

Deep Ecology as a framework for student eco-philosophical thinking

William Smith

RMIT University, Australia

william.smith@rmit.edu.au

Annette Gough

RMIT University, Australia

annette.gough@rmit.edu.au

Abstract

Deep ecology is an ecological philosophy that promotes an ecocentric lifestyle to remedy the problems of depleting resources and planetary degradation. An integral part of this ecosophy is the process of forming a metaphysical connection to the earth, referred to as *self-realisation*; an unfolding of the self out into nature to attain a transcendental, *non-egoic* state. Findings from our research indicate that secondary school students in environment clubs align with the principles of deep ecology, and show a capacity to become *student eco-philosophers*, and they report empathy for becoming ecocentric beings. This study explores the capacity for students to engage in environmental philosophy.

Key words

ecosophy, deep ecology, self-realisation, ecological self, secondary schooling

Introduction

The idea that children can be philosophers is not new (Haynes 2003; Haynes, 2014), however, there has been little if any research on ecocentric philosophies in schools, and on how secondary school students view themselves using the deep ecology lens. As a result of our research we propose the idea of *student as eco-philosopher*, based on the existing network of philosophy in schools (Sapere 2014). The significance of this study is in its generation of new theoretical models for eco-philosophical thinking amongst secondary students.

There is growing evidence that philosophy is an important component of school education, with successful programs being implemented throughout the United Kingdom (Bartley & Worley 2012), where primary school children as young as eight

years are successfully involved in classroom philosophy (Bartley & Worley 2011), and in Australian schools (Federation of Australasian Philosophy in Schools Association 2014; Victorian Curriculum and Assessment Authority 2014). There is also an active program in the United States for teaching philosophy to children (Teaching Children Philosophy 2014) and a primary school program in ethics in Australia (Primary Ethics 2014). Philosophy has become popular in England where it is claimed that it promotes abstract thinking, the art of discussion, and expands students' vocabulary (Brett 2003). Others have called it the holy grail of education because it creates active, creative and democratic thinking, at the same time as increasing a sense of self-worth in students (Cohen & Naylor 2008).

In this paper we discuss the relevance of ecocentrism to students' lives and propose that students can realise their *ecological self* based on the deep ecology philosophy of Naess (1973). Our investigation of the ecological self derives from *self-realisation* (Naess 1995), a central metaphysical process for deep ecologists that we examine in the context of concepts of the self. The purpose of our study was to investigate student beliefs about ecocentrism and anthropocentrism, and the approach taken was grounded in the *ecologism* of Green political thought (Dobson 2007). Whereas *environmentalism* takes a managerial approach to environmental problems, *ecologism* seeks the existential solution of a radical change to human existence in social and political life, and has the core idea of reframing the relationship humans have to non-human nature to allow for a more sustainable and meaningful life. Our study also followed the critical social research tradition (Harvey 1990) by investigating the contemporary social order of society, an essential feature of the deep ecology platform (Rothenberg 1995). The theoretical framework was underpinned by a critical-dialectical perspective that attempted to uncover social forces that influenced student thinking about their place in the biosphere (Harvey 1990).

Deep Ecology

The deep ecology movement developed in the early 1970s in response to concerns about the lack of connectedness, reciprocity and simplicity in the shallow environmental worldview dominant in Western society. The founder of deep ecology, Arne Naess (1973), outlined its main principles of connectedness to nature, biospherical egalitarianism, wilderness preservation, population management, biodiversity, and reduction of resource use (1973). In the same article Naess argued that *shallow* ecology was a narrow (anthropocentric) science that mainly addressed pollution or other environmental problems that threatened the affluent in society,

whereas lifestyles that protected the earth were *deep* ecology (ecocentrism). Another more metaphysical process in deep ecology, described by Naess as '*self-realization*', is the deeper questioning of the relationship between the Self (the ecological self) and nature (Fox 1990b). Sometimes this is referred to as an *unfolding* of the Self outwards into the environment (Fox 1990a), and it means moving towards a *oneness* or meaningful life by recognising the intrinsic value of all biological systems (Mathews 1991). Naess did not see this as a moral position but rather saw the connectedness as deriving from a love and respect of all life and of all nature (Fox 1990b), including the inanimate part of ecosystems such as mountains and rivers. For Naess, self-realisation was moving from the narrow ego to 'as expansive a sense of self as possible' (Fox 1990b, p. 106). Naess was also influenced by Rachel Carson's *Silent spring* (1962) to have a deep humility towards the earth, and cites her as saying that humanity was a 'drop of the stream of life' (Naess & Rothenberg 1989, p. 165).

Naess was not the only scholar to devise an ecosophy; Felix Guattari was also a key figure in the study of ecosophy (Guattari 2000) and his approach of the *three ecologies* is described as an ecological philosophy that 'engages with the material, social, and ideological "registers" of life' (Greenhalgh-Spencer 2014, p. 324) and is presented as a lens to 'illuminate pedagogical practice'. In our analysis of Guattari's pedagogical usefulness, it does fulfill a role in moving towards valuing the non-human world, but his emphasis on social problems differs from what we see as the more important aspects of deep ecology relating to the metaphysics of the Self. Naess grounded his philosophy in the work of Spinoza (Naess 2005b) and his concept of self-realisation was influenced almost entirely by Gandhi (Naess 1988). Spinoza's monism and Gandhi's *maturation of the self* are key ingredients in the deep ecology platform that provide unique models for embracing ecological philosophy. Deep ecology promotes the complex thinking required for environmental reform and it does this by promoting an ecological consciousness to counter dominant worldviews that threaten the planet (Devall & Sessions 2007).

It is important to establish some pedagogical terrain for deep ecology within the philosophy of education landscape, and the principal foundation is Dewey's dissertation on education and culture (Garrison, Neubert & Reich 2012). The roots of environmental education can be traced to the liberal-progressive philosophy of Dewey (Gough & Gough 2010). According to Garrison et al. (2012), Dewey saw humans as part of nature:

Since his early acquaintance with Hegel, Dewey had realized that nature and culture are not opposite but relational to each other. He

was convinced that humans as cultural beings are a part of nature. They act within nature, with it, and partly also against it at the same time. (p. 1)

This view accords with the monism of deep ecology (Naess & Sessions 1995). Dewey also held the view that the individual (or self) is co-evolving with the environment and he viewed the environment as the total of *all* that is experienced by the self. Dewey contributed insight into the *unfolding of the self* by stating that education was an 'unfolding of latent powers towards a definite goal' (Dewey 2012, p. 79). This is seen as a *drawing out* of the student and a developing of the mind, which is not dissimilar to Naess' deeper questioning towards a gestalt state of existence (Naess 2005a). From this perspective, this paper proposes an additional approach to the philosophy of education, one that sees deep ecology as an ecosophy for students willing to focus their minds on metacognition rather than on discipline-based thinking.

We recognise that there is important work on moral education and critical thinking (Lipman 1995), and more recent evidence that the quality and complexity of student responses increases when teachers ask shorter, higher-order questions (Topping & Trickey 2007), particularly when there is a shift from teacher talk to student talk. There is also an array of thinking skills programs, of which Lipman's Philosophy for Children (P4C) is possibly the best known (Trickey & Topping 2004), and collectively they harness skills that are consistent with the deep ecology principles (Naess 1973) and the deep ecology platform (Naess & Sessions 1995). Lipman's pedagogical dimension to philosophy of education, the *community of philosophical inquiry* (Kennedy 2012), lends itself to a similar normative discourse that can be found in deep ecology (Drengson & Devall 2010). Lipman's dialogical speech community, we believe, would work well as a classroom exercise for complex environmental issues that might be emotive and challenging for students to embrace. Our view is that it is necessary for schools to prepare students to be good earth citizens in the face of environmental criticism (Dobson & Bell 2006).

There is a further dimension to deep ecology that requires recognition, and this relates to the idea of *intrinsic value* (Fox 1990b). Defining an intrinsic value for non-human nature is one of the central problems of environmental ethics (Callicott 1995), largely because there is an assumption that if only sentient beings can perceive nature (Rolston 1994), then what value does nature have when it is not experienced by humans? Participants in the research study were asked about the value of nature but the full analysis of the topic is beyond the scope of this paper.

Research study and methodology

The focus of this study is the responses from nine students and three teachers (including the sustainability coordinator 'Wolf'¹) who were interviewed at a mixed-gender metropolitan secondary college ('Bunjil'²) in the eastern suburbs of Melbourne. The school was located within the metropolitan region of Melbourne and was unremarkable in the sense that it was not in a disadvantaged demographic region, nor in a prestigious location, and was a government school. We approached the Victorian Association of Environmental Education for member schools that might be interested in a study of deep ecology, and a few schools with strong sustainability initiatives were short-listed. From this list we negotiated cooperation from the school Bunjil (some principals we approached did not wish to be part of the study). Students were drawn from the school's environmental club; i.e. *enviroclub* (with one exception), largely because they were encouraged to do so by the sustainability coordinator, and with the permission of the principal and governmental education department authorities. All of the available *enviroclub* students participated in the study. The *enviroclub* is only one of a number of voluntary extracurricular activities (e.g. music, student representative council, sport) competing for student membership. Use of stratified sampling was not possible due to the difficulties in finding a host school, largely because schools receive many requests to conduct research. Semi-structured interview questions are one of the tools of population survey and they can be designed to give either narrow responses or almost completely unstructured responses (Nayar 2014). We aligned more with the latter view, so the semi-structured interview questions were tailor-written for *enviroclub* students and sustainability coordinators. We used semi-structured interview questions as the basis for flexible interviews allowing for rich responses that enabled us to follow interesting lines of thought (Appendices I and II). We encouraged respondents to elaborate on answers and clarify their thoughts whenever fruitful lines of inquiry emerged during the interview. What is clear from our teacher interviews is that the sustainability coordinators had a clear predisposition for the role and embraced the duties with some passion and commitment. We recorded responses from the students and teachers about the relative value of humans versus the non-human world by asking them if the earth's limited resources should be more equitably shared between humans and the non-human and inanimate parts of ecosystems. The research question we addressed looked at evidence for eco-philosophical thinking consistent with the deep ecology

¹ Respondents were de-identified by name and gender using the names of stars in the night sky.

² We used the name of an Indigenous supernatural deity to de-identify the school.

philosophy of biospherical egalitarianism (monism), self-realisation, ecological wisdom³, biodiversity and anti-neophilia. The respondents were also asked questions about their orientation towards Naess' binary of anthropocentrism versus ecocentrism. However, we devised a modified version modeled on the electromagnetic spectrum, to allow for a range of answers rather than the simple binary responses. We refer to this research device as *The Deep Ecology Spectrum* (Figure 1). We created this spectrum to give the respondents the option of aligning with a value somewhere along the spectrum. This value represented the degree to which the student thought that humans should sacrifice their use of natural resources for the greater good of all ecosystems. Students were also asked questions about Indigenous land practices and whether the land was managed in a more sustainable and holistic way compared with European settlers.

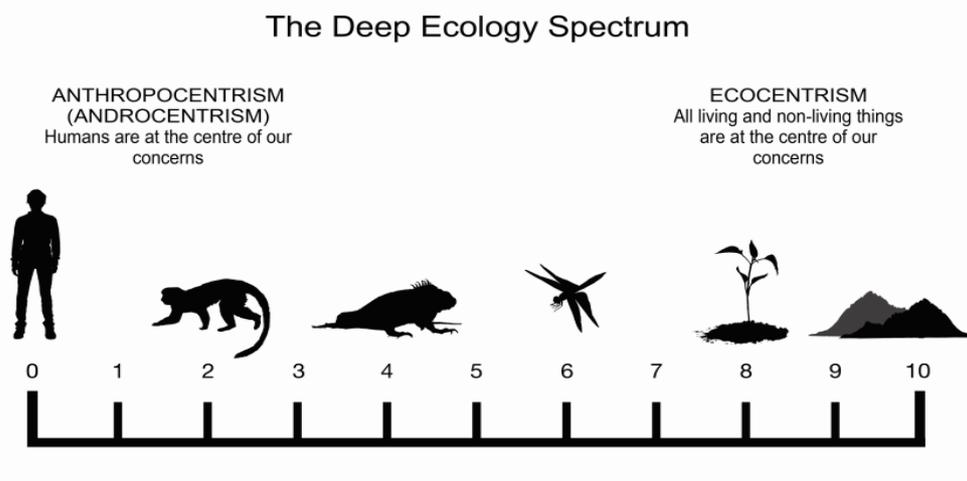


Figure 1: The Deep Ecology spectrum

(Copyright HR Smith 2014. Reprinted with permission)

The interview data for the students were transcribed, coded and analysed using grounded theory (Glaser & Strauss 1967), modified to facilitate rich, nuanced analysis of the responses (Boeije 2010), then reconstituted into an ontological model (see Figure 2).

³ Naess describes *ecological wisdom* as the 'deep exploration of our whole lives and context in pursuit of living wisely' and as 'the essence of Socratic inquiry to know ourselves' (Drengson & Devall 2010, p. 19).

Findings

Our research findings to date indicate that the establishment of sustainability clubs and collectives in schools, together with other environmentally-related activities in school and at home, has led to the emergence of a generation of school students that are well informed about key environmental problems. For example, if students had attended a primary school with school-wide sustainability practices, they were predisposed to becoming enviroclub members at Bunjil, even if other clubs were available. Our data also shows that these successes are due largely to the teachers appointed as sustainability coordinators in schools, who drive student immersion into a sustainable culture where the school identifies itself as having a sustainability focus. This identity is promoted throughout the school community by the principal and 'Wolf', and beyond into the wider community via the school website and the media. The students in environment clubs in our research are influenced positively by the sustainability coordinators to have robust views about how to live and how to protect the environment. This paper focuses on the potential of developing a deep ecology philosophy within these students, because they express a level of awareness of environmental issues that separates them from students who choose to stay outside of the sustainability loop (Department of the Environment Water Heritage and the Arts 2010; Szabo & Hedl 2011).

Some students provided evidence of metaphysical responses to the interview questions. The following example was from a Year 9 student:

00:18:46 'Barnard': Yeah I definitely agree with putting the earth first. It's such a beautiful and unique ecosystem our universe and our world that it should be there for I suppose people of the future to observe so they can admire the beauty of everything. So conserving resources to protect the environment I definitely agree is an important thing. But there is of course the problem of the efficiency of the resources that are like harmful to the environment.

When asked about what the future holds for us humans, Year 12 student 'Naldisu' responded:

00:10:41: I think I have to be optimistic because if you keep thinking that the world's going to die, and the future generations won't have anything left that's not the nicest way to think. Because if you come in with the thought that we're all doomed then you're not going to work as hard towards fixing it.

The crucial task for eco-philosophers interested in embedding deep ecology in schooling is to prevent it from being seen as a bolted-on imposition on the core curriculum. Our findings indicate that environment club students in schools tend to align with the ecocentric end of the deep ecology spectrum. Using the Deep Ecology Spectrum, where 'zero' equates to anthropocentrism and 'ten' to ecocentrism, students interviewed at Bunjil, scored 6.5. This represents a significant skew towards ecocentrism, but at the same time it indicates that the respondents cannot fully let go of human needs and wants (which could be construed as a social versus ecocentric orientation). This is not the same as Guattari's social ecosophy that consists of 'developing specific practices that will modify and reinvent the ways in which we live as couples or in the family' (2000, p. 34). The responses from students indicate that humans are in a sense on a journey moving from an anthropocentric past towards an ecocentric future. This needs to be explored further to identify the cognitive processes behind the views expressed.

Responses from teachers at Bunjil indicate that they find it difficult to embrace sustainability as a cross-curriculum priority, unless ecology is already part of the core curriculum for their discipline. This was described by Delphinus, the curriculum coordinator at Bunjil, as due to the larger task of implementing the Australian Curriculum across the entire school. This process commenced in 2013 at Bunjil and, at the time of interview in 2014, many teachers were engaged in the transition from old teaching materials to new documentation. There was a clear sense that the curriculum was crowded enough without the cross-curriculum priorities, even if they are part of the Melbourne Declaration that set the foundations for the Australian Curriculum (MCEETYA 2008). Despite this problem of embedding deep ecology in schools, the extra-curricular sustainability projects (solar, water recycling, habitat restoration, energy saving, wetlands, urban forest, *frogbog*) engender traits in students that are reflexive and at times metaphysical. These characteristics are age-dependant and apparently relate to the transition from primary school (Grade Six) into secondary school (Year Seven). The sustainability coordinator Wolf reported that students from feeder primary schools with existing environmental programs often find it difficult to adjust to the secondary school timetable (and hence different teachers and rooms), but they also have more options for extracurricular activity (as pointed out above).

The enviroclub students reported that they contemplate the nature of their own existence, have an acute awareness of their sense of being within the social milieu of the school, and can transcend personal boundaries to other ecosystems and other

creatures. They have a feeling of interconnectedness that aligns well with deep ecology philosophy. Both Wolf and the enviroclub students identified strongly with the club projects and were proud of the many environmental awards won by members of the school community (including Wolf, the principal, and the school at state, national and international levels). This could be construed as elitism but the responses are more aligned to an ecological wisdom as described earlier. It clearly gave students a wider identification with creatures all around the earth and a more highly developed sense of self, consistent with an ecological self.

The teachers and students also hold the view that traditional landowners had a more spiritual and connected existence to land compared with colonising peoples, and that their collective knowledge is a valuable epistemological resource that all humans can draw upon if we are to lead an ecocentric existence.

Discussion – A framework for eco-philosophical thinking

We have developed an ontological model to explain the student social milieu and how the students transform into eco-philosophical entities (Figure 2). The model sees all of the entities (beings) in the students' lives as contributing to a social influence or *vector* (force acting in a direction) that changes their existence and thoughts. The social vector of influence might be interpreted as the net effect of factors that might compete against enviroclub (e.g. student representative council, Year 12 exams) versus those factors that might enhance membership of enviroclub (early years exposure to sustainability at primary school). The sustainability coordinator, Wolf, is a central figure who *walks the talk*, and is universally seen as an exemplar by the students, thus contributing to the social vector of influence. There might be some tensions from staff outside the sustainability milieu because they perceive it as impinging on the core business of classroom teaching, and this aspect needs further investigation, but this does not produce a negative vector of influence. Bunjil provides significant support (both financial and time allocation) to Wolf's position and there is strong support from parents and the school council for the sustainability program. In the two-way flux where the students engage in self-realisation, we propose this metaphysical 'oscillation' as a thought exercise where the students allow nature to come into the fold of their consciousness, and then they in turn become expansive throughout nature by dissolving any boundaries between the self and the non-self. Naess' description of self-realisation is built on Gandhi's rejection of the narrow ego, attainment of a 'supreme or universal Self' (1988, p. 25), and through the wider identification with nature (1988). Naess elaborates (1988, p. 20);

‘The joy and meaning of life is enhanced through increased self-realisation, through the fulfilment of each being’s potential’. Our model in Figure 2 proceeds on to a social psychological model of the student exercising agency over their own existence on the one hand (De Lamater, Myers & Collett 2015), and embracing the epistemological and spiritual approaches of Indigenous peoples to the earth on the other hand. Once the student abandons the narrow ego and moves from the social to the ecological self, there is an ultimate version of the self that is indistinguishable from the non-human ecosystem.

Eco-philosophical model for student as eco-philosopher

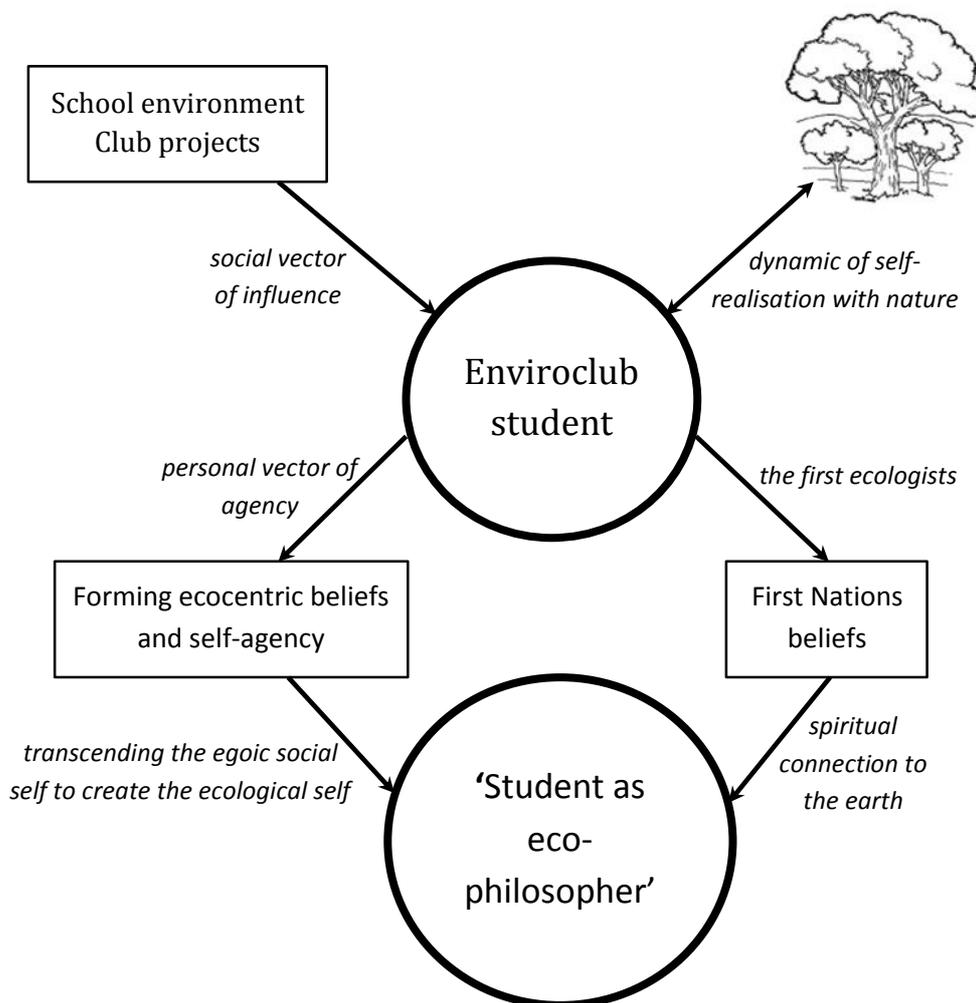


Figure 2: The ontological basis for Student as Eco-philosopher

The personal vector of agency we propose is the actualisation of Naess’ self-realisation to achieve a non-egoic state, and this is effectively the monism that Naess (2005b) adopted from Spinoza, where the delineation between self and non-self no

longer exists. Interconnectedness with the environment underpins the development of an ecological self (Mathews 1991), which Naess interprets as occurring when 'things strive to increase their level of being in themselves, to increase their power, to increase their level of freedom' (Drengson & Devall 2010, p. 274). The vector along the line of the *first ecologists* has its origins in the view by some anthropologists that 'we open our minds and our bodies to other people's epistemologies' (Rose 2007, p. 88), and that we need to 'question our modern sense of the real', to overcome the 'pervasive anthropocentrism in modernity' (Apffel-Marglin 2011, p. 13). Turning to other cultures is inherent in the Aboriginal and Torres Strait Islander cross-curriculum priority of the Australian Curriculum, but how the spiritual connection to the earth is addressed is open to interpretation by teachers. Most of the world's peoples live in non-cosmopolitan, non-modern places and rely upon ritual and traditional knowledge to lead rich and rewarding lives (Apffel-Marglin 2011). It made sense to include this topic in the semi-structured interview questions and our data show that student and teacher beliefs support traditional knowledge being integral to the concept of student as eco-philosopher. Our data show that respondents believe that Australian aboriginal peoples are closely connected to the land, and that this relationship to country led to more sustainable land management practices compared to European settlement.

The study reveals that secondary students in an environment club have an understanding of the various, complex factors at play in our world that are affecting both the natural environment and their own biographical trajectories. They are aware of the social norms for their age group and how these norms influence lifestyle and consumer behavior that might negatively impact on the limited resources of the earth. They have a distinct awareness of their unique position within the school community, a state of mind that is generally altruistic and ego free. This was not a result that we pre-empted in our interview questions nor self-reported by the students. The observation was derived from the field notes taken in addition to the audio transcripts. Environmental disasters on the opposite side of the planet adversely affected the students and this was driven by a concern for wild animals. The students were able to reflect upon their place within their own families, as well as within the school community, and they used this to create their ecological selves as well as robust eco-philosophical views. We postulate that this ontological analysis of the data is a central feature of student lives and that this is important to the concept of student as eco-philosopher.

Conclusion

In this paper we developed a theoretical model for the student as eco-philosopher, based on the findings from our research with students and teachers in a Victorian state secondary school. Our research indicates that students in secondary schools can embrace philosophy at abstract levels, and that this proposition is supported by responses from students in our cohort school. We also show that, whilst Naess's self-realisation is a metaphysical experience that not all scholars would agree can easily be defined, the notion of self and the abstract sense of being are concepts that young people can and do embrace. We conclude from our work that these students reflect upon their existence within the ecological world and generate an environmental philosophy that is robust, personal and well developed. In the process of developing an ecological self, the students demonstrate attributes towards becoming the student as eco-philosopher. Schools should be encouraged to establish environment clubs and provide opportunities for students to engage in self-realisation that enables them to develop their ecological selves.

References

- Apffel-Marglin, F (2011) *Subversive spiritualities. How rituals enact the world*. Oxford University Press, New York, NY.
- Bartley, G & Worley, P (2011) Primary school philosophy. *Philosophy Now Radio Show #13*. Resonance FM, London, 26 October.
- Bartley, G & Worley, P (2012) Philosophy in education with Peter Worley, Michael Hand and Stephen Boulter. *Philosophy Now Radio Show #30*. Resonance FM, London, 13 March.
- Boeije, H (2010) *Analysis in qualitative research*. SAGE, Los Angeles, CA.
- Brett, M (2003) Philosophy 4 Skool. *The Philosopher*, 91(2). <http://www.the-philosopher.co.uk/philinschool.htm>
- Callicott, JB (1995) Intrinsic value in nature: A metaethical analysis. *The Electronic Journal of Analytic Philosophy*, 3(Spring). <http://ejap.louisiana.edu/EJAP/1995.spring/callicott.abs.html>
- Carson, RL (1962) *Silent spring*. Houghton Mifflin, Boston, MA.

- Cohen, M & Naylor, L (2008) Philosophy in schools. *The Philosopher*, 96(1).
<http://www.the-philosopher.co.uk/p4cgallions.htm>
- De Lamater, JD, Myers, DJ & Collett, JL (2015) *Social psychology*. 8th edn, Westview Press, Boulder, CO.
- Department of the Environment Water Heritage and the Arts (2010) *Evaluation of operational effectiveness of the Australian sustainable schools initiative. Final report*. Department of the Environment Water Heritage and the Arts, Sydney.
- Devall, B & Sessions, GS (2007) *Deep ecology: Living as if nature mattered*. Gibbs Smith, Layton, UT.
- Dewey, J (2012) *Democracy and education*. Start Publishing, New York, NY.
- Dobson, A (2007) *Green political thought*. 4th edn, Routledge, London.
- Dobson, A & Bell, D (2006) Introduction. In A Dobson & D Bell (eds), *Environmental citizenship*. The MIT Press, Cambridge, MA, pp. 1-18.
- Drengson, A & Devall, B (eds) (2010) *The ecology of wisdom. Writings by Arne Naess*. Counterpoint, Berkeley, CA.
- Federation of Australasian Philosophy in Schools Association (2014) *FAPSA Home page*. Viewed 23 August 2014. <http://fapsa.org.au>
- Fox, W (1990a) On the interpretation of Naess's central term "self-realization". *The Trumpeter Journal of Ecosophy*, 7(2), pp. 98-101.
- Fox, W (1990b) *Toward a transpersonal ecology: Developing new foundations for environmentalism*. Shambala, Boston, MA.
- Garrison, J, Neubert, S & Reich, K (2012) *John Dewey's philosophy of education. An introduction and recontextualization for our times*. Palgrave MacMillan, New York, NY.
- Glaser, BG & Strauss, AL (1967) *The discovery of grounded theory. Strategies for qualitative research*. Aldine, Chicago, IL.
- Gough, A & Gough, N (2010) Environmental education. In C Kridel (ed) *The encyclopedia of curriculum studies*. SAGE, Thousand Oaks, CA, pp. 339-343.

Greenhalgh-Spencer, H (2014) Guattari's ecosophy and implications for pedagogy. *Journal of Philosophy of Education*, 48(2), pp. 323-338.

Guattari, F (2000) *The three ecologies*. (trans I Pindar & P Sutton), The Athelone Press, London, UK.

Harvey, L (1990) *Critical social research*. Uwin Hyman, London, UK.

Haynes, F (2014) Teaching children to think for themselves: From questioning to dialogue. *Journal of Philosophy in Schools*, 1(1), pp. 131-146.

Haynes, J (2003) *Children as philosophers: Learning through enquiry and dialogue in the primary classroom*. Routledge, London.

Kennedy, D (2012) Lipman, Dewey, and the community of philosophical inquiry. *Education and Culture*, 28(2), pp. 36-53.

Lipman, M (1995) Moral education higher-order thinking and philosophy for children. *Early Child Development and Care*, 107(1), pp. 61-70.

Mathews, F (1991) *The ecological self*. Routledge, London.

Ministerial Council on Education Employment Training and Youth Affairs (2008) *Melbourne Declaration on educational goals for young Australians*. Carlton South, Victoria.

Naess, A (1973) The shallow and the deep, long-range ecology movement. A summary. *Inquiry*, 16(1), pp. 95-100.

Naess, A (1988) Self realization: An ecological approach to being in the world. In J Seed, J Macy, P Fleming & A Naess (eds), *Thinking like a mountain: Towards a council of all beings*. New Society Publishers, Philadelphia, PA, pp. 19-30.

Naess, A (1995) Self-realization. An ecological approach to being in the world. In G Sessions (ed), *Deep ecology for the 21st century. Readings on the philosophy and practice of the new environmentalism*. Shambala, Boston, MA, pp. 225-239.

Naess, A (2005a) Gestalt thinking and Buddhism. In HG Glasser & A Drengron (eds), *The selected works of Arne Naess*, vol. 8. Springer Netherlands, pp. 1839-1849.

- Naess, A (2005b) Spinoza and attitudes toward nature. In HG Glasser & A Drengson (eds), *The selected works of Arne Naess*, vol. 10. Springer, Netherlands, pp. 2647-2661.
- Naess, A & Rothenberg, D (1989) *Ecology, community and lifestyle. Outline of ecosophy*. New York, NY.
- Naess, A & Sessions, G (1995) Platform principles of the deep ecology movement. In A Drengson & Y Inoue (eds), *The deep ecology movement. An introductory anthology*. North Atlantic Books, Berkeley, CA, pp. 49-53.
- Nayar, PK (2014) *Posthumanism*. Polity Press, Cambridge, UK.
- Primary Ethics (2014) *Primary ethics: Just think about it*.
<http://www.primaryethics.com.au/>
- Rolston, H (1994) Value in nature and the nature of value. In R Attfield & A Belsey (eds). *Philosophy and the natural environment*, Cambridge University Press, Cambridge, pp. 13-20.
- Rose, DB (2007) Recursive epistemologies and an ethics of attention. In J-GA Goulet & BG Miller (eds), *Extraordinary anthropology*. University of Nebraska Press, Lincoln, NE, pp. 88-102.
- Rothenberg, D (1995) A platform of deep ecology. In A Drengson & Y Inoue (eds), *The deep ecology movement: An introductory anthology*. North Atlantic Books, Berkeley, CA, pp. 155-166.
- Sapere (2014) *Sapere. Philosophy for children, colleges, communities*. Viewed 12 November 2014. <http://www.sapere.org.uk>
- Szabo, P & Hedl, R (2011) Advancing the integration of history and ecology for conservation. *Conservation Biology*, 25(4), pp. 680-687.
- Teaching Children Philosophy (2014) *Main page*. Viewed 6 August 2104.
http://www.teachingchildrenphilosophy.org/wiki/Main_Page
- Topping, KJ & Trickey, S (2007) Impact of philosophical enquiry on school students' interactive behaviour. *Thinking Skills and Creativity*, 2(2), pp. 73-84.

Trickey, S & Topping, KJ (2004) 'Philosophy for children': A systematic review.
Research Papers in Education, 19(3), pp. 365-380.

Victorian Curriculum and Assessment Authority (2014) *Philosophy*. Viewed 23
August 2014..

<http://www.vcaa.vic.edu.au/Pages/vce/studies/philosophy/philosophyindex.aspx>

Appendix I: Student Interview**Deep Ecology and Secondary Schooling project****List of questions for students****Semi-structured interview**

- Q1. Can you tell me what motivates you to be involved in sustainability and perhaps a little bit about yourself?
- Q2. How does it make you feel when you work on an environmental problem and end up either solving or reducing the problem?
- Q3. Does working towards a solution make you think differently, more carefully about what impact you and the people around you have on the planet?
- Q4. Thinking overall, about teachers and other students, if some don't really care that much about the environment, how do you think and feel about that?
- Q5. Some people try to solve environmental problems just so that we can have more resources for humans. What do you think?
- Q6. Some people called *Deep Ecologists* think we should not keep using more and more resources, and should put the Earth first. What do you think?
- Q7. Does being involved in sustainability change the way you think in general? Are you more inclined to be critical if you think an action is harmful to the Earth?
- Q8. Some researchers believe that Aboriginal Peoples and Native Americans had a more spiritual and stronger relationship to the land and they took better care of the land. Do you agree or disagree? Can we learn from this?
- Q9. Do you agree with the idea that First Nations Peoples (Aboriginal) can be described as the *first ecologists*?
- Q10. Are many of the teachers at the school as keen on sustainability as Mr. 'Aldebaran'?
- Q11. You will be shown a picture of the DES (deep ecology spectrum) scale. Can you tell me where on this line you might situate yourself with 1 = anthropocentric (humans first) and 10 = ecocentric (earth first)? THIS DIAGRAM WILL BE EXPLAINED TO YOU AT INTERVIEW.

Appendix II: Teacher Interview**Deep Ecology and Secondary Schooling project****List of questions for teachers****Semi-structured interview**

- Q1. Can you tell me how you became involved in sustainability education and a little bit about your recent teaching in the area?
- Q2. How does it make you feel when you and your students work on an environmental problem and contribute to reducing the problem? Do you feel more connected to the Earth?
- Q3. Do you think that students acquire a kind of ecological wisdom, perhaps a more robust personal ecological philosophy by studying sustainability?
- Q4. When you think of the earth's ecosystems as consisting of physical elements, human and non-human elements, do any one of these deserve priority? How does this affect your approach to sustainability teaching?
- Q5. Do you think that science has the answer to all of our sustainability problems? Is there another way of tackling planetary health for future generations?
- Q6. Some people try to solve environmental problems just so that we can have more resources for humans. What do you think about this approach? Explain.
- Q7. Some people called *Deep Ecologists* think we should not keep using more and more resources, and should put the earth first. What do you think?
- Q8. Some researchers believe that Aboriginal Peoples and Native Americans had a more spiritual and stronger relationship to the land and they took better care of the land. What do you think? Can we learn from this?
- Q9. Do you agree with the idea that First Nations Peoples (Aboriginal) can be described as the *first ecologists*?
- Q10. In teaching children about Aboriginal identity with country as described in the curriculum, how do you best convey this relationship to students and do they truly understand what it means?
- Q11. When you read the AusVELS content descriptors, how do you go about giving them meaning (i.e. translate them into teaching practices)?