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A comparative analysis of nature kindergarten programmes in Australia and New Zealand

Jennifer Masters ^a and Leanne Grogan^b

^aFaculty of Education, University of Tasmania, Launceston, Australia; ^bSchool of Education, Outdoor & Environmental Studies, La Trobe University, Bendigo, Australia

ABSTRACT

This paper highlights the similarities and differences of seven nature kindergarten programmes in Australia and New Zealand. The study targeted three programmes from New Zealand and four from Australia. Participant observations and semi-structured interviews were used to build a profile of each site. The profiles were compared on factors such as philosophical influences, curriculum design, site location, safety requirements and programme activity. In many ways, the programmes were quite similar, and this was attributed to synergies between the respective curriculum frameworks and the influence of the European Forest School movement. There were, however, some unique features at each site and differences attributed to national perspectives. It is anticipated that the profiling of philosophical and logistical dimensions of nature programmes implemented in exemplar settings can help to inspire other early childhood educators and encourage them to reposition nature pedagogy as part of their own early childhood programmes.

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Introduction

Both Australian and New Zealand governments legislate for children's access to outdoor play (DEEWR 2009; Ministry of Education 1996) and most early childhood educators use indoor and outdoor spaces as learning environments. Many young children still have minimal access to nature and the sensory experiences that it provides, however (Dowdell, Gray, and Malone 2011).

This study examined how early childhood educators in Australia and New Zealand provide authentic nature education experiences for children they teach. In particular, it looked at formalised 'nature kindergarten' programmes in both countries. The overall research question for the study was:

How have early childhood educators in Australia and New Zealand enacted nature kindergarten programs?

This question included a focus on the drivers and influences for starting the programmes; the design of the programmes and the practicalities of implementing the programme.

A sub-question of particular interest to this paper was;

How are nature kindergarten programs in Australia and New Zealand similar and/or different?

Background

A recognised inspiration for nature education is the European Forest School movement (Elliott and Chancellor 2014; MacQuarrie, Nugent, and Warden 2015). Forest School is defined as ‘an inspirational process that offers ALL learners regular opportunities to achieve and develop confidence and self-esteem through hands-on learning experiences in a woodland or natural environment with trees’ (Forest School Association 2017). Waite, Bølling, and Bentsen (2016) outlined typical Forest School characteristics as:

- A long-term regular programme of visits;
- A woodland or wooded context;
- Holistic development of the child;
- Qualified Forest Schools practitioners; and
- Child-centred processes to encourage a community of learners.

(Waite, Bølling, And Bentsen 2016 p. 876)

The Forest School movement originated in Scandinavia in the 1950s and progressively spread through Europe and into the UK (Elliott and Chancellor 2014). This approach has been adopted in Canada, U.S.A., and Japan (Sobel 2014) and now influences nature education initiatives in New Zealand and Australia.

The argument for engaging with nature education is compelling. The research identified that learning in the outdoors helps to build belonging and allows for exploration, transformation and liberation (Duhn 2012; Ritchie 2013). Furthermore, early and meaningful connections with nature may lead to a stronger sense of sustainability and environmental sensitivity in later life (Hass and Ashman 2014). This was reinforced by Ritchie (2013), who suggested that teaching in nature enabled educators to teach about Māori principles of environmental stewardship, caring and generosity.

Play in nature is beneficial for children. It enables them to learn about resilience, self-management and cooperation with others (Dowdell, Gray, and Malone 2011). Furthermore, the flexibility of unstructured play with natural materials can help to build improvisation skills, imagination and creativity (Wilson 2012). The natural environment allows children to extend their physicality. Sandseter, Little, and Wyver (2012) identified that experiences in nature enabled children to develop motor skills, courage, resilience and confidence.

Concern has been raised by early childhood advocates that children no longer have free and regular access to reasonable risk and adventure in order to develop resilience and self-regulation (Bundy et al. 2009). As a consequence, early childhood educators are being encouraged to plan for risk management rather than risk avoidance. O'Neill (2016)

found that exposing children to risk and providing opportunities to discuss safe behaviours built safety risk intelligence and thus self-regulation.

It is possible that commitment to outdoor play and consequent risk-taking may be culturally positioned. Sandseter, Little, and Wyver (2012) compared pedagogical approaches to risky outdoor play between Norway and Australia and found that while teachers in both countries valued nature play, there was a much closer alignment between beliefs and practice in Norway than in Australia. They suggested that this might be attributed, in part, to differences in educational theories but also to variations in policy and legislation. It seemed that the Australian guidelines were more likely to restrict free play in nature than those in Scandinavia.

While the concept of ‘unstructured play’ is fundamental in nature education, this does not mean that it is without curriculum. Kelly and White (2013) pointed out that educators draw on their expertise in the natural setting to ‘uphold their pedagogical obligations’ (50). It is essential that educators identify learning moments during nature sessions and then situate the children’s experiences in the curriculum. This includes mapping learning against the curriculum framework and documenting learning experiences (Elliott and Chancellor 2014). Masters and Grogan (2015) identified that technology, such as digital cameras, are useful to capture moments in nature. Audio, video and images can be beneficial for documentation and for extending learning when the children return to the classroom. This was reinforced by Hass and Ashman (2014) who suggested that photographs and drawings are important reflective devices for remembering and representing ideas.

National curriculum frameworks

Australia and New Zealand both have national early childhood curriculum frameworks. Each framework provides learning outcomes to implement and reflect on curriculum and to address learning dispositions. Furthermore, each is based on a socio-cultural perspective and the holistic development of children (Lee et al. 2012). There are, however, differences in each framework that align with the beliefs and cultures in their respective countries. For the purpose of this study, aspects that relate to nature and the natural environment have been identified in each document.

The New Zealand curriculum

In 1996, New Zealand adopted Te Whāriki (Ministry of Education 1996) as a bi-cultural educational framework for young children. Te Whāriki translates from Indigenous Māori as ‘a woven mat’ and this metaphor is used to represent a holistic, interwoven curriculum. In Te Whāriki, nature education reflects the learning associated with Strand Five – Exploration (Kelly and White 2013). In this strand, children actively explore their environment. They are encouraged to gain confidence and control over their bodies and develop strategies for exploring, thinking and reasoning through spontaneous play. This helps them to develop working theories relating to the natural, social, physical and material worlds (Ministry of Education 1996, 18). This strand includes knowledge such as being able to identify local features of significance but also more philosophical understandings such as being aware of their own relationship with the natural environment. Strand five also specifies that ‘There should be a recognition of Māori ways of knowing and making sense of the world and of respecting and appreciating the natural environment’

(19). Ritchie (2013) emphasised the importance of Māori concepts of sustainability in Te Whāriki, with reference to *kaitiakitanga* (the responsibility to act as guardians of our natural environment). Kelly and White (2013) suggested that the bi-cultural perspective of Te Whāriki places the Māori world-view of connection to nature at the heart of the curriculum, and thus, New Zealand teachers are required to incorporate fundamental aspects of Māori culture and understandings, including a strong nature connection.

The Australian curriculum

Belonging, Being and Becoming: The Early Years Learning Framework (EYLF), was introduced in Australia in 2009 (DEEWR 2009). Like Te Whāriki, the EYLF provides an overarching structure for early childhood curriculum and there are specific directives focused on nature and the natural environment. The framework requires early childhood educators to 'foster children's capacity to understand and respect the natural environment and the interdependence between people, plants, animals and the land' and points out that 'environments and resources can highlight our responsibilities for a sustainable future and promote children's understanding about their responsibility to care for the environment' (16). Learning Outcome 2.4 specifies that 'children become socially responsible and show respect for the environment' (29). Examples of evidence for this outcome include that children 'explore, infer, predict and hypothesise in order to develop an increased understanding of the interdependence between land, people, plants and animals' and that educators 'find ways of enabling children to care for and learn from the land'. The EYLF also identifies that embracing diversity includes promoting greater understanding of Aboriginal and Torres Strait Islander (ATSI) ways of knowing and being and is particularly focused on providing cultural security for ATSI children and their families.

Justification for the study

Early childhood educators in New Zealand and Australia have obvious connections to nature education in their respective frameworks and it is, therefore, understandable that they might look to the European Forest School Movement for a mechanism to enact these intentions. It is clear though, that the Southern Hemisphere is quite different to Europe and that any nature education programme needs to be carefully considered before implementation. In both countries, there are innovative educators who have already introduced nature education programmes with the children they teach. This study documented how they went about it, how they manage the logistics of their programme, including aspects such as toileting, safety and transportation, and how they connect to and report on curriculum goals as they work in the natural setting. The purpose of this study, therefore, was to illustrate how early childhood educators in Australia and New Zealand implement nature kindergarten with an additional goal of examining how programmes in the two countries are similar and/or different.

Methodology and design

The methodology for this study was a comparative case study design (Yin 2009) using a multiple case model (Stake 2006) to frame examples from both countries. Furthermore, the ethnographic technique of participant observation (Spradley 2016) was used for

data collection. This method allowed the researchers to immerse in the nature kindergarten programmes through active participation. In accordance with Spradley, data were analysed with componential, then theme analysis (103).

Participants

Study sites were selected through purposeful (Creswell 2012) and sometimes opportunistic sampling (Burns 1994). Potential sites were identified through an Internet search for published material relating to nature kindergarten initiatives. After sites were located, an itinerary for visits was mapped based on travel opportunities and researcher availability. Targeted kindergartens were then invited to participate with three New Zealand and four Australian sites accepting profiled in Table 1.

Data collection

Researchers visited the sites according to the travel itinerary. Data collection involved either one or both researchers attending one nature kindergarten session at each site. This resulted in seven extended visits where the researchers were active participant observers (Spradley 2016). During each session, (2–3h), the researcher/s spoke with teachers and adult helpers about the programme, took photographs and recorded notes, based on a focused observation framework (Spradley 2016). This process included a combination of descriptive observation, focused observation and, at times, selective observation. Informal ethnographic interviews occurred during the session and then after the session; a formal, semi-structured interview was conducted with the teacher/s. This interview took approximately an hour and was also based on the observation framework. The formal interview was used to clarify observations from the session, fill in any gaps and corroborate information that had been recorded.

Table 1. Profiles of programmes in the study.

Site	Location	Years	Size	Distance from K	Access	Frequency	No. chn	Adults	Terrain
A-1	Regional Victoria	3	3 ha	8 km	Car	1 morning per week	26	2 teachers aide parent	Bushland
A-2	Regional Western Australia	12	1 ha	onsite	Onsite	unrestricted	21	Teacher aide parent	Forest
NZ-1	North of Auckland	3.5	9 ha	1.2 km	Car	3 h per week	10	Teacher Parent ranger	Forest stream
NZ-2	Auckland	3.5	172 ha	.5 km	Walk	5 visits over three days	7	Teacher Parent	Park farm
NZ-3	South of Auckland	3	.5 ha	1 km	Walk	1 visit for 2.5 h	10	Teacher 2 parents	Forest
A-3	Melbourne, Victoria	5	10 km	4 km	Car	3–5 h per week	22	3 teachers 2 parents	Beach
A-4	Hobart, Tasmania	8	.5 ha	.25 km	Walk	2 h per week	23	Teacher aide parent 2 older students	Park gully

Data analysis

The data were digitised and stored in Google Docs. The artefacts collected included photographs, observation notes, interview transcripts and peripheral material such as planning documents and learning journals. The data were analysed using the process outlined by Spradley (2016). A systematic sweep of this material was used to make a componential analysis. While it was not practical for the researchers to physically return to each site to confirm or extend on concepts, the collated digital material for each programme provided a virtual location that could be ‘visited’ for further investigation or clarification. The components emerging from this process were used to populate a matrix with domains and concepts for each site. The matrix provided a platform for theme analysis, and the themes derived from the study are displayed in Table 2. Immersion in the data through themes enabled the researchers construct insights about site-based activity and determine similarities and differences at intra- and inter-national levels.

Findings

This paper reports on emergent themes in three key areas. These are:

1. How the programmes came about – programme instigation, development and influences
2. The practical logistics of implementation – location, attendance, health and safety

Table 2. Themes emerging from the data.

Domain	Concepts		
History	<ul style="list-style-type: none"> • Formation • Initiators 	<ul style="list-style-type: none"> • Philosophies • Influences 	<ul style="list-style-type: none"> • Time in operation • Management
Location	<ul style="list-style-type: none"> • Terrain • Size of site • Public access 	<ul style="list-style-type: none"> • Access to buildings • Ambiance • Boundaries 	<ul style="list-style-type: none"> • Distance from centre • Travel arrangements
Practical Arrangements	<ul style="list-style-type: none"> • Numbers • Shelter • Sustenance 	<ul style="list-style-type: none"> • Ratios • Funding • permissions 	<ul style="list-style-type: none"> • Hours • Building/nature balance
Curriculum	<ul style="list-style-type: none"> • Framework • Programme design 	<ul style="list-style-type: none"> • Provocation • Themes 	<ul style="list-style-type: none"> • Documentation • Activities
Health and Safety	<ul style="list-style-type: none"> • Dangers • Toileting 	<ul style="list-style-type: none"> • Policies • Weather 	<ul style="list-style-type: none"> • Insurance • First aid
Environmental Awareness	<ul style="list-style-type: none"> • Use of experts • Tools 	<ul style="list-style-type: none"> • Take/leave policies • Degradation 	<ul style="list-style-type: none"> • Indigenous perspectives
Teacher	<ul style="list-style-type: none"> • Programme initiation • Experience 	<ul style="list-style-type: none"> • Qualifications • Presentations 	<ul style="list-style-type: none"> • Professional development
Promotion	<ul style="list-style-type: none"> • Media releases 	<ul style="list-style-type: none"> • Publications 	<ul style="list-style-type: none"> • Website

3. How early childhood curriculum is fulfilled in nature programmes – curriculum activity, environmental considerations and Indigenous perspectives

These areas were selected for discussion because they offer useful insights into the design of the programmes visited and the practices of the educators who implement them.

Themes from key areas

Programme instigation and development

The data revealed that each of the nature programmes were instigated by one or more champions who believed that nature education could enrich the lives of the children in the programme. The programmes in the study had been established between 12 and 3 years (see Table 1) and a lead teacher was usually the instigator of the programme, although two of the settings (A-1, A-2) reported that the programme was initiated through parent interest. It was clearly evident that all of the participating educators were passionate about the advantages of children being connected to nature and were strong advocates for the inclusion of a nature programme.

Influences

The teachers were asked about theoretical or philosophical influences that they applied to their programme. The work of known nature kindergarten advocates such as Warden (2012) and Louv (2008) was mentioned by all of the educators. Several Australian teachers also referred to Elliott, an Australian expert in sustainability education (Elliott 2014; Elliott and Chancellor 2014). All of the teachers in the study were familiar with the Forest School approach and a teacher from NZ-1 and another from A-3 had visited schools in Europe. Teachers were obviously familiar with the philosophies of Montessori, Steiner and Reggio Emilia; however, none identified a single, dominant approach. The teacher from A-3 actually indicated that her school was careful to avoid affiliating with any particular approach, as they preferred to customise their philosophy based on the beliefs and requirements of the families with whom they worked. Some of the kindergartens also drew their inspiration from established nature programmes visiting other schools with similar philosophies (NZ-1, A-3, A-4).

All of the teachers interviewed in this study were conversant with their national early childhood curriculum frameworks with some knowing that of the other country. In all centres, the national curriculum framework was the source of the kindergarten curriculum including the nature programme.

Location

The location for each programme was identified at conception and the same setting was used for each session, in accordance with forest school philosophy (Waite, Bølling, and Bentsen 2016). This enabled the children to establish a familiarity and connection with that place (Duhn 2012; Sobel 2014). The size of the site and distance from the kindergarten varied (see Table 1). Two the programmes (A-1, A-2) used private land for the nature programme. If the site was close to the kindergarten (less than 1 km), the children walked; for further distances, children were more likely to be transported to the site by their family. Available space varied substantially: the smallest sites were half of a

hectare (NZ-3, A-4) while the largest site was 172 hectares (NZ-2). Several sites were 'unbounded' and the group could roam freely with the area covered during the session restrained by physical limitations and time rather than fences or boundaries.

Attendance

All programmes catered for kindergarten-aged children (4–5 years) and three sites (A-2, NZ-1, NZ-2) also included pre-kindergarten children (2–3 years). The number of children attending each session ranged between 7 and 26 (see [Table 1](#)). In New Zealand, the number of children onsite at any time was 10 or fewer, whereas the Australian sites could have more than 20 children at a time. Each session had at least one teacher and one other adult, an employed support person or a parent helper. Additional help was usually from parents, but in one case primary school students assisted (A-4). The most common ratio was 1 adult to 3 or 4 children, although two Australian sites (A-1, A-2) identified 1:7 as policy.

Health and safety

Safety concerns have often been the justification for limiting children's access to nature (Bundy et al. 2009) and so strategies to manage this risk are highly relevant. All programmes classified the nature kindergarten activity as an 'excursion' and therefore did not require additional insurance. Each programme had a well-documented safety and risk assessment plan and teachers were confident that they could manage the safety requirements of the nature kindergarten effectively.

Teachers ensured that they were well equipped to deal with any emergency that arose. All programmes, with one exception (A-2, where the nature programme site was at the school), carried an emergency response kit to the site. Kits typically contained medical supplies (e.g. epi-pen, a first aid pack), a list of children and adults in attendance and a mobile phone. Other safety equipment included hi-vis safety vests (NZ-3), whistles (NZ-1, NZ-3, A-3) and maps (NZ-1, NZ-2). Most sites either provided or asked children to bring wet weather gear when necessary. Teachers were asked about dangers associated with their location and these included water hazards (NZ-1, NZ-3, A-3), wind and branches falling, fire, snakes (in Australia), ants and other biting insects, marine animals (A-3), poisonous plants and/or fungi, rubbish (such as broken glass or needles) and dogs. Programmes where the public shared site access seemed to be especially aware of dogs. A teacher at NZ-1 identified that the children had been given a strategy for when a dog approached:

We say to the children that they should ignore dogs and continue to play. If the dog gets close, then they must turn their backs and look down and the dog will most likely move away.

The important point about risk management at any site was that all participants – children, teachers and volunteers – were aware of dangers and knew what to do in an emergency. The teachers felt that if this strategy was followed they could provide a safe but challenging nature programme for the children in their care.

Weather is another safety factor that needs to be considered for nature education. European nature kindergartens are known for taking children outdoors in almost any weather (Elliott and Chancellor 2014). High wind, flood or, for the Australian sites, temperatures in excess of 36°C were more likely to be the cause of cancellation rather than rain or cold in

these programmes. Some programmes seemed less likely to cancel than others. A-1 and NZ-1, for example, reported that they rarely cancelled nature kindergarten, while A-4 only took the children to the park if the weather was reasonable. All teachers ascertained the conditions on the day. If children were transported to the site by parents (A-1, A-3, NZ-1), the cancellation of a session was usually communicated to parents by a text message.

Toileting is also a factor that needs to be considered when educating outdoors. One programme (A-2) remained close to their school building during nature activities so this was not an issue. Two programmes (A-1, NZ-3) carried a port-a-loo to the site with them. A-3 explained that they had tried taking a port-a-loo on a trolley, but this strategy was ineffective and so abandoned. A-3 and NZ-2 reported that they were able to use public facilities at the site. The remaining two programmes (A-4, NZ-1) reminded the children to visit the toilet before they left, with the option to pop behind a tree or rock in an emergency.

Whether children carried backpacks largely depended on the distance of the site from the kindergarten. The programmes where children were transported to the location usually allowed the children to bring a backpack with a drink, a snack and perhaps a rain-coat or a jumper. These belongings might be left at a 'base camp'. One of the sites (NZ-3), provided a backpack for each child containing items for investigating (e.g. a magnifying glass) and recording (e.g. a notebook) as well as the child's own snack and drink. Children from the two programmes closest to their nature site (A-2, A-4) did not carry backpacks, although the adults had water for the children. The adults from NZ-2 carried in snacks and drinks for the children.

Curriculum activity

Teachers were asked if they developed a defined curriculum for their nature programme. All responded that the activity should be primarily child-initiated with little pre-planned teaching. This was confirmed during researcher visits. It was noted that the children usually had clear ideas about what they would like to do and it was apparent that they had thought about how they might spend their time prior to arriving at the site. Several of the programmes incorporated a discussion on arrival where the children decided what they might do that day. This could be a quick, informal chat or a recognised meeting. At one site (A-4), the children assembled under a tree just inside the park boundary. The teacher explained:

The learning tree is a device to bring the children in to the natural space. It gives them time to be still, reflect and watch the passing of time.

The activity observed at each site was unique but, in some ways, the seven programmes were remarkably similar. The focus on child-centred, play-based learning and emergent curriculum was clearly evident at all sites. At the beginning of all the sessions, children either nominated or were invited to engage in a particular activity and then change in tasks and locations were negotiated through child/child and child/adult interactions as the session progressed. At all sites, children played in pairs, groups or individually and the activity flowed naturally during the session. At times the teacher or another adult might point out a particular feature or perhaps invite individuals to join in a group task.

Programme activity varied widely but generally all activity could be classified into five broad categories (see [Figure 1](#)).

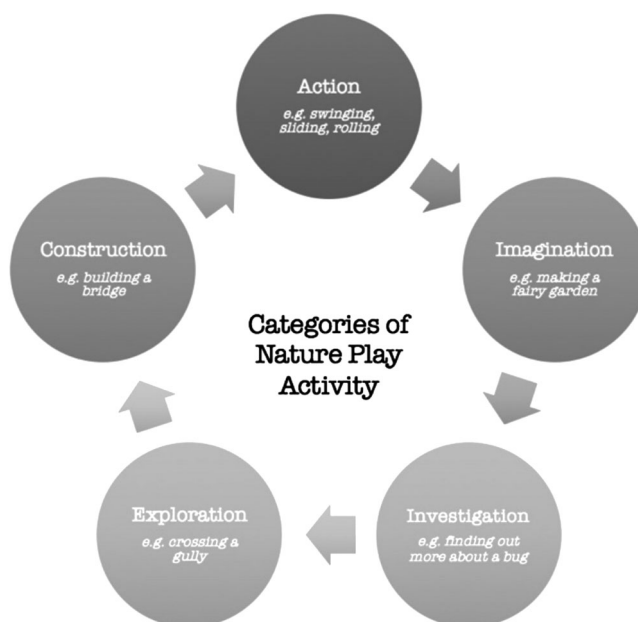


Figure 1. Categories of nature activity.

Forest Kindergarten often includes woodland craft, for example, whittling or fire lighting (Warden 2012), but this practice was not prevalent at the research sites. Some reported that they occasionally took in materials or tools to work with such as ropes, magnifying glasses and buckets. One of the sites (A-4) mentioned that children sometimes took props for play, such as heavy plastic dinosaurs but this was unusual and other sites, as a rule, discouraged taking any toys for play (e.g. A-1).

Most of the sites had a digital camera, smartphone or an iPad handy to capture learning. At NZ-3, all of the children had a notebook and pencil to record thoughts and observations. All of the programmes reported they used photo journals and/or reflective writing to capture the learning from the programme. An example of a paper-based photo journal (A-1) is shown in Figure 2.

There were curriculum differences at each of the sites and these could be attributed to the milieu of that particular programme and the experience/interests of the teachers, children and families involved. At the beach site (A-3), the teachers could focus on coastal ecosystems, for example, by identifying crustaceans in rock pools. A programme in a forest setting (e.g. A-2, NZ-1) was more likely to focus on forest ecology and investigate ‘mini-beasts’ living in the leaf litter. An example of teacher influence was the particularly strong sustainability focus evident at A-4. The teacher had completed a qualification based on sustainability in education and consequently embedded principles relating to conservation and sustainability across her programme.

Environmental considerations

A sense of environmental awareness is central to Forest School philosophy, so this study sought beliefs and practices relating to this idea. The analysis showed that all programmes



Figure 2. A photo journal.

encouraged the children to look and reflect on the nature around them, however, the degree of enacted environmental practice varied across the sites.

One focus related to the environmental impact of the nature programme. Teachers were asked if they were concerned about degradation of the site and about strategies they used to minimise this. The teacher of A-1 was particularly aware of this aspect and carefully monitored the environmental conditions across the site. If an area was looking worn or damaged, she would ensure that the children played elsewhere until it had begun to recover. This damage was more likely to be a problem for a small site where the children could not roam widely or a site that catered for larger numbers of children.

A common strategy to prevent environmental damage is a 'take nothing but photographs, leave nothing but footprints' policy. The degree to which this was enacted at the sites varied. Most of the programmes did not leave equipment or materials at the site, possibly because of the lack of security in publicly accessible spaces. A1 had locked storage at the private site which was used for wet weather gear, a sign-in book and the reflective journal. At some of the sites, the children built structures such as bridges with natural materials. Some were dismantled at the end of the session, but others were left for continued play. It seemed that the teachers were aware of the impact of the activity on environment and the site was always 'tidied' before the end of the session. The

implementation of 'take nothing' varied. Several sites (A-1, A-3) would not permit any natural materials at all to be removed while the others allowed children to take fallen materials. During research visits, it was noticed that teachers would pick up rubbish at the site. The teacher at A-4 took a bag especially for this purpose and the children were encouraged to stock-pile any rubbish they found so it could be carried out.

Indigenous perspectives

Both New Zealand and Australia have fundamental Indigenous connections with the land and this was reflected to varying degrees in the programmes visited. As noted previously, Te Whāriki specifies that kindergarten teachers incorporate significant aspects of Māori culture in the curriculum, including a connection with nature. This was very visible in the programmes in New Zealand. At one site (NZ-3), the children recited a Māori incantation as they entered the site. The teacher explained that this was a 'karakia', to show respect for the guardian of the forest, Tane Māhuta. This teacher also reminded the children, 'Look out for baby plants children, we have to look after Papatūānuku'. She explained to the researchers that Papatūānuku might be translated as 'Earth Mother', while Ranginui was 'Sky Father'.

At NZ-1, a nature programme ranger was employed through targeted grant funding. This ranger took much of the responsibility for educating children about the Māori connections with the land, along with learning about nature and environmental aspects in general. The EYLF identifies that it is important to 'promote a greater understanding of Aboriginal and Torres Strait Islander ways of knowing and being' (p. 13) but it does not explicitly describe this aspect in the learning outcomes. It was noted though, that all Australian educators were aware of including Indigenous perspectives in the nature programme and all sites reported they had visits from experts to ensure that children learnt about Indigenous connections to country. Furthermore, A1 had secured funding for an Aboriginal educator to work with the children in each session to embed cultural awareness.

Summary of themes

After visiting seven nature kindergarten programmes across Australia and New Zealand, it was evident that there are many early childhood educators dedicated to providing an authentic and meaningful nature programme for children whom they teach. Each programme had been carefully designed for local circumstances and tailored to meet the needs of children and community in that setting. All programmes required significant research and planning and often intense negotiation prior to implementation. Once the programme had been enacted, diligent management was entailed to ensure safe and effective implementation on a sustained basis. Not surprisingly, the resulting nature programmes were distinct, however, there were some commonalities across programmes and across countries.

Country comparisons

At the completion of all visits, the data were re-examined to find generalisations that could be made across nature programmes in each country and comparisons between the two

nations. While it was difficult to isolate characteristics that were clearly country specific, there were aspects that might be attributed to national difference.

Safety

Firstly, taking children into nature appears to be a far more dangerous proposition in Australia than in New Zealand. Australian teachers had to consider risks that could have serious consequences if not managed correctly. This included being aware of venomous creatures such as snakes, spiders and the blue-ringed octopus and other creatures that may trigger an allergic reaction, e.g. wasps or ants. In Australia, educators needed to deal with issues that are specific to a hot dry country, i.e. keeping children protected from sun and ensuring that they remain hydrated. In contrast, the teachers in New Zealand could relax more in the natural environment. While the children usually had a hat and a drink, it was less crucial for them than their Australian counterparts. Furthermore, the children in the New Zealand programmes could explore most terrains without having to worry too much about creatures living there. During one of the New Zealand visits, children were seen wading happily through long grass up to their shoulders (NZ-2). This was almost a shocking sight for the Australian researchers who appreciated the wonder of this experience but recognised this freedom would be risky in Australia.

Indigenous perspectives

There were subtle variations between New Zealand and Australia in applying Indigenous perspectives. In New Zealand, most of the educators seemed quite comfortable with the Māori perceptions of land and they could facilitate meaningful connections for children through nomenclature, song and rituals. The application of Indigenous concepts in Australia, however, was different. While it is important for Australian children to learn about Indigenous connections with the land, it was more usual to bring in an Indigenous expert to work with the children. Teachers might reinforce the concepts with the children later, but they did not feel they had the sanction to introduce this content themselves.

Environmental focus

Conversely, it seemed as if Australian educators were more likely to enact practical sustainability in the programmes including an awareness of human impact on the environment, land conservation and how individuals can advocate for sustainable practices. For example, the children would be encouraged to bring a 'rubbish-less' lunch, i.e. with recyclable containers rather than packaging or cling wrap (A-1). This same level of attention to detail was not observed in the New Zealand sites. This difference may have been that the sites selected in Australia happened to be more orientated to this aspect than the sites selected in New Zealand. However, it may also have been because the EYLF mandates sustainable practice.

Attendance

The last point of difference noticed between countries was the number of participants in a nature kindergarten session at any one time. In New Zealand, there would typically be ten children in any session with two or three adults. At all sites, this was a sub-group of the kindergarten class and other children remained in the kindergarten building. In Australia, the group was usually a full kindergarten class with approximately 20 children in the nature setting with a minimum of three adults. The fact that more children attend each

nature kindergarten session in Australia was somewhat unexpected, given the higher risk factors for outdoor activity in Australia.

Discussion

A number of studies (e.g. MacQuarrie, Nugent, and Warden 2015; Sandseter, Little, and Wyver 2012; Waite, Bølling, and Bentsen 2016) have made comparisons between forms of nature education for young children and, in particular, the Scandinavian conceptualisation of Forest School. This appraisal can be challenging because, as Waite, Bølling, and Bentsen (2016) pointed out, comparative studies are often complicated due to subtle language use, tacit understandings and cultural concepts. This complexity is also enhanced by the inherently interconnected structure of early childhood education. MacQuarrie, Nugent, and Warden (2015) identified that nature education in early childhood settings is an embodiment of theoretical, philosophical, pedagogical and cultural factors. Consequently, research in this area is needed to gain some understanding of how nature can provide a conduit for early childhood educators to facilitate meaningful experiences for children.

The study reported here offers a practical perspective to the literature. The cases in this study are exemplars in Australia and New Zealand where teachers who are passionate about nature education have drawn on the foundation of Forest School in Europe and other influences to consider how learning in nature can be enacted in their own context. The description provided here shows how they realised that challenge.

This study found that nature kindergartens in Australia and New Zealand vary, but all grapple with similar challenges and considerations. These challenges include finding a suitable location where the children can develop a connection with nature and a sense of place (Sobel 2014) and where they can experience *manageable* risk (Bundy et al. 2009; Sandseter, Little, and Wyver 2012). The teachers have also had to negotiate the logistics of implementing their programme. Practical arrangements such as travelling to and from the site, shelter, inclement weather policy, first aid and toileting arrangements are all significant factors (Elliott and Chancellor 2014).

For educators in both countries, the relevant curriculum frameworks and strong pedagogical and philosophical beliefs were fundamental to nature programme enactment. This included understanding and implementing key principles of curriculum documents (Lee et al. 2012; Sandseter, Little, and Wyver 2012) and core pedagogical practices such as play-based learning and negotiated curriculum within the parameters of the nature kindergarten (Wilson 2012). Furthermore, contemporary thinking about nature education were strong drivers for the programmes. This included key concepts from advocates such as Warden (2012) and Louv (2008) and broader domains such as Indigenous perspectives and ecological sustainability.

This study has used a case study approach informed by ethnographic methods to report on the practices of seven nature kindergartens in Australia and New Zealand. The limitations of the study stem from the narrow window of opportunity to study each programme and the limited selection of programmes based on convenience and researcher availability. It would be beneficial to investigate a wider range of programmes and make connections between factors such as teacher beliefs and qualifications, parental involvement and the emerging programmes in order to learn about how nature education can be shaped to be relevant for a Southern Hemisphere context. It would also be

interesting to investigate the networks for support and advocacy of nature education in both countries. This research would help to establish learning in nature as a viable and sustained form of education for young children in Australia and New Zealand.

Conclusion

This study of programmes in Australia and New Zealand has shown that nature kindergarten is viable in the Southern Hemisphere. Inspired by European Forest School, teachers in Australia and New Zealand have been able to develop nature programmes that are appropriate and sensible for their local conditions. While each programme had been customised to suit children, families and communities, there were some common characteristics across the sites, including the logistics of managing permissions and insurance, risk management strategies and a child-centred approach to curriculum. The similarity in curriculum activities was highlighted in this study and commonality was attributed to the cross-pollination of influences, practical examples and pedagogical approaches across both countries.

There were some differences in the curriculum approaches that may have been attributed to the respective national curriculum framework. The educators in New Zealand demonstrated a more integrated approach to Indigenous connections, while in Australia, the teachers seemed to incorporate more aspects of sustainability education. The study also suggested that designing and implementing a nature kindergarten programme in Australia might be more challenging due to the harsher climate and dangers associated with venomous and/or poisonous flora and fauna. The Australian teachers seemed to manage this risk successfully although this may have been an easier task if the partial class system used in New Zealand was adopted and fewer children were onsite at any given time.

Although this research has reported on only a handful of sites where there are many more nature programmes in both countries, it has provided a snapshot of the innovation, determination and commitment of teachers who are passionate about children learning in nature. It is hoped that this comparative analysis will provide a useful starting point for other early childhood educators who are considering extending their early childhood programmes by including a nature education dimension.

Disclosure Statement

No potential conflict of interest was reported by the authors.

ORCID

Jennifer Masters  <http://orcid.org/0000-0002-0606-4086>

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