

Kindergarten children's introduction to sustainability through transformative, experiential nature play

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IN TASMANIA, KINDERGARTEN IS part of the Department of Education and is available to all children who have turned four at the beginning of the year. The focus of this article is the development of global citizenship within the kindergarten setting through the implementation of the learning emphases of Global Education (GE). The particular emphasis selected is sustainability education. This paper explores ways through which nature play and concepts of sustainability are central to and can be developed and actioned by young learners in their journey to becoming global citizens. This paper outlines the case for implementing global education in the early years, followed by a focus on those values and pedagogies for kindergarten-aged children that link nature play with sustainability. Practical examples of successful pedagogy are presented, followed by recommendations for teachers for achieving the goals of increased contact with the natural world in early childhood education.

Introduction

Children no longer inhabit a world consisting of merely a town or a state or a nation. Their world is truly global and this is the world for which their education must prepare them. Spring (2007) proposes that 'We are witnessing ... the dawn of an entirely new way of living and working never experienced before' (p. 214). As other commentators have suggested, 'we are living, not in an era of changes, but in a change of eras' (Ordonez & Maclean, 2007, p. 214). The Melbourne Declaration (MCEETYA, 2008) requires students to become active and informed citizens who are responsible both globally and locally. Likewise, the Australian Curriculum requires learners to identify as local and global citizens and to be able to sustain and improve their environments. It recognises that successful learners understand their place as local and global citizens, sustaining and improving both natural and social environments (ACARA, 2010). The *Early Years Learning Framework* (EYLF) calls for educators to foster an understanding and respect for the natural environment and the interdependence between people, plants, animals and the land (DEEWR, 2009). These documents make clear educators' responsibility for providing programs that are committed to developing future citizens who have the ability to contribute to a 'more peaceful, just and sustainable world' (Commonwealth of Australia, 2010, p. 2).

Global perspectives: A framework on global education for Australian schools (Commonwealth of Australia, 2010) integrates global perspectives within and across disciplines and provides learners with opportunities to develop the skills to achieve the goals stated in the Melbourne Declaration (MCEETYA, 2008). Global education encourages an open-minded approach 'leading to new thinking about the world and a predisposition to take action for change' (p. 2). The importance of global education in the early years should not be underestimated as this is where the foundations of a learner's world view, as mediated by the school, are laid down. Beare's (2002) proposition that everyone needs a set of enabling beliefs to provide a framework for interpreting the world, is a valuable way to conceptualise the child's experience of Kindergarten. It is important, at this early stage, to ensure that all children have the widest experience of the world that we can provide. For example, taking them beyond the boundaries of the classroom and the school, physically and imaginatively, provides opportunities to broaden those experiences.

Within the global education framework (Commonwealth of Australia, 2010) there are five learning emphases—interdependence and globalisation; identity and cultural diversity; social justice and human rights; peace building and conflict resolution; and sustainable futures. These five interconnecting learning areas provide a

framework for learners to build on their knowledge and skills, consider values and attitudes, develop skills and processes and allow for actions and participation. This discussion will focus on the aspect of sustainable futures. The authors assert first that nature play is central to developing responsible global citizens acting for sustainability and second, that early childhood educators have a particularly important role in establishing firm foundations for responsible global citizenship and that one way to achieve this is through play in nature (Barlow, 2010; Orr, 2004; Sax, 2001).

Nature play

For the purposes of this paper, nature play is described as frequent periods of uninterrupted time spent in nearby nature in outdoor natural settings which have multiple and varied natural elements. These spaces are ideal because they are endlessly rich in play potential. They ignite the imagination, engage the senses, create social bonds and inspire a sense of awe and wonder for the natural world. Nature play is fundamentally engaging, usually open ended and child-initiated, with children setting the agenda and choosing the materials. Practitioners use holistic, experiential, inquiry-based pedagogies. While nature play is focused mainly on the outdoors, it blurs the boundaries by bringing the outdoors in and the indoors out. Nature play in the school context emphasises topics related to nature and the use of natural toys and materials and the previously mentioned pedagogies.

Literature review

In this section, the general notion of sustainability is discussed in relation to present curriculum documents and educational theory, followed by an examination of the pedagogy of nature play and its role in early childhood education.

The understandings related to sustainability are of paramount importance to the children currently being educated, as they will face vast and unpredictable global challenges throughout their lives (Hill, 2007; Mansilla & Gardner, 2007; Ordonez & Maclean, 2007; Spring, 2007). The United Nations Decade of Education for Sustainable Development (UNESCO, 2005) suggests that education for sustainable development is about learning to 'respect, value and preserve the achievements of the past; appreciate the wonders and the people of the earth; live in a world where all people have sufficient food for a healthy and productive life; assess, care for and restore that state of the planet; create and enjoy a better, safer more just world and be caring citizens who exercise their rights and responsibilities locally nationally and globally' (p. 1). This statement is relevant for education in general; however, restoring the state of the planet is not yet the responsibility of kindergarten-aged children.

Though children may choose to be active in sustainable projects, they should, as Sobel (n.d) suggests, 'come to love the world before being asked to heal its wounds' (n.p.). Play in nature develops the familiarity upon which empathy for the natural world is built (Kals, Schumacher & Montada, 1999) and kindergarten programs informed by a global perspective aim to establish from the beginning, the values and predispositions for advocacy for sustainability (Chawla, 2006), which are so integral to responsible global citizenship. In practice, these transformative aims are attainable. Educators striving for transformation may be buoyed in their challenge by the Commission for the Future's 1989 statement that, 'the future is not some place we are going to, but one we are creating. The paths to it are not found but made' (Calder & Smith, 1991, p. 207).

How then, may education contribute to making better paths and thus create a more sustainable future?

The answer to this question sits firmly in the realm of global education which has the capacity to develop global citizens who actively participate in a responsible way for the sustainability of their world. Spring (2007) builds on the progressive tradition of prominent developmental theorists such as Dewey, Froebel, Montessori, Malaguzzi, and Freire that encourages students to 'be the subjects of history as opposed to mere objects of history. As subjects of history, they can change the course of human events by consciously making choices' (p. 84).

Global education is informed by progressive worldviews such as transformative learning and ecopedagogy, a view advocating for all living and non-living elements of the planetary ecosphere. Ecopedagogy grew out of critical pedagogy developed by Freire (1967) and gives priority to socially constructed, experiential learning, much of it in nature. Emotional and expressive responses are respected as valid ways to understand the world. Being ecoliterate suggests an understanding of the principles of ecology and the application of them for nurturing healthy communities. It includes caring about the places where we live and the people and creatures in them (Center for Ecoliteracy, 2011). Global Education supports the implementation of ecopedagogy and cultivates the understandings, dispositions and competencies for sustainable and humanitarian lifestyles.

The Australian Curriculum and the *Early Years Learning Framework*

In contrast to ecopedagogy which considers our relationships with the rest of the world, 'much of current debate about educational standards and reforms, is driven by the belief that we must prepare the young only to compete effectively in the global economy' (Orr, 2004, p. 2). The cross-curriculum priorities of the Australian Curriculum do reflect ecological education

particularly within the sustainability priority. However, these perspectives are not afforded the status of results-oriented assessment which, instead, is linked to performance standards in a range of separate disciplines. The more dominant, discipline-centric aspect of the Australian Curriculum, influenced by the human capital model 'fragments the world into bits and pieces' (Orr, 2004, p. 11) and stands in sharp contrast to an ecoliterate systems perspective.

Ecopedagogy principles are clearly evident in the EYLF. This framework is more consequent in its representation of the ethic of complementarity and interconnectedness than the Australian Curriculum. It directs 'educators to foster children's capacity to understand and respect the natural environment and the interdependence between people, plants, animals and the land' (DEEWR, 2009, p. 16) and the EYLF Outcome 1.4 requires that 'children learn to interact in relation to others and the natural world with care, empathy and respect' (DEEWR, 2009, p. 14). Moreover, importance is placed on play experiences in nature, and Outcome 2 intends for children to 'become socially responsible and show respect for the environment' (DEEWR, 2009, p. 29).

Early Childhood Education for Sustainability (ECEfS)

Keeping in mind that enabling young people to participate in shaping a better shared future for the world is at the heart of global education and ecopedagogy, the way we teach is as significant as what we teach. Educators must strive to engage children at the highest feasible rung of Hart's ladder of participation (cited in Browett & Ashman, 2008, p. 25) regardless of the age of the children. The use of varied thinking strategies engages learners and cultivates a disposition for higher order thinking. ECEfS promotes teaching principles which are framed for young learners (Davis, 2010), offering them experiential, multi-sensory, project-based inquiries. Natural settings are often the stage for these inquiries. Likewise, problem solving and socially constructed learning is central to ECEfS, both indoors and out (Woyke, 2004). Sustainability's emphasis on systems thinking in which 'students are encouraged to see phenomena and events as bound up in complex, interactive and multi-layered webs in which relationship is everything' (Pike & Selby, 1988, p. 34) typifies the holistic approach embedded within the vision of ECEfS and, indeed, Global Education.

Play

Similarly, play pedagogy, in which children are encouraged to actively explore and experiment, is central to ECEfS (Edwards & Cutter MacKenzie, 2011; Elliott & Davis 2004; Grant & Littlejohn, 2005). It is based on the theories of Dewey and Piaget who contended that

children learn best when they are allowed to actively explore their environment. Dewey considered that one of the problems with schools was that they were not based on natural contexts but were fragmentary and artificial, to the detriment of children's ability to understand systems and processes. In schools where children are apart *from* nature instead of a part *of* nature, they learn that nature is something 'to watch, to wear, to consume, to ignore' (Louv, 2005, p. 2). Froebel too, claimed that experiential play in nature is essential to child development and that 'the outdoor environment and activities should be as carefully planned and implemented as those indoors and both should focus on children's interaction with the natural world' (Wilson, 2008, p. 17). Similarly, the Reggio Emilia approach recognises the environment as the 'third teacher' and Gardner warned educators not to overlook learning opportunities for children to develop 'naturalistic intelligence' (cited in Vardin, 2003). Many contemporary education theorists recognise that a biodiverse perspective is necessary as biodiversity is in global crisis and they see primary experience in nature as an urgent response to this (Chawla & Cushing, 2007; Orr, 2005; Rivkin, 2002; Woyke, 2004). Australian leaders in this field highlight the pivotal role played by nature play in the formative years for laying foundations for future responsible stewardship of the natural and social worlds (Davis & Cooke, 2007; Elliott, 2008). This viewpoint is supported by international early childhood educators (Chawla, 2006; Pramling-Samuelsson & Kaga, 2008).

Context

This project describes the process whereby nature play was increasingly incorporated into a Kindergarten program in a middle-class suburb in Hobart, Tasmania. Children attend Kindergarten sessions for 15 hours per week. In this school community, children are strongly supported by their parents to attend school and in this class, attendance is consistently high.

Responding to ECEfS' purpose of reducing ecological burden, the Kindergarten classroom in this study offers a generous supply of open-use, natural play materials such as sand, clay, wheat, seed pods, flowers, gumnuts in addition to recycled items—fabrics, old tyres, cardboard boxes, springs etc. The children often bring materials to contribute to class collections. These materials encourage creativity and lend themselves to child-directed play, in addition to many structured learning opportunities in numeracy, language, science and the arts. The Kindergarten program strives to embody the principles of ECEfS in its big ideas as well as in the minutiae of its operation. Considering small children's predisposition to emulate the adults in their lives, 'the power of examples over words' (Orr, 2004, p. 13) is not to be underestimated. Therefore, while some plastic, commercially produced toys are available, those that

reinforce stereotypes, are single-purpose, culturally narrow, or inculcate children in consumerist ideology are avoided.

There are three zones in this Kindergarten context for nature-based play—the classroom, the school playground, including a vegetable garden, and natural bushland reserves near the school. Although the program ranges over these areas, this study focuses largely on the third arena. The project commenced with an investigation by the classroom teacher to determine the Kindergarten class's understanding of nearby nature, guided by the belief that children have a right to play outdoors (Moore, 1997) and out of concern that they may develop 'nature deficit disorder' (Louv, 2005). Children were shown pictures from popular children's culture and pictures of local flora and fauna. Overwhelmingly, these children were more familiar with all the superheroes and characters of digital media than the flora and fauna of their natural world. They could relate many details of the characters and though most children recognised the more well-known Australian animals, few could identify a gum tree, or recognise carrots or beetroot or a kookaburra. This may have indicated that much of their time is indeed spent in front of screens rather than outside in nature, and supports research by Martin (2011) that children are spending excessive time in front of screens. Moreover, many playground games were informed by the superhero narrative and tended to be confrontational, exclusive, hierarchical and often ended in tears. Inspired by the idea that nature, in contrast to TV, does not steal time but amplifies it (Louv, 2005), it was decided that an increase in nature play would enrich their lives and contribute to transformative education.

Providence Valley Reserve is a living laboratory which offers experiential learning in all the following ways and more—digging in sand, dirt and mud, climbing, tunnelling, photographing, balancing, picnicking, finding new plants in different seasons, hefting and lifting heavy items in teams, inventing places to use as secret spaces, picking and playing with flowers, searching under bushes, bark, rocks and logs for insects and other creatures, relaxing on the grass in the sun or in the shade of the trees, constructing artwork with loose materials, building shelters, playing in and experimenting with water, imagining themselves as frogs or monkeys or Indigenous children, climbing up and down slopes, sitting and soaking up the beauty of the surroundings, listening to the water, the birds and the wind in the trees, smelling the fresh forest fragrances. The reserve is an ideal, authentic, natural environment which includes multiple features of a stimulating environment, with various 'natural elements [which] inspire the most pretend and symbolic play' (Dyment & Reid, 2011, p. 173) such as rocks, logs, caves, a wide variety of vegetation types changing seasonally, steep to gentle slopes and even a little watercourse.

The other natural area occasionally visited was Knocklofty Reserve, also within walking distance from the school. It affords different play and learning opportunities, namely a wide vista and a dry, rocky ecosystem. Exploring and becoming familiar with nearby nature deepens children's connection to their world. These walks enabled children to begin to know their biotic and social community and understand their physical place in the world (Greenman, 1999; Louv, 2005). Knocklofty Reserve allowed the children to see how their landscape is connected from the mountains to the sea. From the Knocklofty vantage point, the children could see the ocean, the river, Hobart CBD, suburbs where they live, Providence Valley Reserve, their school, where the water comes from and where it goes. They took photographs to document their experiences. Upon return to school, children revisited their impressions using the sandpit, playdough and blocks to construct representations of their physical environs.

Methodology

The lens through which the methodology was employed reflected the ecopedagogy principles outlined in the literature review. Most importantly, it required the researchers to privilege the child's perspective on their learning through mind mapping and child-led investigations in the outdoors.

Suitable natural areas with a wide variety of landscape features were sought within walking distance from the Kindergarten for this project to be undertaken. A benefit/risk analysis of the most useful site was undertaken by staff with the understanding that 'the adult role is to remove hazards that the children do not see, not the risk within the play. For example, unseen spikes or sticks in jumping areas. But it is not our role to remove the challenges that children see and choose to undertake' (Warden, 2011, p. 13). Strategies were developed and recorded to deal with areas such as road crossings or slippery logs where potential hazards were identified. The benefits of the various aspects of nature play afforded by the site were also listed (Bundy et al. 2009). Likewise, it was noted that the benefits provided by reasonable risks are that children learn 'self-confidence, emotional resilience, and the ability to self-assess risk situations' (Warden, p. 13). The families were invited to view this document and to participate in planning, implementing and evaluating the play sessions through discussions with staff on an ongoing basis. The children were then taken on an initial visit to the reserve to familiarise them with the playspace. The class responses informed the teacher of the focus for future visits.

Implementation

Excursions were facilitated throughout the year to the nearby natural playspace. Children, teacher and parents walked to and from the reserve. Outings took

place weekly or fortnightly as the weather permitted. Families were notified the day before and invited to join excursions, which were of about two hours' duration.

Prior to expanding to the outdoor play, a carefully planned nature play program was developed. This process involved determining specific goals and outcomes, developing a timeframe, considering ways to collect data, and determining ways of interpreting data.

Based on the premise that the qualities, beliefs and roles of the early childhood educator are important to the success of ECEfS, the adults working with this class planned for play and reflected on their practice. Social learning theory highlights the role of adults in nurturing children's values by modelling, sensitivity, interpretation and reinforcement (Edwards, Fleer & Nuttall, 2008). The author and co-workers (teacher assistant, parents) are guided by two models in their role as play providers. The first is as a play-worker, supporting rather than directing children. Engaging in nature play does not automatically ensure that all curriculum content and learning outcomes will be covered. On occasions therefore, children were guided to expand their games if their play became repetitive. Nature play allows the educators the time and flexibility to observe children's interactions and intervene when deemed appropriate, to challenge children to take up other opportunities, to guide, or to maximise situations where teachable moments occur.

The second role that educators adopted in this project is that of a companion, as described by Carson (1984). 'If a child is to keep alive his inborn sense of wonder' she writes, 'he needs the companionship of at least one adult who can share it, rediscovering with him the joy, excitement and mystery of the world we live in' (p. 45). The authors share the belief that everyone working with small children 'should seek to develop qualities reflecting eagerness, energy, curiosity, and playfulness. They should regard the issue of increased outdoor play as one of major importance, with significant repercussions for future generations' (Clements, 2004, p. 77). Outdoors, the adults convey value messages about our interdependence with other people and species, both physically and verbally. It was observed that, whereas nature's playground offers opportunities for adults to 'teach less, share and experience more, build moments of joyful play [and] heightened experiences of the life around us, empathy for living things and calm reflection' (Barlow, 2010, p. 24), the indoors had been traditionally the stage for the maths and literacy preparedness curriculum in which the teacher is 'focused on order and routines, appearances and paperwork, agendas and lesson plans. There is no serendipity, no wonder, no surprise' (Miller & Almon, 2009, p. 54). Play in natural environments excites children more than the indoors, therefore 'children are entitled to expect that adults involved in play provision will understand and be

responsive to cues that they may be in need of comfort or reassurance as a result of their play' (NPFA, 2000). There were always adults nearby to reassure and support children when called upon.

Ecological education's emphasis on active learning in which children's agency is respected could be seen in the activities engaged in by the class. In one episode, the adults, sensitive to the children's needs and to the safety issues, supported an ever-growing group of self-motivated students to develop an idea of building a bridge across a small stream. Here in the natural bush setting, the loose parts play theory (that the more loose parts that are available, the more creative, engaging and enduring the play) was evident. The children added more and more details as the play episode developed. They even checked the structure from all angles. Eventually they had collected enough sticks and bark to make a weight-bearing bridge 'for winter when the creek is high and a lower crossing for summer'.

Another topic of interest which arose from discussions in Providence Valley Reserve was nocturnal animals. On one occasion a large group of children built a dam to provide water for the nocturnal animals. This interest initiated a learning sequence in the class about local animals that come out at night. A night excursion with families was organised with Parks and Wildlife called 'Where the wild things are'. After a guided night walk, there was a campfire with drinks and marshmallows and the class performed a song of their invention called 'nocturnal animals'.

Data collection/analysis

The large numbers of adults who accompanied the fortnightly outings made it possible for the teacher to make and record detailed observations of the 25 children at play throughout the year. Data was collected by taking field notes while informally talking with the children and by offering them opportunities to tell their story. Photographic records and children's comments during the excursions, verbal and artistic responses to their experiences after returning to school, video interviews and parents' observations all contributed to the data upon which the project outcomes were based.

The data were interpreted against previous observations of the class and against readings in the field of Global Education and ECEfS. After collection, data was considered in light of the principles of ecopedagogy and ECEfS previously discussed.

Findings

After the first visit, the children constructed a mind map of the possible types of play they might engage in and what equipment they would need for each plan. This

mind map was referred to before each outing to help with their planning and was refined and added to from time to time. Children often suggested a topic related to classroom learning such as an alphabet hunt or a mini-beast search, or they suggested collecting materials for a project. At other times the focus was on a game that they had been discussing or a theme for photography. On some occasions they had specific goals and at other times activities simply evolved.

The adults were able to observe a transformative effect from these nature play experiences. Over the course of the year, with the expansion in nature play, the children increasingly chose a wider range of games and were playing more fairly. The Kindergarten learning community improved in the outdoors as there was a noticeable reduction in children coming to the adults telling minor tales on their classmates. At no time did any child report being 'left out', unlike in the school grounds. The play episodes in the bushland were more complex and enduring than those indoors. Adults working with the class observed children depending on each other more, engaging in more teamwork and supportive behaviours and being more inclined to interact with children outside their usual playground group. The expanded repertoires of unstructured nature play engaged all the developmental domains: cognitive, physical, emotional; as well as the academic domains: language, science, numeracy; and also the aesthetic and spiritual domains of the children or, as Bagot (2005) suggests, nature play benefits their aesthetic, athletic and academic development. These results support the premise that children learn best when surrounded by a wide variety of opportunities and with stimulation of the senses and the imagination (Grant & Littlejohn, 2005; Rivkin, 2002).

Furthermore, child–environment relationships were strengthened as were child–child and child–adult relationships as a result of the leisurely pace of unstructured play. A cornerstone of responsible global citizenship is respect for all human and non-human species and this quality certainly became evident in the class.

Overall physical capabilities were improved. One child who was reluctant to even venture outdoors in first term, developed his confidence through nature play and was constantly on the move in Providence Valley Reserve, developing his balance and physical fitness. When the class was immersed in the more physically challenging natural environment, social interaction was observed by teachers to be more intense, with children focusing on projects for extended periods enabling them to develop complex ideas. Vygotsky's social construction of knowledge was more apparent during these cooperative play episodes as each child built upon the contributions of their playmates. This observation is supported by recent research and theory which 'tell us

that concepts actually get their meaning by being used in social practices. Concepts and social actions are like two sides of the same coin' (Edwards et al., 2008, p. 9). Additionally, as the social, cognitive and physical demands are often greater outdoors, opportunities to develop resilience arose more frequently. Children showed a great deal of perseverance with their outdoor ventures.

While children were generally more active in Providence Valley, they could also be observed in wonderfully peaceful moments of solitude, just gazing at the water or at the view, or transfixed by some small creature. Feelings of peace arising from nature play were apparent long after returning to the classroom. As contact with nature increased, restless children demonstrated increased attention capacity outside and inside the classroom. Many children's 'naturalistic intelligence' carried over from the outdoors into classroom projects. The findings of this study concur with numerous reports (Elliott & Davis, 2009; Kaplan, 1995; Korpela, 1992; Strife & Downey, 2001; Townsend & Weerasuriya, 2010), that leafy green outdoor settings have been shown to have a restorative effect, allowing us to return to tasks and other stimuli refreshed and focused, therefore benefiting both the children and staff and, in the case of this study, family members. The families expressed appreciation of this restorative effect and parents even took time off work to take part in the outings. Some of the comments from parents were that 'this is how school should be', and 'I had no idea that this great place was even here and now we often come here on the weekend with friends to play'. Parents and children sometimes emailed photos taken in Providence Valley on the weekends to show something they'd found, something they'd played with or some changes they'd noticed. One little boy reported that on the weekend he'd gone into one of the caves and 'found dinosaur bones!'. A couple of families agreed that the highlight of the school year had been the nocturnal walk.

The focus on nearby nature for place-based education and play added to the sense of attachment to place. In a reflection on what children enjoyed most about their first year in school, our excursions rated very highly in the children's responses. In another reflection about their favourite things about Providence Valley Reserve, their drawings and writing represented a wide range of activities and interests.



Evie: *I like sticking forget-me-nots on everybody.*



- Emily: *I like pretend fishing off the bridge.*
- Harrison: *I like building shelters with sticks and leaves.*
- Harry: *I like looking up at the cliffs. I want to go in the caves one day.*
- Henry: *I like pretending I'm a hunter.*
- Imogen: *I like climbing up the big hills.*
- Louis: *I like getting big sticks to make a tent.*
- Mat: *I like looking after the bugs.*
- Matilda: *I like looking for flowers.*
- Mia: *I like looking for flowers.*
- Oliver: *I like building bridges across the creek.*
- Owen: *I found a vegetarian snake and cooked it for Mrs Haas.*
- Zoe: *I like climbing on the tree stump (even though she got stuck there).*

Mat's comment shows that he is beginning to acquire environmental values and dispositions, Zoe's comment shows resilience and an enjoyment of overcoming difficulties, Henry's and Owen's comments reflect the complexity of their play scenarios, Evie's drawings and comments show the joy in these nature experiences. All the comments show evidence of Wilson's (1984) biophilia, which according to researchers (Bögeholz, 2006; Chawla, 2006), is a strong indicator of later advocacy for sustainability.

Issues for policy, pedagogy and practice

Returning to authentic places in nature allows children to become more ecoliterate in the concepts of change, growth and cycles. Children observed seasonal changes to Providence Valley. Some children grow and learn by looking and spending extended periods simply observing. There were some children who tire of the excitement earlier than others and just needed a rug to rest on and some books to read, or some paper and crayons for drawing. Shared reading of stories about the outdoors, in the outdoors, was a particularly favourite time for the class.

This study is unequivocal in the strength of its conclusion that, in the best interests of the health of people and the health of the world, education for sustainability beginning in the early years with education in nature, must be acknowledged as an essential part of Global Education.

To support a culture of nature connectedness, the authors make the following recommendations based upon the above findings:

- integrate frequent outdoor and nature-based experiences throughout school curricula
- ensure participatory pedagogies are integrated into practice
- blur the boundaries; bring the outdoors indoors (plants, animals, natural materials) and the indoors outdoors (take play- and subject-based activities and inquiries outdoors, read stories under trees, count peas in the garden, eat outside)
- convert playgrounds to playspaces with many natural elements, include a vegetable patch and integrate their use across curricula
- up-skill grounds attendants to maintain playspaces with a high degree of naturalness, and to ensure that loose parts are available for play
- educate families in the importance of nature play and involve them in outdoor activities
- seek out and publicise all child-friendly naturalised places in the local neighbourhood
- include nature play theory and practice as part of all undergraduate teacher training, with particular emphasis on those in ECE.

The authors recognise that there is a greater need for research (particularly within the Australian context—which is dramatically different from a lot of the northern European experiences and subsequent publications/research) to support these findings. Queries that arose in this study that need further investigation related to the long-term benefits to children's health and wellbeing, as well as determining if nature play contributes to long-term pro-environmental behaviours by participants.

Conclusion

In Providence Valley Reserve the children watched birds and shadows, spent quiet moments in peace and rowdy moments of excitement, searched for insects and fungi, tickled the water on its journey from the mountains to the sea, clambered over fallen logs, collected gumnuts and created art with their found treasures. They laboured together to build breathtaking shelters and bridges, breathed deeply of the air, lay on their backs and watched the cloud pictures, lay on their tummies and watched the ants marching through the grass. They walked together and played together, 'learning the sweetness that comes with knowing the terrain' (Sobel). Hopefully, this gentle beginning to learning about sustainability reflects what Thoreau (cited in Sobel, n.d.) imagined when he wrote, 'the more slowly trees grow at first, the sounder they are at the core, and I think the same is true of human beings'.

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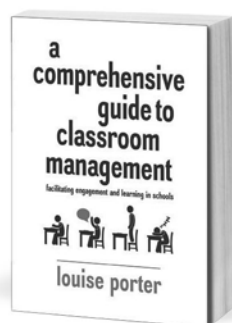
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