Chapter 3
Environmental Education and Pedagogical Play in Early Childhood Education

Abstract This chapter turns the reader to critical debates and typologies in the environmental education research and literature. Such debates are contextualised within early childhood education and play pedagogies in particular. The authors initially discuss the concepts of sustainable development and sustainability, leading to further critical discussion around the apparent tensions between environmental education and Education for Sustainable Development (ESD)/Education for Sustainability (EFS). The authors challenge the dominant aligning of Education for Sustainability (EFS) and early childhood education, arguing that such alignment is grounded within traditional ideas about children's play. Rather the authors focus upon situating environmental education within contemporary play-based pedagogies. The chapter explores how understanding play-based pedagogy in terms of the role of the teacher is helpful because it widens understandings of 'play' so that content and educator interactions are valued alongside children's activities and interests. Such understandings are essential with respect to supporting children indeveloping ecocentric or biophilic dispositions.

3.1 Introduction

Environmental education is acknowledged as representing a core educational concern in the twenty-first century. This is because environmental education is understood as being an important response to the ways in which human interactions with the world can damage natural and finite resources and put at risk the habitats and ecosystems of different species. In 1972 at the Stockholm *United Nations Conference on the Human Environment*, environmental education was described as "one of the most critical elements of an all-out attack on the world's environmental crisis" (UNESCO-UNEP 1976, p. 2). In the intervening decades, environmental education developed a series of philosophical and research orientated perspectives, in which the purpose of environmental education was variously debated in terms of a range of ideological perspectives (Huckle 1991; Fien 2000;

Jickling 1992; Jickling and Wals 2007; Sauve 2005). At the international policy level (UNESCO) there has been a notable shift in terminology from Environmental Education to Education for Sustainable Development (ESD) and Education for Sustainability (EFS). Such changes are part of a wider typology of different theoretical and pedagogical positionings or propositions. Sauvé (2005) argues that there are "15 currents" in environmental education whereby sustainable development (including the approaches ESD and EFS) is albeit one current. That argument aside though, the concept of sustainable development (and indeed ESD, EFS among other sustainability education iterations) has unquestionably infiltrated the field of environmental education.

Traditionally 'sustainable development' was defined as "development which meets the needs of the present without compromising the ability of future generations to meet their needs" (World Commission on the Environment and Development 1987, p. 8). However, as with any theory seeking political legitimacy, there are scholars and activists who oppose the ideas underpinning sustainable development (e.g. Jickling and Spork 1998; Selby 2009). One criticism of EDS/EfS is that these approaches derive from an anthropocentric perspective on the environment. An anthropocentric perspective emphasises the use of the environment for human gain, and so sustainability is associated for some scholars with responding to this use so that children become 'agents of change', working to protect the earth's resources from being depleted. Whilst this approach undoubtedly has value (in that children should be supported to understand the importance of not over-using the environment), critics argue that an ecocentric perspective is more appropriate. This is because ecocentrism seeks to value the environment for its own intrinsic value rather than what it offers humans as a resource (Dobson 2007; Eckersley 1992; O'Riordan 1981; Pepper 1984, 1986). Opponents of EfS therefore argue that EfS does not necessarily promote learning to value the environment for its own sake, nor allow children the option of developing their own worldviews about their relationship with the environment (see for example, Kopnina 2012). Hovardas (2013) argues:

> Belief in the intrinsic value of nature, namely, the value nature possesses independently of human valuers, is a strong indication of departing from anthropocentrism (i.e., justification of human conduct only in relation human motives and desires (Curry 2006, cited in text). Granting intrinsic value to nature is related to an ecocentric conceptualisation, according to which natural systems should be considered as bearers of intrinsic value (Gruen 2002, cited in text). Intrinsic valuation of nature and the adoption of ecocentrism might have a substantial effect on images of nature and sense of play (Korfiatis et al. 2009, cited in text). In this regard, environmental education might influence students' worldview to a substantial extent, rather than simply fostering environmental values. Overall, these reservations refer to the formulation of objectives in environmental education and to a potential controversy between endorsing the call for sustainable solutions and, at the same time, respecting learners' autonomy and self-determination (Wals 2010, cited in text) (pp. 1467–1483).

Thus, whilst ESD and EfS are increasingly evident approaches employed in school-based and public education campaigns, it is important for educators and scholars associated with early childhood education to be aware these approaches represent contested arguments in the broader environmental education literature

(Jickling and Wals 2007). This is not to discredit the role of EfS in helping build awareness about the critical importance of sustainability in educational circles, as clearly this been an important platform for getting environmental issues into the curriculum. Rather, the aim here is to alert those involved in early childhood education about how EfS and environmental education are positioned according to the ideological positions they hold about the environment and human relationships with the environment.

Environmental education has had a presence in primary and secondary education for a number of years, and recently emerged in the field of early childhood education in the form of EfS as an official concern (Littledyke and McCrae 2009). The first UNESCO international workshop on environmental education in early childhood was held in 2007, whilst the 2009 Bonn Declaration was amongst the earliest of international documents to recognise the role of early childhood education in environmental education. The 2007 UNESCO workshop resulted in a significant publication titled '*The contribution of early childhood to a sustainable society*' (Pramling Samuelsson and Kaga 2008), aimed at describing how EfS could be understood, used, taught and learned in early childhood settings. Whilst educators and researchers had been working in the area of early childhood environmental education prior to the release of the Pramling and Kaga (2008) document (see for example the significant works of Elliott and Davis 2009), the document served as a touchstone for increased public discussion and awareness regarding the relationship between the education of very young children and the role of sustainability as a core concern of the twenty-first century (Siraj-Blatchford 2009).

3.2 Environmental Education in Early Childhood

Since the publication of '*The contribution of early childhood to a sustainable society*' (Pramling Samuelsson and Kaga 2008) the notion of EfS in early childhood education has gained traction as the most frequently used term associated with environmental education in the early years. However, given debates in the broader environmental education literature about the ideological positions of different approaches to environmental education there is some concern that early childhood education should also be more open to these discussions (Cutter-Mackenzie and Edwards 2013), and so broaden awareness in the field beyond the concept of EfS into consideration of the educational function of environmental education in the first instance. Interestingly, in the history of early childhood sustainability education, it is the ecocentric, rather than anthropocentric perspective that has been most strongly emphasised. This is because the ecocentric perspective seeks to value the earth for its own sake in a way that aligns with historical beliefs in early childhood education about the significance of outdoor and nature-based play as a vehicle for learning about the environment. Pramling Samuelsson and Kaga (2008) argue this very point:

> There is a great deal in the history of early childhood education that aligns with education for sustainability e. g. *integrated curriculum approaches* (interdisciplinary), holism, outdoor play and learning, creating a sense of community, social justice etc. We do not have to create entirely 'new' pedagogies in order to 'do' education for sustainability. There is a tradition that could be built upon at the same time as it has to be renewed in terms of thinking about the content and [the need] to work [in] goal directed [ways] in the early years. It is important to raise the question of what the content in Early Childhood Education should be and also what the objectives have to be for fostering children for a life in Sustainability Development. We were also all convinced (from research) that it is not the traditional school subjects and ways of teaching knowledge that has the best effect on children's learning (p. 8).

This has resulted in the situation in which EfS has become somewhat of a default position for environmental education in early childhood education (even though EfS is more likely to orientate towards anthropocentric environmental position whilst early childhood education tends to express ecocentric tendencies towards outdoor play). Consequently, there has been more focus on educating young children about the importance of sustainability in early childhood education (see for example Duhn 2012; Prince 2010), then there has been on understanding how play-based learning connects with environmental education more broadly. Once again, this problem can be seen in the opening vignette for this book in which Seth's play episode largely echoed traditional beliefs about play-based learning in the outdoors, but lacked opportunities for children to engage with environmental learning that would further help them to understand biodiversity, develop biophilic dispositions towards nature and understand the natural habitat of the sea creatures they were incorporating into their play. Environmental education research suggesting that outdoor play *alone* is insufficient for helping children develop later pro-environmental dispositions as adults underscores the significance of this point (Blanchard and Buchanan 2011).

The need for more focused learning about the environment than that enabled by children's exploratory and outdoor based play is illustrated by the Vadala et al. (2007) study regarding the role of children's outdoor play experiences on their later adult-orientated environmental interests. They conducted extensive interviews with 61 participants aged 18–35 years, some who were involved in professional conservation related employment or volunteer activities. Participants were asked to recall and describe their childhood experiences in the outdoors. Interestingly, Vadala et al. (2007) identified two types of outdoor play, including 'child-nature play' and 'child–child play in nature'. Their findings suggested that children who participated in 'child–child play in nature' were more likely to use things found in nature (such as stones, sticks or walnuts) to play war games or build forts than were children who participated in 'child-nature play'. 'Child-nature play' was characterised by children's interests in collecting frogs, searching under logs for bugs and beetles or capturing fireflies. These adults also reported having their interest in nature actively supported by parents who provided access to books, field guides and magazines on natural history. One participant reported "you would just sit back and read them [field guides] like novels" (Vadala et al. 2007, p. 7). 'Child-nature play' adults were more likely to be involved in professional or volunteer conservation

roles than those adults who participated predominately in 'child–child play in nature'. This meant that simply being outdoors was not necessarily enough to foster environmental knowledge or understanding in ways that contributed to meaningful environmental interests and behaviors in later adulthood. What mattered was the child's orientation to nature and the fostering of their interest via content supplied by parents. Being outside was not necessarily equated with understanding nature as for some adults the environment simply provided the resources for their childhood imaginative games and activities.

3.3   Biophilia and Biophobia

The Vadala et al. (2007) findings can be understood in relation to two important concepts in environmental education known as biophilia and biophobia. Biophilia is considered to be children's love of and affinity with nature (Wilson 1992). According to Hyun (2005) "biophilia is a theoretical notion that there is a fundamental, genetically based human need and propensity to affiliate with nature and life" (p. 200). Orr (1992) argues if biophilia is not encouraged and nurtured in the early years of life, the opposite occurs and children can develop a fear of nature which is described as biophobia. In the Vadala et al. (2007) study, opportunities for developing a biophilic disposition may be have been most likely to emerge from the experiences of those children participating in 'child-nature play' because this play was orientated towards meaningful engagement with and learning about nature, rather than simply using what nature offered as a resource for play. Research by Hyun (2005) regarding the ways in which children and adults perceive nature would concur with this suggestion. He found that children tend to engage more directly with nature "by doing more touching, smelling, drawing and pretending in a direct and descriptive manner than adults, who did not actively participate" (p. 205). Thus, a disposition towards biophilia is likely to require active opportunities to engage with nature, supported by later opportunities to engage with information about the experience. Seth's wading pool optimistically filled with sponges, sea weed and plastic sea creatures may in fact work to promote biophobia amongst the children—unless some means for later engagement with content knowledge about these creatures is provided.

   An important point about biophilia and biophobia in early childhood education is the extent to which educators themselves are likely to express each disposition, and the consequent impact these dispositions have on educator capacities for engaging children in environmental educational experiences. Figure 3.1 presents two contrasting discussions between a child and educator exhibiting either a biophilic or biophobic attitude. Here, it can be seen that the educator leaning towards biophilia is able to support the child's learning needs with respect to understanding the importance of biodiversity and associated concepts such as habitat.

   In these examples, the first educator exhibits a biophilic disposition. Her inclination towards respecting the 'snake' extends to helping the child learn the

Biophilia

Child: I saw a snake in my backyard yesterday

Educator: Aren't they so beautiful how they move?

Child: My Dad said I was very lucky to see a large python. So we took a photo. I asked Dad if I could keep him. I said he could sleep in my room. Dad said I couldn't because his home is in the bush

Educator: I know a book called 'The salamander room' (Mazer, 1991) that is about a little boy who tries to keep a salamander but found he couldn't unless he turned his house into a forest

Child: Can we read that now?

Educator: Sure. Let's tell all the other children about the snake you saw yesterday. I am sure we could find out lots more information on pythons too. About what they eat, where they sleep and so on

Biophobia

Child: I saw a snake in my backyard yesterday

Educator: Did your parents kill it?

Child: No, we took a photo of it

Educator: Did you tell your neighbors? You know snakes are very dangerous. They are poisonous and they bite. They could kill you.

Child: Dad said they are beautiful

Educator: Yeah, beautiful when they are dead

Fig. 3.1 Educator dispositions towards biophilia and biophobia

correct terminology (python) and to offering access to more information about the likely habitat and life needs of the python. In this way, the adult's biophilic disposition increases the likelihood of the child accessing the range of content material that the children in the Valdala et al. (2007) study were provided with by their parents—leading to an experience of nature that built and supported a respect for the environment that carried into adulthood. In contrast, the second educator promotes a view of nature that sees the snake as frightening and dangerous. The opportunity to learn more about the reptile is shut down by the suggestion that such a creature could only be beautiful when it was 'dead'. These examples show how environmental education in early childhood education requires more than providing children with outdoor play experiences in nature. Rather, opportunities for play that involve conversations with adults holding biophilic dispositions can be a necessary precursor to accessing content knowledge. In Chaps. 4, 5 and 6 of this book the biophilic dispositions held by Jeanette, Josh and Robyn were a significant influence on their decision making regarding the provision of content knowledge to the children during modelled and purposefully-framed play.

3.4 Pedagogical Play in Early Childhood Education

In Chap. 2 we outlined how theoretical and philosophical ideas about play have influenced understandings about pedagogy in early childhood education. An important idea in Western-European pedagogy has been that children's learning and development is most effectively supported through participation in open-ended and freely chosen play. This idea connects very strongly with ideas proposed by Piaget regarding children's active construction of knowledge and Froebel's and Dewey's arguments regarding the role of play in the child's life as a vehicle for purposeful learning (Wood and Attfield 2005). These ideas about play are strongly entrenched in understandings about early childhood education that are still typically expressed in curriculum documentation or different 'approaches' to early childhood education. For example, the Developmentally Appropriate Practice guidelines (Copple and Bredekamp 2009) suggest:

> Children of all ages love to play, and it gives them opportunities to develop physical competence and enjoyment of the outdoors, understand and make sense of their world, interact with others, express and control emotions, develop their symbolic and problem-solving abilities, and practice emerging skills (p. 14).

This orientation towards play in early childhood pedagogy continues to resonate with the field, and whilst the presence of play itself in early childhood education has not necessarily been critiqued, how play is used and understood in relation to young children's learning has attracted significant research attention. A particularly important body of play-based literature is focused on what young children are likely to learn whilst playing in early childhood settings. An initial concern in this literature was the extent to which young children were likely to learn content knowledge by participating in open-ended and interest-driven play.

Wood (2007) went to the heart of this concern by questioning the extent to which play could be argued to have an educational function if it relied predominately on children's interests in a way that did not deliberately connect with conceptual knowledge and the content associated with a particular learning area:

> It is not clear whether children's interests are themselves goals, whether children create their own goals through their interests and, if so, what those goals are. A further question focuses on whether educators recognise and act on those interests as personal and/or social goals. For example, whilst playing with materials in a water tray may enable children to observe that objects behave in different ways, they will not spontaneously learn the concept of floating and sinking, volume and mass without educative encounters with more knowledgeable others. In other words, play activities may stimulate learning-relevant processes, but may be content free which juxtaposes the developmental against the educational rationale for play (p. 125).

The line of argument expressed by Wood (2007) was largely initiated against a background of theoretical and philosophical change in early childhood education. Other researchers were raising similar questions and concerns regarding the assumed relationship between children's participation in interest-driven and open-ended play and the learning of content knowledge (Hedges and Cullen 2005;

Kallery and Psillos 2001). These investigations were characterized by interest in ideas derived from the sociology of childhood and sociocultural theory. Now broadly encapsulated in the idea of being 'post-developmental' these ideas were focused on addressing perceived limitations associated with traditional ideas about play-based learning such as those emerging from the works of Piaget, Froebel and Dewey amongst others (see Chap. 2). A core concern was focused on understanding the child in 'context', rather than focusing on the individual child and the construction of knowledge through play. Context included consideration of the role of relationships in children's learning and increasingly referenced the ways in which social and cultural experiences mediated what and how young children learned. Research investigating children's content learning during play drew on sociocultural ideas about learning and development derived from the work of Vygotsky (2004) and Rogoff (2003). These ideas included an emphasis on the role of the adult during play as a support to children's learning and the importance of children's intent participation during social and cultural activities in learning.

A stream of research emerged focussing on understanding the relationship between children's play and their learning of content during such play in early childhood settings (i.e. Pramling Samuelsson and Asplund Carlsson 2008; Robbins 2003). This research increasingly emphasised the importance of adult interactions during play as a means of supporting children's developing conceptual understandings as basis for building content knowledge (Jordan 2009). This included the concept of Sustained Shared Thinking (Siraj-Blatchford 2009) which emerged from the Effective Provision of Pre-School Education research conducted in the United Kingdom (Siraj-Blatchford et al. 2008). Sustained Shared Thinking was linked to the provision of high quality early learning experiences for young children and arguably characterised by interactions between children and adults that were focused on building knowledge and ideas in the context of play-based experiences. In Australia, Fleer (2010) proposed the idea of contextual inter-subjectivity during children's play. She suggested that interest-driven and open-ended play was an important and appropriate aspect of early childhood education. However, she argued that educators needed to ensure that they understood the context of children's play so that they were able to engage and interact with children in ways that supported learning rather than assuming that children were learning particular concepts through the provision of play experiences alone. In the United States the concept of intentional teaching was used to describe the importance of achieving a balance between child and teacher initiated activity and interactions:

> An effective early childhood program combines *both* child-guided and adult-guided educational experiences. The terms 'child-guided experience' and 'adult-guided experience' do not refer to extremes (that is, they are not highly child-controlled or adult-controlled). Rather, adults play intentional roles in child-guided experience; and children have significant, active roles in adult-guided experience. Each takes advantage of planned or spontaneous, unexpected learning opportunities (Epstein 2007, p. 3).

An important aspect of intentional teaching was the inclusion of content knowledge in the interactions children and teachers would have together. In Sweden,

Pramling Samuelsson and Carlsson (2008) noted that children should learn 'something' from their interactions during play. Like Bodrova and Leong (2011), they highlighted how learning 'something' was important for extending children's play so that children would have more knowledge to draw on to inform their play-scripts. Understandings about the relationship between adults, children and content during play-based learning have grown through the use of concepts such as intentional teaching, inter-subjectivity and sustained shared thinking. These concepts have supported the emergence of pedagogical ideas about play-based learning that focus on understanding play across a continuum of activity. In these arguments play is not focused on so much as an interest-driven and freely chosen activity in early childhood education as it is understood pedagogically as an experience encompassing a range of activities, including those that might be solely child-initiated and open-ended to those that are more adult directed and/or initiated. This also includes activities in between either end of the continuum that are likely to include a balance of child to child and adult to child interactions and engagements around both play and content learning.

The continuum idea is expressed in descriptions such as integrated pedagogies (Wood 2013) and pedagogical activity (Dockett 2011) that emphasise the importance of play for children's learning but also acknowledge the extent to which educators are able to support this learning when engaging in meaningful interactions with young children. This orientation towards play is evident in contemporary early childhood curriculum frameworks that refer to the role of the educator in engaging young children's learning. For example, the United Kingdom's Early Years Foundation Stage (Department for Education 2012) suggests:

> Each area of learning and development must be implemented through planned, purposeful play and through a mix of adult-led and child-initiated activity. Play is essential for children's development, building their confidence as they learn to explore, to think about problems, and relate to others. Children learn by leading their own play, and by taking part in play which is guided by adults. There is an ongoing judgement to be made by practitioners about the balance between activities led by children, and activities led or guided by adults. Practitioners must respond to each child's emerging needs and interests, guiding their development through warm, positive interaction (p. 5).

In the Australian Early Years Learning Framework (Department of Education and Employment and Workforce Relations 2009), the balance between adult and child-initiated play as a basis for learning is described as such:

> Early childhood educators take on many roles in play with children and use a range of strategies to support learning. They engage in sustained shared conversations with children to extend their thinking (Siraj-Blatchford and Sylva 2004, cited in text). They provide a balance between child led, child initiated and educator supported learning. They create learning environments that encourage children to explore, solve problems, create and construct (p. 5).

Interest-driven and open-ended play in early childhood education is still highly valued for the social, emotional, cognitive and language benefits it arguably provides for young children. However, as recent research suggests, and curriculum frameworks such as the Early Years Foundation Stage and Early Years Learning

Framework increasingly describe, interest-driven and open-ended play is also complemented by educator initiated experiences and interactions aimed at building the content knowledge associated with children's interests and activities. Trawick-Smith (2012) describes the movement towards intentional teaching in terms of three main approaches to pedagogical play, including the "trust in play approach", the "facilitate play approach" and the "enhance learning outcomes through play approach" (pp. 260–262). The "trust in play approach" involves educators providing children with opportunities to engage in open-ended activity in which content is associated with the nature of the materials provided. The "facilitate play approach" involves educators interacting with children during play to add complexity to play scenarios and to help children identify play content. The "enhance learning outcomes through play approach" involves teachers purposefully identifying content they intend for children to interact with during play in order to meet pre-determined learning outcomes. Trawick-Smith (2012) argues that play is used most effectively when teachers combine the approaches in various ways according to what they learn about children's learning through observation and assessment.

Earlier in this chapter we noted that early childhood environmental education needed to be based on more than children's experiences of outdoor play in nature. This was because research shows that play alone does not help children to develop pro-environmental dispositions and understandings (Davis 2010), and further, that adults disposed toward biophilic attitudes towards the environment help children access the content knowledge that extends nature play into understanding about the environment. The recent emergence in the field of early childhood education of the complementary use of different types of play, including both child and adult initiated play, provides a strong basis for beginning to understand how children's outdoor play may be connected with learning opportunities via educators who are interested in promoting environmental education with young children. This is because contemporary orientations towards play-based learning focus on the inclusion of content during play and the ways in which this play can be engaged by children and adults to support conceptual and content based learning. This means there is potential for considering how different forms of pedagogical play can be used by teachers in early childhood environmental education. As we noted in Chap. 1, the pedagogical play-types we have drawn on to inform our research with teachers include open-ended play, modelled play and purposefully-framed play.

3.5 Conclusion

Environmental education is recognised as a core educational concern for the twenty-first century. In recent years, this recognition has been extended to the field of early childhood education. Environmental education and early childhood education can involve more than aligning the values of EfS with the traditional ideas about children's play. It can also be focused on determining how environmental education can be located in early childhood education in a way that addresses

needing to learn 'something' (Pramling Samuelsson and Carlsson 2008) about the environment using play-based learning. Recent advances in understanding play-based pedagogy in terms of intentional teaching are helpful because they widen understandings of 'play' so that both content and educator interactions are valued alongside children's activities and interests. This means there is space for considering environmental education in terms of content, but also in terms of the educator interactions that are necessary for realising this content so that children are supported in the development of pro-environmental dispositions and understandings. In the next three chapters we now consider how Jeanette, Josh and Robyn approached the use of play-based learning in early childhood environmental education.

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