Early Childhood Educators' Professional Learning for Sustainability Through Action Research in Australian Immersive Nature Play Programmes[1]

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Abstract

In this paper, I provide insights into how action research influenced the movement of Australian early childhood educators' worldviews, identities, and their agency in relation to education for sustainability (EfS) in natural outdoor settings. This was integral to a larger study that explored early childhood educators' understandings of a nature–sustainability nexus and its influence on their pedagogies in Australian immersive nature play programmes. The findings indicated personal transformations for some participants as individuals and as teams of early childhood professionals, resulting in new discourses for EfS—with others engaging in an ongoing journey of disrupting dominant anthropocentric ways of thinking.

Keywords: early childhood, nature play, sustainability, professional learning

Introduction

This is an important time to be an early childhood educator. In the current global context, engaging with young children around sustainability is critical to educating for Earth's future. In Western societies today, children are more disconnected from the natural world than in any previous generation (Elliott, 2015). The literature attributes this to a variety of modern issues that hinder children from playing in nature, such as the rise of technologies, busier family lives, risk aversion, and the lack of accessible natural spaces (Malone & Waite, 2016). The concern is that young children deprived of the benefits of being in nature will be detrimentally affected in their longer-term health, development, and well-

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being. Outdoor play in nature is often perceived in Western societies as the antidote to modern childhood, and the rapid international emergence of "forest school" or "nature play" type programmes in the last two decades attests to this. The forest school approach has been adopted by an increasing number of Australian early childhood services (Kids in Nature Network, 2018), and is identified in some states of Australia as "bush kinder"—a term reflecting the uniqueness of the Australian landscape. Given the relative newness of these programmes in Australia, it is vital for educators to reflect on their pedagogical roles in outdoor nature settings, particularly in relation to the demands of global sustainability.

Given that there has been scant research into early childhood education (ECE) pedagogies in Australian outdoor nature settings and, more specifically, into professional learning for sustainability in immersive nature play programs (INPPs), this perceived gap was investigated in the larger study on which this article is based (Hughes, 2021). This overarching research question guided the study: **"How might an awareness of a nexus between nature and sustainability influence the pedagogies of early childhood educators in nature immersive programme settings?"**

Although Australian research in early childhood education for sustainability (ECEfS) is recognised internationally, caution has been expressed that the potential for ECEfS is not yet evident in nature play programmes (Carr & Plevyak, 2020; Elliott et al., 2020). Australian policy requirements for early childhood education promote stewardship, respect, and care but often, a romanticised sensory discourse is promulgated and subsequently, is the somewhat comfortable route taken by educators.

Specific to INPPs and sustainability, the relationship between educator identity and agency has not yet been addressed. Although the participants in the study generally held pro-ecological worldviews, their ideas about a nature–sustainability nexus and human–nature relationships generally appeared to be a mixture of worldviews. A worldview is a framework or collection of values and beliefs one holds about the world and our future in it (Olthuis, 1989). Environmental worldviews refer to a belief or value system through which an individual understands the natural world and human–nature relationalities. Some 20 years ago, Kuhn (2001) argued for an ecological worldview that reconnects humans with nature, replacing the dominant anthropocentric worldview that positions both the humans and the more than human as a dualism on the brink of environmental peril. Examination of our experiences, beliefs, values, and worldviews invites engagement in change towards ecological sustainability, aligning with Sauvé's (2005) description of "social criticism" (p. 24) in which individuals are challenged to confront their own beliefs, attitudes, and actions and challenge the dominant discourses.

A worldview represents the way one sees the world, and calibrates identity and our ways of being in the world (Walton & Jones, 2018). Thus, personal identity formation involves constant questioning and reinventing of self (Moisander & Pesonen, 2002). In relation to developing a nature identity, Schultz (2000) suggested this requires interaction of connectedness, care, and commitment, and that environmental concerns are tied to a worldview that encourages humans to perceive themselves as part of nature. Therefore, an assumption can be made that seeing the world ecologically may lead to taking on pro-ecological roles, developing identity in practice, and enacting agency. The Australian national curriculum policy, *Belonging, Being and Becoming: The Early Years Learning Framework for Australia* (Australian Government Department of Education [AGDE], 2022; Department of Education, Employment & Workplace Relations [DEEWR], 2009) stated that humans enacting agency entails being able to make decisions and choices that impact their world and influence events. For the educators in this study, enacting agency involved engaging with new knowledges, reflecting on attitudes, values, and identities, and becoming challenged to adopt new praxis. These pedagogies provided opportunities for seeing, reflecting on, and responding to sustainability through recognising assemblages, associations, and relationships in their immediate bush settings.

In this context, I specifically examine professional learning for sustainability with early childhood educators around EfS through action research in INPPs, a strand within the larger study (Hughes, 2021). Early childhood educators thinking differently and deeply can facilitate change towards sustainability in many different ways, including being open to new possibilities and exploring various worldviews. Consequently, coevolvement of an ecological worldview and ecological identity developed through the study. Regular visits to the bush sites and critical reflection assisted in the enhancement of educators' environmental values, beliefs, and attitudes about nature and educator agency in action research, which led to furthering their ecological worldviews.

Literature Review

In this brief synthesis of relevant literature, I draw together insights about pedagogy, ECEfS and common worlds thinking. The Australian early childhood curriculum for early years learning (DEEWR, 2009), defined pedagogy as "early childhood educators' professional practice, especially those aspects that involve building and nurturing relationships, curriculum decision making, teaching and learning" (p. 9). Educators develop their pedagogical repertoire from their worldviews, training, experience, context, and the particular cohort of children, whilst constantly being responsive and critically reflective. Pedagogy is central to educators' roles both in early childhood centres and beyond centre boundaries in nature play spaces, and it is the latter that invites exploration in this paper. However, in Australian pre-service education and the curriculum documents guidance around EfS and INPPs has not been evident until recently. The *Belonging, Being and Becoming: The Early Years Learning Framework for Australia V2.0* (AGDE, 2022) was released in January 2023, and included a Sustainability Principle and recognition of opportunities for children to learn on Country in the Practices section. Another recent Australian publication, *Early Years Learning in Australian Natural Environments* (Hughes et al., 2021) is the first text providing professional learning for INPPs.

Even though there is an emerging body of research on sustainability and ECEfS and their place in INPPs (Elliot & Krusekopf, 2017; Hass & Ashman, 2014; Kelly & White, 2013), there is little research about the pedagogies for ECEfS in INPPs (Truscott, 2020). In addition, most often, the focus is on education *about* nature, and not on education *for* and *with* nature (Grogan & Hughes, 2020). Research illustrates that attitudes towards the natural environment are formed during the early years, but do require a mentor or influential adult for guidance (Chawla & Derr, 2012; D'Amore & Chawla, 2020). As Carson (1956/1998) argued many years ago:

> *If a child is to keep alive his inborn sense of wonder . . . 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. 55)*

Therefore, in an INPP it is imperative for educators to critically analyse and reflect on their pedagogical practices because these influence children's construction of understandings about sustainability and relationships with nature.

In Australia, ECEfS has its historical beginnings in environmental education (Davis & Elliott, 2014; Gough, 1997). Australian authors Elliott and Davis (2009) defined ECEfS as:

> *an empowering approach to education underpinned by both humanistic and ecological values that promote change towards sustainable learning communities. Consequently, early childhood education for sustainability seeks to empower children and adults to change their ways of thinking, being and acting in order to minimise environmental*

impacts and to enhance environmentally and socially sustainable practices within early childhood settings and into homes and the wider community. (p. 68)

This definition is about educators recognising transformative education that values sustainability and is brought to bear through policies and pedagogies that reflect social change (Davis, 2015). Importantly, incorporating ECEfS into INPPs requires moving beyond merely playing in nature.

The complexities of the Earth we inhabit invite engagement with new pedagogies to challenge current humanist discourses of the default stewardship of nature. Harwood (2019) framed emphasis on relationality and entanglements between the human and the more-than-human world to challenge the centrism of humans within ECEfS. As such, posthumanist thinking has been recommended as an alternative view of human–nature relationships and as critical to Earth's survival (Wilson, 2019). Accordingly, Ferreira and Davis (2015), Taylor (2013), and Weldemariam et al. (2017) have argued that many early childhood educators might continue to hold superficial views of a nature–sustainability nexus unless positions such as posthumanist thinking are included in their everyday pedagogy and reflections. Highlighting such entanglements may enable us to see more clearly the pervasive anthropocentric worldview, and to reflect on the issues created by such a view. Taylor (2013), Taylor and Pacini-Ketchabaw (2015), and Weldemariam and Wals (2020) argued for a move away from child-centred pedagogies and towards learning within a commonworlds approach. In disrupting child-centred pedagogies, Wilson (2019) asked early childhood educators "to consider, instead of learning about nature, thinking with nature" (p. 29). This would entail a distinct rethinking and movement of Australian educators' worldviews, ecological identities, and agency as was demonstrated in the larger study (Hughes, 2021).

Theoretical and Methodological Framing

Research Sites and Participants

Selection of the study participants required seeking early childhood services that were implementing nature programmes. Therefore, purposive sampling (Liamputtong, 2013) guided this study and two early childhood services whose educators took groups of children on regular excursions to a bushland setting were invited to participate. I strove to locate two services that had been involved in INPPs for a similar length of time—supported by Stake's (2005) advice to employ cases that seemed to offer opportunities to learn. I purposefully invited one preschool and one long day care service situated in an Australian city to facilitate a broader sample of educator experiences and perspectives. These are the two Australian early childhood education service types that conduct most nature programmes (Kids in Nature Network, 2018). Also, I asked each of the services to nominate two educators to be in-depth participants for the individual interviews, nature programme observations, and writing of individual educator reflective journals and I invited all staff in both centres (21 participants) to be part of the centre focus groups.

Theoretical Framework and Methodologies

A social constructionist theoretical framework was employed, alongside participatory action research (PAR) and appreciative inquiry (AI) methodologies. Similar methodology has been employed in prior early childhood research to facilitate transformative learning, for example, by Elliott (2015) and Woodrow and Newman (2015). Through PAR in this study, transformative shift was possible with the research opening up a space for professional learning among the practitioners who made movements in their thinking and pedagogies.

Action research has many forms, one of which is participatory action research (PAR). Carr and Kemmis (1986) asserted that PAR is the research method of preference "whenever a social practice is the focus of research activity" (p. 165), providing a process through which

transformative change occurs by way of collaborative learning in a social situation. De Souza (1998) maintained that the pedagogic and research functions become entangled when a community acquires and generates knowledge. That is, communities, specifically, in this study, participants in two nature programme settings, work individually and collectively to develop their worldviews, their understandings of pedagogy, and the contexts of these to transform their worldviews and praxis. Liamputtong and Ezzy (2005) described "participation, education and collaborative action as the cornerstones of participatory action research" (p. 183). In this study, PAR methodology was the vehicle for transformative learning that presented the educator participants with the opportunity to problematise and engage in both innovative and transformative thinking, reflection, and practice. Collaborative partnerships positioned the participants as agentic knowers (Newman & Woodrow, 2015), which assisted in deepening their knowledge and changing worldviews in relation to their pedagogy (MacNaughton & Hughes, 2009).

Appreciative Inquiry (AI) was utilised as a complimentary methodology to potentially empower participants to reflect on new ideas and create new knowledges. It is closely related to action research as a search for innovative knowledge creation in a social arena (Zandee & Cooperrider, 2008). AI is based on the constructionist notion that social reality is maintained and transformed through processes of shared meaning-making, with the premise that knowledge creation is a relational endeavour (Watkins et al, 2011; Zandee, 2014). AI is a collaborative, empowering, holistic, transformative, inquiry-based methodology that follows a strength-focused model and employs those strengths to uncover the positive aspects of an issue under consideration by the group (Priest et al., 2013; Waters & White, 2015). AI guided the research interview and focus group questions through the four dimensions of the AI process: discovery, dream, design, and destiny (Bright et al., 2006). In this study, I align with AI as a process of generative theorising whereby the participants were able to create knowledges by discovering, understanding, creating a sense of possibility, and implementing transformative ideas from positive questioning about a subject.

Data Creation Procedure

The experiences of the educators were captured through observing their practices and pedagogies, individual interviews, interactions in focus group interviews, and reading their reflective journaling in their typical work context. Data were collected over an 8-month period in which insights into the perceptions of the educators about sustainability and nature were sought.

Data Analysis

This being an under-investigated phenomenon, qualitative research was well suited to seeking understandings from the participants' perspectives (Creswell, 2012). The goals of the data creation and analysis were thick and rich descriptions that could lead to identification of salient themes, as proposed by Creswell (2005). I took inspiration from Ringrose and Renold (2014) who invited examination of lines of flight, Deleuze and Guattari (1987) to analyse research encounters, and I realised that analysis was not simply coding—it was about first reading the data widely, and then deeply, once immersed in them. These notions were inductively refined by ongoing close examination and interpretation through a process of identifying similar ideas, looking for patterns in practices and thinking (commonalities and variations), and noting common reflections. Miles et al. (2014) termed this process *data condensation*, and it engendered stronger data in an iterative way throughout the study (Creswell, 2012), illuminating participant transformative changes/movement.

Ethics

Approval was sought from the University of New England's Human Research Ethics Committee to undertake this study. The private school and charity organisations where the services were located were approached as the responsible bodies via the Directors of the invited services, and permission was received to be involved in the study from their respective organisations. Consent was obtained from all participants and parents/guardians. It is standard ethical practice to request consent from parents to observe their children in an early childhood setting as per Early Childhood Australia's (2016) *Code of Ethics*.

Findings and Discussion

All participants reported/reflected on rich journeys of professional learning through action research incorporating pedagogical movement towards sustainability. In particular, a movement from linear and pragmatic pedagogies to more fluid relational pedagogies was evident and these are now examined. I first consider pedagogical roles in the bush, then being with colleagues, relationalities of place, and finally, emerging lines of flight are explored.

Shifting Pedagogical Roles in the Bush

Initially, the educators placed emphasis on the importance of facilitating children's knowledge through purposeful and intentional teaching and learning opportunities whilst in the bush settings. They perceived this as the way the children would learn first-hand about sustainability and that such lived experiences sparked relationships, curiosity, wonder, and engaged the children's senses. This type of pedagogical identity appeared linked to the *Early Years Learning Framework* (DEEWR, 2009), being well known to, and practised by, the educators. However, as the study developed, the educators' pedagogies appeared to move in various ways (from linear towards relational)—with more diverse views about their pedagogical roles in the bush around sustainability becoming apparent. These included slow pedagogies, and philosophising and sharing conversations with children in the bush, which are examined here in relation to educator identity and agency.

Slow Pedagogies

Slow pedagogy as originally described by Payne and Wattchow (2008), is a response to Dewey's call for a philosophy of experience, seeking "to expose the possible depths and values of the places we might dwell in" (p. 27). All educators in this study appeared to have shifted their mindset and taken a "slow down" approach over the period they had been taking children into the bush. This invited sustainability learning to occur at a slower pace; and, at the same time, they were being pedagogically intentional, valuing nature and place, and promoting ecological understandings. They all sensed the powerful time and space influence of nature on their pedagogy and also, time and space to critically reflect on their worldviews and identity. As Elliott and Chancellor (2014) and others have described, educators adopt a slow pedagogy to be able to recognise more in nature, be present, and teach intentionally. The educators at both settings were vocal about how the bush had influenced their individual pedagogical approach and, subsequently, the children's slowing down. They agreed that being in nature engaged their senses and promoted more thinking about sustainability, thereby enacting their agency to value the places they were in and make decisions and choices relating to their pedagogies.

Philosophising and Sharing Conversations

Throughout the study, the educators reflected on the questioning techniques they had employed with children, and how these had changed over time with impacts for themselves. Learning more about the places they inhabited, and subsequently deepening their questioning and conversations with each

bush visit, was viewed as important. The educators cited that, alongside the children, they were developing a stronger sense of commitment to sustainability—evident in their shifts in questioning techniques with more intentional teaching about sustainable practices. These deeper conversations for philosophising with children presented openings for the educators to be involved in a community of inquiry pedagogy (MacNaughton & Williams, 2009; Murris, 2008). This included wondering about things with a view to thinking differently and for oneself. The educators at both centres were opening up and wondering about questions and puzzlements on philosophical topics that interested themselves and the children. One educator responded on behalf of others:

> There was lots of discussion about the trolley we saw on the embankment today. How it got there, who put it there and why they put it there. The children pondered how they could remove it.

She recognised that they were not talking about parts of the bush and sustainability in isolation but, rather, were involved in sustained, shared thinking as first described by Siraj-Blatchford (2007), discussions about sustainability generally, and solving real problems. As a collective, the educators grappled with more complex thinking about their agency for implementing their revised worldviews. Building on these pedagogical changes, remaking of knowledge through collegial practice followed.

Change Through Being With Colleagues

Being with colleagues created opportunities for critical reflection and peer pedagogical support to promote professionally transformative learning. Together with ongoing learning in the bush settings with children, these opportunities appeared to enhance movements in the educators' pedagogy and thinking. The educators from both centres remarked on how they supported each other when critically reflecting on EfS practices in the bush, and time was deliberately created for dialogue, discussion, and debate. Although such dedicated time is not often structured into ECE daily routines (Knauf, 2019), visits to the bush appeared to be an impetus for critically reflective practice. All participants reported being more reflective in the bush settings than in the centres, and this transposed to their discussions once back in the centres. They also agreed that being involved in the study had stimulated more critical reflection, and provoked deeper reflections about sustainability. White et al. (2007) maintained that critical reflection on practice can enable "a making and remaking of knowledge" (p. 10). In this way, through careful practice scrutiny, they had re-envisioned their pedagogical roles around sustainability. Professionally transformative learning had occurred (Mezirow, 1990) and, as Archer (2012) identified, reflective thinking leading to transformative action is essential, particularly in changing circumstances.

In both centres, the educators referenced the positive aspects of peer pedagogical support that appeared to emanate from the context, the people involved, and a shared endeavour. These reflective practices provided a time and space for the educators to consider any movement in their pedagogy in relation to a nature–sustainability nexus and whether these pedagogical practices stemmed from the centre or bush contexts. The study had provided the educators with an opportunity to explore and share knowledge as peers, and to work more collaboratively as a team engaged in transformative learning. By talking, explaining, and telling stories during the focus group interview, it appeared the educators were learning more about themselves and others. This promoted critical reflection and in-depth scrutiny of their values and priorities in relation to practice. The educators identified that pedagogical shifts may be necessitated, and one of these shifts was challenging themselves about how they were addressing sustainability in the bush, rather than only "being" in nature and hoping this would develop sustainable worldviews and practices. The PAR process had facilitated educators' agency in pedagogical shifts with implications for educators' sense of identity. In the same way,

pedagogical movements were made and relationships with place and a movement towards relationships with the more than human followed.

Rethinking Place and Relationships

Some educators enacted a place-based pedagogy that attended to ethical and moral practices, with the explicit intention of developing sustainability worldviews in the children. The educators were intentional and knowledgeable about their site and what was present in place. They appeared in tune with who had been there before, were learning about the local First Nations People's understandings of the place, and actively sought these new, but ancient knowledges. They situated themselves within a place and also within the learning space it provided, for example, one educator stated:

> *Making sure we are giving some areas in the bush a rest. The children say "You said that we couldn't climb on the rocks." It's good they are questioning, but also comes that understanding that we have used the rocks a lot and now they might need a rest now and so that idea of regeneration is really important. It's just as important as every other aspect.*

Place responsive pedagogy involves being in relationships with place. Both educators and children began shifting their focus to include the rights, knowledges, agencies, and the value of the more than human in the place. The educators articulated a deep sense of connection and belonging to the place; a perhaps unconscious, intuitive, posthumanist perspective and relational ethics were evident. The lived experience of place appeared to strengthen the educators' relationships and entanglements with place, place meaning, and affordances, resulting in flows of connectivity and open-ended thinking.

Relationships between humans and the more than human have been addressed (Pacini-Ketchabaw & Nxumalo, 2016; Taylor 2013) to promote different pedagogies. These pedagogies move us away from the dominant early childhood discourses of an anthropocentric child and nature benefits, towards how humans can learn both from and with the more than human with whom we share Earth. The pedagogies focus on the muddles of place, flora, and fauna and the decentring of humans, and emphasise a deeper level of ethical relationships with place (Iorio et al., 2017). This requires a shift from an anthropocentric worldview to a more biocentric stance in which the more than human are recognised (Haraway, 2008). The educators intentionally encouraged engagement with place and the more than human and positioned place as a provocation for pedagogies of concern. Thus, the educators were on a journey of transformative professional learning utilising critical reflection as a collective learning tool to progress their identities and agency.

Reflecting on Emerging Lines of Flight

Building on the focussed discussions of relationalities of place, I now synthesise some emerging lines of flight (Deleuze & Guattari, 1987) that demonstrate fluid relational pedagogies. Lines of flight are trajectories moving from the typical or commonplace to things that perhaps had not previously existed and, in this study, led to some surprising places for the participating educators. Places that demonstrated their agency in change and their reimagined identities around a nature–sustainability nexus.

Loving and Caring at First, Then Some Movement Towards Commonworlds

Often, adults focus on romanticised notions about children in nature, love, care, stewardship, or using nature for human benefit—and fail to recognise the human–nature dualisms that deserve considerable scrutiny. Perhaps these are blind spots (Wagner, 1993) for most people. The educators in this study often demonstrated the dominant, romantic, Western discourse of valuing nature for what nature can provide humans. I acknowledge facilitating educators to move beyond this discourse may take some

time, considering Louv's (2008) popular message that human connection to nature will save the world. This message reinforces weak sustainability (Dickinson, 2013; Ruhs & Jones, 2016) and maintains a human–nature dualism accompanied by stewardship, anthropocentrism, and human rights as exclusive and prioritised over nature. While the dominant participant view largely remained one of a human–nature dualism, many instances were observed where the educators' depth of environmental understandings, values, beliefs, ethics, and pedagogical collaboration with nature offered glimpses of an emergent commonworlds framework. This in-betweenness seemed to implicitly encourage them to think more widely, and exhibit tendencies towards strong sustainability (Ruhs & Jones, 2016) through their intra-active pedagogies. The apparent hybrid coexistence of both dualisms and commonworlds alluded to educators' changing perspectives and identities. Thus, EfS thinking and acting assisted in revealing the dominant humanist discourse and encouraged the educators to reconstruct notions of sustainability and develop new knowledges from an ambitiously relational perspective.

Viewing Nature as a Co-Constructor and Leader of Learning Through a Commonworlds Lens

The potential for nature to lead learning developed throughout the study with the human adult or child adopting a lesser role of co-teacher or pedagogical discoverer with nature. As Jickling et al. (2018) maintained, positioning the natural world as active, and recognising it as co-teacher, presents an opportunity to build relationships with the more than human. This created a new framework for considering developing practices with nature and building habits for additional relationships. By furthering these relationships, a set of "tools" to frame the world differently and to sustain relationships with the more than human were created with nature as integral to the pedagogical team (Blenkinsop & Ford, 2018; Jickling et al., 2018). The more-than-human encounters were encouraging more agency for nature and a less human-centric relational ethic (Pacini-Ketchabaw, 2012). In addition, Elliot and Krusekopf (2017) have suggested that all living things be viewed as central and connected in programmes, thereby encouraging children's awareness of "their intertwined connections with natural landscapes and phenomenon" (p. 118). Responding to the more-than-human voices led to the lessening of child-centred play, and a refocusing towards a posthumanist approach as educators sought collaborations and entanglements with nature. A commonworlds orientation called for a reimagining of worldviews, identities, agency, and pedagogies with nature as co-constructor, mediator, and leader for learning. This was integral to the observed pedagogical movement to view nature as agentic, with educators' now viewing nature subjectively as a co-creator of curriculum. An implication for the field is a reimagining of co-constructed curriculum as a triad of children, educators, and nature; thus, the natural environment is positioned as agentic and pedagogies are intra-active (Barad, 2007). Lastly, Powell and Somerville (2018) succinctly asserted the more than human and humans exist together "in entangled states of ever-changing becoming" (p. 2). These pedagogies, centred on relations with the more than human, create a pathway to different views of respectfully and ethically caring for and with Earth.

Ethically Informed Pedagogies

Pedagogy as an ethical practice was highlighted by Robinson and Vaealiki (2015) who specifically noted ethics of care, listening, participation, and hope in relation to EfS. In particular, the ethic of care (Robinson & Vaealiki, 2015) can be seen as an anthropocentric viewpoint as humans caring for the land. Alternatively, if we intentionally care with the land by constructing knowledges of seasonal change, plants, animals, and physical climate parameters from both Indigenous and Western perspectives, then interdependencies linked to climate change are more likely to be emphasised in EfS. The educators' pedagogies demonstrated that they were highly aware of nature receiving specific care, sometimes practised individually, sometimes with other children, and sometimes with adults. Ethically based pedagogies centred on care, listening, participation, and hope appeared to provide a conduit for the educators to recognise the potential of a nature–sustainability nexus, a conduit for

thinking about things not previously considered. Enacting these ethically framed pedagogies, the educators were keen to share their new knowledges and agency with others.

Participation in Communities of Practice and Intergenerational Engagement and Learning

Critical reflection had strengthened the resolve of some educators, children, and families to become a community of practice or a driving force for change. This encompassed the more wide-ranging global impact of their actions and building capacities through collaborative learning (Wenger, 2000), and contextualising nature play to their local place and involving community became a high priority. In building community, the educators were keen to extend a community of practice amongst the centres and schools in their local area. Robinson and Vaealiki (2015) stated this approach incorporates collaborative relationships, thus, local solutions to sustainability issues are much more likely to be achieved. Participating in communities of practice also involved intergenerational learning with families about sustainability in the bush and educators saw this as vital to advocacy for sustainable practices. I speculate that the intergenerational learning occurring in the bush settings could be a foundation for intergenerational equity and shared sustainable futures.

In summary, the educators' development of a sense of commitment to sustainability was strongly evident. Indeed, their local initiatives were outstripping the Australian national sustainability policy agenda. The educators employed an advocacy pedagogy (Tooth & Renshaw, 2019) with an agenda for the environment, and the intersection of educators' pedagogies of place were beginning to encompass both local and global citizenship. The movement towards local advocacy and activism for sustainability reflected revised identities and the development of agency for ambitiously moving forward in early childhood education communities.

Conclusion

Through the influence of a PAR methodology, the educators in this study moved from somewhat linear and pragmatic pedagogies, towards pedagogies informed by relationalities, illustrating a deep sense of connection and belonging with place. At times, they viewed nature and sustainability as separate and at times, as connected. Sometimes more tokenistic connections were evident, and at other times a deeper philosophical worldview of connections surfaced. However, the changing ideas, values, and perspectives signalled identity transformation rather than just superficial change. It appeared ambitious for the educators to think deeply about defining nature and sustainability links but subsequently, they were able to envisage a nexus and question their ecological worldviews and identities.

Similarly, the educators' transformative change evolved with peer pedagogical support and collaborative learning. They acted individually and collectively to construct deeper understandings of their bush pedagogies to transform their praxis as a joint knowledge generation process, facilitating mindset shifts at the differing stages in their journeys of change. It appeared critical reflection was integral to transformative learning, and that ongoing professional learning and revised questioning techniques with children enhanced movements in the educators' pedagogy and agency. For the educators, the physical bush environments were strongly associated with place, interacting in and with the place, optimistically establishing reciprocities, and heightening new agencies. This study prompted their troubling of pedagogies in a deeper way and where lines of flight and new identities emerged.

Lines of flight towards a commonworlds approach involving relationality and entanglement facilitated transformative worldviews and EfS pedagogies. Nature became a potential mediator for knowledge co-construction about sustainability and a living part of their curriculum. Ethically informed pedagogical priorities became clear and supported further movement in thinking about sustainability.

Throughout the study, the educators demonstrated development of a sense of commitment to sustainable practices, which inspired communities of practice for intergenerational learning and advocacy.

Creating connections with nature and posthumanism and how they relate to EfS requires a rethinking of "the big picture" beyond loving and caring for nature. The participants appeared challenged by the alignments and the movements in their thinking as they grappled with new ideas. They apprehended movement, multiplicities, and sought to reposition their worldviews from known assumptions, expectations, and discourses of nature play. As a methodology, PAR provided a vehicle for transformative professional learning, offering the participants the freedom to be involved in new, innovative thinking and practice, leading to the development of changed environmental identities. What is significant in the theoretical framing of this study is the relationality and entanglement of the findings, the movement between. These pedagogical movements required educators to examine their understandings of sustainability and reflect on their worldviews, identities, and agency, a significant and ongoing task for all INPPs educators in the Anthropocene.

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