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Constructions of Space: Exploring Photographic Images in Forest School

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Abstract

This research builds on the recently published paper (Garden, 2022c), which explored through interviews the use of iPads as cameras to enhance Forest School practice. Children's perspectives of the Forest School space captured what was important to them on camera (Garden, 2022c). Working with the same group of 32 Key Stage 2 children selected from two UK primary schools, the research explored the images captured on iPad cameras during the follow-on session. The unstructured interviews explored the children's feelings and meanings associated with the images captured in the Forest School space using Interpretive Phenomenological Analysis (IPA). The photographs can be understood within the themes of 'play with technology', 'soft fascination' and 'place attachment', all of which are inherent in the Forest School ethos. Suggestions for future research include reflections on the ways the capturing of images of Forest School can encourage peer collaboration whilst considering the relative influence of space.

Keywords: Forest School, Photographs, Outdoors, Children, Space

1. Introduction

Ever Forest Schools in the UK can be examined in terms of their conceptualisations of space. Forest School arguably is the product of interrelations with multiplicity and space as co-constitutive (Massey, 1995), that is, both can have casual powers over each other as space is always under construction. A co-constructive understanding acknowledges a relational dynamic between the children and the inhabitation of the forest space. Participants are co-constructed as social actors in a variety of ways. In an increasingly technological age, photography can provide an alternative way to explore and engage with nature (Shakespear, Varghese and Morris 2020). This study examines the ways in which children view the 'constructed' space of Forest School and how this is captured through the camera lens of an iPad through unstructured interviews around the subsequent printed photographs.

The term 'Forest School' has accorded status in the UK over the past 25 years as part of a broader interest in outdoor learning (Cudworth and Lumber, 2021). There is a culture of the increasing commodification of Forest School and undertaking Forest School training may not necessarily mean the development of deep and reflexive practice (Ord and Leather, 2011). A key influence seems to have been concern over the lack of child exposure to outdoor experiences and with the natural world (Louv, 2005) and the overriding assumption that children are separated from nature and must seek to reconnect.

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The term 'nature deficit disorder' attempts to capture the challenges associated with children's lack of exposure to the outdoors and nature (Louv, 2005). Forest School is underpinned by the philosophy of child-initiated, child-led, and intrinsically motivated activity (Forest School Association (FSA), 2019). There is a cultural and context specificity to Louv's discourse about the nature of human relationships. Louv's nature-deficit disorder theory was only centred on one forest conservation education programme (Dickinson, 2013). Nature deficit disorder fails to consider deeper cultural influences and emotional expression as a non-traditional communication practice (Garden, 2022c).

Udeskole (meaning outdoors) or learning outside the classroom are inspired by the Scandinavian approach to early years' education. There is a focus on 'place' for learning in the early years. Forest School has expanded to include older age groups and children who have additional needs (Skar, Gundersen, and O'Brien, 2016). Natural play, woodland culture, land rights and child-centred learning all seem to fall under the Forest School umbrella (Cree & McCree, 2012). Wider international discourses from Scandinavian approaches to outdoor education have taken on a distinct approach, largely due to cultural tendencies that foreground outdoor activities, such as 'friluftsliv' (fresh-air life) in Norway (Henderson & Vikander, 2007). 'Forest pedagogy', emerging from the Skogsmulle school and the following 'In Rain and Shine' early years' movement in Sweden have encouraged the outdoor initiatives and a strong connection with the natural environment. Similar initiatives emerged across Scandinavia, such as Metsamoori in Finland and åbørns pædagogik in Denmark (Cree & McCree, 2012).

Whilst there is ideally a child-led approach to outdoor learning influenced through Scandinavian approaches to Forest School, the focus is often on meeting the curriculum needs, creating tensions with the extent to which sessions are structured (Early Years Foundation Stage (EYFS), 2021). Biesta, Allan & Edwards (2013) argue that a child-led approach to learning encourages greater engagement from the children and richer learning opportunities. Forest School practitioners often view the sessions as encouraging holistic development, but they may struggle with the concept of taking a step back and observing, compared to their usual pedagogy of adult-directed teaching (Garden, 2022b). Forest School providers can be overly concerned with practical activities, with many Forest School practitioners carrying out activities such as digging, den building, whittling and fire lighting (Leather, 2018), activities that are not necessarily underpinned by conceptual meaning. These arguments assume a curriculum-based approach to learning rather than the traditional skills-based activities that Forest Schools are arguably based upon. Schools such as *udeskole* integrate outdoor learning and integration of assessment and evaluation, curriculum coverage and timetabling are less challenging. The responsibility lies with the teacher to identify the areas of learning in *udeskole* that would benefit from being taught outside the classroom (Kelly, 2014).

Within this study, I consider the use of iPad cameras within the natural environment and specifically how photographs captured in a previous Forest School session can encourage children and practitioners to engage in conversations around outdoor spaces. The normalising of technology in the outdoor space may for outdoor educators, start to become as 'normal' as walking boots and compasses (Hills and Thomas, 2019) if we support the notion of normalised technology (Wattchow, 2001). Technology has been used outdoors for several years in a general sense (Rogers, 2019), such as clothing, walking boots, compasses and even fire as examples of technology (Hills and Thomas, 2019).

2. Forest School as a constructed space

Our systematic literature review of Forest School research (Garden and Downes, 2021) identified the Forest School conceptual space within three distinct contexts, that is, early years, special education needs and disability, and formal education. Our conceptual map highlights these distinct themes:

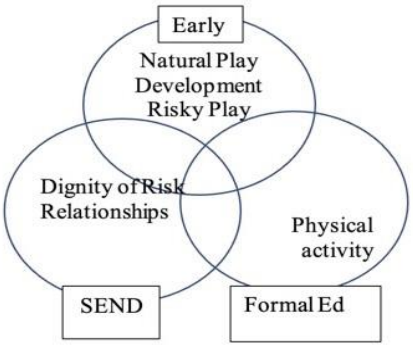

Figure 1: Garden and Downes (2021) Forest School Conceptual Space

New and existing spaces may emerge through an examination of interactions between children, adults, and artefacts and allow us to explore hybrid spaces constituted by both classrooms and Forest Schools (Garden and Downes, 2021). This research considers new learning spaces offering children new opportunities to explore away from the structure, social dynamics, norms, and expectations of the classroom; the integration of iPads within this new environment acts as an additional micro context. The physical layout of structures such as Forest School may have defined borders consisting of walls and railings. The micro context of Forest School (Peacock, 2011) can be described as the physical layout of the fire circle logs, the pathways, the positioning of the trees or plants, the size of the group, presence of adults, opportunities for group discussions around the fire circle, the balance between child-initiated and teacher-initiated learning, objects available to support the activities and background noise that may cause distractions. I challenge for a dualism in relation to the field of outdoor education with differing perspectives that argue for excluding technology and those that argue for its inclusion. There is increasing interest in taking digital technologies outdoors (Garden, 2022c) with Forest Schools (and other forms of outdoor education) aiming to provide an alternative setting to the indoor classroom.

Learning outdoors often has less structure than the classroom environment and increases the physical space around children. Holloway & Mahan (2012) explore Forest Schools as an alternative learning space and the increase in the use of outdoor education spaces in primary schools in England. Space is not just conceptualised as a physical outdoor space. A metaphorical idea of space can be presented where different practices are permitted such as the use of technology within nature (Garden, 2022b). Massey (2005) explored the intersections between space, relations of power and identity. An outdoor learning space provides new opportunities for children and teachers to interact with Forest School leaders and children co-creating a learning environment in which the boundaries are re-defined beyond that of the classroom environment (Harris, 2018). The trees, paths and fire circle in Forest School exist as a place but one that is continually being recreated and may change and adapt (Garden and Downes, 2021). Forest Schools can be seen as a 'third space' (Bhabha, 2012) that exists beyond the highly ritualised spaces that constitute classrooms in which de-formalised spaces of collaboration and culture-sharing exist for the children (Olson, 2016).

The outdoors as a learning space can be associated with norms of behaviour, objectives, and goals for learning (Peacock, 2011) and practices such as rules around the fire circle and routines for the start and finish of sessions. This means that the new learning spaces of Forest School provides different contexts and environments for children's learning. Forest School can be conceptualised as a community of practice with expectations of behaviour. Forest Schools ideally promote curiosity and creativity enhancing the ability of children to use all five senses (Dabaja, 2021) as they are underpinned by the philosophy of child-initiated, child-led and intrinsically self-motivated learning activities. This focus on play-pedagogy is often viewed as an alternative to the structured classroom environment but it can also complement traditional classroom teaching, particularly for Key Stage 2 children. Harris (2017) argues that the outdoor environment encourages a freer learning space in terms of norms and expectations for behaviour with less need to suppress energy or noise than in the classroom.

3. Play 'away' from technology

The work of Richard Louv, whose *Last Child in the Woods* (2010) states that children are suffering from 'Nature Deficit Disorder' and that emotional connection to nature increases psychological and

physical health. Louv (2005) suggested that children are spending less time outdoors. This can impact on their physical, emotional, and mental development. 'Nature-deficit disorder' (Louv, 2005: 136) describes a child disconnect from nature and that exposure to nature is vital for learning and creativity. It is argued that nature-deficit disorder contributes to reduced senses, lower attention, obesity and higher rates of emotional and physical issues, and an epidemic of inactivity. Significant groups of children spend little time outdoors in natural environments (Hunt, Burt and Stewart, 2015). Reasons may include digital technology in play; less play opportunities; increased urbanisation of the population; and increased risk aversion and safety fears among parents. Conversely, there is a growing sense of urgency concerning global environmental problems such as climate change and biodiversity decline (Harris, 2021) and an engagement with and understanding of the natural world is important if children are to be aware of environmental issues (Zylstra, Knight, Esler and Le Grange, 2014; Beery and Wolf-Watz, 2014). If children do not experience nature, they may not be concerned about its potential loss (Harris, 2021).

Forest School can be viewed as an 'unplugged' space in contrast to the fact that technology has become part of our everyday lived experience (Hills and Thomas, 2019). For most children and adults, it would be rare to go a single day without engaging in some form of digital technology. In many ways this has impacted in how childhood is currently shaped and constructed. Advancements in technology such as the use of video games or tablets may contribute to children spending less time engaging in outdoor nature play (Garden, 2002b). The concern is that digital technology may place a barrier between the learner and the outdoor environment as it prevents a direct experience with the natural world and negatively impact on children's face-to-face communication (Thomas and Munge, 2017; Coates & Pimlott-Wilson, 2018). Key concerns around the integration of technology into the Forest School space seem to centre around distraction to the child. The child may be distracted and lose interest in nature and the usual outdoor experiential activities (Wattchow & Brown, 2011). However, Hills and Thomas (2019) state that digital technology can undermine the aim of being outdoors, but it can also provide additional learning experiences.

The use of iPads for outdoor learning is not without debate. Van Kraalingen's (2021) review of 33 articles on the use of mobile technology in outdoor learning emphasise the portability and accessibility of technology offering new learning opportunities. However, other studies highlight the complexity of their use, online safety, and a diminishing of the quality of experiential learning. Affordance theory first proposed by Gibson (1977) illustrates both positive and negatives from the use or non-use of digital technology within the constructs of technological determinism and social constructivism. For Gibson, affordances were a precondition for activity in that they define potential allowable actions between an environment or object, and the person. Gibson (1977) argues that affordances in a digital environment are the opportunities that the environment offers the learning process in that they may facilitate or impede learning. However, it must be recognised that technology is purely a tool and that it can also create opportunities to enhance outdoor learning experiences (Garden and Downes, 2021). If Forest School or outdoor learning in general is viewed as an opportunity to draw children 'away' from technology and into 'nature' then it can be argued that digital technology can undermine the aim of being outdoors.

This study explores how the images captured represent the children's construction of the space of Forest School. The importance of pedagogically appropriate technology within outdoor settings should be highlighted, as technology on its own may not bring educational benefits unless they are integrated in a way that brings specific teaching and learning purposes (Schleicher, 2015). For example, digital technology can more fully engage and connect learners with both the outdoors and each other (Bolliger & Shepherd, 2017) if learners find and take pictures of specific plants and then reflect upon and sharing these images with their peers (Hills and Thomas, 2019). Other concerns centre around the use of digital technology in the outdoors, or more specifically in Forest School, is the barrier that it places between the learner and the outdoor environment. French (2016) suggests that technology

may be seen as a third party with technology creating a barrier between the child and the natural world. These arguments may suggest that digital technology can create both opportunities and threats within the Forest School or outdoor learning environment.

4. Methodology

Research design

Phenomenological research describes the essence of a phenomenon as it is explored it from the standpoint of those experiencing it in terms of both *what* was experienced and *how* it was experienced (Neubauer, Witkop and Varpio, 2019). The hermeneutic phenomenological research approach was adopted in this study to focus on the participants' lived experiences through the photographs. By combining the reported experience of the pupils, including their understanding of the role digital technology played in that experience the study sought to reach an understanding of how capturing images influences and shapes learning in forest schools. The phenomenological research design thus focused on integrating the subjective judgements of the children and researcher to generate a new perspective on the role of digital technology in outdoor learning. IPA assesses the experiences and feelings of individuals exposed to various phenomena and is based on phenomenological, hermeneutic, and idiographic research philosophies (Rajasinghe et al. (2019). There is value in focusing on how people perceive an event or experience and how sense of the world through capturing images on photographs.

The potential pitfalls inherent in the phenomenological research can be broadly described under 'subjectivity', that is achieving validity (whether the research methods lead to data that support the conclusions the research draws from it) (Bell & Waters, 2018). It is impossible to guarantee whether similar data and results would have been achieved at a different time, or with a different set of pupils or in another location. In addition, there is a danger of bias in phenomenological research, particularly when working alone, as conclusions may fit a predetermined opinion and the challenge of presenting the data in a format which both makes sense and illustrates key findings.

Unstructured interviews were conducted as the main research method to collect personal experiences from the children as the researcher was keen to capture the child's voice. The unstructured interviews were based around the physical photographs taken by the children in the previous session. The questions allowed the researcher to both ask an unplanned question on the experiences of the participants and to follow-up their answers. The duration of the interviews was on average 5 minutes per photograph. The analysis sought to reach an understanding of how the images represent what is important to the children in the space.

Participants

The participants of the research were 32 children from two local primary schools in England who took part in the first study (Garden, 2022c). The children were first recruited via emails sent to the parents of the selected children. The parents issued their informed consent, and the children confirmed their agreement to participate in the second-part study and interview process. The children's names were converted to pseudonyms to protect their identities (Data Protection Act 1998) with the interview data only using the first letter of each name. All photographs were included with full parental and child permissions. The participant information sheet, consent form and the letter to the children all made the children aware of their right to withdraw. BERA (2018) Ethical Guidelines for research state that participants have the right to withdraw from research without explanation (3.1).

School 1

School 1 was small UK primary School, with a demographic of pupils aged between 4 to 10 years from a white, British background of lower-than-average socio-economic status. School 1 delivered a Forest School programme of 6 sessions for each class half-termly for a full day of activities supervised by qualified forest school practitioners. 16 pupils (10 girls and 6 boys) from School 1 agreed to participate in the interviews with the parents providing written consent.

School 2

School 2 was bigger than an average primary school with a wealthier catchment area and a demographic of pupils aged between 4 to 8 years from a white, British background. School 2 was directly responsible for guiding the children through the outdoor learning activities since the sessions took place in the woodlands owned by the school, located approximately 5 miles away. 16 children (8 girls and 8 boys) agreed to participate in the unstructured interviews with the parents providing written consent. The difference in the demographic of the samples enhances the diversity of the data capturing experiences of participants from diverse socio-economic backgrounds.

Data analysis

The Unstructured interviews enabled interviewees to elaborate or provide further information. This complemented the constructionist epistemology of capturing participant experiences, with the capacity to respond freely. Photographs as a starting point for conversations was highlighted by O'Connor and Wyatt (2004:6) in which photographs were regarded as 'conversational reflections'. The digital environment produces a means for presenting the images critical to this study. The duration of the individual unstructured interview around each individual photograph was on average 5 minutes and conducted within the forest school sessions; the interviews were audio-recorded and later transcribed. Children had previously been directed to take photos of the Forest School (Garden, 2022c) but had freedom over what to photograph; they reflected on their own 'key' photograph selected at the end of the previous session. This follow-on study involved their previously selected 'key' printed photograph hung around the Forest School area from tree branches as a provocation for conversations. The key question was open-ended to enable the researcher to ask unplanned questions to in response to participant answers. The unstructured interview question was 'tell me about your photograph'. Follow-up questions included 'what do you like about the photograph?' and 'how is the image important to you?'

The study employed Interpretive Phenomenological Analysis (IPA) in evaluating the data collected from the unstructured interviews. There were 5 steps to data analysis (Groenewald, 2004):

1. Bracketing and Phenomenological Reduction – the researcher becomes familiar with the words used in the interview responses by listening several times to the recording of each interview. This identifies the unique characteristics of each participant's experiences. To reduce the influence of the researcher's interpretations on interviewees' responses, the researcher aimed to maintain an objective mindset when analysing the recordings.

2. Defining the Units of Meaning in the Data - The second step elucidated the data collected through identifying interviewee accounts that referred specifically to the photographic constructions of the Forest School space. The recurring responses were attributed with the same code to establish the credibility of the study.

3. Grouping of Themes - the researcher created themes based on the similarities and connections between them (Pietkiewitcz & Smith, 2012) through listening to the recording of each interview several times and cross-checking it with the factors identified in Step 1.

4. Revision of the Themes - the researcher reviewed the themes and renamed some of the themes to reflect the content. Sub-themes were revised to accurately represent the interviewees' responses to increase the accuracy of the data collected.

5. Development of a Summary - after completion of previous steps, the researcher undertook a final check to ensure that themes reflected the views of the interviewees. The development of the themes was a summary of the content. The researcher was able to explain how the capture of the images in the photographs shaped an understanding of constructions of Forest School (Noon, 2018).

5. Outcomes and discussion

IPA identified three interconnecting themes: nature connectedness, a focus on space and place attachment. Each theme had a defining set of

characteristics and are considered important as they appeared in the data most frequently across the 32 unstructured interviews. The themes were connected by the Forest School Ethos (FSA, 2019), which is grounded in constructivist approaches to learning, a child-led process whereby the Forest School leader shapes the sessions to the needs of the participant with socialisation and conversation integral to the learning process.

Nature connectedness

Nature connectedness is an individual's sense of their relationship with the natural world moving beyond just having contact with nature. As a measurable psychological construct, levels of emotional connection towards and feelings of being a part of the natural world, has long been linked to environmental behaviours (Hughes, Richardson and Lumber, 2018; Mayer and Frantz, 2004). Smith, Dunhill and Scott (2018) investigated the ways in which Forest Schools provide children with opportunities to develop positive attitudes towards the environment. They found that children demonstrated increased knowledge about nature and the environment as one of the most frequently reported outcomes of Forest School. It is often proposed that a connection to nature can be developed through time spent in the outdoors particularly during childhood (Chawla and Derr, 2012; Mayer and Frantz, 2004). However, an exanimation of the conditions necessary to create a strong connection with nature seem to be lacking.

Within this study the photographs captured items in nature that were important or interesting to the children hence highlighting nature connectedness:

"I like the colour of this (yellow) flower. We've got to look after our Forest School by making sure we don't pull up any flowers. It's ok to take photographs of them though." (Phoebe, age 10)

"I like to know which tree each leaf comes from. I took this photograph so that I can remember to check later." (Ryan, age 9)

*"This leaf in my photograph is from a sycamore tree. I like its shape." (*Dean, age 9)

"This is a centipede. You can tell by its shape and number of legs." (Macy, age 7)

Figure 2: Centipede

"I took a photo of this worm, but I put him back in his home afterwards. He lives over there in that hole with the other worms." (Rachel, age 8)

Figure 3: Worm

This is reflected in the research reported by Knight (2016) and Slade, Lowery and Bland, 2013) when parents also reported that their child had learnt about animals and trees and were able to name trees and animals. Additionally, Turtle, Convery, and Convery (2015) investigated the development of pro-environmental attitudes following participation in Forest School, specifically addressing the idea that through taking part in long-term Forest School activities, children would develop long-term pro-social environmental attitudes. Other conversations highlighted the children' developing pro-social attitudes because of attending Forest School:

"I took a photo of crisp packets and plastic bottles that I had collected from the soil. I placed them in the recycling bin afterwards as they're not good for environment." Joe, age 8

"This leaf looks very dry in my photo. Rain is needed for plants to thrive." Sarah, age 7

"Bees live in our Forest School. It was hard to capture one in a photo, but I managed. I used to be scared of bees but now I know how good they are for the flowers." Ryan, age 9

Figure 4: Bee

Environmental education for all children is even more important than in previous generations due to increasing societal concerns related to environmental issues, such as anthropogenic climate change and biodiversity loss (Steffen et al., 2015). Children are now more likely to recognise that human activities are responsible for our impact on the ecosystems as linked to sustainability and accountability for world. It also increases the likelihood that society will be able to achieve more sustainable ways of living (Frantz and Mayer, 2014). Kolb expands this dual notion of transaction and links this to Piaget's (1951, 1971) notion of assimilation and accommodation (Kolb, 1984) where the key to learning lies in the mutual interaction of the process of *accommodation* of concepts or schemas to experience in the world and the process of *assimilation* of events or experiences from the world into existing concepts or schemas (p.23):

"This is a leaf from a birch tree. I have learnt the names of different types of trees in Forest School." (Dean, age 9)

"We did some digging here so that we could plant bulbs. I like to come back each week to see how they are growing." (Maltida, age 8)

Figure 5: Growing from bulbs

For Kolb (1984) the tension between accommodation and assimilation, that is, the degree to which the *individual is changed* by the environment and the extent to which the *environment is changed* by the individual is the contradiction at the heart of experiential learning. A change in the environment reconceptualises how we see the environment or the 'world' as much as an actual physical change in it. Participants are changed because of the outdoor education experience but so is the world, or perhaps how we both perceive and conceive of it as changed (Leather, 2018).

6. A focus on space

Forest In this study, space was considered not only in terms of the physical aspects of outdoor space but as the metaphorical idea of space where different behaviours are permitted, and spaces in the curriculum (Harris, 2017). Shakespear, Varghese and Morris (2020) in their Canadian 'Focus on Nature' programme found in the children's nature photographs that they can view the space literally for example living, non-living, dead or human-made things; symbolically for example representing other

things or prior experiences; or as dynamic and static entities. The concept of soft fascination is the distinctive visual characteristics make viewing natural scenes more fascinating than viewing built scenes (Valtchanov & Ellard, 2015). Exploring the reasoning behind this contributes to a more effective design of urban green space making optimal use of its health-supporting ingredients. The photos captured through the iPads were through the perspectives of 'soft fascination' in nature (Valtchanov & Ellard, 2015). Hughes, Richardson & Lumber (2018) found that nature connectedness captures that relationship between people and the rest of nature. The visual complexity of nature as natural environments may be the trigger for soft fascination as nature tends to have intermediate levels of visual complexity. These intermediate levels may attract attention in a moderate, pleasant way such as capturing nature through the iPad camera in this study. In contrast most human-made environments evoke hard fascination or lack in visual complexity and therefore do not capture the attention of the child.

The photographs in this study considered of close-ups of insects or different perspectives such as the view of the sky:

"Look at my photo. You can see all the spiders' legs close-up. I think this spider has eight legs. I found it crawling along the branch of that tree" (Luna, age 10)

"Look at the way the camera captured the clouds in the sky. They look like cotton wool balls." (Clare, age 9)

"The trees look so much taller from the angle of my photo. I didn't realise how tall they looked!" (John, age 8)

"I love the way the sun is shining through the branches of the trees. It looks magical." (Emily, age 8)

Figure 6: Sun through the branches

"I tried to take a photograph that captured all of our Forest School area, but I couldn't fit it all in." (Ryan, age 10)

Figure 7: Forest School area

The borders were different as there are less confines than in the classroom. This afforded the creation of different spaces. Pictures of the sky highlighted the expanse of what can be accessed through the 360 degrees lens. Nature was viewed as a space and place that is rich with natural resources; a living space, which is different from the classroom and lacking definitive walls and a ceiling. The outdoor learning, in comparison to a classroom environment, increases the physical space around children (Harris, 2017). As Kraftl (2013:1) states it is "impossible to divorce social processes from spatial processes". The

learning space for children was not only to do with the physical space but also how it impacts on social organisation within the space:

"We like to build our dens in this space. I've taken a photograph of our favourite den. We like it as it is hidden in the bushes." (Joe, age 8)

"Emily and I found coins buried in the soil. It's our secret treasure. We are buried it again after taking the photograph so that the coins remain in Forest School. It means we can play with them next time." (Rachel, age 8)

Figure 8: Digging for treasure

The outdoor spaces may be seen as sites where children 'develop' as opposed to spaces where children can 'experience' whereby breadth of experience is easier to capture within complex environments such as outdoor spaces. Taylor, Spehar, Hägerhäll, & Van Donkelaar (2011) found fractal geometry useful in describing the visual complexity of natural environments. Natural scenes capture the order and structure in natural environments by the recurrence of similar visual information across multiple scale levels as they hold roughly the same number of elements and form as one zooms in and out of the scene. It can be argued that it is almost impossible to set up valid research in outdoor environments to capture cognitive development, whereas experience can be observed directly through the social interactions that occur in outdoor spaces. This was true through the lens of the iPad camera where children were able to 'experience' nature whether it was holding a leaf to photograph it or leaning against a tree to hold the iPad up to the sky.

Place Attachment

Place attachment refers to an emotional bond or meaning and attachment to a particular place or setting (Harris, 2021). The child observations noted that the children were keen to capture images that held some importance to them whether it was leaves, insects, trees, flowers or the image of the sky through the tree branches. These may hold particular social or cultural meanings as well as ecological meaning. Spiteri, Higgins, and Nicol (2020) for example found that children often conceptualise nature in different ways including as a place related to their identity. Only a few papers so far focus on children's development of a relationship with the environment through Forest School (e.g. Cumming and Nash, 2015; Smith, Dunhill, and Scott, 2018; Turtle, Convery, and Convery, 2015; Harris, 2021).

The physical environment can be associated with feelings of secure attachment. The familiar background of the scene (trees, fire circle, pathways) may be comforting and provide a sense of calm promoting the principles of nurture and provide a kind of ritualised routine. The idea of place attachment in children may be feeling love towards nature and how children think about nature, in other words, affective responses to nature (Garden, 2022a). Dopko, Capaldi and Zelenski (2019) suggest that nature exposure can foster children's nature connectedness and willingness to perform pro-environmental behaviours with place attachment referring to the positive emotional- cognitive connections. This can also be bonds between a person and the significant places where they live and spend their time (Scannell and Gifford, 2017). Connections to natural environments such as Forest Schools can be associated with place attachment. The development of emotional and cognitive processes such as resilience can be linked to secure place attachment (Chawla, 2015; Little and Derr, 2018). Scannell and Gifford (2017) found that individuals can benefit psychologically and experience intrinsic fulfilment from places of attachment that provide them with appreciation of beauty. Dopko, Capaldi and Zelenski (2019) highlight the emotional benefits of time spent outdoors for children and may also promote pro-social behaviours. The development of ties with places in positive ways may encourage

children to learn about the environment and therefore protect places that are important to them:

"I love this place. I like to hide behind that bush as it is quite hidden. I look forward to coming here every week." (Michael, age 9)

"I make dens in that space. It's my special place. It's pretty cool." (Joshua, age 8)

"This is our special hiding place. We made a fairy den in there and decorated it with sticks and leaves form the Forest School." (Kate, age 9)

Figure 9: Den building

"This is my gardening area. I've been growing daffodils and I like to see how they are doing when I come back each week." (Chloe, age 9)

"That's my area to dig. My buried treasure is there." (Ryan, age 9)

Figure 10: Area to dig

Within Harris's (2021) study several of the children similarly felt a sense of ownership to the space. Through identification, naming and association of places to activities, Forest School becomes a more meaningful environment. The capturing of photographs in the Forest School space may help to develop a sense of ownership and concern for the forest school setting (Harris, 2021). Forest Schools are arguably relatively ambiguous in nature providing opportunities for children to negotiate their interactions using processes garnered from a range of experiences, including those from the indoor classroom (Garden and Downes, 2021).

7. Concluding thoughts

Forest School may encourage a sense of belonging (place attachment) developed by being in nature (Harris, 2021) and a sense of belonging to a wider natural community (Cudworth and Lumber, 2021). There is a need to better understand children's nature connection and the spatiality of Forest School to frame the development of nature connection within a socio-spatial analytic (Cudworth and Lumber, 2021). A focus on space generates new complexities around the hybrid spaces that are constituted by Forest Schools as highlighted by our Forest School Conceptual Space figure (Garden and Downes, 2021: Fig1). I argue that Forest Schools are distinctive spaces, and we need to consider new ways of describing Forest Schools and their value to those who engage with them. Such notions of new spaces as distinctive of, but complementary to, existing educational spaces are not new. The emergence of digital technologies has necessitated a similar approach when considering their affordances within the education context (Potter & McDougall, 2017). A 'third space' (Potter & McDougall, 2017, p. 37) and the interconnectedness of different learning spaces across various domains. John Dewey's theory of experiential education (1916/2007, 1938/1997) sought to understand the outdoor education experience as a lived experience drawing on Dewey's original ideas of meaning making out of experience. Dewey (1938/1997: 43) refers to "trying" and "undergoing", with trying as the outward expression of the individual, the attempts by them to within the environment and undergoing as the ways in which the environment impacts upon the individual. A dynamic and two-way process, the interaction involves an

impact on the environment by the individual and an impact on the individual by the environment.

Digital technology within outdoor experiential learning such as Forest School, can consist of a range of devices such as iPads, digital cameras, tablets, smartphones, augmented reality and so on. Digital technology, such as a GPS device, may enhance and create additional opportunities in outdoor experiential learning through children to navigating using a map and compass; providing accurate location feedback (Thomas & Munge, 2017). Technology can involve the promotion of health, wellbeing, and pro-environmental behaviours. Technology has now become vital to maintain social, physical, emotional, intellectual, and spiritual wellbeing for children in ways that it was not previously. Technology may now support children's wellbeing as opposed to socially isolating them. This article sought to consider the possibilities of capturing the forest space through a camera lens and the affordances it provides for children to fully explore pedagogical possibilities, whilst engaging in the outdoors. Forest School may encourage children towards pro-environmental behaviours as highlighted in this study. Engagement with nature is a key outcome (Harris, 2017). The forest space is in many ways constructed as an 'escape', a space away from the classroom, away from technology, away from the pressures of everyday life and the outside world. Space and time were managed and constructed differently. Whilst being a distraction from outdoor experiential learning experiences, digital technology also provides opportunities to enhance learning (Hills and Thomas, 2019). It is perhaps important to consider a move away from the narrative of a 'demonisation' of technology and view technology as a tool; a tool which practitioners have a responsibility to manage appropriately within the setting through scaffolding of activities (Vygotsky, 1978).

Whilst spaces can exist antagonistically with one another, usually defined by rigid impenetrable borders, many exist in affiliation (Bhabha, 2012). We argue that the 'gateway' into Forest School is an important moment of transition from one place (usually a school) to another. In Forest Schools, this gateway is usually symbolised using a fire circle. This is where the context for the Forest School space is created through establishing who will say what and when, who will have control over what, and general rules about how to move around and interact with the space. The continuity with connected spaces, for example, the classroom can therefore be established. The more the gateway references classroom rules, practices, and roles, the greater the continuity; the fewer references there are, the more discrete the space becomes. The ideal is a blend of both: a connection with other spaces so that Forest Schools become meaningful in these contexts, and disconnection, leading to Forest Schools becoming distinctive spaces (Garden and Downes, 2021). Nature was viewed as a space and place that is rich with natural resources; a living space, which is different from the classroom and often definitive walls and certainly a ceiling. Pictures of the sky taken through the lens of the iPad camera highlighted the expanse of what can be accessed through the 360 degrees lens. Harris (2021) found that the move away from ceilings and walls that confine children towards an outdoor space meant children were more likely to be able to express themselves. This study suggests that trees and forest settings may be relatively fascinating and restorative types of nature with technology fully engaging and connecting the learner with both the expanse of the outdoors (looking up) and each other. Bollinger and Shepherd (2017) investigated children taking pictures of specific plants, reflecting upon them, and sharing these images with their peers.

This research, whilst small scale, is a unique view of children's perceptions of the space described as 'Forest School'. Further research is needed to continue exploring the benefits of the capturing images through photographs. Further training may be useful for primary school teachers and Forest School leaders on the more intuitive ways in which cameras, iPads or other technologies might be used in the outdoor space. There is the need for all primary schools to consider the outdoor space as an effective pedagogy. Teacher educators should encourage teachers to interact with children while they are using devices or playing outdoors (Deaver & Wright, 2018; Donohue & Schomburg, 2017). Wolfe and Flewitt (2010) discuss the limited training for staff working with children in early childhood education and care

(ECE) on how to support children to use technologies effectively and purposefully. Within ECE in the England, more digital resources needed to engage children fully and appropriately with technological experiences and expertise (Fleer, 2017). The primary schools in this study were committed an outdoor play-pedagogy in their school. Future research could focus on the processes that Forest School leaders use to make decisions about their use of digital technologies such as cameras and the ways in which they could be meaningfully integrated into the conceptual space of Forest School (Massey, 2005).

8. Disclosure statement

The author(s) declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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10. References

Bhabha, H.K. (2012) The Location of Culture. London, UK: Taylor & Francis.

Beery, T. H., and Wolf-Watz, D. (2014) Nature to Place: Rethinking the Environmental Connectedness Perspective. Journal of Environmental Psychology 40: 198–205. https://doi.org/10.1016/j.jenvp.2014.06.006.

BERA (2018) Ethical Guidelines for Educational Research. [online] Available at: https://www.bera.ac.uk/publication/ethical-guidelines-for-educational-research-2018. Accessed: 15 August 2022.

Bergen, D. (2017). Technology and outdoor play. T.Waller, E. Ärlemalm-Hagsér, E.B.H. Sandseter, L. Lee-Hammond, K. Lekies & S. & Wyver (Eds.). Handbook of outdoor play and learning. London, UK: Sage Publications.

Biesta, G., Allan, J., & Edwards, R. (2013) Making a difference in theory : The theory question in education and the education question in theory. London, UK : Routledge.

Bolliger, D. U., & Shepherd, C. E. (2017). An investigation of mobile technologies and Web 2.0 tools use in outdoor education programs. Journal of Outdoor Recreation, Education, and Leadership, 9, 181-196. https://10.18666/JOREL-2017-V9-I2-8228.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77–101. Qualitative Research in Psychology. Retrieved from http://www.informaworld.com/smpp/content~db=all~content=a795127197~frm=titlelink [Taylor & Francis Online]

Chawla, L., and V. Derr. (2012) The Development of Conservation Behaviors in Childhood and Youth. In S. D. Clayton (Ed.), Oxford library of psychology. The Oxford handbook of environmental and conservation psychology (p. 527–555). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199733026.013.00

Children & Nature Network (2021) https://www.childrenandnature.org. Accessed 17 August 2022.

Coates, J.K. & Pimlott-Wilson, H. (2018) Learning while playing: Children's Forest School experiences in the UK. British Educational Research Journal, Volume 45, Issue1, February 2019, pp. 21-40.

Cree, J., & McCree, M. (2012). A brief history of the roots of forest school in the UK. Horizons, 60, 32–34. Retrieved from https://www.outdoor-learning-research.org/Portals/0/Research%20Documents/Horizons%20Archive/H60.History.of.FS.pt1.pdf?ver=2014-06-23-151226-000 Accessed 1st August 2022

Cudworth, D. and Lumber, R. (2021) The importance of Forest School and the pathways to nature connection. Journal of Outdoor and Environmental Education, volume 24, pages71–85, 2021.

Cumming, F., and Nash, M. (2015) An Australian Perspective of a Forest School: Shaping a Sense of Place to Support Learning. Journal of Adventure Education and Outdoor Learning 15 (4): 296–309.

Dabaja, Z.F. (2021) The Forest School impact on children: reviewing two decades of research. Education 3-13. International Journal of Primary, Elementary and early years Education, 2021, https://10.1080/03004279.2021.1889013

Data Protection Act (1998) HM Government http://www.legislation.gov.uk/ukpga/1998/29/pdfs/ukpga_19980029_en.pdf Accessed: 17 August 2022.

Deaver, A. W., & Wright, L. E. (2018) A world of learning. Young Children, 73, 22–27.

Dewey, J. (1997). Experience and education. New York: Touchstone. (Original work published 1938).

DfES (2006) Learning outside the classroom manifesto. Nottingham, UK: Department for Education and Skills.

Dickinson, E. (2013). The misdiagnosis: Rethinking "nature-deficit disorder". Environmental Communication: A Journal of Nature and Culture, 7(3), pp. 315-335, 2013.

Donohue, C., & Schomburg, R. (2017) Technology and interactive media in early childhood programs: What we've learned from five years of research, policy, and practice. Young Children, 72, 72–78.

Dopko, R.L., Capaldi, C. and Zelenski, J.M. (2019) The psychological and social benefits of a nature experience for children: A preliminary investigation, Journal of Environmental Psychology, Volume 63, June 2019, Pages 134-138. https://doi.org/10.1016/j.jenvp.2019.05.002

Early Years Foundation Stage (EYFS) Statutory Framework (2021) https://www.gov.uk/government/publications/early-years-foundation-stage-framework--2. Accessed 16 August 2022.

Fleer, M. (2017) Play in the Early Years. Cambridge, UK: Cambridge University Press.

Forest School Association (FSA) (2019) Forest School Association Website. www.forestschoolassociation. Retrieved 1 August 2022.

Frantz, C. M., and F. S. Mayer. (2014) The Importance of Connection to Nature in Assessing Environmental Education Programs. Studies in Educational Evaluation41: 85–89. https://10.1016/j.stueduc.2013.10.001

French, G. (2016) Going Pro: Point of view cameras in adventure sports research. Journal of Outdoor and Environmental Education 19, 2–9.

Garden, A.S. (2022a) UK Forest Schools as a space for risk for children with Social, Emotional and Mental Health (SEMH) Needs. In P. Wood (Eds) Policy, Provision and Practice for Special Educational Needs and Disability. Routledge. November 2021. https://10.4324/9781003155034-12

Garden, A. (2022b) The case for space in the co-construction of risk in UK Forest School. Education 3-13 International Journal of Primary, Elementary and Early Years Education. https://doi.org/10.1080/03004279.2022.2066148

Garden, A. (2022c) An Exploration of Children's Experiences of the use of Digital Technology in Forest Schools. Journal of Adventure Education and Outdoor Learning. Published online 7 Aug 2022. https://10.1080/03004279.2022.2066148

Garden, A. & Downes, G. (2021) A systematic review of forest schools literature in England. Education 3-13 International Journal of Primary, Elementary and Early Years Education. Published online 25 Aug 2021. https://doi.org/10.1080/03004279.2021.1971275

Gibson, J.J. (1977) The theory of affordances. In R. Shaw & J. Bransford (Eds.), Perceiving, acting, and knowing (pp. 67–82). Hillsdale, NJ: Erlbaum

Harris, F. (2017). The nature of learning at forest school: Practitioners' perspectives. Education 3-13 International Journal of Primary, Elementary and Early Years Education, 45, 272–291.

Harris, F. (2018) Outdoor Learning Spaces: The Case of Forest School. Royal Geographic Society, Vol. 50(2), 222-231.

Harris, F. (2021) Developing a relationship with nature and place: the potential role of forest school. Environmental Education Research, 1-15. https://doi.org/10.1080/13504622.2021.1896679

Henderson, B., & Vikander, N. (2007) Nature first: Outdoor life the friluftsliv way. Toronto, Canada: Dundurn.

Hills, D. and Thomas, G. (2019) Digital technology and outdoor experiential learning. Journal of Adventure Learning and Outdoor Education, 13 April 2019, pp. 155-169.

Holloway, P. and Mahan, C. (2012) Enhance Nature Exploration with Technology. Science Scope, Vol. 35, 9, July 2012.

Hughes, J., Richardson, M., & Lumber, R. (2018) Evaluating connection to nature and the relationship with conservation behaviour in children. Journal for Nature Conservation, 45, 11-19.

Hunt, A., Burt, J. and Stewart, D. (2015) Monitor of Engagement with the Natural Environment: a pilot for an indicator of visits to the natural environment by children - interim findings from Year 1 (March 2013 to February 2014) NECR166.

Kelly, P. (2014). Intercultural comparative research: Rethinking insider and outsider perspectives. Oxford Review of Education, 40(2), 246-265.

Knight, S. (2016) Forest School in practice for all ages. London: Sage.

Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development (Vol. 1). Englewood Cliffs, NJ: Prentice-Hall.

Kraftl, P. (2013) Geographies of alternative education: Diverse learning spaces for children and young people. Bristol, UK: Policy Press.

Leather, M. (2018). A critique of "forest school" or something lost in translation. Journal of Outdoor and Environmental Education, 21, 5–18.

Little, S. and Derr, V. (2018) The Influence of Nature on a Child's Development: Connecting the Outcomes of Human Attachment and Place Attachment. In Research Handbook on Childhood Nature, January 2018. DOI: http://dx.doi.org/10.1007/978-3-319-51949-4_10-1

Louv, R. (2005; 2010) Last Child in the Woods: Saving Our Children from Nature Deficit Disorder. London: Atlantic Books.

Massey, D.B (1995) Thinking Radical Democracy Spatially. Environment and Planning D: Society and Space. First Published June 1, 1995. https://doi.org/10.1068/d130283

Massey, D. B. (2005) For Space. London, UK: Sage Publications.

Mayer, F. S., and C. M. Frantz. (2004) The Connectedness to Nature Scale: A Measure of Individuals' Feeling in Community with Nature. Journal of Environmental Psychology 24 (4): 503–515. https://10.1016/j.jenvp.2004.10.001.

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017) Thematic analysis: Striving to meet the

trustworthiness criteria. International Journal of Qualitative Methods, 16(1), 13, Sage Publications.

O'Brien, L., & Murry, R. (2007) Forest School and its impacts on young children: Case Studies in Britain. Urban Forestry and Urban Greening, 6, 249–265. Elsevier.

O'Connor, B. and Wyatt, R. (2004) Photo Provocations: Thinking In, With, and About Photographs. London, UK: Scarecrow Press.

Olson, B. (2016) Tensions in the Third Space: Examining the Digital Visual Culture of Teenagers. Visual Arts Research. Vol. 42, No. 1 (Summer 2016), pp. 8-21 (14 pages) Illionois, US: University of Illinois Press

Ord, J., & Leather, M. (2011) The substance beneath the labels of experiential learning: The importance of John Dewey for outdoor educators. Australian Journal of Outdoor Education, 15(2), 13–23.

Peacock, A. (2011) Managed learning spaces and new forms of learning outside the classroom. In S. Waite (Ed.), Children learning outside the classroom. From birth to eleven (pp. 188–200). London, UK: Sage.

Piaget, J. (1951). Play, dreams and imitation in childhood. New York, USA: WW Norton.

Piaget, J. (1971). Psychology and epistemology. Middlesex, UK: Penguin.

Rogers, M. (2019) Playing with Technology Outdoors. Early Learning in the Digital Age, 46, 2019.

Schleicher, A. (2015) Schools for 21st-Century Learners: Strong Leaders, Confident Teachers, Innovative. Approaches, international Summit on the teaching profession. OECD. https://www.oecd.org/publications/schools-for-21st-century-learners-9789264231191-en.htm. Accessed 1 August 2022.

Shakespear, M. Varghese, J. and Morris, R. (2020) "We Are Nature": Exploring Nature Conceptualizations and Connections through Children's Photography." Children, Youth and Environments, vol. 30 no. 2, 2020, p. 1-29. Project MUSE muse.jhu.edu/article/848947.

Skar, M., Gundersen, V., & O'Brien, L. (2016) How to engage children with nature: Why not just let them play? Children's Geographies, 14(5), 527–540

Smith, M. A., Dunhill, A. and Scott, G.W. (2018) Fostering Children's Relationship with Nature Exploring the Potential of Forest School. Education 3-13 46 (5): 525–534.

Spiteri, J., Higgins, P., and Nicol, R. (2020) It's like a Fruit on a Tree: Young Maltese Children's Understanding of the Environment. Early Child Development and Care: 1–17. https://10.1080/03004430.2020.1850444.

Steffen, W., K. Richardson, J. Rockström, S. E. Cornell, I. Fetzer, E. M. Bennett, R.Biggs, et al. (2015) Sustainability. Planetary Boundaries: Guiding Human Development on a Changing Planet. Science (New York, N.Y.) 347 (6223): 1259855. https://10.1126/science.1259855.

Taylor, R., Spehar, B., Hägerhäll, C., & Van Donkelaar, P. (2011) Perceptual and physiological responses to Jackson Pollock's fractals. Frontiers in Human Neuroscience, 5, 60.

Thomas and Munge (2017) Innovative outdoor fieldwork pedagogies in the higher education sector: Optimising the use of technology. Journal of Outdoor and Environmental Education 20, 7–13 (2017).

Turtle, C., Convery, I., and Convery, K. (2015) Forest Schools and Environmental Attitudes: A Case Study of Children Aged 8–11 Years." Cogent Education 2 (1): 1100103.

Valtchanov, D., & Ellard, C. G. (2015). Cognitive and affective responses to natural scenes: Effects of low level visual properties on preference, cognitive load and eye-movements. Journal of Environmental Psychology, 43, 184-195.

Van Kraalingen, I. (2021) A systematized review of the use of mobile technology in outdoor learning. Journal of Adventure Education and Outdoor Learning, https://10.1080/14729679.2021.1984963

Vygotsky, L.S. (1978) Mind in Society: The development of higher psychological processes. Cambridge, MA: Harvard University Press.

Wattchow, B. (2001). A pedagogy of production: Craft, technology, and outdoor education. Australian Journal of Outdoor Education, 5(2), 19–27.

Wattchow, B., & Brown, M. (2011) A pedagogy of place: Outdoor education for a changing world. Clayton, Victoria: Monash University Publishing.

Wolfe, S. and Flewitt, R.S. (2010) New technologies, new multimodal literacy practices and young children's metacognitive development. Cambridge Journal of Education, v40 n4 p387-399, Dec 2010.

Zylstra, M. J., Knight, A.T., Esler, K.J. and Le Grange, L.L. (2014) "Connectedness as a Core Conservation Concern: An Interdisciplinary Review of Theory and a Call for Practice." Springer Science Reviews 2 (1–2): 114–119. https://doi.org/10.1007/s40362-014-0021-3.