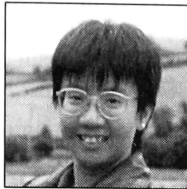


In the Words of Children and Young People: The Opinions and Concerns about their Environments of Some Brisbane School Students

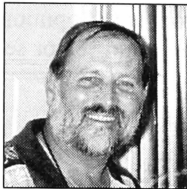
Tammy Kwan

The University of
Hong Kong



John Miles

Queensland University
of Technology
Brisbane



A B S T R A C T

This paper reports on a study into the environmental opinions and concerns of a sample of Brisbane children in the upper primary, junior and senior secondary years. The study adopted a qualitative approach. Children's opinions about the environments around them and beyond were gathered using open-ended question items and focus group discussions. The study revealed that the upper primary children participating were most obviously concerned about their immediate personal environments. The junior and senior secondary students were more concerned about their natural environments to which they showed strong positive associations. On the other hand, all participants wanted to undertake personal action for change in their social environments at local, national and global levels.

individual's intention to act is considered to be the result of a number of variables acting together, such as cognitive knowledge, cognitive skills and personality factors. However, people's desire to act is not strong enough to predict their environmental behaviours because other factors may influence this. These factors may include: an individual's attitudes towards behavioural and subjective norms; beliefs about the consequence of performing particular behaviours; and the value placed on the behavioural expectations of others whose opinions are respected (Ajzen & Fishbein 1977).

Cade (1990) used the term 'environmental opinion' in preference to 'environmental issues' considering that the former contained personal connotations making it a more helpful and less misleading expression than the latter with its appearance of fact and impersonality. He believed that opinions and perceptions of issues were more important in education than merely the knowledge about issues. For Cade, opinions were verbal, written or recorded expressions of attitudes and values and as such were more tangible in terms of teaching and learning. The term 'environmental opinion' used in this paper refers to people's personal reflections and preferences. With this meaning, the 'opinions' expressed by children may well be more socially useful, meaningful and important than knowledge, theories, or even some skills that educators believe are so vital for them. Becoming aware of children's opinions towards the environment is therefore especially important in environmental education. Since the publication of the Belgrade Charter and Tbilisi Declaration (UNESCO 1977), this kind of awareness has received prime attention in the school educational agenda of many school authorities. In this they sought to promote the long-term task of teaching an environmental education in schools which fostered and reinforced children's environmental attitudes and behaviours in their daily life (Kwan 1995).

'an individual's intention to act is considered to be the result of a number of variables acting together'

Knowledge concerning environmental issues, critical reflection in forming environmental opinions and beliefs, and the practice of responsible environmental behaviour and commitment have often been regarded as the goals of environmental education (Stapp 1969, UNESCO 1985, CMEC 1988, Ramsey et al 1992, Gayford 1996, Lai & Stimpson 1997). However, there have been many debates over the relationship between environmental knowledge, attitude and behaviour. Much environmental education research has revealed a strong focus on the idea that increased knowledge of environmental issues leads to increased awareness, and that an increased awareness leads to a greater motivation to behave in a more responsible way towards the environment (Hungerford & Volk 1990, Newhouse 1990). Others have commented that such a linear connection is not necessarily the case. For example, Hines et al (1987) and Stapp (1990) suggested that individuals who felt some personal responsibility toward the environment were more likely to have engaged in responsible environmental behaviours than were individuals who felt no such feelings of responsibility. Thus, an

'teachers need to identify and draw on children's opinions about environments'

With this background in mind Australian schools have been encouraged to advance environmental education in an integrated inter-disciplinary manner that allows the goals of environmental education to be materialised and fulfilled (DoE 1993, QBTR 1993). However, to achieve success in environmental education teachers need to identify and draw on children's opinions about environments and be able to help children to form and judge such opinions, whether they are their own or those of others. It is important that educators have an appreciation of the probable ideas and ways of thinking that are expressed by their students (Stanisstreet & Boyes 1996). In her study about pro-environmental practice, Palmer (1995) confirmed the findings of Tanner (1980) that children's outdoor experience was the single most important factor in developing personal concern for the environment. All children have unique relationships with the world in which they grow up, a relationship based on feelings, experiences and interactions with people, places, objects and events (Palmer 1994). Children such as those participating in the present study will soon make important decisions about personal lifestyle and the organisation of communities. Not only that, they may help their parents to become aware and change their behaviour by explaining at home what they have learnt at school (Palmer 1998). Their abilities to form opinions and judgments are hence an essential part of education for the environment, and among those required for future citizenship.

Aims and objectives of the study

Although the school student participants in this study included many for whom the term 'children' was appropriate, the inclusion of senior secondary students made 'children' not a completely appropriate collective descriptor. However, the more accurate collective 'children and young people' is also considerably more awkward. The term 'children' is therefore used throughout the paper, interchangeably with 'students', with acknowledgment of its limitations.

The intention was that this study offer two contributions to environmental education in schools. First, it focused on school students, the prime source of data. The abilities of children and young people to form opinions are often neglected or underestimated by adults; in fact they are often discouraged from articulating and expressing their opinions. Cade (1990) and Cullingford (1996) drew attention to the need to recognise the awareness of the environment children hold. Children enjoy talking about things in the world around them (Cade 1990); their analysis of the environment is developed far earlier than their experience of school, they often bring intelligence and intuition to bear and they need to learn to make interpretations about where they live and to develop the ability to communicate these interpretations (Cullingford 1996). Second, the study sought to expose school students'

meanings for the term 'environment'. Stanisstreet and Boyes (1996) have been critical of the use of the term 'environment' by itself. They argued that it is a source of confusion to learners. The term 'environment' has general and inclusive meanings and uses making it important to clarify what is meant by the term, and the opinions and concerns children express towards environments.

The study sought to identify and investigate the nature of the opinions and concerns of a group of Brisbane school students about environments around them and in wider contexts. There were three objectives, namely to:

- collect and identify the opinions and concerns which students had about local, national and global environments and to do this in such a way that genuine voices of students were heard.
- analyse student environmental opinions and concerns to determine whether sub-categories of the term 'environment' emerged.
- compare the environmental opinions and concerns of upper primary, junior and senior secondary school students.

Research methodology

'The intent of the study was to capture and identify students' opinions and concerns about their environments'

Design

The study adopted a qualitative and multi-method design. As Brewer and Hunter (1989) have indicated this allowed for the integration of distinct research methods into a coherent investigation. The multi-method strategy is able to overcome the inevitable weaknesses and limitations of using a single research method. The intent of the study was to capture and identify students' opinions and concerns about their environments through the way they reported seeing the world around them was accomplished by asking students:

- first, to complete five open-ended items and
- second, to participate in focus group discussions (Hausbeck et al 1992, Lyons & Breakwell 1994, Hillcoat et al 1995) organised according to students' educational level.

The study group

Sixty-nine students from two metropolitan Brisbane schools were invited to participate in this study. Both schools were located in the same geographical and environmental area of southeast Queensland, close to the coast with its sunshine and ocean breezes and to patches of rainforest containing koala and other wildlife. Twenty five students were from a multi-age class of upper primary Years 5 to 7, twenty seven in Year 8 junior secondary and seventeen were in Year 12 senior secondary. There was

gender balance within and between the student groups involved. Table 1 shows the gender, age and grade level distribution of the participants.

Table 1: Grade levels, ages and gender balance within study groups

Children's Group	Grade Levels	Age Range	Gender		Total
			Boys	Girls	
Upper Primary	Years 5 to 7	9 y 1 m to 12 y 6 m	12	13	25
Junior Secondary	Year 8	12 y 0 m to 14 y 3 m	13	14	27
Senior Secondary	Year 12	16 y 6 m to 18 y 0 m	9	8	17
Total			34	35	69

Methods

Students were asked first to respond to five simple open-ended items adapted and modified from Cade (1990). Initially the items were about their feelings towards the environment around them. In the end the word 'environment' appeared only once in the introductory paragraph of the questionnaire:

We are interested in what you think about the environment. Your answers to the following items are simply your own opinions. There are no 'wrong answers'. By telling us and sharing with us what you think and feel, you are helping us to understand the reasons behind your concerns.

The word 'environment' was intentionally removed from the five items in the survey because it was felt that its inclusion could induce the students to express their opinions and concerns deliberately towards 'the environment' to suit the interest and the preference of the researchers.

After permission was obtained from the two school principals the survey was administered in the morning of a school day to the primary students by the research assistant and one of the researchers in the presence of the principal. The research assistant administered the survey to the secondary students in their own classroom while the researchers set up the video recording equipment in another room of the school. The introductory paragraph of the survey was read to the students to stress the importance of them expressing their own opinions and concerns. By doing so, it is believed that the genuine opinions and concerns of the children were expressed and captured. The responses were then read and coded by the research assistant and the researchers to reflect the scope of environmental concerns of the children as they emerged from the responses to the survey.

The five items in the survey were:

1. Name up to 3 things that you treasure very much. For each, explain briefly why you treasure it.
2. Name up to 3 things that you think are great and important. For each, explain briefly why its change or disappearance would upset you.
3. Name up to 3 things that annoy you most. For each, explain briefly why it annoys you.
4. If you were given the power, name up to 3 things that you would like to change. For each, explain briefly why you would like the change.
5. Beyond your immediate local area, e.g. near Brisbane or even overseas, name up to 3 things that worry you a lot. For each, explain briefly why you would or want to change or stop it.

These five items were structured:

- to encourage the students to focus on positive things before they were asked to express their more negative concerns
- so that students could move away from their individual concerns to consider things outside Brisbane and Australia, and
- so that students could indicate their preferred action for bringing about changes to things they saw as negative.

It was intended that on completion of their responses to the open-ended items, students in each school level would be immediately divided into groups of 8 or 9 to participate in a focus group discussion of thirty minutes duration. This group size was considered appropriate for allowing all students to share their opinions with the rest of their group. The purpose of the focus group discussions was to provide all students with the opportunity to articulate their feelings freely and to give further elaboration to the opinions and concerns they had written about in their responses to the five open-ended items. Due to school timetabling arrangements, only one focus group discussion involving 8 students was held for each of the junior and senior secondary students. However, all upper primary students could be released from their normal lessons to participate in three focus group discussions. As a result, a total of five focus group discussions of thirty minutes each were video-recorded and subsequently transcribed into a full protocol for interpretation, and for analysis as to whether they supported the students' survey responses.

Analysis of the data gathered from the five items and the focus group discussions were determined using the phenomenographic approach as defined by Marton (1981) and Dahlgren (1995). In brief, the interpretation of the qualitative data involved the following steps:

- preliminary groupings of the survey responses and the videotape protocol data were constructed.
- similar groupings were merged into categories
- these groups were labelled using as many terms and

expressions as possible from the original data to encapsulate the descriptive characteristics

- the sets of categories necessary for attending to the qualitative variation within the empirical material were explored
- a comparison was made between categories to raise the analysis to a meta-level in which the way of understanding a particular category became a process often profiting from understanding what had not been included.

The process of comparing categories was a way of further enriching the content and description of the categories, and sometimes of reorganising the categories—by collapsing them, or dividing them again before coming up with the final categorisation.

Results and discussion

Analysis of student responses revealed their concern with three different kinds of environments. These were their:

- personal and immediate environments—which referred to themselves, and their parents, siblings, pets, toys and friends
- social environments—which related to their community, to society, to the nation, and to the global environment, and
- natural environments—which included specific animals and plants, fauna and flora in general, and other natural features such as beaches air, waterways and landscape.

Table 2 summarises the classification of different kinds of environments about which students expressed opinions and concerns. It also shows the codes used later in this paper in discussing each kind of environment and the sub-categories within them suggested by the analysis of the student responses.

Table 2: Classification and coding of the different kinds of environment revealed in student responses

Kind of Environment	Items referred to	Code
Personal (self plus)	Self, personal belongings, hobbies	Ps
Personal (parental plus)	Family, parents, brothers & sisters	Pp
Personal (friends plus)	Friends, neighbours, classmates	Pf
Social (community plus)	Community, immediate neighbourhood	Sc
Social (society/general)	Society in general	Ss
Social (national)	Nation, country as a whole	Sn
Social (global)	Whole world	Sg
Natural (animals)	Animals, wildlife	Na
Natural (plants)	Plants	Np
Natural (features)	Natural features, eg. beach, air, river	Nf

Things which students valued and considered to be important

As the data in Table 3 indicate a distinct difference between primary and secondary students' opinions and concerns about their environments was revealed. Primary students expressed a greater attachment to their own personal environment than did other students (Ps+Pp+Pf = 50%); for other groups this quantity did not exceed 10%. They particularly valued their personal belongings and possessions such as toys and books (Ps=34.5%).

Secondary students, on the other hand, expressed greater attachment to the natural environment (Na+Np+Nf= 90% or more). Within this set of information secondary students' attachment to natural features and landscape such as sunshine, the beach, the coast, waterways and the air was obvious (Nf = 41.5% and 59%). A substantial proportion of all the participants, that is one third of primary and senior secondary students and one half of junior secondary students, said they treasured animals and plants (Na + Np). It is of interest that primary students' responses to Question 2—about things they considered important—was similar to other students' responses in that the natural world appeared to be valued more highly than personal things. Table 3 summarises the distribution of responses to the first two items about things they treasured most and that they regarded as important.

Table 3: Summary of students' positive feelings about their different kinds of environments (all entries in percentages)

Upper Primary		Junior Secondary		Senior Secondary	
Question 1	Question 2	Question 1	Question 2	Question 1	Question 2
code %	code %	code %	code %	code %	code %
Ps 34.5	Ps 18.0	Ps 1.5	Ps /	Ps 6.5	Ps 2.5
Pp 12.5	Pp 3.0	Pp 1.5	Pp /	Pp /	Pp /
Pf 3.0	Pf 3.0	Pf 1.5	Pf 1.5	Pf /	Pf /
Na 11.0	Na 10.0	Na 25.5	Na 20.0	Na 11.0	Na 19.0
Np 20.5	Np 23.0	Np 25.5	Np 27.5	Np 20.0	Np 11.0
Nf 17.0	Nf 24.5	Nf 41.5	Nf 42.5	Nf 59.0	Nf 48.5
misc. 1.5	misc.18.5	misc. 3.0	misc. 8.5	misc.10.0	misc.19.0
Total 100	100	100	100	100	100

A selection of some of the reasons given by primary students for their valuing certain things are listed below. They expressed mainly feelings of love and trust towards their family members, friends and pets. Most of their reasons for thinking something was important indicated intuitive and egocentric preferences, often without obvious environmental or social connections.

- Ps *I love my turtle and it is of value to me because she is part of my family.*
- I treasure very much a doll. My sister and I made at my Grandmother's . It is full of flowers. I treasure the doll because it's beautiful, and I'm proud of it because I helped to make it.*
- Pp *I love my family because there is a special part of me. If I did not have family, I would be sad and have no one to talk to.*
- Pf *I love my friends because I trust them.*
- I treasure my friends and family and my dog because they are important to me and I love them.*
- Np *I treasure rainforests and bushlands. I think that a lot more children need to get outside and not watch television so much.*
- Np/Nf *I treasure the rainforests with their crystal clear waters because they are the most beautiful and peaceful places on this earth.*
- Without trees and flowers, we would all die without oxygen. And if we had no flowers, there would be no colour and life.*
- Na *I love and want to protect all the animals in this world and want them to be safe so that generations to come can see them.*
- I treasure the wildlife and there is so much to learn about animals but people are not taking enough care of them.*

'junior secondary students.....were beginning to care about things beyond themselves'

An almost identical expression towards the natural environment was expressed by junior secondary students. They focused on things such as rainforests, bushlands, animals, wildlife and particular places of interest such as Daisy Hill Forest, Brisbane Botanic Garden, Kakadu National Park, and the Great Barrier Reef. This indicated that they were beginning to care about things beyond themselves and their immediate personal concerns. However, these items were usually things that they had seen or places that they had often visited locally—for instance, the Daisy Hill Forest and the Brisbane Botanic Garden—or features to which they could easily attach a sense of national pride—for instance, Kakadu National Park and the Great Barrier Reef. Though they still suggested simple reasons like 'I love them', 'They are cute', 'They are beautiful', the teaching in school

apparently had enriched their knowledge about the ecological importance of forests, wildlife and bushlands. They expressed an understanding indicating that they could appreciate these natural beauties on an equal rights basis. Some of their reasons for valuing things follow.

- Np *I treasure trees because they eliminate carbon dioxide and produce oxygen. Trees also give shade and provide homes for animals.*
- If we did not have trees we would not be able to breathe and if we could not breathe, we could not live. Trees purify the air around us.*
- Np/Na *We could get permission from the Council to plant some trees there (the rainforest nearby) and ask to have the endangered species or other living things listed in the national park.*
- Na *I treasure wildlife animals because animals are nice and never should be killed or mistreated.*
- I treasure animals because they are just as important and I love animals.*
- Nf *I treasure Great Barrier Reef. It is a very beautiful part of Australia. It also provides a home for many different species.*
- Kakadu National Park. I have been there. The best place in the world.*
- I like the Botanic Gardens because flowers and trees by the waterside is a nice scene to see.*

Senior secondary students' preferences were similar—the natural world in terms of waterways, the air, the clear blue sky, mountain and ocean. However, they also displayed due concerns for flora and fauna. The reasons for their concern were similar to the junior secondary students except that more abstract and philosophical comments emerged from their discussion. A sample is given below.

- Na *I treasure the animals because they are innocent. They live in accordance with their environment, do not destroy their environment intentionally as humans do.*
- Np *I treasure plant life, particularly how various plants adapt to climatic conditions. Without them, everything on earth would not exist.*
- Nf *I treasure the clean waterways. The pollution of one person shouldn't inhabit others. Clean waterways make it better for any water activities and safer.*

Things that annoyed and worried students and that they would like to change if given the power

'all students showed particular concern about problems of the global environment'

As set out in Table 4, all students showed particular concern about problems of the global environment (item 5—Sg). Although this was the general pattern of concerns across the three groups of students, both junior and senior secondary students wanted to change their immediate social community environment first (item4—Sc), despite their worry and annoyance with things they saw happening in society in general and at the national level. This may indicate that they wanted to propose changes in areas where it was more feasible for them to exert their power and effort.

Table 4: Summary of students' views about things which need to be changed (all entries in percentages)

Level* code	Item3			Item4			Item5		
	p	j	s	p	j	s	p	j	s
N	26	20.0	8.5	21.0	13.0	6.0	24.0	11.5	2.5
P	10	1.5	3.0	/	4.5	3.0	2.5	/	/
Sc	18	41.0	43.0	17.5	37.5	36.5	8.0	20.0	10.5
Ss	16	12.0	8.5	23.0	7.0	18.5	21.0	11.5	2.5
Sn	18	21.5	28.5	13.5	22.0	24.0	10.5	22.0	18.5
Sg	12	4.0	8.5	25.0	16.0	12.0	34.0	35.0	66.0
Total	all columns total = 100								

*p=primary; j=junior; s=senior

Some of the distinctive concerns of students, expressed in their responses to items 3, 4 and 5 as a desire to do something to protect various environments, are listed below with summary comment.

Sc If I had the power, I would pull down the old roddy tatty homes and make new ones because we can use the wood and bricks or what ever to make people brand new houses and that they won't look like a dump.

This junior secondary student was concerned about the shabby housing in the community and wished to rebuild the houses to uplift the outlook of the neighbourhood. However, she had recycling and reusing of materials in her mind and she hinted that she wanted to see a healthy pleasant housing environment. On the other hand, it is not clear whether she had any concept of heritage values.

Nf/Sc Different age group people can do different things to protect the environment. Like the beach, we all find them very important. I mean older people might not really like the beach as much as we do. However, we can do

small things. Get more of us involved, getting youngsters who enjoy beaches a lot to go out there and do real things to protect the beaches from further destruction.

This senior secondary girl conveyed the opinion that, no matter what age group people are in, once they got involved with the environment by doing things in it they would treasure it more and become annoyed if people did not show respect for it and feel the urge to do more to protect the environment from further destruction.

Ss I worry about poverty as people should be able to live a life with food and nice surroundings like trees and clean creeks.

This junior secondary girl was mindful of equity and human rights considering that everybody should have a fair chance to live a decent life and to enjoy the beauty of the nature.

Sn I am annoyed with the politicalisation of environmentalism because people seem concerned not with actually doing something but scoring political points. Radical ideas are often put forward by environmental pressure groups. However, it is not possible to consider only the environment when making decisions. It is only part of the equation, economic and social aspects are important aspects too.

This senior secondary boy obviously disliked aspects of the overall social environment in Australia. He saw Australian governments being constantly dominated by political voices from one side. He also expressed a strong dislike for the way some people play political games by pushing one side of the story without considering the overall picture.

Sg I feel annoyed about the nuclear waste because its radioactivity could cause major destruction to the environment. I worry about the French Nuclear testing because some marine organisms are mutating unnaturally.

This primary boy had some superficial knowledge about radioactivity and had apparently heard about how mutation causes unnatural growth of living things. This issue has perhaps become his concern due to its broad coverage by mass media.

Conclusions

'All students demonstrated a willingness to act on improving and protecting their immediate environments'

The students in this study ascribed three major meanings to the concept of 'environment'. They were 'personal',

'natural' and 'social' environments. To some extent, this has disagreed with Stanisstreet and Boyes' (1996) claim that a general and inclusive meaning is often given to the term 'environment'. Students in this study did differentiate different kinds of environment, and had different opinions and concerns about each of them.

This study suggests that there is, with age, a gradual strengthening and deepening of students' concern towards the environment from self-centred to the broader society and, eventually, to the world. However, perhaps because of the unique physical environments which these Brisbane students enjoyed they all treasured and rated more positively coastal natural environments. They were more skeptical about social environments, and would like to see these improved. More philosophical and scientific reasons were used to substantiate the likes and dislikes about social environments expressed by senior secondary students. On the other hand most primary and some junior secondary students relied more on egocentric reasons to justify their attachment to their personal environment. All students demonstrated a willingness to act on improving and protecting their immediate environments, whether they were personal, social or natural.

The results of this study also support what Cade (1990) and Cullingford (1996) have said about children's awareness and analysis of their living environment. Children of different ages do have opinions about their environments and they want to be listened to. Some of these opinions could be intuitive responses from their immediate personal experience. Some of the opinions could be the result of growing concerns through sophisticated and abstract learning which bring the students to be able to justify their preference, express their annoyance and eventually take action to care better for the environment.

This study has sought to investigate the environmental opinions and concerns of children and young people at various stages of development. Through it, a better understanding has been obtained of different learners' standpoints and affective platforms. This understanding should be especially relevant to teachers inclined towards a constructivist view of pedagogical reality by helping to provide some knowledge of the essential foundations on which further learning could be built for particular individuals and groups. Apart from this the study provides some insights which could be of value in assisting all teachers to design more relevant, and implement more effective, environmental education programs. In this the study reaches a conclusion similar to that of Palmer (1994) with reference to geographical education—that the understanding of the opinions and concern of children can inform and provide discussion of appropriate learning tasks and methods or organising the curriculum for teaching and learning in environmental education. 🌀

Acknowledgment

The authors wish to acknowledge that this study was supported by a research grant from the Faculty of Education, Queensland University of Technology.

References

- Ajzen, I., & Fishbein, M. 1977, 'Attitude-behaviour relations: a theoretical analysis and review of empirical research', *Psychological Bulletin*, vol. 84, no. 6, pp. 888–918.
- Brewer, J. & Hunter, A. 1989, *Multimethod Research: A Synthesis of Styles*, Sage, Newbury Park, California.
- Cade, A. 1990, 'Listening to children—the young opinion formers on Earth', *Annual Review of Environmental Education*, no. 3, pp. 10–11.
- Council of Ministers of the European Community (CMEC) 1988, 'Resolution on environmental education', *Official Journal of the European Communities*, no. C177/8.
- Cullingford, C. 1996, 'Children's attitudes to the environment', in Harris, G. & Blackwell, C. (eds), *Environmental Issues in Education*, Cambridge University Press, Cambridge.
- Dahlgren, L. 1995, 'Lars on qualitative research', in Gerber, R. & Bruce, C. (eds), *Qualitative Research—Phenomenography: Theory and Application. Video Series Program 1*, Queensland University of Technology, Brisbane.
- Department of Education (DoE) 1993, *P–12 Environmental Education Curriculum Guide : Care for the Earth, Care for Others, Care for Yourself*, Department of Education, Brisbane.
- Gayford, C. 1996, 'The nature and purposes of environmental education', in Harris, G. & Blackwell, C. (eds), *Environmental Issues in Education*, Cambridge University Press, Cambridge.
- Hausbeck, K., Milbrath, L. & Enright, S. 1992, 'Environmental knowledge, awareness and concern among 11th-grade students: New York State', *Journal of Environmental Education*, vol. 24, no.1, pp. 27–34.
- Hillcoat, J., Forge, K., Fien, J. & Baker, E. 1995, 'I think it's really great that someone is listening to us ...: young people and the environment', *Environmental Education Research*, vol. 1, no. 2, pp. 159–171.
- Hines, J., Hungerford, H. & Tomera, A. 1987, 'Analysis and synthesis of research on responsible environmental behaviour: a meta-analysis', *Journal of Environmental Education*, vol. 18, no. 1, pp. 1–8.
- Hungerford, H.R. & Volk, T.L. 1990, 'Changing learner behaviour through environmental education', *Journal of Environmental Education*, vol. 21, no. 3, pp. 8–21.

- Kwan, T. 1995, 'Preparing "small" environmentalists through activity-based and interdisciplinary environmental teaching', *New Horizon in Teaching*, no. 36, pp. 94–103.
- Lai, G. & Stimpson, P. 1997, 'Environmental attitudes and actions: people's perceptions of the effectiveness of their actions and Chinese cultural context', *Australian Journal of Environmental Education*, vol. 13, pp. 55–60.
- Lyons, E. & Breakwell, G. 1994, 'Factors predicting environmental concern and indifference in 13–16 year-olds', *Environment and Behaviour*, vol. 26, pp. 223–238.
- Marton, F. 1981, 'Describing and improving learning', in Schmeck, R. (ed) *Learning Strategies and Learning Styles*, Plenum, New York.
- Newhouse, N. 1990, 'Implications of attitude and behaviour research for environmental conservation', *Journal of Environmental Education*, vol. 22, no. 1, pp. 26–32.
- Ramsey, J.M., Hungerford, H.R. & Volk, T.L. 1992, 'Environmental education in the K–12 curriculum: finding a niche', *Journal of Environmental Education*, vol. 23, no. 2, pp. 35–45.
- Palmer, J.A. 1994, *Geography in the Early Years*, Routledge, London & New York.
- Palmer, J. 1995, 'Influences on pro-environmental practices', in Palmer, J., Goldstein, W. & Curnow, A. (eds), *Planning Education to Care for the Earth*, International Union for the Conservation of Nature, Gland.
- Palmer, J.A. 1998, *Environmental Education in the 21st Century: Theory, Practice, Progress and Promise*, Routledge, London & New York.
- Queensland Board of Teacher Registration (QBTR) 1993, *Environmental Education: An Agenda for Preservice Teacher Education in Queensland. Report of the Working Party on Environmental Education to the Board of Teacher Registration*, Queensland Board of Teacher Registration, Toowong, Queensland.
- Stanisstreet, M. & Boyes, E. 1996, 'Young people's ideas about global environmental issues', in Harris, G. & Blackwell, C. (eds), *Environmental Issues in Education*, Cambridge University Press, Cambridge.
- Stapp, W. 1969, 'The concept of environmental education', *Journal of Environmental Education*, vol. 1, no. 3, pp. 31–36.
- Stapp, W. 1990, *An Approach to Environmental Education: Through Action Research and Water Monitoring Programs* (video-recording), Department of Education, Brisbane.
- Tanner, T. 1980, 'Significant life experiences', *Journal of Environmental Education*, vol. 11, no. 4, pp. 20–24.
- UNESCO 1977, *First Intergovernmental Conference of Environmental Education Final Report, Tbilisi, USSR. Needs and Priorities in Environmental Education: An International Survey*, UNESCO, Paris.
- UNESCO 1985, 'A comparative survey of the incorporation of environmental education into school curriculum', *Environmental Education Series*, vol. 17, pp. 5–15.

Tammy Kwan was lecturer at the School of Professional Studies, Queensland University of Technology from 1992–1997. She is presently assistant professor in geographical education at the University of Hong Kong.

John Miles is lecturer in social and environmental education, School of Professional Studies, Queensland University of Technology, Brisbane, Australia.
