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A Content Analysis of Documentation of Nature Play in Early Childhood Teacher Education Programs in Australia

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Abstract: This study theoretically aligns with research that purports that nature play positively contributes to sustainability stewardship. Early childhood teachers can plan for and nurture children's capabilities and dispositions for sustainability stewardship. Initial teacher education programs contribute to the professional learning of preservice early childhood teachers' perceptions regarding nature play. This article details the findings of content analysis to explore and uncover the existence of nature play in online, publicly available documents representing twenty-two early childhood teacher qualifications. In what ways is nature play evidenced in early childhood initial teacher education programs in Australia? The findings highlight potential discrepancies between the values related to nature play in the early childhood field and the content in initial teacher education programming. The article concludes with implications for teacher education programs and proposed recommendations for ongoing research.

Introduction

The United Nations Sustainable Development Goals (SDGs) (United Nations, 2015) have amplified the already burgeoning concerns regarding the status of the environment and the need for a collective global response. Education for sustainability (EfS) is an approach that aims to develop dispositions to contribute to sustainability stewardship (Australian Curriculum, Assessment and Reporting Authority, n.d.). Children have the right to participate in and influence decision-making (United Nations General Assembly, 1989) and, when provided with opportunities to be active agents, they can be "powerful protagonists for [environmental] change" (Sanson & Burke, 2020, p. 353). Although traditionally focused on primary and secondary school settings (Ernst & Burcak, 2019), the inclusion of very young children in optimising earliest understandings, skills and dispositions for sustainability stewardship is both plausible and necessary.

Central to EfS is the need for awareness and understanding of environmental issues (Berto & Barbiero, 2017; Engdahl, 2015). The notion that young children need to feel a deep connection to nature as a means of saving the future of the environment is acknowledged (Ärlemalm-Hagsér, 2013; Garbutt, 2013; Kahn & Kellert, 2002; Lesko, 2017). Play in nature promotes children's sustainability stewardship later in life (Chawla, 2007, 2009; Kellert, 2005; Sobel, 2014). Nature play provides the necessary opportunities to connect with the environment through unstructured play, exploration, and engagement, fostering the development of their understanding and compassion for the Earth.

Adams and Savahl (2017) advocate that a strategic aim for early childhood teachers is "to cultivate an environmental ethic and appreciation for nature, not solely for the benefit of future generations, but for nature itself, which is a crucial feature of sustainable development" (p. 316). In Australia, the national curriculum framework, *Belonging, Being, Becoming: The Early Years Learning Framework* (Department of Education, Employment and Workplace Relations, 2009) contributes to Adams and Savahl's aim by identifying the vast array of possibilities for natural environments and resources in highlighting "our responsibilities for a sustainable future," promoting "children's understanding about their responsibility to care for the environment," and fostering "hope, wonder and knowledge about the natural world" (p. 16).

The Early Years Learning Framework intersects with the mandated National Quality Standard (NQS) which "sets the benchmark for the quality of education and care services" (Australian Children's Education and Care Quality Authority, 2018, p. 88) within the early childhood education and care regulatory environment in Australia. In adhering to the NQS, early childhood teachers are expected to enact Quality Area 3.2 (Physical Environment) and to know how their programming and planning to support children with quality experiences in natural environments [Element 3.2.1]. Early childhood teachers are required to take an active role in caring for the environment and support children to develop environmental responsibility [Element 3.2.3]. It is this intersection of the regulations that validate the requirement for teachers to have the necessary knowledge, capabilities, and dispositions for engaging children in nature play.

In addition, Boyd et al. (2021) outlined the increasing prevalence of nature playscapes in communities and the growth of varied nature-based learning programs across Australia. Community and educational service interest in, development and implementation of nature play is in response to the regulatory environment and a strong, deep, and broad evidence base of the benefits of nature-based curricula and pedagogies (Bowden et al., 2011; Chawla, 2015; Kuo et al., 2019; Waite et al., 2013). However, while early childhood teachers report nature play as beneficial for children's learning (Miller, et al., 2022), professional development regarding the importance of their own engagement with nature and the recognition of the need for academic instruction about implementing nature play with young children is lacking (Torquati et al., 2013).

Similarly, Davis and Davis (2021) highlight the potential long-term impacts of increasing the presence of EfS in initial teacher education (ITE). They acknowledge the presence of sustainability within ITE courses as "unplanned and piecemeal" (p. 560). As teacher educators ourselves, we identify with Davis and Davis regarding the essential role of ITE programs in contributing to the professional learning of early childhood teachers regarding sustainability stewardship. The focus on interrogating the ways nature play is evidenced and serves as a foundation for EfS within early childhood ITE programs was significant in relation to the NQS focus on sustainable practices, sustainable learning environments and environmental responsibility. This study aimed to understand the presence of nature play content in teacher education programs designed to prepare graduates to plan, implement and evaluate authentic nature-based learning programs. The research question that guided the study was: In what ways is nature play evidenced and positioned as foundational for EfS (specifically sustainability stewardship) within early childhood initial teacher education programs in Australia?

Literature Review

As identified in the introduction, the theoretical perspective which informs the focus of the review is the premise that regulatory requirements exist within the early childhood field that supports the value of nature play. The review of the current literature draws on research regarding early childhood teacher perceptions, initial teacher education, nature play and sustainability stewardship. A review of the relevant research provides the background context to contribute to the value of including nature play as an integral component of early childhood initial teacher education programs in Australia.

Sustainability Stewardship

A connection to nature reflects the relationships that humans have with their natural world and is explored through the concept of biophilia – the "innate emotional affiliation of human beings to other living organisms" (Wilson 1993, p. 31). Recent research continues to validate a strong correlation between an emotional connection to the natural world and sustainability stewardship (Mackay & Schmitt, 2019; Martin et al., 2020; Whitburn et al., 2019). However, Furness (2021) suggests that a sense of feeling a connection to nature is an unstable relationship and in flux, stating that "to endure, it requires time and regular attention" (p. 7). Barragan-Jason et al. (2021) argued the importance of purposeful practices to enhance human connectedness to nature. This is supported by Hughes et al. (2019) who contend that while children have a strong affinity with nature, this connectedness reduces as children age. Barragan-Jason et al. recommend a need for contact with nature and mindfulness as important practices to enhance nature connectedness, and environmental attitudes, ultimately contributing to sustainability stewardship.

Environmental attitudes and behaviours have a significant influence on issues of sustainability and environmental stewardship (Hahn, 2021). Wilson (2020) writes of the importance of "both saving and savoring the natural world", stating that sustainability is very much an early childhood issue. Olivos et al. (2020) described the emotional attributions children five years of age have to nature, determining that youngsters experience both positive and negative emotions. While happiness was the most attributed emotion, biophobia (fear of nature) was the second most common feeling. A longitudinal study by Otto et al. (2019) revealed that children's environmental attitudes and behaviours are formed by age seven, while Kahn (2006) supposes that children as young as three years of age are aware that environmentally harmful behaviours are wrong. For this reason, early childhood education and care is the optimal space to positively influence children's attitudes and behaviours. Wilson (2020) suggests that "introducing education for sustainability [EfS] during the early childhood years avoids having to shift course at a later time in how we encourage children to think about and relate to the natural world" (p.18). Opportunities for children to make connections with nature have the potential for powerful short and long-term benefits.

Benefits of Nature Play for Sustainability Stewardship

The benefits of nature play are discussed across the relevant research literature. Experiences in nature contribute to young children's physical, social, cognitive, and emotional development during the early years (Berto & Barbiero, 2017; Ernst & Tornabene, 2012) and their understanding and awareness of the environment and associated issues (Berto & Barbiero, 2017; Engdahl, 2015; Otto & Pensini, 2017). Play in nature was noted as an

important early childhood experience that influenced adult values and behaviours toward nature and promoted the growth of children's environmental stewardship later in life (Chawla, 2007; Chawla & Derr, 2012). Asah et al. (2012) also suggest that nature-based activities lay the foundation for future environmental attitudes and behaviours.

As nature becomes an important provocation for learning in the early learning environment, sustainability can be woven into the culture of everyday life of services and schools, becoming the foundation upon which both children and teachers develop, learn, and grow together (Boyd et al., 2021). Wight et al. (2016) found that natural environments for inquiry, play and exploration "constitute an important opportunity to provide young children with environmental education and help prepare environmentally responsible adults" (p. 533).

An association between nature play and children's developing understandings of sustainability has been suggested by several scholars. For example, Ernst et al. (2021) noted that along with developing environmental values, attitudes and behaviours from an early age, children are also able to understand and engage with sustainability issues. Ernst et al. (2021) undertook a review to identify contributions to sustainability, revealing that nature play "appears to be contributing to applied knowledge in the context of sustainability" (p. 9). Contemporary research has established nature play as a learning opportunity for the development of children's understandings of sustainability. The inclusion of nature play as a component in early childhood initial teacher education programs is underpinned by the notion that nature play provides an opportunity for teachers to engage children with ideas around sustainability.

Teachers' Perceptions and Experiences of Nature Play

The early childhood teacher's role is to facilitate children's daily experiences and their decision-making around planning and programming is significantly influenced by personal beliefs (Nilsen, 2021; Woods & Hedges, 2016). Beliefs about children's play, the natural world and environmental education may determine the choices teachers make, situating them as the gatekeepers to children's access to outdoor natural environments and experiences (Copeland et al., 2011; Dietze & Kashin, 2019).

Studies investigating teachers' beliefs report that nature play is viewed as being important for young children's development (Ernst, 2014; Little et al., 2012; McClintic & Petty, 2015). When exploring early childhood teacher beliefs and practices about outdoor play, McClintic and Petty (2015) noted that participants expressed the belief that "outdoor play was essential" (p. 25) for children's development and Ernst (2014) acknowledged that early childhood teachers recognise the "fundamental importance of nature experiences in childhood" (p. 73). Little et al. (2012), reported that Australian and Norwegian teachers acknowledged the importance of outdoor play as essential for children's holistic development. The value teachers placed on the benefits of nature play were associated with personal individual experiences. Research into teachers' perceptions of outdoor learning possibilities revealed that teachers acknowledged that past experiences strongly influence their perceptions of nature play (Blanchet-Cohen & Elliott, 2011; Ernst, 2014; Leggett & Newman, 2017; Kaarby & Tanberg, 2017). Dietze and Kashin (2019) reported that teachers believed their own experiences with outdoor play were an impetus for engaging young children with the environment. Teachers who had current and regular ongoing experiences with nature were more likely to advocate for outdoor play in early learning settings (Dietze & Kashin, 2019) drawing on their firsthand experiences for planning, programming, and engagement.

McClintic and Petty (2015) uncovered that, teachers with limited outdoor experiences expressed a lack of confidence in their abilities to facilitate children's learning in natural environments. The researchers reported that the teachers felt they had limited knowledge about the environment and the necessary pedagogies to support children's learning. Torquati et al. (2013) noted that teachers identified "basic knowledge about nature as essential" (p. 739) for effective engagement and expressed low self-efficacy in their ability to effectively respond to questions and conversations with young children about the natural environment because of their lack of knowledge.

In recent studies, teachers have identified that different skills are needed when working in the outdoor environment. Communicating in ways that support children in expressing ideas, sharing knowledge about nature, and serving as an example of how to take responsibility for nature conservation are important skills commonly reported by teachers (King, et al., 2020). Moreover, teachers are more likely to be co-learners in the natural landscape discovering natural phenomena at the same time as the children when they possess skills of flexibility and attentiveness to children's interests (Little et al., 2012). In the outdoors, teachers noted benefits such as the emergence of increased learning opportunities leading to different conversations with children (Little et al., 2012). Overall, they felt that their relationship with the children improved, and the way children interacted with each other also altered (Little et al., 2012).

In summary, previous research indicates that teacher participants in relevant studies acknowledged the importance of the outdoors as a valuable learning opportunity for young children however their self-efficacy for working in natural environments was impacted by their own beliefs and values. To improve teachers' self-efficacy and their intention to support young children's engagement with nature play, the reviewed research literature indicates the significance of personally engaging in outdoor experiences. Therefore, preservice teachers would benefit from opportunities to spend time in nature and connect with associated learning during initial teacher education programs.

The Role of Initial Teacher Education

Qualified early childhood teachers are fundamental to high quality early childhood experiences (Manning, et al., 2017). Professional learning and development such as initial teacher education programs have been shown to improve the quality of early childhood practice, and ultimately children's outcomes (Fukkink & Lont 2007; Waters & Payler, 2015). In Australia early childhood teachers are required to complete a three- or four-year accredited initial teacher education program to gain the necessary qualifications.

The research literature details a range of challenges related to teachers' perceptions, and limited experiences that negatively impact their abilities to engage and facilitate nature play. McClintic and Petty (2015) reported that many teachers do not fully understand the potential that outdoor environments offer as learning opportunities for young children. Torquati et al. (2013) found that the teachers they interviewed felt poorly prepared to support children's nature play. These sentiments appear common across the literature, leading scholars to call for the inclusion of nature play in early childhood initial teacher education programs (Ernst, 2014; Hughes et al., 2016; McClintic & Petty, 2015) and for preservice teacher engagement with outdoor play experiences during practicums at the tertiary level (Beery & Magntorn, 2021; Copeland et al., 2011; Dietze & Cutler, 2020; McClintic & Petty, 2015). Torquati et al. (2013) advocate for initial early childhood teacher education programs that act as a guide for preservice teachers to facilitate children's appreciation of natural

environments and "provide opportunities for preservice teachers to become acquainted with educational and developmental affordances in natural environments" (p. 206).

Davis and Davis (2021) note an insufficient focus on Education for Sustainability (EfS) within initial teacher education. They contend the potential that advancing the inclusion of EfS in initial teacher education programs must "encourage greater systems-wide action within the broader early childhood education field, as opposed to the adhoc approaches that currently apply" (p. 550). This very sentiment parallels the argument for including a focus on nature play within initial teacher education, as well as an emphasis on nature play's role as a foundation for sustainability stewardship. Discussion about the next iteration of the Early Years Learning Framework for Australia has indicated the possibility of a new principle addressing sustainability, emphasising that "teaching children and young people about the natural environment and how to take care of it is central to education for sustainability" (Hadley et al, 2021, p.7). The connection between nature play and EfS in current initial teacher education programs is an important and timely research focus. ITE has a role to educate teachers on the benefits of nature play and its connection to EfS.

Previous research indicates that initial and ongoing professional learning support for teachers seems obvious. Despite recognition that initial teacher education programs play an important role in preparing preservice teachers for working with children in natural environments and fostering environmental stewardship, a gap in the literature reporting on the ways nature play is evidenced in programs in Australia was identified. The literature review has revealed that an interrogation of the evidence of nature play as a component of early childhood initial teacher education programs in the Australian context is significant and timely. The intent of this study was to uncover the inclusion of approaches (if any) for facilitating preservice teachers' understanding and knowledge to support young children's learning about nature and the ways in which nature play supports sustainability stewardship.

Methodology

A content analysis was conducted of online, publicly available documents representing early childhood initial teacher education programs in Australia. Content analysis (Kapustka et al., 2009; Kleinheksel et al., 2020; Krippendorff, 2004) is a systematic methodology which identifies patterns in recorded communication. The research team specifically conducted a summative content analysis, which began with recording the occurrences of keywords, followed by deeper interpretation of the associated content (Hsieh et al., 2005).

The research team agreed upon the criteria for inclusion of key terms to search for within the online documents associated with program and course design (such as aims and objectives), content (such as topics), and assessment outlines. The broader set of terms were established through a review of relevant literature regarding nature play and sustainability stewardship in early childhood. Focusing on 'nature play' in isolation may have been overly reductive, disregarding context, nuance, and ambiguous meanings and practices. Therefore, the authors in this study used additional terms of reference akin to that of 'nature play' to address this potential limitation and produce a more inclusive search (Maier, 2017). For example, search terms also included natural environments, outdoor learning, and environmental education.

Data Collection

The data collection was limited to Australian Early Childhood Teacher (ECT) qualifications. In this article, 'program' is the term used for the qualification and the degree program offered by a university, and 'course' refers to a subject or unit within a program. Recognised Australian Children's Education and Care Quality Authority (ACECQA) qualifications, approved until the end date of 2024 or 2025, were identified as the focus of the review. During the review period, 31 ECT full-time or equivalent programs were drawn from the ACECQA approved qualifications list. The focus on sustainability and sustainable practices in the National Quality Standard (NQS) (Australian Children's Education and Care Quality Authority, 2018) varied from the 2010 version. The initial teacher education programs selected for the review were submitted for accreditation in 2019 and 2020 following changes to the NQS and were publicly available from the ACECQA website.

Two research team members located the key terms from the same documents through a consistent process. Data were recorded in an Excel sheet, including qualification level (e.g Bachelor of Education – Early Childhood), awarding institution, qualification name and code, date awarded (end date qualification is recognised by ACECQA), course code and name (e.g. one of 32 courses in a 4-year qualification), coding term (one of the agreed upon search terms by the research team), document type (e.g. course specification), section in document (e.g. rationale), section in document verbatim (cut and paste of full text), and location link to the publicly accessible qualification communication. Of the 31 ACECQA accredited qualification, 22 university programs were identified as including key terms or terms of reference akin to that of 'nature play'.

Data Analysis

Collated data provided a summary of nature play content available through the website searches. The research team then analysed the meanings and relationships of key terms via an adapted version of the coding scheme created by Kapustka et al. (2009). The coding scheme consisted of four questions like the U.S. study inquiring about social justice in teacher education through a qualitative content analysis method (Kaptustka et al., 2009). The collated data in this study were analysed with the following guiding questions:

1. How is nature play connected to the context of teaching and learning?
2. What is the rationale for nature play content in initial teacher education programs?
3. What is the stance taken toward nature play and sustainability stewardship?
4. In course content, who is deemed to bear responsibility for learning about nature play as a pedagogy with young children?

The questions facilitated a more qualitative understanding of the nature play within the course content of early childhood initial teacher education programs in Australia.

Findings

The findings offer insights into a national snapshot of current provisions for nature play in early childhood teacher education across Australia. Of the 22 programs analysed, there were two course titles with direct reference to nature play, 'Outdoor and Nature Play' and 'Nature Pedagogies'. Of the 22 programs analysed, thirty-six individual course titles included the terms sustainability/sustainable, science/scientific, place, play and/or

environments/ environmental. These courses prompted further examination for any links to nature play.

The following section of this article presents further analysis of the collated data. In depth findings are presented in response to the four questions adapted from Kapustka et al.'s (2009) coding scheme. The questions provided a coherent structure, not only as an accommodating perspective for what the research team was seeing in the data, but also as a broad perspective facilitating a holistic examination of the ways in which nature play was evidenced.

How is Nature Play Connected to the Context of Teaching and Learning?

Kapustka's (2009) first question recognises that teacher education courses are connected to the varied contexts of teaching and learning with children and their families. In early childhood, the Early Years Learning Framework (Department of Education, Employment and Workplace Relations, 2009) and the National Quality Standard (Australian Children's Education and Care Quality Authority, 2018) outline a key practice of being an early childhood teacher to construct and co-construct the early learning environment.

Most relevant courses in the collated data in this study articulated the importance of the physical and human environment to support learning and development. An analysis of the accessible course information indicated that preservice teachers are expected to apply learned strategies across learning contexts, for example, in weekly tutorial activities. During professional experiences or theoretical course assessments, preservice teachers are asked to evaluate strategies, design, or create learning environments for a specific purpose or in response to a scenario. For example, create a learning environment for developing children's scientific, technological, or environmental understandings, or to promote language and mathematical development, curiosity, inquiry, imagination, self-expression, higher-order thinking and problem-solving. The collated data demonstrated little evidence or reference specifically to designing environments to support nature play in the context of early childhood services and/or the early years of schools in which most graduate candidates will be employed.

In the documentation analysed, content, practice and assessment focused on such things as the physical layout of indoor and outdoor spaces, routines, transitions, aesthetics, the use of time, groupings of children in spaces, resources, and materials. The use of natural, non-plastic, wooden resources and materials was commonly mentioned when the focus was on 'natural environments'. Relationships, safety, inclusivity, and well-being were also promoted through positive and diverse environments (as part of services, centres and early years of schools) but not always in relation to specific mentions of nature play environments.

An analysis of the collated data demonstrated that teacher education course content was connected to the curriculum context – six courses were identified that articulated nature-based learning to expand course participants' working knowledge of the Early Years Learning Framework and Australian Curriculum. For example, one course addressed the Learning Outcomes outlined in the Early Years Learning Framework regarding the course overview: "Children are connected with and contribute to their world"; and "Children are confident and involved learners" (DEEWR, 2009). There was no direct connection to the regulatory context of the National Quality Standard (NQS) (Australian Children's Education and Care Quality Authority, 2018) communicated in accessible documentation.

Overall, the analysis of the data in this study suggests that there is an opportunity for ITE courses and programs to consider more critically and broadly the contexts for which they are preparing future teachers when designing course content, practice, and assessment for

nature play. The analysis framework (Kaputska et al, 2009) uncovered specific opportunities to connect curriculum, learning contexts, and nature play environments.

What is the Rationale for Including Nature Play Content?

Kapustka et al.'s (2009) question regarding the rationale for content refers to identifying one of three rationales: values-based rationale, multicultural and diversity rationale, and a structural critique rationale. In this study, the rationales outlined by Kaputska guided us to search for evidence of dispositions toward nature play; access to natural environments and nature play opportunities, and any focus on health and wellbeing and nature play. And lastly, we searched for critiquing and/or overcoming barriers and inequities for implementing nature play.

Given the less prominent use of nature play available in the online documents for each qualification, it was difficult to determine definitively from the language alone the rationale for utilising specific terms related to nature-based learning (Kapustka et al., 2009). The collated data uncovered one course devoted to outdoor and nature play that proposed the notion that unstructured play outdoors (nature play) is fundamental for a healthy childhood in that it provides benefits for health, cognitive, social, and emotional development and helps to build resilience and creativity. Another course devoted to nature pedagogies drew upon the research evidence, emphasizing exposure to natural environments develops children's understandings and experiences, such as physical health, motor skill development, emotional wellbeing, self-regulation, empathy, creativity, and innovation, and their capacity to be successful learners. Most relevant courses, inclusive of content related to nature play, nature education and environments focused on approaches to play as pedagogy, project-based learning, and inquiry learning. Explicit courses devoted to play and play pedagogies also failed to detail nature play or other nature-based learning pedagogies, approaches, and strategies as important foci within a beginning teacher's repertoire for inquiring, learning, and relating with young children.

What Stance is taken toward Nature Play and Sustainability Stewardship?

Kapustka et al. (2009) examined program and course documentation and identified three stances reflected in the language used in qualification documentation. In this study, the research team searched for "action-based" work for nature play in early childhood services and/or schools (stance 1); "action-based" work for nature play in the broader community (stance 2), and "knowledge-based" which emphasises developing knowledge or values associated with nature play (stance 3).

Universities varied in the way they described nature play within their courses. Of the courses that explicitly referenced the term nature play, one university had direct links to the Australian Professional Standards for Teachers (Australian Institute for Teaching and School Leadership, 2011) focus areas to which the course unit learning outcomes applied. This suggests an action-based stance, with direct contextual relevance to early childhood services and schools by way of teacher competency.

Furthermore, there was minimal evidence in the courses reviewed that the discussion of nature play and/or natural environments extended beyond the boundaries of early childhood services or schools. Taught, practiced, and assessed course components were confined to the walls of the early learning environment and within the confines of the fenced

outdoor space of early childhood services and schools. Nature play was not articulated as being part of the broader community.

As previously discussed, despite much of the relevant research about nature play to date addressing the definitive effectiveness of natural environments as places for learning and development (Christiansen et. al., 2018; Elliot & Chancellor, 2014; Leather, 2018), only a small proportion of courses included a focus on the importance of nature-based learning. Next, we analysed courses to identify those that developed knowledge or values about nature play for sustainability.

Several courses authentically and purposefully included environmental education in early childhood education and evidenced sustainability and sustainable development as a key concern, fundamental concept, or central theme. Although these courses identified sustainability as a main component, there were only two explicit connections of nature play to stewardship evidenced. In one course, the course overview propositioned that experience in nature as a child may lead to environmental sensitivity and responsibility later in life. In another course: the course content was articulated as drawing on the research evidence that reveals exposure to natural environments develops children's understandings and experiences that will have a long-term impact on the quality of children's lives. Overall, the collated data demonstrated minimal attention to how involvement and participation in natural learning environments could contribute to an appreciation and connection to the natural environment, develop environmental awareness and responsibility, and provide a basis for ongoing environmental education (Department of Education, Employment and Workplace Relations, 2009) and sustainability stewardship.

Who is Deemed to Bear Responsibility for Learning about and Implementing Nature Play as a Pedagogy with Young Children?

The idea of 'responsibility' (Kapustka et al, 2009) raises questions about the locus of leadership and collaboration in implementing nature play. A focus of the analysis of the collated evidence of nature play in course documents examined the question of responsibility, specifically who was responsible for enacting institutional visions of nature play. Furthermore, is content knowledge deemed adequate or are teachers, children and/or families viewed to be 'agents of change' with specific knowledge, skills, and dispositions? Wynne and Gorman (2015) formulated a lengthy compilation of possible curriculum links to nature play and nature pedagogy. They identified connections for nature play to compliment both the Early Years Learning Framework (Department of Education, Employment and Workplace Relations, 2009) and the Australian Curriculum (Australian Curriculum, Assessment and Reporting Authority, n.d.), targeting early childhood teachers and primary teachers to bear responsibility to implement nature play.

In addition, viewing children as agents capable of being active participants and enacting change in their world is integral to the principles of the approved learning frameworks, nurturing children's sense of sustainability stewardship. Pollock et al. (2017) proposed three key practices to support children to be environmentally responsible; involve children authentically, collaborate with families, and engage in critical reflection. Each of these practices were evident in the course documents analysed. Examples included creating responsive and healthy early childhood environments, contributing to sustainable futures, facilitating child participation, critically reflecting on the child's perspective, and strengthening communities with a focus on activities that promote environmental responsibility.

Three early childhood initial teacher education courses explicitly detailed the responsibility of teachers to facilitate parents'/carers' and/or children's participation in building sustainable environments or a sustainable society. These courses identified a teacher's responsibility to develop strong partnerships between children, parents, carers and families, and the broader community was articulated in course overviews. Overall, the responsibility for nature play was only evidenced minimally in the early childhood initial teacher education programs reviewed, suggesting that the translation of contemporary research regarding the importance of responsibility is still emerging and underdeveloped within initial teacher education. Overall, the responsibility for nature play was only evidenced minimally in the early childhood initial teacher education programs reviewed, suggesting that the translation of contemporary research regarding the importance of responsibility is still emerging and underdeveloped within initial teacher education.

Discussion

Current research has begun to uncover how nature play is perceived by teachers, the ways in which nature play is enacted, and how nature play is experienced (Cutter-Mackenzie-Knowles et al., 2020; Dankiw et al., 2020). Yet, as reported in the literature review, research indicates that teachers are underprepared for engaging children in nature-based learning. Our research team were curious about the presence of nature play in early childhood initial teacher education programs in Australia. The content analysis and findings presented in this article were guided by the question, in what ways is nature play evidenced and positioned as foundational for EfS (specifically sustainability stewardship) within early childhood initial teacher education programs in Australia?

Twenty-two initial teacher education programs were interrogated using Kapustka et al.'s (2009) coding scheme constituting four questions seeking evidence of the inclusion of nature play. Overall, EfS and sustainable development were evident in some initial teacher education programs although the link between children engaging with natural environments through play and developing sustainability stewardship was unclear. Aligned with the findings reported by Merritt et al. (2018) who noted that course work associated with sustainability content was rare in teacher education intended for early years teachers, parallels were found in the current study. Furthermore, the interrogation of the Australian ITE programs has highlighted that program information lacked detail about engaging young children in nature play in general, and for the benefit of developing environmental understandings. Perhaps, suggesting ITE programs for early childhood education in Australia are bereft of the professional learning required by preservice teachers to confidently engage children with learning through nature, and learning through nature for the benefit of environmental and sustainability stewardship.

Methodological issues encountered as a research team are interwoven throughout the next two sections as the implications for teacher education and recommendations for ongoing research are discussed.

Implications for Teacher Education Programs

Previous studies have indicated that frequent play opportunities within natural settings is a powerful influence on the development of lifelong conservation values (Finch & Loza, 2015; Powers & Ren, 2018). The analysis of 22 early childhood initial teacher education programs in Australia found limited articulation of the importance of nature play for sustainability stewardship, even within those programs offering sustainability and sustainable

practice-focused courses or those that included content such as environmental education and environments within general courses.

Nature play in teacher education is crucial as a pathway for teachers who also work for sustainability stewardship. Institutional spaces in which initial early childhood teacher education (ECTE) programs are positioned have become increasingly complex, fraught with new pressures, and conflicting expectations and demands from a range of stakeholders (Australian Children's Education and Care Quality Authority, 2018; The Australian Institute for Teaching and School Leadership (2011; Teacher Education Ministerial Advisory Group, 2014). The findings confirm a dearth of evidence of nature play and provoke further wonderings regarding the provision of adequate knowledge, experiences, and practice opportunities for preservice teachers to develop knowledge, capabilities and dispositions for nature play and sustainability stewardship.

The project team advocates for nature play to be foundational and prioritised within early childhood initial teacher education programs with clearly articulated conceptualisation and implementation within a program's philosophy, conceptual framework, or underpinning vision in all documents. The publicly available qualification documents demonstrated that the current articulation of nature play offers a range of possibilities for featuring nature play and sustainability stewardship conceptually within accreditation documents. For example, identified in recent and extensive childhood and nature research, emerging perspectives and thinking are proposed, including 'childhoodnature', a concept that problematises long-held "Cartesian nature-cultural binaries" (Mackenzie-Knowles et al., 2021, p. 3). In addition, the development of a Nature Play Framework (Cutter-Mackenzie-Knowles et al., 2021) is a positive step toward a collective knowledge base about nature play. Further development of Cutter-Mackenzie-Knowles et al.'s Nature Play Framework and emerging conceptual theories require a wider application and will be a critical contribution to supporting teachers' development of nature-based learning experiences.

Recommendations for Ongoing Research

Ongoing accreditation cycles highlight that an interrogation of the qualifications in previous or future years would produce varying data. The research team concurs with McArdle et al. (2018) in making no claims to replicate the full course learning experience of preservice teachers in each program. Only static course material was analysed, individual program coordinators and teaching academics were not interviewed, and on-campus or online teaching was not observed. The content analysis methodology guided the research team to interrogate static course documentation which limits the inferences that can be drawn from this study (Krippendorff, 2004). Further reviews of documents submitted for accreditation to state curriculum authorities and to the ACECQA may provide further and varying insights.

Future studies with faculty program leaders and teaching academics could examine how nature play is being taught, practiced, and assessed across the ITE programs and courses. This would also highlight the extent to which program leaders and teaching academics have the knowledge; rationales; materials; and strategies required for programming, planning practices, and assessing nature play of future educators.

Confined by the research question guiding the review and the data collated, the authors wonder whether the changes from the NQS (Australian Children's Education and Care Quality Authority, 2011) to the updated version in 2018, further external policy and/or regulatory requirements, impacted the inclusion of nature play in the preparation and professional development of early childhood teachers. This query proposes the possibility for

further research to track the progression of future developments in terms of regulatory changes and their potential impacts.

Conclusion

The findings provide an important snapshot of how knowledge, capabilities and dispositions associated with nature-based learning are evidenced within Australian Early Childhood Teacher (ECT) qualifications across 22 universities. The findings and analysis uncovered that nature play is inadequately evidenced in publicly accessible university documentation. What emerged from this analysis, too, was a coherent narrative that indicates an overall lack of attention to the relationship between nature play and sustainability stewardship in the documentation.

A deeper investigation of the research literature and early childhood initial teacher education programs in Australia has informed and extended the authors' understanding of existing nature play within the early childhood initial teacher education context. These new learnings offer opportunities to expand scholarly conversations and conceptualisations of nature play and EfS as well as assist with advocating for further research into how nature-based learning can be implemented into early childhood initial teacher education programs.

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