



Asking The Participants: Students' Views on Their Environmental Attitudes, Behaviours, Motivators and Barriers

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This study investigated student views on the relationship between their environmental attitudes and behaviours and their thoughts about barriers and motivators to environmentally responsible behaviours. The environmental attitudes and behaviours of students participating in a classroom-based environmental education program were measured using two Likert scales that had been tested for internal consistency and validity using the Rasch polytomous measurement model. Focus groups were held for students to comment on the results from the two questionnaires and provide suggestions with regards to the barriers and motivators influencing their behaviour. The findings of the study support previous research about the relationship between attitude and behaviour and the students' comments on the results provided insight that has not been widely reported elsewhere. Conclusions were drawn regarding the most significant barriers to specific environmental behaviours for high school students and how environmental education programs could be designed and delivered more effectively in secondary schools with the aim of engendering environmentally responsible behaviours in students.

■ **Keywords:** student voice, adolescents, attitudes, environmental behaviours, environmental education, barriers

Environmental education programs are seen as a vital tool in fostering environmentally responsible behaviour (Australian Government Department of the Environment, Water, Heritage and the Arts [AGDEWHA], 2009). In Western Australia (WA) a range of environmental education programs are delivered in schools, some of which aim to increase student knowledge with the assumption that this will manifest into environmentally responsible behaviour change (Ellis, 2007). Furthermore, the community is targeted with constant messages from the media, politicians and environmental campaigners regarding the change needed to avoid further environmental problems (Stanisstreet & Boyes, 1996). Despite this, a corresponding increase in environmentally responsible behaviour is not always observed (Firth & Plant, 1996; Holbert et al., 2003).

There is much evidence that knowledge alone is not the key to environmental behaviour change (Firth & Plant, 1996; Hsu, 2004), highlighting the need for environmental educators to question what *is* required to achieve targeted behaviours (Dwyer, Leeming, Cobern, Porter, & Jackson, 1993). Furthermore, environmental education that primarily provides students with understanding or

knowledge of environmental issues can nurture feelings of hopelessness and futility when provided with no practical skill development enabling students to contribute towards solutions (Nagel, 2005).

The Role of the Student in Environmental Education

In order to gain the best possible understanding of links between education and behaviour change it is vital that we ask those most involved in environmental education — the students. The need for research in this area with young participants has been highlighted repeatedly for over a decade (Barratt Hacking & Barratt, 2007; Zelezny, 1999). It is commonly agreed that such research would be useful to those responsible for the development of education programs aiming to advance environmental improvement.

In addition to assisting those delivering education programs, involving students in their own educational

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development provides more meaningful education. This is a crucial dimension in aiding students to become more socially and environmentally conscious members of society, hence achieving a significant aim of environmental education (New Zealand Parliamentary Commissioner for the Environment, 2004). In the past, many environmental education programs have been designed and developed in consultation with teachers and those involved in program delivery (Ballantyne, Fein, & Packer, 2001; Cheong & Treagust, 2001). Very few environmental education programs in WA (Millennium Kids and River Rangers being possible exceptions) ask students to contribute to the program design, vision and evaluation (Millennium Kids Inc., 2009; Swan River Trust, 2010; Salter, Venville, & Longnecker, 2011). Most rely on teaching staff to complete these important tasks (Stevenson, 2007; Western Australia Department of Environment, 2005).

If environmental education programs hope to influence long-term behaviour change, it is essential that the programs consider the motivations and barriers that influence participants. To identify the motivations of young people, according to Firth and Plant (1996), it is vital to first understand how their experiences, their sense of themselves and their social location are represented and constructed. The most logical approach to seeking a broader understanding of such issues is to ask those participating in environmental education and related behaviour change programs. In doing so, we may not only gain an understanding of their perspectives and opinions, we may also engage them in a reflective educational process (Firth & Plant, 1996).

For some time it has been widely reported that school-based environmental education can provide students with a forum to voice their opinions, not only in regard to what they are learning about the environment and what they want to achieve, but also to offer insight into how they believe environmental education could be more effective in empowering them to achieve change (Rickinson, 2001; Rickinson, Lundholm, & Hopwood, 2009). In addition to providing such a forum, school-based environmental education programs can provide students with an opportunity to actively and authentically participate, not only in evaluating their current programs, but in designing solutions and working with adults to implement change (Salter et al., 2011). It has been postulated previously that students are not often given the opportunity to learn through participation in their communities, possibly lacking experiences of learning through participation (or social apprenticeships) (Hart, 2008). In a culture (such as Australia) where children are typically raised in same age peer groups (from day care onwards) and not readily provided an opportunity to learn through participation in mixed-age social groups, some have argued that environmental education programs are an ideal forum in providing such learning and participation opportunities (Hart, 2008).

Addressing Behavioural Barriers and Influences

In order to develop effective environmental education programs, clearly defined behavioural objectives and measurable outcomes are essential (Andrich & Styles, 1998). Once aims, objectives and outcomes are identified, it is important to identify the possible barriers or inhibiting factors that increase the difficulty of behaviours (Willis, 1999). Von Borgstede and Biel (2002) suggest understanding the nature of barriers to behavioural change is important when developing intervention strategies. There is little evidence of research being conducted to identify barriers to environmental behaviour change *prior* to the introduction of environmental education programs in WA schools.

The *National Review of Environmental Education and its Contribution to Sustainability* (Tilbury, Coleman, & Garlick, 2005) highlighted common issues and inadequacies in environmental education in Australian schools. Opportunity for students to carry out environmentally responsible behaviours at school as part of their environmental education program was viewed as lacking, with most science education focusing on education *about* the environment, often failing to provide students suitable opportunity to facilitate action or explore mechanisms for social change in regards to environmental issues and related behaviours (Tilbury et al., 2005). In the past decade there has been a visible cultural shift in some schools and programs to embrace environmental education and sustainability action processes (Cutter-Mackenzie, 2010). Despite this, there remains a lack of research and available literature that explores sustainability action processes, including students defining their own scope for environmental action in secondary schools (Rickinson et al., 2009).

Human behaviour is influenced by a range of variables (Borden & Schettino, 1979; Stern, 2000) that form three categories in this research (Figure 1). These are: the individual's personal perspectives including environment-related attitudes, beliefs, knowledge and values (Gross & Niman, 1975); the social influences affecting personal experiences, including peer interaction and social norms (McKenzie-Mohr, Nemiroff, Beers, & Desmarais, 1995) and formal environmental education. In this research project, the formal environmental education was a postcompulsory (Year 11 or 12) practical geography class in a metropolitan WA senior college. In addition to the variables that are known to influence student behaviour, there are also barriers that can inhibit environmentally responsible behaviour. While much research exists relating to such barriers more generally (Kollmuss & Agyeman, 2002), barriers specific to particular contexts are less often documented prior to development of environmental education programs (Rickinson et al., 2009). To date, environmental education programs have tended to focus on the first set of variables, aiming to change students' environmental behaviour through changing attitudes and knowledge and developing more pro-environmental values in students (McKenzie-

Mohr et al., 1995; Wray-Lake, Flanagan, & Osgood, 2010). This research project acknowledges that specific barriers may exist that influence both the first set of variables and environmental behaviour (Figure 1). It also acknowledges that participating in formal environmental education may be important in influencing the range of variables, the barriers and environmental behaviour.

Theoretical Framing

This study was based on the theories that environmental behaviours are influenced by a number of variables (Ajzen, 1991; Ajzen & Fishbein, 1977) and that positive attitudes towards the environment are ‘easier’ to achieve than the corresponding positive behaviour (Andrich, 1988). Prabawa-Sear (2010) theorised that four key groups of variables influence environmentally responsible behaviour (Figure 1). The four groups of variables described include: personal perspectives, social influences, environmental education and barriers. Figure 1 illustrates the theory that desired environmentally responsible behaviour is directly influenced by environmental education and social variables, while environmental education and social variables also influence and are influenced by personal perspectives, which therefore indirectly influence environmentally responsible behaviour. Each of these spheres of influence will have an impact on the desired outcome, as will the nature of the barriers existing between the influences and the target behaviour. Prabawa-Sear’s (2010) conceptual theory incorporates Ajzen and Fishbein’s (1977) and Ajzen’s (1991) findings that attitudes towards the environment do not necessary correlate with behaviours, as behaviours are influenced by variables including resources, opportunity and perceived social approval. The research in this article

uses the model presented by Prabawa-Sear (2010) as a basis for investigating the students’ views of the relationships between their attitudes and behaviours, and their opinions about what influences their environmental behaviour. It also explores Andrich and Styles’ (1988) theory to investigate the relationship between environmental attitudes and behaviours.

Purpose of the Study

This research is a small part of a larger project examining the relationship between the behaviours and attitudes of a group of Year 11 and 12 practical geography students. The aims of the research presented in this article include: to investigate the students’ views of their attitudes and behaviours and their opinions or ideas about factors that might influence these and to identify the perceived barriers to carrying out environmentally responsible behaviours in various social settings. The original research project focused largely on the relationship between attitudes and behaviours and utilised the (Rasch, 1960/80) Unilateral Measurement Model (RUMM) in its analysis. This article focuses on the more inclusive methods of data collection that were used to complement the RUMM data and the value of direct participant feedback (student voice) in understanding the complexities of environmental attitudes and behaviours.

Methods

The participants ($n = 31$) were Year 11 and 12 students ranging in age from 15–19 years. The students were all participating in formal environmental education (practical geography) at a WA secondary college. This group was selected in order to address the identified need for greater understanding of motivations and barriers to environmen-

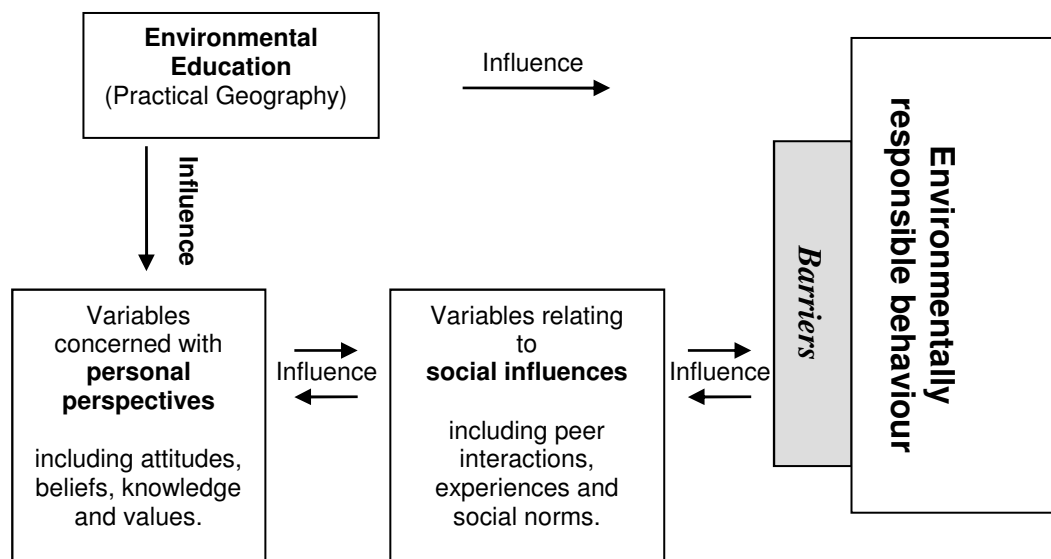


FIGURE 1
Conceptual framework (from Prabawa-Sear, 2010, p. 45).

tally responsible behaviour of students in this age group (Western Australia Department of Environment, 2005). Practical geography is the only course of study that focuses on environmental/sustainability issues at the college and no extracurricular environmental activities are offered, so this was the only group of students at the college formally participating in environmental education.

The research incorporated both quantitative and qualitative data collection methods, allowing for examination of trends in the sample group while also providing opportunities to identify and explore complex issues arising from quantitative data analysis. Questionnaires (measuring attitude and behaviour), interviews and focus groups were used to gather data while also providing students the opportunity to reflect on and offer explanations of their attitude and behaviour and the results from the quantitative data.

Instruments and procedures. The questionnaire consisted of two scales of 17 paired items using a 4-point Likert scale. The scales were developed using the principles of psychometric measurement (Krueger & Casey, 2000) and were validated using the (Rasch, 1960/80) Unidimensional Measurement Models (RUMM) program, which was also used for the analysis of the final data.

Focus groups. Focus groups provided students with a forum to voice their opinions/ideas about: the questionnaire data, how the researcher should interpret the data, what influences their environmental attitudes and behaviours, perceived barriers to carrying out environmentally responsible behaviours and also to offer ideas about how environmental education at their school and in the broader community could be more effective in empowering them to achieve change. Five focus groups were conducted over two weeks and ranged in size from 2–7 participants. Each session ran for 20–30 minutes and was audio recorded. Recordings were transcribed and stored according to ethics approval requirements. Each student was provided with a copy of the transcribed recording and a brief discussion was held in class where the researcher confirmed accuracy of the transcription with the students and provided the opportunity for students to give further feedback on the outcomes of the focus groups. Focus groups were semi-structured and although a guiding set of questions was prepared, participants were encouraged to elaborate on any of the questions asked by the researcher and to raise questions of their own for the group to discuss.

Limitations. This research project had various limitations due to time and resource constraints, as well as limited access to students due to their study demands and the researchers not being school staff. The research would have benefited from a larger sample size with students from different schools participating in environmental education and the students having a more active role in designing, interpreting and reporting the outcomes of the

research (research *by* children, rather than research *with* children) (Barratt Hacking, Cutter-Mackenzie, & Barratt, in press) In order to do this, a cultural change would have been required at the school, which was unachievable for many reasons including time restraints. The students would have benefited from having the opportunity to address the issues they identified in the focus groups and being given an opportunity to authentically participate (Barratt Hacking et al., in press; Hart, 2008). If these limitations were overcome in future research, the data and research findings could be applied more broadly to other schools and environmental education providers and students and the broader community would also be likely to benefit from the process (Hart, 2008)

In acknowledging these limitations, it is also important to highlight that this research project did not intend to draw generalisations from the data or to evaluate or implement changes at the school, but to better understand various aspects of environmental education in relation to this particular group of students' views on the relationship *between* attitude and behaviour and the barriers to carrying out environmentally responsible behaviours.

The researchers acknowledge the limitations of qualitative research and the use of focus groups where a single researcher collects and analyses data (Hart, 2008; Smithson, 2008). These limitations were considered, but the strength of focus groups for allowing participants to discuss and develop ideas collectively and to assist the researcher in interpreting questionnaire data outweighed the risks of misinterpretation by the researcher that can be partially overcome by awareness of the constraints (Smithson, 2008; Lofland, Snow, Anderson, & Lofland, 2006).

Results

Students' responses to the Likert-style attitude and behaviour items were analysed using RUMM to position the statements in order of easiest to most difficult to agree with/engage in (Table 1). Attitude statements (A) and behaviour statements (B) were listed in order of 'difficulty to agree with'. Those statements that the students found easiest to agree with are at the top of the table.

The data clearly shows that it was easier for students to agree with any attitude statement than it was to agree with the idea of engaging in the behaviours, except in the case of *recycling at home*. Every attitude statement was considered easier than its corresponding behaviour statement. For example, the attitude item *Buy eco-friendly products* (A09) was the easiest to agree with (location of -1.50) whereas its corresponding behaviour statement (B09) was relatively difficult (location of 1.09).

Students were asked in the focus groups to provide possible reasons as to the difference in attitude and behaviour results (Table 2). *Lack of motivation, socially unacceptable* and *no choice* were the three most common responses.

TABLE 1

Attitude (A) and Behaviour (B) Questionnaire Items Listed in Order of 'Difficulty' (RUMM Analysis Location)

Item	Statement	Location (logits)	Standard Error (logits)
A09	Buy eco-friendly products	-1.50	0.29
A10	Recycle at home	-1.45	0.22
A12	Recycle at school	-1.23	0.25
A14	Encourage family to recycle at home	-1.04	0.19
A05	Bring own drink bottle	-0.90	0.23
A17	Participate environ activities in free time	-0.86	0.23
A04	Use both sides of the paper	-0.84	0.19
A13	Encourage others to recycle at school	-0.84	0.19
A15	Tell friends about practical geography lessons	-0.81	0.24
A03	Walk to friend's house (<10 mins)	-0.80	0.19
A01	Turn off TV when leave the room	-0.66	0.22
B10	Recycle at home	-0.56	0.18
A06	Refuse plastic bags	-0.53	0.18
A16	Pick up litter	-0.34	0.21
A11	Tell parents about practical geography lessons	-0.31	0.17
B03	Walk to friend's house (<10 mins)	-0.22	0.21
B01	Turn off TV when leave the room	0.13	0.16
A02	Spend <5 mins in shower	0.16	0.16
B14	Encourage family to recycle at home	0.39	0.15
B13	Encourage others to recycle at school	0.58	0.20
B04	Use both sides of the paper	0.63	0.22
B15	Tell friends about practical geography lessons	0.64	0.21
B12	Recycle at school	0.79	0.22
B11	Tell parents about practical geography lessons	0.90	0.21
B09	Buy eco-friendly products	1.09	0.19
B05	Bring own drink bottle	1.25	0.22
B06	Refuse plastic bags	1.32	0.21
B17	Participate environ activities in free time	1.50	0.22
B02	Spend <5 mins in shower	1.75	0.23
B16	Pick up litter	1.78	0.22

Students were asked what they thought the barriers to carrying out environmentally responsible behaviours were at school, home and in broader social situations. The results grouped in common themes are presented in Table 3. The majority of the barriers identified by the students were connected to social and emotional factors. Infrastructure and knowledge were the two exceptions, with a lack of knowledge only being cited once.

When asked how more environmentally friendly behaviour could be encouraged at school, the majority of suggestions were related to (increased) staff involvement and wider student involvement (Table 4), supporting the theory that environmental education is most effective when delivered through a whole-school approach in secondary schools (von Borgstede & Biel, 2002).

Discussion

The quantitative results support the argument that behaviour is more 'difficult' than its associated attitude (Andrich & Styles, 1998). It may therefore be unlikely that a positive attitude towards the environment will lead to environmen-

tally responsible behaviours as others have echoed (Ajzen & Fishbein, 1977; McKenzie-Mohr & Smith,). The qualitative data indicated an awareness of this among the students who commented that some actions were *easier to agree with but harder to do*, influencing the likelihood of engagement. *Recycling at home* was a particularly easy behaviour for students (Table 1). This may be attributed to significant investment in waste education (Cutter-Mackenzie, 2010), or the availability of infrastructure in the region or a combination of factors. Further specific research would be required in this area to draw conclusions regarding causes of level of ease or difficulty of particular behaviours.

The data highlighted that although students supported all the behaviours in principle by agreeing to the attitude statement, a range of factors reduced the likelihood of the behaviour being carried out. Importantly, the situation differed between behaviours as each behaviour had different barriers. Students were often aware of these barriers but were unable or lacked motivation to overcome the obstacles. Consequently, each behaviour and its barriers must be carefully considered in program design and delivery

TABLE 2

Reasons Provided by Students to Explain Differences in Attitude and Behaviour Data in Order of Most Common to Least Common

Reason	Percent of responses	Example responses
Lack of motivation	18%	'We're lazy'
Socially unacceptable	14%	'...at school if you were like 'c'mon, let's all recycle', people would just give you that look'
No choice (parents make me)	12%	'You might want to get driven, but parents might say no, make you walk.'
Unrealistic	8%	'You can't have a 5 minute shower'
No opportunity	8%	'If something came up I might, but you never hear about things like that'
No-one else does	4%	'Everyone agrees but no-one does it'
No reward/ recognition	4%	'No one recognises that you've done anything'
No time	4%	'You want to go out on the weekend and work Saturdays, so not really the time'
Not my responsibility	4%	'People should take responsibility for their own things'
Habit	4%	'Just a habit of putting it in the bin' (not recycling)
Don't want to	4%	'We are told to do it, but stuff it'
I've done enough	2%	'I've done enough'
Ineffective/won't work	1%	'It won't work'
Unsafe	1%	'Might be syringes, glass. It's dirty' (picking up litter)
Feel uncomfortable	1%	'You feel like a scab'
Hard to do	1%	'It's hard to do'
Costs more	1%	'People don't want to spend money on fuel'
Don't know how	1%	'Don't know how to get involved, who to ring'

TABLE 3

Barriers to Environmentally Responsible Behaviours as Reported by Practical Geography Students

Common Theme	Examples
Roles & Outcomes	'I don't see the point in just me doing it. If I knew everyone was doing it, then I'd do it. Otherwise you feel a bit ripped off, like you're busting your guts and no-one else is doing it' 'I feel like if I just do it, it's not going to make a difference — on a global scale. It's not like everyone is going to do it' 'There is a cleaner anyway, at school the cleaner will pick it up. But if you go to the beach, and to you see a bottle, then you'd pick it up'
Social trends	'Probably just the way that people look at each other. People often try to outmatch each other (through consumption)' 'Society — socially. You wouldn't go plant trees for fun' 'Habits' 'Laziness' 'Too lazy'
Others perception	'Reputation. People don't like to be called a hippy' 'The fear of being labelled a nerd (at home)' 'Peer pressure — it's uncool. You don't tell people to pick up litter'
Lack of opportunity/control	'Sometimes we're not in control of those things (at home)' 'Not enough opportunities. Especially as a teenager (in the community)'
Infrastructure	'No bins between the school and local shopping centre' 'We need more bins in parks and on the main street'
Personal choice	'I don't like using two sides of the paper' 'Picking up other people's rubbish is gross'
Disempowerment	'One of the worse things you can do is get kids to pick up litter. It just makes them want to rebel'
Lack of knowledge	'I don't know how (to print of both sides of the paper)'

(McKenzie-Mohr & Smith, 1999) to ensure that support can be provided to address barriers to difficult behaviours. Item 9 (buy eco-friendly products) is an example of a difficult behaviour for a Year 11 or 12 student (Table 1). Although students agreed with the idea of buying eco-friendly products, few did the family shopping, had income available or

had access to shops supplying such products; whereas item 3 (*walk to a friend's house*) is a no-cost behaviour that could be carried out independently. Lack of motivation and social influences were the most common reasons given by students for the differences between their attitude and behaviour scores (Table 2).

TABLE 4

Practical Geography Students' Ideas on How to Encourage More Environmentally Friendly Behaviour at School

Knowledge (for all students)	'Teach us more about it. Coz nobody outside this class knows anything about it. People don't like to know about how bad the problems are, so then they don't care.' 'Awareness'
Infrastructure	'It would be good if we had recycle bins here because so many people do buy drinks from the vending machine and so many people have bottles and they just get chucked in the bin.' 'Give us recycling bins at school.'
Staff involvement	'We are the only class that recycles. If there were more teachers, then there'd be more classes doing it (recycling).' 'None of the other teachers care. If you don't put it in the recycling bin. If you just put it in the normal bin, they just say, whatever.' 'Even if they (other teachers) don't care, they should (encourage recycling) especially the art and IT teacher.' 'They (teachers) are sort of our role models. We're here 5 days a week so if they're always pushing us to do it, then it get drills in harder.'
Wider student Involvement	'I reckon it shouldn't only be practical geography (that learns about environmental stuff).' 'We have conventions for other things, but not for the environment. And if it's about the environment, it's not compulsory.' 'They should introduce more volunteer programs. People are looking for experience to put on their resumes.'

Each environmental behaviour has its own set of barriers that are dependent on social context (McKenzie-Mohr & Smith, 1999). For environmental education programs targeting one particular environmental issue and a few related behaviours, identifying the most common barriers is important (McKenzie-Mohr & Smith, 1999). This research project identified a broad range of barriers in various social settings related to 17 environmental behaviours (Table 1). Some barriers were behaviour specific (*I don't pick up litter because I don't want to look like a scab*) and others were broader (*Why should I if no-one else does?*). Social trends, lack of opportunity and a lack of outcomes were identified as the most common barriers as reported by the students (Table 3). If environmental education aims to alter behaviour it needs to address a broader agenda that includes examining and addressing social trends (across the whole school including students, staff and administrators, infrastructure) and measurable, visible outcomes.

A lack of knowledge was among the least common reasons, making up 1% of responses. A possible explanation is that either the practical geography subject provided the students with sufficient knowledge in relation to the target environmental issues and behaviours, or the students were of the belief that they already acquired the knowledge prior to joining the class. Either way, the students made it clear that they felt that a lack of knowledge was not a major barrier to carrying out environmentally responsible behaviours. This situation reinforces the need for environmental education programs to consider addressing barriers and enabling behaviour change in addition to general environmental education and awareness-raising.

The practical geography students acknowledged the need for knowledge-based environmental education but suggested it needed to be across the whole school commu-

nity, with increased teacher and student participation (Table 4). The students' responses highlight that whole-school participation (as opposed to isolated classes) is critical to forming social norms (so environmental behaviours become 'normal') with the social influence of 'everyone doing it' being more important than a deep knowledge of the environmental issues relating to the behaviour. Kaplan (2000) suggests that people choose not to make sacrifices and engage in environmentally responsible behaviours due to concern that others will cheat and those making the sacrifices will feel foolish. Kaplan's explanation is mirrored by the statement of one practical geography student: 'I don't see the point in just me doing it. If I knew everyone was doing it, then I'd do it. Otherwise you feel a bit ripped off, like you're busting your guts and no-one else is doing it'.

This line of thinking is consistent with Kaplan (2000) who suggests that when people become convinced that their efforts truly matter, a powerful motive force is recognised. Such a rationale may provide a strong justification for a whole-school approach in secondary education. In working towards whole-school approaches, the three main barriers that the students highlighted (social trends, lack of infrastructure, lack of outcomes) need to be overcome. To overcome these barriers and achieve the goal of behavioural change environmental education programs will need to work closely with all stakeholders including students (McKenzie-Mohr & Smith, 1999). A collaborative effort between school administrators, students, local governments and families will be required to empower students to the point where they feel they do have a choice and to address issues like social acceptance of environmental behaviour, both at school and in the local community. Students need to see the wider community (especially adults) taking positive action in addressing environmental concerns to address

issues of 'helplessness' and a lack of motivation that naturally stems from this.

Staff involvement was a popular topic in the focus groups with students highlighting the need for full staff involvement and support across the school. Some students were critical of staff who they felt did not support the practical geography teacher or the environmental initiatives at the school. The need for basic infrastructure, such as recycling bins in the school café and many classrooms, was also highlighted in the focus groups. Students felt that if the infrastructure was there, it would be easy to encourage students (and staff) to use it. These results support the calls for students to be provided with opportunities to not only evaluate their own educational settings and programs, but to be involved in sourcing solutions and improvements (Hart, 2008).

In general, these results support the theory that people who believe they have neither the resources nor the opportunities to perform a certain behaviour are unlikely to form strong behavioural intentions to engage in the behaviour (Ajzen, 1991; Ajzen & Fishbein, 1977). It is argued that this may even be the case if people hold favourable attitudes toward the behaviour and believe that important others would approve of the behaviour (Ajzen, 1991; Ajzen & Fishbein, 1977). In the context of this article, this suggests that if infrastructure and opportunity is not available, students cannot be expected to engage in the behaviour. The students in this project viewed the resources and opportunities to carry out environmentally responsible behaviours as inadequate (Tables 3 & 4). When this is the case, motivation to enact the behaviour is likely to suffer, limiting the effectiveness of environmental education (Ajzen, 1988). Students were able to identify the need for infrastructure but were not provided the opportunity to implement the change and therefore missed an opportunity to learn through participation in this research project (Hart, 2008). It is therefore crucial to the success of any environmental education program that the relevant resources are identified and made available for participants in order to provide adequate opportunity to engage in environmentally responsible behaviours and learn through participation in decision-making and implementing change.

Conclusions

This research project used direct participant feedback (students discussed and interpreted the questionnaire data) to investigate students' views of their attitudes and behaviours and their opinions about influencing factors and to identify the perceived barriers to carrying out environmentally responsible behaviours in various social settings.

The results indicated that the students found it significantly easier to agree with environmental behaviours than to carry them out, with the exception of 'spending less than 5 minutes in the shower', which they found difficult to agree with and 'recycling at home', which was consid-

ered a very easy behaviour. 'Buying eco-friendly products' and 'participating in environmental activities in their free time' had the greatest difference between attitude and behaviour scores.

Most students felt there was a relationship between their attitude and behaviour towards the environment and were able to identify various reasons as to why their behaviour did not necessarily reflect their attitude. The most difficult behaviours for students to engage in were identified as 'participating in environmental activities in their free time', 'spending less than 5 minutes in the shower' and 'picking up litter'. Students attributed this to lack of motivation to carry out behaviours, some behaviours being considered socially unacceptable and lack of choice/opportunity.

The greatest barriers identified by students were 'Social Trends', 'Lack of Infrastructure' and 'Lack of Outcomes'. The least significant barrier was identified by students as 'Lack of Knowledge'. Many of the specific identified barriers can be easily overcome in the school setting (Table 3). Greater staff involvement and support for environmental initiatives, wider student involvement in environmental initiatives, better infrastructure (such as recycling bins) to allow students to carry out the behaviours and greater involvement for all students in learning about environmental issues were identified by the students as important to increase environmentally sustainable behaviour in schools. The student responses suggest that involving students in envisioning solutions, planning and decision-making, as well as improving the basic infrastructure (such as recycling facilities) could assist in changing social trends and increasing student motivation for environmental behaviours. Student responses generally supported the conceptual framework (Figure 1) by Prabawa-Sear (2010), which theorised that the variables influencing environmentally responsible behaviour could be grouped into four key areas — personal perspectives, social influences, environmental education and barriers. These results also support the work of Ajzen and Fishbein (1977), which identified resources, opportunity and social approval as variables that influence and individual's behaviour.

This research highlights the value of involving students when considering the complexities of environmental attitudes and behaviours in an environmental education context. The data collected through focus groups with the students demonstrates the value of this approach. The ability of the students to reflect on the data (from their questionnaires), to consider shortcomings of the current environmental education program and to identify solutions and improvements to assist the school in its path to sustainability validate the value of including students. It also suggests that future planning and evaluation of school-based environmental education programs should provide opportunities for students to participate, not only

as consulted and informed participants but as shared decision-makers (Hart, 2008).

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