

The development of an interdisciplinary theoretical framework for Forest School in the United Kingdom

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Abstract

A growing evidence base has demonstrated the value of Forest School as an outdoor learning approach which supports a range of benefits including improved physical, social and mental wellbeing, increased confidence and self-esteem and the development of problem-solving skills. However, critics of Forest School have argued that a lack of theoretical coherence and detail risks the misinterpretation of Forest School and its pedagogy by both practitioners and researchers. This paper responds to these concerns, establishing a comprehensive and detailed theoretical framework for Forest School. Through a thorough examination of evidence supporting Forest School delivery, we examine the theoretical keystones of this pedagogical approach to inform an interdisciplinary theoretical understanding of Forest School. We argue that Forest School is a particular socially constructed approach to outdoor education, which is informed by social constructivist experiential learning theory. This is driven by two core components. First, play-pedagogy, which includes the opportunity to experience risk and be creative. Next, biophilic interaction, which examines the human innate desire to be in nature. This is informed by the cultural origins of Forest School development as underpinned by Nordic notions of *friluftsliv* and by theories of place

[Corrections made on 25 January 2024, after first online publication: The fourth author's surname has been corrected in this version.]

Sara Knight is currently working as an independent researcher.

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attachment. Taken together, this theoretical framework considers the breadth of knowledge that underpins Forest School and recognises its growing evidence base, which positions it as a rich and valuable pedagogical approach.

KEYWORDS

biophilia, experiential learning, outdoor learning, play-pedagogy

Key insights

What is the main issue that the paper addresses?

This paper addresses the lack of theoretical coherence in Forest School research and pedagogy by presenting the first comprehensive, evidence-based discussion of the underpinning theoretical constructs which create the Forest School pedagogical environment and explain the reported benefits of Forest School for participants.

What are the main insights that the paper provides?

Forest School is a socially constructed approach to outdoor education which draws on experiential learning theory. It is driven by two core components:

- *Play-pedagogy*. The opportunity to play in creative and risky ways provides a rich environment for learning and development.
- *Biophilic interaction*. Repeated, regular engagement with green space develops attachment to place, supporting nature connection and wellbeing.

INTRODUCTION

Forest School is a pedagogical construct rather than an entity. It is a way of working outside in wooded spaces to facilitate personal growth with participants of all ages (Knight, 2022). First introduced to the United Kingdom in 1994 by early years practitioners from Bridgwater College in Somerset following a visit to outdoor nursery settings in Denmark, the Forest School approach has steadily increased in popularity in UK education settings and beyond (Garden & Downes, 2023a). It offers opportunities for children and adults alike to participate in novel and engaging activities in natural green spaces (Knight, 2016a, 2016b, 2016c). The launch of the Forest School Association (FSA)—the professional body for Forest School in the United Kingdom—in England in 2012 embedded a clear set of criteria for practice to be identified as Forest School (Forest School Association, 2020; Knight, 2013). These six principles, drawn up by the membership following research into current practice at the time, describe an experiential process:

1. Forest School is a long-term intervention, preferably enabling participants to experience the changing seasons. Leaders engage in a cycle of planning, observation and adaptation to match their offer to the needs of the participants.

2. Forest School takes place in a wooded environment to support a lifelong relationship between the participants and the natural world.
3. Forest School starts with the interests and abilities of the participants and follows those developing interests and needs through shared playful activities.
4. Forest School provision aims to promote holistic development to foster resilient, confident, independent and creative participants.
5. Forest School offers opportunities for risk-taking that is appropriate to the environment and the participants.
6. Forest School sessions are run by qualified Forest School practitioners who engage in professional CPD.

Despite this set of pedagogical values to underpin Forest School practice, scholars have been critical of this practitioner-constructed definition. For example, Leather (2018) argues that Forest School lacks theoretical rigour, a clear pedagogy and theoretical coherence. A recent systematic literature review by Garden and Downes (2023a) also indicated that wider theorisation is needed to ensure insights surrounding Forest School can be applied more broadly, suggesting that formal and more generalisable theoretical perspectives should be identified. However, Waite and Goodenough (2018) note that over-theorisation could endanger the playful and 'alternative' elements of Forest School. While a growing body of evidence to support Forest School practice exists (Garden & Downes, 2023a), we recognise a need to draw together a theoretical framework which both explains the observations of researchers examining Forest School and extends understanding of this pedagogical approach.

This paper presents a rigorous, evidence-based theoretical framework which underpins Forest School pedagogy and practice, whilst recognising the underlying values set out in the six principles above. It sets out the first comprehensive theoretically focused interdisciplinary framework for understanding Forest School. In doing so, existing evidence is reviewed and collated, drawing on the extensive research and in-depth understanding of Forest School of the first author, a founding member of the Forest School Association.

UNDERSTANDING THE EXISTING EVIDENCE BASE

The focus of much research relating to Forest School has been an examination of the benefits to participants (Knight, 2011a, 2011b, 2011c), and this has been demonstrated through a number of recent systematic reviews (see Dabaja, 2022a, 2022b; Garden & Downes, 2023a; Harris, 2022; Sella et al., 2023).

In their systematic review, Sella et al. (2023) specifically examine the psychological impact of Forest School on preschool children. They indicate that exposure to Forest School on a regular basis can benefit young children's psychological resilience, their motor and physical development, creativity and problem-solving, and connection to nature. They note that the experiential and immersive nature of Forest School activity, alongside the child-oriented focus, may contribute to the positive impacts observed in the 16 studies they reviewed. Positive findings are demonstrated in research with primary school children. For example, Austin et al. (2013) and Trapasso et al. (2018) demonstrate, through objective measurement, that Forest School can increase primary school children's physical activity levels. Improvements in physical activity and physical development through Forest School are also highlighted by Harris (2015) and Coates (2019). Coates (2019) argues that the challenging and unpredictable natural environment in which Forest School is situated, alongside the opportunity to engage in adventurous and risky play, can help support positive physical development within Forest School settings, as per Savery et al. (2020).

The experiential and play-based learning offered in Forest School affords children learning opportunities, develops their sense of social and environmental responsibility and buffers wellbeing (Coates & Pimlott-Wilson, 2019). Indeed, several researchers argue that Forest School, and the opportunity it offers for children to be in green, wooded spaces, stimulates children's motivation and concentration, improves self-esteem and self-confidence and develops their ability to work co-operatively (see, e.g., Coates & Pimlott-Wilson, 2019; Garden & Downes, 2023a; Hughes & Jenner, 2006; Knight, 2013; O'Brien & Murray, 2006; Ridgers et al., 2012). Being given the time and space to explore at their own pace during Forest School has also been argued to stimulate language and communication development (Davis & Waite, 2005).

Although much research examining Forest School has focused on early years and primary school populations, some researchers have examined the impact for older children and adults, showing similar benefits (Archard, 2015; Knight, 2011a, 2011b, 2011c; Tiplady & Menter, 2021). Tiplady and Menter (2021), for example, examine the causal processes underlying the benefits of Forest School for both primary and secondary school children who experience social, emotional and mental health (SEMH) difficulties. They note that Forest School improved the emotional wellbeing of their participants, with participants discussing the sense of freedom they experience when in the Forest School environment. This is something highlighted by Coates and Pimlott-Wilson (2019) in their mainstream primary school-aged population, where they suggest that Forest School allows children to experience aspects of childhood not often available in structured classroom settings (i.e., child-initiated play-based learning). For their secondary school participants, Tiplady and Menter (2021) indicate that relationship development was an important feature for this group and argue that the underlying principles of Forest School (as indicated earlier in this paper) play some part in explaining the positive impact of Forest School for children of different ages. However, they do note that these benefits and behavioural improvements reflected in Forest School engagement may not be maintained when back in classroom settings. By contrast, Knight (2009) found that parents and children recognised the beneficial effects on children's dispositions of learning in Forest School, and the impact this had on children's appreciation for the natural world, which continued to have an impact for years after their Forest School experiences.

When considering adult populations, Knight (2011a, 2011b, 2011c) and Archard (2015) report that Forest School engagement resulted in improved confidence and resilience of the participants. This helped the adult participants to re-engage with society and highlighted the potential economic benefit of green interventions in health and social care.

Taken together, these studies represent the growing body of evidence to support delivery of Forest School in a range of settings and with diverse populations, which has been reflected by the growing number of systematic reviews on the topic (Dabaja, 2022a, 2022b; Garden & Downes, 2023a; Harris, 2022; Sella et al., 2023). These studies tend to speak to the benefits of Forest School for participants. While some attempts have been made to develop more conceptual understandings about Forest School practice (e.g., Garden & Downes, 2023a; Harris, 2022; Tiplady & Menter, 2021), there remains a significant lack of theoretical understanding about how the pedagogical practices which underlie and influence Forest School delivery might support the realisation of the benefits highlighted in this body of evidence. Tiplady and Menter (2021) go some way towards developing this by recognising the ways in which the FSA (Forest School Association, 2020) principles underlying Forest School practice may influence the beneficial impact of Forest School. However, other researchers have noted that there are broader theoretical principles related to learning and development which may also influence practice, such as social constructivist learning theories (Coates & Pimlott-Wilson, 2019; Knight, 2013; Knight, 2016a, 2016b, 2016c; O'Brien, 2009), experiential learning (Coates & Pimlott-Wilson, 2019), play (Garden & Downes, 2023b; Harris, 2022;

McCree et al., 2018), shifting adult–child power dynamics (Coates & Pimlott-Wilson, 2019; Maynard, 2007) and curriculum design considerations (Harris, 2022). Additionally, while researchers identify benefits which link to a number of academic disciplines, there has been no attempt to recognise that this interdisciplinarity is a significant contributor to the success of Forest School. It is clear that the theories which influence Forest School delivery and its potential to generate positive impacts for participants are both interdisciplinary and inter-linked. The remainder of this paper will set these out as a theoretical framework for Forest School.

A THEORETICAL FRAMEWORK FOR FOREST SCHOOL

While many academics have identified concepts that form a part of the Forest School framework, Harris (2022) notes that what is lacking is the ways in which these concepts converge towards a common understanding of Forest School pedagogy. Our interdisciplinary model (shown in Figure 1) presents a complex and multi-dimensional theoretical framework informed by the existing evidence base, which intends to contribute to the development of a deeper understanding of Forest School. In doing so, we recognise the socially constructed nature of Forest School as both a concept and a practice, and through this acknowledgement we can begin to understand the variability of individual Forest School provision (Harris, 2022) and also recognise the mechanisms which likely explain the transformational and beneficial nature of Forest School engagement for participants.

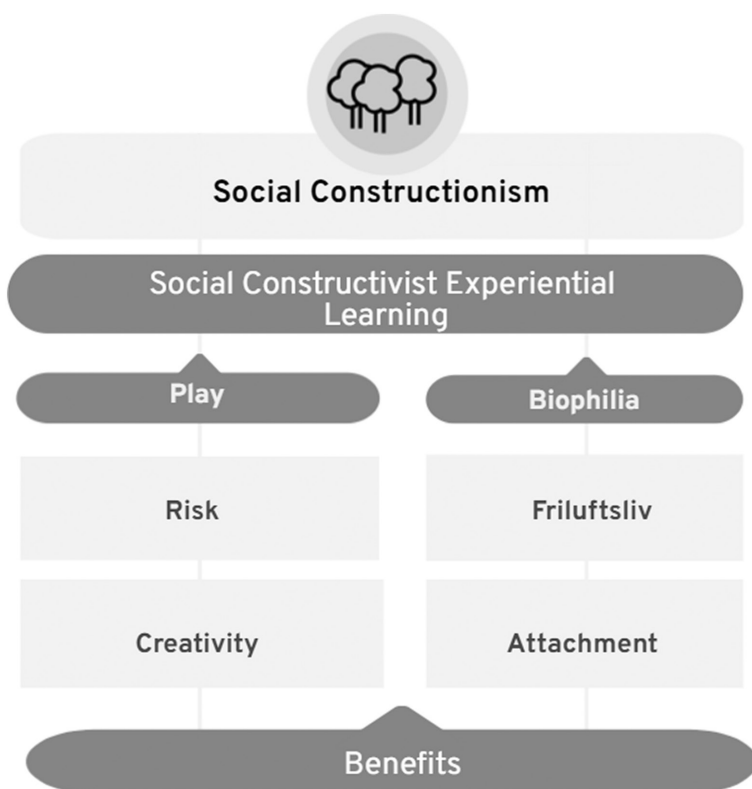


FIGURE 1 Theoretical model for Forest School.

THE SOCIALLY CONSTRUCTED NATURE OF FOREST SCHOOL

The development of Forest School has been led by social constructionist ideology, and it continues to change and grow through ongoing convocation and discussion—the concepts and categories being socially constructed through language and based on our experiences (Burr & Dick, 2017). This theory of knowledge originated from the field of sociology, and we acknowledge this as the first disciplinary strand to inform Forest School. The early development of Forest School in the United Kingdom was driven by the interpretations of a group of early years practitioners seeking to apply a Danish model of early years education within a British context (Knight, 2011a, 2011b, 2011c). Theories originating in early years education represent the second disciplinary strand to inform Forest School. Following its development as an early years intervention, the initiative grew as early Forest School leaders constructed knowledge in a living context (Moon, 2005), leading to the development of a National Governing Body for Forest School practice—the Forest School Association. These early initiators assumed shared beliefs about Forest School alongside a commitment to developing Forest School practice, drawing on their own personal and professional experiences and understanding of what they believed constituted Forest School, as well as wider cultural understandings drawn from their diverse backgrounds (Knight, 2011b). In sharing their beliefs and diverse experiences, these early initiators were able to develop a set of core values underpinning Forest School (Burr, 2015). Over time, as experience and understanding about Forest School has developed, alongside the growing membership of the FSA, so have these values. In this way, Forest School continues to be socially constructed by those who practice it, making it an adaptable, creative and open movement (Knight, 2016b). It is important to recognise this fluidity in what constitutes Forest School, and the ways in which people who practice and participate in Forest School shape its future development. While this presents a challenge in defining ongoing practices, it presents an opportunity to interrogate the theoretical basis of this initiative through an examination of the ways in which these core values and the current evidence coalesce.

SOCIAL CONSTRUCTIVIST EXPERIENTIAL LEARNING

The six principles underpinning Forest School pedagogy and practice outlined at the start of this paper speak to developing the experiences of practitioners and participants in natural, green spaces. Thus, outdoor learning theories are embedded in the theoretical framework of Forest School. Central to many outdoor learning theories, including Forest School, are philosophical assumptions surrounding experiential learning (Neubert, 2009; Ord & Leather, 2011). Much of this builds on the work of the educational philosopher John Dewey (1997), who argues that learning is an active process which occurs through direct experience, reflection and application. Dewey (1997) further purported that education should be based upon democratic values, whereby learning is relevant to the learners' interests, and should involve co-construction and active participation in decision-making, problem-solving and community-building. Central to this is social interaction. For Dewey, and indeed many other social constructivist learning theorists (e.g., Vygotsky, 1986), social interaction is viewed as fundamental to learning, and these socially driven interactions are at the core of Forest School practice. Continuity is a key element of social constructivist experiential learning theories (Garrison, 1995), in that every experience and each iteration of that experience builds on what existed before, so that participants develop their knowledge and understanding over time. In this sense, learning is considered as a process which develops as the participants' experiences develop. This is reflected in the core values underpinning

Forest School practice, in that it is a long-term process rather than a one-off or short-term experience.

Not only are these concepts reflected in the core values of Forest School, they have been reported within the Forest School evidence base (see Coates & Pimlott-Wilson, 2019; Dean, 2019; Harris, 2018; Knight, 2011a, 2011b, 2011c, 2013). For example, Coates and Pimlott-Wilson (2019) draw on notions surrounding social constructivist experiential learning to explain their findings, where they consider how the opportunity to play within Forest School settings affords learners hands-on and experiential opportunities to learn (we consider play in more detail in the next section). They examine more broadly how social constructivist learning theories help to explain the learning processes occurring in Forest School settings through social play, teamworking and adult–child interactions. While research is yet to examine fully the optimal amount of time in Forest School to accrue benefits, practitioners recommend that ‘over time’ should include all seasons (Harding, 2021). Researchers, for example O’Brien (2009), have noted that regular visits to Forest School can improve children’s holistic development, including skills, dispositions and commitment to nature.

Although Forest School aligns with experiential learning theories in similar ways to other outdoor learning opportunities, a key difference is in the nature of the structures involved with different approaches to outdoor learning. For example, the Institute for Outdoor Learning (2020) uses terms such as ‘instructor’, ‘coach’ and ‘trainer’ to describe much of their workforce, indicating a didactic approach at odds with the participant-led approach of Forest School. This didactic approach is echoed in much of mainstream education in the United Kingdom, and indeed globally. By contrast, practitioners and participants in Forest School sessions are in a fluid state of knowledge co-construction based on their shared lived experiences of Forest School (Knight, 2016a). Social constructivist experiential learning in Forest School therefore includes the development of the leaders alongside the participants, such that the benefits are bidirectional. This is considered by Barrable and Arvanitis (2019) in their application of self-determination theory to Forest School practice. It is also evidenced through research which examines practitioner perspectives about Forest School, for example McCree (2014), who considers the Forest School practitioner as a ‘connector’ within a space, where the experience and connection to that experience is shared between both practitioners and participants. Central to this experience-facilitated learning in Forest School is play.

PLAY

Play is at the heart of Forest School practice (Knight, 2010), which includes risk-taking and creative endeavour. Forest School starts with the interests and abilities of the participants and follows those developing interests and needs through shared playful activities. Gray (2018) highlights the evolutionary importance of play for learning and development, noting that animals (including humans) play to learn and rehearse the skills for life and to establish social relationships and bonds. Play has featured in a wide number of seminal learning theories relating to childhood development, such as Fröbel (1899), Piaget (1962), Montessori (1967) and Vygotsky (1986), which have influenced early years education and how we understand learning throughout childhood and into adulthood. A plethora of research has also highlighted the importance of play, and in particular outdoor play, on the health and wellbeing of children and adolescents (e.g., Brussoni et al., 2015; Oswald et al., 2020; Whitebread, 2017). Into adulthood, research has demonstrated the value of engaging in playful activity in green spaces (e.g., sports, ‘wilderness’ play—camping, hiking, etc.) for improving mental health and wellbeing (e.g., Holt et al., 2019; Reyes-Riveros et al., 2021).

The play-pedagogy embedded in Forest School practice builds on the foundations of the initiative as an early years provision (Knight, 2010). It links to experiential learning. Pascucci (2016) described the Deweyan experiential outdoor learning philosophy as 'play' and indeed, as already suggested, much of the evidence base examining the benefits of Forest School for its participants notes the importance of play for realising these benefits (e.g., Coates & Pimlott-Wilson, 2019; Harper, 2017; McCree et al., 2018; Ridgers et al., 2012; Shaw, 2014). Wicks (2011), for example, stated that play during Forest School led participants to a more relaxed state, and a heightened awareness of their immediate surroundings. Play during Forest School has also been associated with children's developing confidence in their own skills and autonomous thinking (Coates & Pimlott-Wilson, 2019). This is not only relevant to children. Researchers have indicated the benefit of play for adults who engage in Forest School activity, for example through storytelling (Cree, 2011) and music (Brady, 2011; Shaw, 2014).

Garden and Downes (2023b) note that conceptualisations of Forest School and the place of play within these spaces are often linked to constructivist learning theories. They argue that there is a disconnect between theory and application in this regard and go on to suggest that a more fruitful way of examining the processes of learning and engagement in Forest School would be through experiential learning theory. We argue that these theoretical approaches are not distinct in their application to Forest School, but rather are complementary to one another, reflecting the interdisciplinarity that is central to understanding Forest School. Forest School is something to be experienced, often through the opportunity to play, or to be playful, and through that experience, connections are made that facilitate learning, development and improved wellbeing. For Garden and Downes (2023b), the connection of Forest School to other learning spaces offers familiarity for participants, whilst disconnections in practice offer distinctiveness. Understanding these (dis)connections offers an important gateway for understanding the real value of Forest School. The opportunity for play makes Forest School distinctive from other learning spaces, and we argue that this distinctive feature of Forest School offers more value, particularly when play is freely chosen, personally directed and intrinsically motivated, which is at the core of Forest School practice—it is a participant-driven approach. This is supported by the literature, which demonstrates that increased opportunity for freely chosen play—particularly where there is opportunity for risky play—can support physical and cognitive development and wellbeing (Whitebread, 2017).

Risk

Creativity is risky, and risk often involves creative solutions. Thus, we argue that these constructs are interconnected (Knight, 2011b), yet distinct. Taking risks supports human development (Hughes, 2012). Physical skills, such as learning to walk or run, involve tripping, falling and stumbling and the opportunity to trip, fall and stumble supports the honing of our skills, such that we might problem-solve in situations where we are likely to fall (Plumert & Schwebel, 1997). Engaging in risky outdoor play can improve wellbeing (Whitebread, 2017), reduce childhood anxiety (Dodd & Lester, 2021) and support anti-phobic functioning (Sandseter & Kennair, 2011).

A vast array of literature has demonstrated that we live in a risk-averse society where a priority to prevent children from harm and injury has limited their opportunity to take risks which may have some developmental value (Garden, 2023; Harper, 2017). This includes engaging in risky outdoor play. This has stifled the natural capacity for children to take risks and develop creative and innovative solutions to challenges they may face (Lindon, 2011; Robinson, 2006). Stringent education policies contribute to this, where education practitioners are held accountable for the safety of the children they teach, resulting in risk-aversion

and limiting of opportunities deemed risky. Knight (2011c) describes the tensions that exist between evidence which supports risky outdoor play and the reluctance of some practitioners and policymakers to provide such opportunities as a cultural attitude to risk. However, Forest School offers opportunities for participants to engage in supported risky behaviour, through play (e.g., climbing trees), creative endeavour (e.g., woodworking using knives) and social connection (e.g., sitting around a fire) (Coates & Pimlott-Wilson, 2019; Garden, 2023; Knight, 2011c). Indeed, the act of just entering a Forest School for some children is viewed as a risk. It is often a novel space which offers learning and engagement that is distinct from the norms of classroom learning (Coates & Pimlott-Wilson, 2019; Garden & Downes, 2023b).

Facilitating safe-enough risk-taking is recognised as important in outdoor learning theory. Reuben (1999), for example, distinguishes between 'narrow adventure' and 'broad adventure'. Narrow adventure includes activities which are high thrill, but which have a short duration and where little to no responsibility is placed on the participant. An example of this might be a day-long abseiling course offered as part of an Outdoor and Adventurous Education programme. In contrast, broad adventure includes a range of activities which offer varied challenges, over a longer period of time, where responsibility is devolved to the participant. Reuben (1999) argues that broad adventure benefits children's mastery of education, developing their skills and responsibility, which is transferable to later life. However, narrow adventure does not offer the same benefits.

Forest School can be described as offering broad adventure, given its pedagogical focus on offering longer-term opportunities to engage in creative, risk-taking activities which are child-centred. According to Gill (2007), this develops children's resilience, confidence, independence and creativity, something also reported by Coates and Pimlott-Wilson (2019) and Garden (2023).

In this way, Forest School challenges the norms of UK education systems, which inhibit risk-taking. By shifting power from adult practitioners to structure learning, towards offering children responsibility to direct their own learning through creative endeavour and risky play in a supported environment, Forest School abates the fears sometimes experienced by teachers and parents about children being outdoors. Garden (2023, p. 8) argues that 'teachers are more likely to accept risk in Forest School because they take their positions as class-room teachers in the Forest School setting' but a reconceptualisation of risk is needed to promote children's opportunities for exploration in a Forest School setting. This is supported by Maynard (2007), who also recognises the cultural pressures that affect Forest School leaders as they work alongside mainstream education settings. Drawing on Foucault's post-structuralist ideas and theories about the construction of the child, her analysis identified conflicts in power dynamics between the teachers and the Forest School leaders, each holding particular and conflicting truths in a discourse of risk, the comparative benefits of child-led or child-centred learning and intervention or interference by adults. Our theoretical framework offers opportunities for practitioners and researchers to develop their conceptualisation of the value of risk for developing creative and critical thinkers so that children who engage in Forest School are afforded every opportunity to reap benefits from their engagement. It also highlights risk, and specifically risky play, as core components of Forest School pedagogy.

Creativity

As stated above, creativity involves risk, often by exposing our endeavours, ideas and thoughts to the scrutiny of others (Tyagi et al., 2017). But as Henriksen et al. (2021) discuss, creativity is 'a desired and necessary skill' (p. 602) and likely to become even more crucial in the future. Wyse and Ferrari (2015) state that, while positioned as a priority, creativity

has been afforded less space within the UK National Curriculum over time. The NASUWT Report (2017) evidences this trend across the United Kingdom, whilst highlighting the importance of creativity to the economy.

The prescriptive nature of the National Curriculum in the United Kingdom has been a concern for education scholars over recent decades as the pursuit of a knowledge-rich curriculum has thwarted creativity in education settings, both for teachers and learners (Hudson & Shelton, 2020). These curriculum changes, often directed by political point-scoring rather than educational need, dilute the value of creativity in education, which has been highlighted in decades of research (e.g., Robinson, 2001; Schröer, 2021).

Forest School offers something distinct (Waite & Goodenough, 2018). It is not bound by a curriculum, but informally offers teachers and learners the opportunity to develop skills and understanding without boundary, in unexpected and playful ways. This openness is inherent to being in an outdoor space (Knight, 2011c) and is facilitated through its pedagogical approach, which sees practitioners and participants engaged in co-constructed and often creative activity. Davies et al. (2013) and Craft et al. (2014) argue that Forest School offers opportunities for schools to develop and maintain a creative pedagogy which complements traditional curricula. Campbell and Speldewinde (2022) reflect on the creativity observed in Bush Kindergartens, the Australian equivalent to Forest School, and how it enables children to solve science and STEM problems. Forest School is an environment designed for creativity (Knight, 2011c) supported by its core principles: it involves interaction with a 'wild' or natural setting; includes regular and frequent contact with that same setting; provides participants to explore using multiple sense and intelligences; offers time and space for individual learning to be recognised and nurtured; and involves a low pupil:adult ratio (Borradaile, 2006). Forest School fosters a sense of awe and wonder in participants (Knight, 2013), which Glăveanu (2019, p. 171) links to creativity 'from big breakthroughs in science to the everyday discoveries of children at play'.

Forest School practitioners are often creative people (Knight, 2011b) and are trained to work with learners in creative ways to encourage engagement. They are storytellers (Cree & Gersie, 2014) and use a range of creative skills and practices to support participants' engagement (Harding, 2021). This includes offering opportunities for participants to undertake creative endeavour, like creating wild art and bush craft (Coates & Pimlott-Wilson, 2019; Harris, 2018), role play and drama (Craft et al., 2014), campfire cooking (Lynn, 2014) and singing/music (Brady, 2011; Ward, 2018). Through this, Forest School offers opportunities for creative and spiritual growth (Knight, 2017), allowing participants to connect with their inner selves through a connection with the wilder world.

Creative activities are important for healthy development (Knight, 2011c). Puozzo and Audrin (2021) link children's ability to be creative to their increased self-esteem and confidence. This supports the evidence suggesting that Forest School can increase self-esteem and self-confidence (Coates & Pimlott-Wilson, 2019; Garden & Downes, 2023a; Hughes & Jenner, 2006; O'Brien & Murray, 2006; Ridgers et al., 2012), providing some mechanistic understanding for the ways these benefits are realised.

BIOPHILIA

First coined by Fromm (1973), biophilia refers to 'the passionate love of life and of all that is alive' (p. 406). It describes a need to develop harmonious relationships with the natural environment (Wilson, 1984). Psychologists and biologists have considered the biophilia hypothesis—the notion that humans have an innate tendency to seek connection with nature and the natural world—as evolutionary adaptation (Joye & De Block, 2011). The human tendency towards nature is explained as a result of 'millennia of human evolution in a natural environment, where

repeated contact with, and dependence on life and life-like processes was crucial for hominin survival and reproduction' (Joye & De Block, 2011, p. 190). Heerwagen and Orians (2002) argue that, while human society has changed radically over time, our physiological and psychological needs are not very different from those of our hunter-gatherer ancestors, such that contact with nature and green spaces has been recognised as an important facilitator to human health and wellbeing (Van de Bosch & Ode Sang, 2017). This innate tendency is especially significant for children, yet research has shown that their opportunity to engage with nature has declined over time (Kalvaitis & Monhardt, 2015).

Biophilia, our interconnectedness with the natural world, is an important theoretical cornerstone of Forest School (Malone & Waite, 2016; Murphy, 2020). Forest School satisfies the innate need to be in wild spaces and offers potential to improve mental and physical health, which is supported by some Forest School research (Tiplady & Menter, 2021). This is especially valuable in urban areas where access to green space is often limited (Akpınar, 2019), but even in urban areas Forest School offers opportunities to access green spaces regularly.

Researchers working in this space often align biophilia with nature connection (Cudworth, 2021; Ridgers et al., 2012). However, there is growing concern across cultures about the reduction in children's opportunities for access to nature and thus to form 'nature connectedness' (Waller et al., 2017). Developing nature connectedness is therefore recognised as a contemporary cultural imperative (Richardson et al., 2020) and is a key element of Forest School (Cree & Robb, 2021). This is not only important because of the widely evidenced benefits of being in green spaces for mental and physical wellbeing (Stone & Faulkner, 2014; Whitebread, 2017), but is also important for raising awareness about environmental issues and developing thinking about environmental sustainability. In this way, Forest School nurtures children's empathy with the natural world, meaningfully engaging them with the issues affecting the environment and climate change (Knight, 2013, 2018) and developing environmental responsibility (Coates & Pimlott-Wilson, 2019). Children who have the opportunity to experience natural spaces through Forest School build an enduring connection with the natural world (Knight, 2013; Knight & Luff, 2018), learn more about the environment (Ridgers et al., 2012) and develop an appreciation for ecological processes and compassion for other species (Thomashow, 2002). Experience is an importance facet of building connection to nature.

While it is possible to care about the environment without the influence of Forest School, it is not possible to lead Forest School sessions and not care about the environment. This is central to Forest School culture and training (Harding, 2021; Knight, 2018).

Friluftsliv

All theories are contextually and historically situated, affected by the society they are rooted in. The concept of Forest School, as established in the early 1990s, was derived and adapted from Denmark and was linked to the cultural engagement of the Nordic peoples with their environment (Knight, 2009). This introduced the term *friluftsliv* to UK education practitioners, and thus became imperative in the development of Forest School.

Although *friluftsliv* in Nordic culture was not originally directed at educational settings, today it is well established as part of the national curricula, running from early childhood through to the end of secondary school. Philosophically, 'it includes two concepts of freedom: one is a free and open nature and the other is a free and open life in nature for humans' (Jorgensen et al., 2022, p. 136), and incorporates engagement in non-competitive activity in uncultivated spaces, for example skiing and hiking, as well as other recreation activities like foraging and hunting.

This Nordic cultural tradition of being outside frequently and regularly often develops a caring relationship with the environment and is deemed increasingly relevant beyond the boundaries of Scandinavia in an international post-modernist world (Brookes & Dahle, 2007). Leather (2018, p. 7) states that when we use the term *friluftsliv* outside Scandinavia, ‘aspects of the original philosophy may become lost’. In contrast, Brookes and Dahle (2007) argue that when *friluftsliv* is used outside Scandinavia, it should be applied to the local landscape wherever it is being discussed, acknowledging the legitimacy of the term beyond the Nordic geographical borders. This cultural appreciation of the term and its meaning has become synonymous with Forest School and is regularly referred to as a foundation stone of the movement by scholars (e.g., Harris, 2015; Knight, 2018; Waite & Goodenough, 2018). *Friluftsliv* links Forest School explicitly to sustainability outcomes through a shared emphasis on regular contact and a respectful relationship with the natural environment, providing a cultural and philosophical keystone for the movement (Knight & Luff, 2018).

Attachment

Linking biophilia, nature connection and *friluftsliv* is the concept of attachment. While attachment is ordinarily considered in terms of human relationships with others (e.g., Bowlby, 1979), here we consider attachment to place (Giuliani, 2003). Attachment to place refers to the affective bonds that humans develop with particular places, for example, where people were born, where they live or where they had formative experiences (Giuliani, 2003). Morgan (2010, p. 18) argues that place attachment happens when children have ‘repeated enactments of the arousal–interaction–pleasure pattern which generate an internal working model of the child’s relationship with environment, which manifests consciously as a long-term affective bond’. In other words, place attachment occurs when children have prolonged exposure to an environment which they enjoy and can actively participate in. This attachment to place supports emotion regulation and provides a sense of place security, and unlike human attachment, attachment to places can occur into adulthood (Morgan, 2010).

We argue that Forest School offers children and adults repeated exposure to green spaces, which allows for attachments to form and supports the mental health of participants (Knight, 2013). Indeed, geographers and outdoor educators have aligned developing a sense of belonging in a place and time to attachment theory and nature connectedness (Geddes, 2018; Wattachow & Brown, 2011). In relation to Forest School, attachment to place enhances the participant’s sense of security and self-identity (Knight, 2016a) and their confidence in decision-making (Knight, 2013). This is also recognised internationally, for example in Bush Schools, where Cumming and Nash (2015) note that the opportunity for repeated experience in the bush developed place attachment and supported a sense of belonging for children. This sense of belonging is further enhanced by the opportunity for children to not only engage with the environment during Forest School, but also develop their bonds with peers, which has been described as a core benefit of Forest School in numerous literature (see Dabaja, 2022a, 2022b and Garden & Downes, 2023a for reviews). Participation in Forest School creates this sense of belonging by returning to the same place week after week, developing a relationship with that space.

Harris (2018) also associates Forest School with concepts of attachment to place. She argues that place attachment in Forest School might foster a lifelong engagement with wooded spaces and support the development of environmental citizenship. Bronfenbrenner’s bio-ecological model has been used to illustrate this relationship of place to Forest School, showing how Forest School engenders a sense of partnership with and responsibility for place (Knight, 2016c; Murphy, 2020). Harrison (2011) also concluded that place-based education in wilder spaces contributes to concerns for the environment in older participants.

In understanding the relation of attachment to a theoretical model of Forest School, we return to Principle 1, that Forest School is a long-term intervention. It is this prolonged exposure to the Forest School site which supports the development of an attachment to that space, and with it, the respective benefits outlined above. Neglecting the 'over time' principle is most likely to happen in school settings under pressure from the formal curriculum, and evidence is emerging that suggests this factor would undermine the success of Forest School (Arnold & Knight, 2019), which is a primary concern for the future of Forest School (McCree et al., 2018).

CONCLUSION

This paper has set out a theoretical framework for Forest School. Critics of Forest School have argued that a lack of theoretical coherence and detail risks the misinterpretation of Forest School and its pedagogy for both practitioners and researchers, and a blurring of practices found in other forms of outdoor education (Leather, 2018). We argue that Forest School is distinct from other forms of outdoor education and learning. Our theoretical framework develops based on the work of Knight (2009) and others (e.g., Garden & Downes, 2023a) by offering the first comprehensive, evidence-based discussion of the underpinning theoretical constructs which create the Forest School pedagogical environment. It acts as a useful tool for explaining the varied benefits of Forest School, observed in the growing evidence base to support Forest School practice, which has been examined in detail within this paper. It also offers researchers a clear model to examine Forest School practices. For those working in Forest School, it also presents a detailed, philosophically driven understanding of Forest School which underpins the pedagogical principles outlined by the FSA.

This theoretical framework presents a broader understanding of the interdisciplinary nature of Forest School. In doing so, it could be compared to a 'Wood Wide Web' (Wohleben, 2017, p. 50), with the growth of Forest School being nourished by a rich mycorrhizal network of interdisciplinary research and thought. By thematically organising these interdisciplinary discourses, we present the philosophical foundations of Forest School, which is located within the pantheon of outdoor experiential education.

Specifically, we argue that Forest School is a socially constructed approach to outdoor education. It is an alternative pedagogy which disrupts the prescriptiveness of education curricula in the United Kingdom (Waite & Goodenough, 2018). Waite and Goodenough (2018) argue that the uptake of Forest School training by a growing number of teachers and education practitioners suggests an alignment to the values and principles of this approach which contrasts with mainstream education. It offers an approach to teaching and learning which resists the restrictive nature of mainstream curricula. As a result, our understanding of what Forest School is, and how it is adapted to the plethora of education settings adopting it, continues to develop. Thus, a recognition of this ongoing conversation within a living context (Moon, 2005), or social construction of Forest School, needs to be recognised as it feeds the interpretation of Forest School over time.

Next, our theoretical model sets out the core constructs which define Forest School. We argue that Forest School is an approach which is underpinned by social constructivist experiential learning. Experience is fundamental to learning and engagement in Forest School. This experience is driven by two core components—play and biophilic interaction. In relation to this, we argue that a pedagogy of play (Coates & Pimlott-Wilson, 2019) underpins Forest School. Play offers a core opportunity to experience Forest School which is also reflected within the pedagogical principles directing Forest School practice. Within this, risk and creativity are important features of the playful activity offered during Forest School which support the beneficial impact of Forest School experiences for participants, including physical

development (Coates, 2019; Trapasso et al., 2018), mental wellbeing (Garden, 2023) and learning (Coates and Pimlott-Wilson, 2019).

Biophilic interaction, as underpinned by the biophilia hypothesis (Wilson, 1984), is the second foundation stone for Forest School. Engagement with natural green spaces is fundamental in Forest School practice and offers participants a wealth of benefits, which are explained by theories of human evolution suggesting an innate need to be in nature (Joye & De Block, 2011). There is increasing evidence to suggest that Forest School supports the development of nature connection through regular engagement with natural green spaces (e.g., Cudworth, 2021). We argue that Forest School offers the opportunity to develop a nature connection through biophilic interaction. This is influenced by two components. First are the cultural roots of Forest School, which is underpinned by Nordic notions of *friluftsliv*. This appreciation for being in nature influenced the original development of Forest School in the United Kingdom and is an important keystone for this pedagogical movement. In addition, we argue that attachment to place supports biophilic interaction. Specifically, regular engagement with a woodland or green space offers repeated opportunity for that interaction and supports a connection with green spaces. This helps participants to develop a nature connection. Such a nature connection has recognised benefits for individuals in relation to wellbeing and environmental awareness and responsibility among participants (e.g., Coates & Pimlott-Wilson, 2019; Tiplady & Menter, 2021).

This interdisciplinary theoretical framework considers the breadth of knowledge that underpins Forest School and recognises its growing evidence base, which positions it as a rich and valuable pedagogical approach. Researchers from disciplines as varied as biology and education have all theorised aspects of Forest School, but this coherent interdisciplinary framework synthesises the theoretical roots, linking them to the guiding principles of good practice and showing how these co-create conditions necessary for enabling the identified outcomes for participants. In doing so, this theoretical framework offers a valuable model from which to build future research, which allows for the credibility of Forest School to be rigorously examined. It also challenges notions of theoretical incoherence, offering researchers and practitioners a clear pathway for both examining and explaining the impact of Forest School for participants. Therefore, in applying this framework, researchers and practitioners can be guided towards evaluating high-quality Forest School practice. The quality of delivery and the integrity of the concept of Forest School is held in place when practitioners adhere to the six principles of Forest School, and these are underpinned by the theoretical framework developed in this paper. Thus, through this theoretical framework, we aim to uplift the academic credibility of what is already a popular phenomenon.

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