment', vol. 1, no. 1, pp. 14-15.)

Robottom, I. 1984, 'Environmental Education in a Rural Setting: The role of Teachers in Dissemination', vol. 1, no. 1, pp. 25-27.

Robottom documents the experiences of teachers in a rural primary school as they attempt to conduct environmental education within the school and then as they spread their ideas to the surrounding region. He reflects on the process of 'teacher involvement in curriculum change' (p. 26) in terms of constraints and benefits.

Schreuder, D. 1994, 'The Schools Water Project (SWAP): A Case Study of an Action Research and Community Problem Solving Approach to

Curriculum Innovation', vol. 10, pp. 35-46.

This paper expands on a contemporary view of environmental education that is it a construct for the reconstruction of curriculum. The author describes a program which has been under way in Stellenbosch, South Africa called SWAP (the Schools Water Project). Key elements of these projects are that they are community action-based, learning is through participation and they have a socially critical approach to curriculum development. The strength of these approaches are that they are practice-driven rather than theory-driven and they form strong relationships between teachers, students and the wider community. The project has been adapted from the GREEN (Global Rivers Environmental Education Network) program which has been running successfully in SA for some time now.

Selby, D. 1993, 'Humane Education and Global Education', vol. 9, pp. 115-134.

The first section of this paper by Selby summarises a four-dimensional model proposed by the International Institute for Global Education for educating in the field of Global Education. The four dimensions identified are; the spatial dimension, the issues dimension, the temporal dimension and the inner dimension. The second section focuses on Humane Education which is according to Selby are the 'Ultima Thule' of global education. The author describes curricula and materials central to humane education and provides an analysis of the relationship between humane education and environmental education. To conclude the paper Selby provides two examples of activities in humane education.

See also *Philosophy/policy*: Skamp, K. 1991, 'Spirituality and Environmental Education', vol. 7, pp. 79-87.

Sonneborn, C. 1994, 'The Green Fridge Quest—Tertiary Environmental Education for ESD', vol. 10, pp. 47-58.

'The Green Fridge Quest (GFQ) was a multi-disciplinary and collaborative research project involving tertiary and professionals during 1992-93'. The project was promoted as a way to encourage multi-disciplinary students to be involved in the development of an environmentally friendly domestic fridge. The project was run jointly between ACF and RMIT and received support from the CSIRO, Federal and State government departments and industry. In this article Sonneborn gives an overview of the educational, environmental and industrial imperatives of the project, the aims of the project and the major events. The project itself was evaluated through a form of action research combined with case study techniques, the author gives a brief synopsis of the rationale behind the projects evaluation and then concludes with a summary of the outcomes.

Sutti, S. 1990, 'Mantova's Water Analysis Project (WAP)', vol. 6, pp. 93-104.

This report presents an account of an Environmental Education program in Mantova, Italy, namely the Mantova Water Analysis Project. It examines the historical and socioeconomic context of the project and gives an overview of how it developed, its objectives, its processes and its results. The author then describes the professional and pedagogical results and consequences of the project and the research results for teachers and students learning.

Thomas, I. 1993, 'Australian Tertiary Environment Courses: A Status Report', vol. 9, pp. 135-145.

This paper is a report of research conducted in 1990 and 1991 to determine the extent of environmental courses being offered at tertiary institutions in Australia. Questionnaires were sent to tertiary institutions identified as having environmental courses and summary tables of the results were compiled. The paper presents a summary of these results and an interpretation of the data. The final conclusion of the research is an overview of the common features of environmental courses and the types of employment opportunities available for course leavers.

Thomas, I. 1992, 'Imbibing Wisdom of Environmental Impact Assessment', vol. 8, pp. 33-44.

Ian Thomas from the Department of Planning, Policy and Landscape at RMIT in Victoria, documents the process of training students who will conduct Environmental Impact Assessments (EIA). Although, he states, during the past decade many people have been involved in EIA, there is little documentation on the training process and the varying capabilities of undergraduate or postgraduate students from a variety of disciplines. The module 'Environmental Assessment' is described under the headings of; concepts of EIA, the scope of EIA training, the training approach and influences on its design.

Tooth, R., Wager, L., Proellocks, T., Card, M., Braddock, K. & Butler, J. 1988, 'Story, setting and drama—A New Look at Environmental Education', vol. 4, pp. 31-34.

This paper describes the curriculum developed and undertaken at Pullenvale Field Study Centre which is based on a drama theme and is linked with Year 5 Social Studies.

Vince, J. 1988, 'Past Reflections, Current Changes and Future Hopes', vol. 4, pp. 35-36.

John Vince documents the development of the environmental education program offered at the Children's School Camp at Somers,

Victoria which began in 1959.

See also *Research/evaluation*: Wals, A.E. 1992, 'Young Adolescents' Perceptions of Environmental Issues: Implications for Environmental Education in Urban Settings', vol. 8, pp. 45-58.

Walsh, M. 1984, 'Environmental Education: A Decade of Failure but some Hope for the Future', vol. 1, no. 1, pp. 21-24.

This article investigates the emergence of the role of education in helping to find solutions to environmental problems. Walsh identifies the general acceptance of education *for* the environment in the literature but notes that this is not the case in practice in Australia and A.S.E.A.N countries. He states that this 'discrepancy between the theoretical prescription of what environmental education should be and ... what is actually happening should be viewed with concern' (p. 22). Walsh proposes a 'redirection of emphasis' (p. 22) which accepts what is occurring in schools in environmental education as this guarantees that more students are exposed to some environmental studies during their school years.

White, L. 1992, 'Social Ecology as Innovative Tertiary Environmental Education', vol. 8, pp. 59-76.

This article presented by Lesley White, a Lecturer in Social Ecology at the University of Western Sydney, is a report on a Social Ecology undergraduate course currently offered through the Social Ecology Centre at UWS. The report describes the philosophical framework for the course and social ecology in general and discusses the relationship between social ecology and environmental problems. After providing the theoretical framework underpinning social ecology and the course, White then goes on to give a detailed description of the course itself with particular emphasis on the sequence, scope and structure of the themes of inquiry. To conclude the author identifies a number of challenges that have been encountered while developing a course such as the one described.