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Starting with trees: Between and beyond environmental education

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Abstract

This paper explores learning about environments with a focus on starting with trees. The paper examines children and young people's perceptions of and engagement with trees, as part of a large grant that sought to examine the dis/benefits of trees for children's lives and learning. In this paper, we attempt to move beyond notions of 'education for sustainability' in that we start with knowledges generated *with* trees. We are concerned that current educational discourses tend to incorporate extractivist perspectives. They also focus on humans rather than the inseparability of the natural world from the human experience as a starting point for research. The paper is based on a large-scale, transdisciplinary, UK-based project, rooted in in-depth, co-produced research with a total of 545 children and young people, across multiple primary and secondary schools in England and Scotland. The paper begins and exemplifies a new conversation about what starting with trees might enable for studies of education and childhood. We propose the concepts of dwelling, skilling and belonging as a novel framework for 'starting with trees'.

KEYWORDS
belonging, childhood studies, dwelling, skilling

Key insights

What is the main issue that the paper addresses?

The paper addresses the limited focus in current approaches to 'education for sustainability' and is concerned with what they might leave out. It develops an understanding of climate change education, with a focus on trees and children and young people's relationships and entanglements with them.

What are the main insights that the paper provides?

Drawing on the experiences of children and young people, we argue that it is important to work with the concept of diversity, both with children and young people as part of methodological attuning to trees and children assemblages. Our key message is the importance of starting with trees as a mode of working within the field of environmental education, focusing conceptually on dwelling, skilling and belonging.

INTRODUCTION

In this paper we ask what it might mean for us—academics, educators, learners—to 'start with trees' in co-producing environmental knowledges. On the one hand, to start with trees is to offer a constructive critique of other possible starting points when it comes to environmental learning. To start with trees might be to (attempt to) move between and beyond notions of 'education for sustainability' that have often become entangled in problematic ways with neoliberal understandings of sustainability and economic development (Cachelin et al., 2015). To start with trees might also be to avoid the ways in which certain aspects of environmental change—like climate change, plastic pollution and desertification—come to dominate both popular discourses and concerns about the environment, and educational curricula, in part because of anthropocentric bias (Kopnina, 2014).

On the other hand, to start with trees is—in our conception—an attempt at a more open, inclusive, entangled, networked, complexified, less clearly defined way of working, playing and experimenting with environmental knowledges. To start with trees does not, for instance, mean to start with deforestation; it does not, of necessity, mean taking children into 'pristine' forested environments with some determinist views of the healing benefits of nature in mind (cf. Louv, 2005); it does not have to be tied to the ways in which trees could sequester carbon (if only we could plant more of them); it does not mean simply looking at this tree and measuring its height. It *could* mean any or all of these things, but it could mean much else besides. And if we attend to *what else* (Horton & Kraftl, 2006) starting with trees might enable, in open arrangements that attend to the uncertainty of the happenstance (Badwan et al., 2024), it might be possible to think and work with diverse, exciting, generative possibilities: potentially new, heterogeneous, even disruptive ways of relating with trees emotionally, bodily, affectively, artistically, scientifically (etc.)—whatever those terms might mean in context (e.g., see Nxumalo et al., 2022). Such terms can take us into areas that stretch beyond neat understandings into spaces of not knowing that require attention as a mode of creative inquiry (Badwan et al., 2024).

What if we start by simply drawing a tree (any tree)? Or start by modelling the roots of trees with pipe cleaners? Or start by telling stories about what might happen to a particular tree in the future? What if we start with movements of children and technologies as they

attempt to measure trees through a whole range of techniques—some 'accepted' by tree scientists, others not? Or by starting conversations about the soil in which trees grow?

Indeed, in thinking through all of the above questions, it might not matter too much if we start with trees; grasses, shrubs, rocks, plastics might all be equally interesting and provocative. However, trees are a good place to start in thinking and doing between and beyond environmental education: they are a key locus—symbol, even—of attempts to deal with climate change through carbon sequestration; and trees hold a special place in human cultures, replete with myths, imageries, meanings and the sense of rootedness-in-place they afford us. Therefore, this paper charts just some ways in which, in our work with teachers and children in schools in the United Kingdom, we have experimented in 'starting with trees'—and what the implications for curriculum, learning and teaching about the environment might be if we take such starting points seriously.

In order to grapple with the questions outlined above—and in order to outline an agenda for what it might mean to *start with trees in environmental education*—this paper progresses through three 'traces' of research materials from the Voices of the Future project. Voices of the Future was a large, UK-based, 40-month, transdisciplinary research project involving a core team of 23 academics representing disciplines including childhood studies, education, applied linguistics, human and physical geography, ecology, youth studies, sociology, art practice, anthropology, landscape architecture, English and philosophy.

Driven by a commitment to co-production, the wider team included partners from major, regional tree-planting agencies such as The Mersey Forest and Manchester City of Trees, educators from a wide range of settings, youth workers, and children and young people themselves. Across our various sites, we worked in-depth with a total of 545 children and young people, aged from 2 to 25. In the north west we worked with 12 families and 21 very young children, 330 primary and 30 secondary school children, and 61 young people. In Aberdeen we worked with 103 primary school children.

Although forming part of a larger UK research programme ('The Future of UK Treescapes') aiming to improve UK treescapes (environments with trees) for the benefit of the environment and society, principally through mobilising the capacity of trees to absorb carbon, this project took a rather different approach. Through a series of work packages and sub-work packages, across sites in northwestern England, South Yorkshire and Aberdeenshire, it sought to understand and co-produce *with* children knowledge about trees. Central to our work, grounded in philosophies of hope, the project aimed to co-construct with children a range of plans, actions and (speculative) stories to address the (possible) future of trees and treescapes where they live.

Across these aims, we sought to attend to the *diversity* of children and young people's learning, knowledges, experiences and hopes for trees. On the one hand, this meant that we worked in depth (in most cases for a year or more) with large groups of children (up to 90) at each site, ensuring that we worked with a very diverse range of spaces and communities. These sites included: early years settings in South Yorkshire; a highly ethnically diverse primary school in central Manchester; a predominantly white, working class primary school in Bolton; children between the ages of 6 and 12 in an ethnically diverse city primary school in an area of high deprivation and a middle-income suburban primary school on the edge of Aberdeen; several secondary schools and colleges in the Greater Manchester region; and a group of around 20 recently arrived asylum-seeking young people via a youth group in Manchester.

On the other hand, we developed, with our partners, a range of transdisciplinary methodologies that could enable us to start with trees. Some of the richness of these approaches is articulated via small, ephemeral 'traces' of practice that, in our words, 'start with trees' later in the paper. However, in broader terms, as noted above, this often meant spending a year or more at each site, carefully co-developing appropriate methods with children, young

people and their associated adults. Often, researchers from multiple disciplines participated in research sessions at the same time, as we: explored with and trained children and young people how to do research with trees from different disciplinary perspectives; introduced 'scientific', 'social-scientific' and 'arts and humanities' approaches to working with trees; engaged children in a range of creative activities—from designing treescapes to writing stories about trees in the future; engaged children in planning, planting, caring and maintaining for trees, often in their school grounds or places proximate to where they lived; experimented with a range of lower- and higher-tech equipment (from laser scanners to iPads, and from notebooks to rulers) to derive manifold ways to 'measure'—or get the measure—of trees (Pahl et al., forthcoming); and attended, all the while, to the stories, memories, experiences, emotions and embodied interactions children and young people engaged in with trees— whether verbal or non-verbal. It is this assemblage of our attentions that offers glimpses into children's and our own experiences of learning with trees. As historical geographer Sarah Mills notes: 'it is the fragments that contain the beauty, mystery and particular way of reading the archive that so enchants them' (Mills, 2013: 704).

DWELLING, SKILLING AND BELONGING

We combine this approach of starting with trees with a focus on ideas of 'dwelling, skilling and belonging' as ways of developing a shared understanding of—and potentially powerful framework for—the mechanisms needed to start with trees. The idea of dwelling is drawn initially from Ingold's notion of the 'dwelling perspective', first introduced in *The perception of the environment* (Ingold, 2000), which troubled a housebound understanding of what it is to dwell, and was the starting point for rethinking the place of people in the world and the relationships between humans and non-humans in the world. Reflecting back on this idea sometime later in *Being alive: Essays on movement, knowledge and description*, Ingold (2011) reiterates the way in which a 'dwelling perspective' opens up the notion that humans 'inhabit' (p. 71) rather than occupy the world, working 'with materials, … rather than just doing to them' (p. 10). Distancing himself from Heidegger's idea of dwelling, which separates humans from other animals, Ingold makes clear that a 'dwelling perspective' draws instead on the role of movement in the eco-psychological approaches to perception of Gibson (1979, cited in Ingold, 2013: 11) and Merleau-Ponty's phenomenological approach to perception in which humans are 'stitched into the fabric of the world' (p. 12). In this reflection, Ingold reconfigures the ideas of the dwelling perspective from being cosily placebound to situate the dwelling perspective within the expansive movements of everyday life and activity of humans and non-humans in the world, putting an emphasis on 'wayfaring' (p. 12). A dwelling perspective in which humans and non-humans live and move 'skilfully in and through their surroundings' (p. 10) implies that in so doing, people are shaped as much by what they live amongst as by people.

In the context of exploring how children and young people—along with adults—in schools encounter, make sense of and learn from/with/about trees, both the notions of the dwelling perspective and wayfaring, underpinned by the development of the skills to 'live and in through their surroundings' (Ingold, 2013) are pertinent to our work. Skills in this sense are multifaceted and do not follow meritocratic hierarchies, drawing from Bernstein's example of a skilled blacksmith, who despite creating a different arc of the hammer on each blow, always hits the spot because they have the skill to tune their movement (Bernstein 1967, cited in Ingold, 2013: 58). This then provides a very different framing for education, one that emphasises what children know and what they can do.

In contrast to current global educational policies that focus attention on attainment (e.g., PISA, which fosters a competitive and often reductive perspective on learning), Ingold's

writing suggests a slow and deep development of experience, skills and knowledge, which come into being through encounters between humans and non-humans of different ages and dispositions, through practice and repetition. His ideas echo Alison Clark's call for slow pedagogies (Clark, 2022), which, although stemming from working in an early years context, is relevant to people of all ages. Our work with children, young people and trees has allowed everyone to slow down and make time to be curious, to question, to listen, to learn together and reciprocally between children, trees and adults. Our approach has made it possible to recognise when being still or moving about heightens our perceptions of being in a treed world. It also calls into question how open schools are to breaking down the dualism between 'vocational skills' and curricular knowledges. We mean this in two inter-related ways: on the one hand, in terms of the ways in which children and young people (especially) found ways to dwell (or not), feel comfortable (or not), settle (or not)—even if momentarily—through the course of our co-production activities; on the other hand, in terms of the ways in which these forms of dwelling recursively dwelled, sat or fit within (or not) the spaces, rhythms, knowledges and practices of the schools we worked with, and their curricula.

Building on the above discussion, in terms of *skilling*, we argue later in the paper that we were struck by forms of doing and knowing that are either rarely valorised in, or actively excluded from, school curricula. We use the term 'skills' deliberately and provocatively since (in the United Kingdom) there are increasing concerns about a shortage of skills for the forestry sector and—increasingly—about the lack of diversity within the forestry workforce (particularly in terms of gender and ethnicity). Whilst our project does not seek to address this 'skills gap', the notion of skilling more broadly understood is helpful in extending debates about environmental learning beyond those covered by the literatures above (where questions of 'skills' are rarely broached). We want, for instance, to explore and amplify instances of where 'traditional' or 'working class' skills (and knowledges) about working with trees, treescapes and wood—which are often fairly localised but also often effaced in contemporary school curricula—are being and might be a part of school-based learning about treescapes. In an interview with a forest educator (conducted by the team in March 2023), the educator described how rare the skills are that are connected to woodlands, and he argued that these need to be more visible within schools. The educator, who was himself a forestor, talked about the skill of coppicing. He said that the children

> … *just come up here, learn some stuff, build some stuff, have a good time and enjoy with your friends and it links with those children who don't have that contact with nature, like when we coppice this hedge, I need it a lot more … that's why we do other coppicing going because they may not know how to live with nature and keep it alive.*
>
> (Interview, 14 March 2023)

We are concerned about the ways in which 'tree skills' are positioned within the sector and wonder how they might open out opportunities for learning that may resonate well with some learners—that may enable them to dwell more comfortably with trees and tree-knowledges—than do other forms of environmental education. We also want to avoid romanticising those forms of knowledge and skills (who and what might 'traditional' ways of working with and knowing land exclude?), and evade any sense of a dualism between 'vocational' skills and curricula knowledges. In other words, we want to ask how a move to considering skill-*ing*—understood as, but also beyond, 'traditional' forestry skills—can challenge, augment, supplement or otherwise develop environmental education in school curricula?

The concepts of *longing and belonging* (articulated as '*(be)longing*') weave time, place, humans and non-humans together to provide unexpected diffractive configurations. The project's emphasis on the future is anchored in learning to attend to children's past memories,

experiences and histories, as well as their present being, becoming and ongoingness in the world (Horton & Kraftl, 2006). This connection between the past, the present and the future stretches life like a story in an act of 'longing' (Ingold, 2018: 21). However, we use longing in a slightly different way here. Unlike Ingold's focus on stretching life 'along a line', we break free from lines as they risk keeping us in the epistemological pursuit of coherence and convergence (Deleuze & Guattari, 1983). The longing we embrace is stretching in regular and irregular shapes, following the rhythm of children's entanglements in this research assemblage. It is a tool to tie together and yet branch out. It is also a space to assemble and scatter voices and worlds (Ambreen et al., 2023; Ambreen et al., forthcoming). We recognise this in the way we write about children's encounters with trees.

In the next part of the paper, we briefly position our work and its contributions in respect of the large and complex field of environmental education. Thereafter, we recount in detail a series of experiential traces of practice from across our research sites in order to draw out a range of key questions and considerations for starting with trees, between and beyond environmental education.

We draw on the idea from Said (1981) of 'traces' of practice, snippets recorded in the field and then written down in an experimental way (see also Mills, 2013). Said's original account was situated in the context of recovering a history that has been subjugated. Here, we use the term 'traces' to describe the echoes from the field that we experienced. Written by different combinations of authors, they are deliberately multiply voiced and mediated, as we experiment with different written and presentational styles that we argue are necessary for witnessing the outcomes of our approach, outlined above (on the need for such styles in socio-environmental research with children and young people, see also ; Kraftl, 2020). This led to a more diffuse and open conceptual framework for the idea of starting with trees. Throughout, and in conclusion, we outline the broader implications of our work for (environmental) education scholars.

LOOKING BETWEEN AND BEYOND ENVIRONMENTAL EDUCATION

There are many established fields of scholarship that critically evaluate environmental education as broadly understood (for detailed reviews, see Monroe et al., 2019; Rousell & Cutter-Mackenzie-Knowles, 2020). There has been a proliferation of research about environmental education, education for sustainability (and sustainable development), outdoor learning, experiential learning, alternative education and Forest School. In relation to sustainability, environmental and climate change education, the common terms used in the UK Department for Education strategy (Department for Education, 2022) over-emphasise economic values and less attention is paid to social and relational dimensional aspects, requiring a collaborative partnership among policymakers, teachers, educators, young people and children (Dunlop & Rushton, 2022). The focus on environmental learning has tended to focus on the potential for human-oriented learning and the benefits to humans. For example, environmental education has been described by the American Association for Environmental Education, and quoted on their UK site, as being

> … a key tool in expanding the constituency for the environmental movement and creating healthier and more civically engaged communities. (https://naee.org.uk/so-what-is-environmental-education/)

This work has been accompanied by burgeoning theoretical perspectives, many of which have sought to challenge the notion that learning about environments and environmental

change should be based on the didactic transfer of knowledge to learners in traditional classroom settings (Trott & Weinberg, 2020). Many, indeed, focused on children and young people as agents of change (e.g., see Mackey, 2012). In part, this involves decentring 'teachers' as providers of stable environmental knowledges, towards more discursive, participatory, inclusive, interdisciplinary and creative approaches to environmental education (BERA Research Commission, 2021). In part, though, this means moving beyond the classroom, as outdoor learning and Forest School settings privilege forms of learning through active 'connectedness' with specific ('natural') places, such as local woodlands—often involving activities like walking, playing, climbing, collecting and making in the generation of 'place-responsive pedagogies' (Kraftl, 2013; Lynch & Mannion, 2021).

Meanwhile, Common Worlds conceptualisations of environmental learning seek to question the very foundations of what it means to be a human (and a 'learner') within environments (Taylor & Pacini-Ketchabaw, 2018). Where Forest School might still view (child) learners as individuated human subjects, Common Worlds framings deploy feminist new materialist and posthumanist theories to position children as porous, emerging only ever in relation *with* the world (e.g., see Crinall & Someverville, 2020). Although still profoundly place-based and place-aware, Common Worlds theorists and pedagogues are thus more interested in how children interact, are entangled and become-*with* the more-than-human flora, fauna and flows with which they have contact (Land et al., 2022). As the Common Worlds Research Collective (2020: 2) argues in a recent paper for the UNESCO *Futures of education* report, 'this requires a complete paradigm shift [for environmental education]: from learning about the world in order to act upon it, to learning to become with the world around us'.

Whilst overlapping to some extent, each of the above approaches offers a different framework for understanding the relationship between learners, learning and environments (and particularly environmental change). Moreover, to differing extents, each offers a critique of contemporary approaches to environmental education as it is set within the disciplinary, regulatory and political traditions of education systems in countries like the United Kingdom (Howard-Jones et al., 2021). As indicated above, a key outcome of this critique is that increasingly popular forms of environmental learning now take place 'outside' the classroom, if not the curriculum itself (Jickling et al., 2018). Yet, in this paper, we want to think again, and to think further, about what it means to engage in diverse forms of learning, doing, feeling and knowing (about) *trees*. For our work, these diverse literatures prompt three considerations, questions and provocations—about *dwelling*, *skilling* and *(be)longing*.

In terms of *dwelling*, we demonstrate later in the paper how different disciplinary curricula (especially science) cannot (fully) accommodate our co-production work in the Voices of the Future project. It was hard to find spaces and times in which our work could settle or sit comfortably within or alongside the curriculum in schools, especially when different schools have different interpretations of following and enriching the statutory curriculum, and it is even harder to imagine how it might be incorporated in a formal sense into future curricular developments. Part of the reason for this was that we wanted to consider more deeply what it was like to *(be)long*, with treescapes, in diverse forms and styles. Critically, this did not mean privileging certain ways of being (and acting, and *skilling*) within carefully chosen ('pristine') treescapes in order to afford socio-culturally narrow forms of nature (re)connection (Kraftl et al., 2019). Rather, it meant proliferating ways of *dwelling with/in*, *skilling with/in* and *(be)longing with/in* treescapes with diverse ages and groups of children, in diverse kinds of treescapes and in places that might not (yet) be considered as treescapes (school classrooms, playgrounds, urban streets). In this paper, then, we seek to extend beyond notions of nature connectedness, place responsiveness and doing/being-with, in order to explore what the concepts of *dwelling*, *skilling* and *(be)longing* might afford environmental education.

In the remainder of the paper, we introduce experimentally written traces of practice from our sites, which draw together and extend our discussion of *dwelling*, *skilling* and *(be)longing*, above. Our approach is to allow—to some extent—the case studies to 'breathe', attending to the multiple rhythms, mediations and performances that emerged when starting with trees. In the paper's conclusion, we draw out the implications of the case studies.

LEARNING HOW TO BE IN THE WORLD: TREE AS TEACHER

Here we draw on observations and films co-created by children in a small patch of woodland adjacent to a primary school playing field in Bolton. We hone in on a semi-rural school, which was located adjacent to a town in the north west of England. We developed, with the children, a project called Trees and Us, which was concerned with trees. In partnership with Manchester City of Trees, a tree-planting charity, and with the support of the Year 3 and 4 teachers in the school (children aged 7–8, $n = 90$), we worked intensively in the school to support a tree-planting and tree-exploring project. Alongside tree planting, we worked with a trained Forest School teacher, who encouraged the children to encounter trees through free play in a series of Forest School sessions within the school day. We documented these sessions, developing an understanding of a relational sense of (be)longing, which was both multilingual and sensory, experienced through action and experience. This sense of (be)longing was actively constructed through interaction with the woodlands.

The writing below was created as a response to spending several afternoons with children and a forest educator in the space. At times it was chilly, and we found it difficult to concentrate because of the cold. The children's responses to the woodlands constituted a commentary on how the woods could become methodologies for learning.

Children roamed freely in the school woodland. Moving away from didactic modes of learning within the concrete walls of the classroom, children learned through a process of self-discovery (Ingold, 2013). During the process, trees, children and other human and more-than-human materials and bodies became part of the process of learning about/with nature. Children were not told by their Forest School teacher, Richard (pseudonym), what to do. Instead, the focus was very much on how to experience things. This enabled curiosity among the children about 'what to look for', in the Forest School teacher's words, by watching, listening, feeling and paying attention to human and more-than-human materials and bodies.

> *You get to climb trees and if you fall over, you don't hurt as much.* (Richard, forest practitioner)

> *It is fun to take leaves off the ground and make things out of them so it's really fun.* (child)

In this exploration we learned from the children what movement feels like around trees. Using Tim Ingold's *Being alive: Essays on movement, knowledge and description* (Ingold, 2011), we explored how movement was reconfigured through the branches and bark of a tree. The children touched the trees, 'we touch with our hands as well as our feet' (Ingold, 2011: 45) and the surface of the tree afforded the climb. While we tend to imagine that things are perceived from a stationary platform, when watching a child climb a tree, we ask: How does the feel of a surface differ? How is perception different from the point of climbing a tree? If 'Movement must be *felt*' (Ingold, 2011: 60), how is this feeling different?

FIGURE 1 Tree climbed with child. [Colour figure can be viewed at wileyonlinelibrary.com]

We attempted to describe, in writing, the process of climbing the tree—providing a trace of practice and a verbal and visual record of a moment of starting with trees. Here we write as the woodland, that teaches us how to move within it and learn from it. The woodland-as-methodology exemplifies how woods exercise their agency to afford opportunities for children to learn with/from nature. The woods, rather than being a passive object, actively contribute in the ongoing/ness of their encounters with children (Taylor et al., 2021). The woods also became a co-teacher (Blenkinsop et al., 2018) and assisted the Forest School educator in enabling—in *skilling*—children to explore their ecological relations and *dwelling*-with nature, rather than (purely) seeing nature-as-resource or as a detached object of scientific knowledge (see Figure 1).

> Tree climbing child. Grasp and move the whole body up. Move up toe in tree, toe up and other toe up at the same time. Arm in the place where the tree has a space. Down. Take a step back, slide back. Start again, 1 foot up, toe in bark. Up 2 feet together. Down. Up down 2 feet on bark with. Arms on tree. Up 2 feet on tree. Down.
>
> Tree climbed with child. Has foothold in bark. Shins of legs feel the bark. Arm in space where the tree branches out.

From here, we could explore what 'starting with trees' offers as a perspective. We asked the question: What does tree-climbing teach a child?

If you stop them getting stuck, they will never understand how they got stuck. If they don't understand how they got stuck, they have no awareness of the world around them. (Richard, Forest School practitioner)

Understanding the relational-ness of children and trees as they *dwell* together means attending to the child + tree, seeing how the two are intertwined through embodied *skills* (or their lack), and attending to their histories, relations in a particular moment and place (Ingold, 2011), which in turn articulate a sense of *longing*: to climb and be climbed.

SOIL STORIES: SHIFTING PEDAGOGIC REGISTERS

In this trace of practice we offer glimpses into starting with trees as part of a whole-school interdisciplinary learning (IDL) project: Our Local Area. As we suggested above, starting with trees is in some ways vital, but in others arbitrary; it enables forms of dwelling, learning and skilling with other (related) matters, with which we could equally well have started,

but with which we engage. In this case study, although initially starting with trees, we shift to think with *soils* via a fusion of scientific techniques and technologies, memories and the proliferation of *skills* of attentiveness and *dwelling*-with soils, thinking through the capacities of soils and how we and other organisms come to know and care for them (Puig De La Bellacasa, 2015; Salazar et al., 2020).

The primary school is on the edge of a northern Scottish city; retreating farmland skirts the area around the school, including three straggly pockets of mature trees—the remnants of shelter belts planted to protect the ploughed fields of nineteenth and twentieth-century farms. The Treescapes team have been working with classes across the school from primary 2 to 6 to explore their local area from the perspective of trees. They have compared the area where they live and go to school today with what their area looked like 50 and 100 years ago, and worked out where their houses (built in the 1980s and 1990s) would have been on the old maps of farmland. This piece also explores the decentring of teachers and other adults as providers of knowledge and the emergent qualities of learning, which particular modes of enacting the curriculum can support (Pahl & Pool, 2021).

Framing

It is a cloudy, dryish day in May with intermittent sunshine, the air is cool and the ground is damp underfoot. A trail of 8–9 year-olds have walked with the Treescapes team, their teacher and classroom assistant, stopping from time to time to notice the changes in the beech trees and the emergent blossom on the cherry and hawthorns. We are in a small patch of woodland on the edge of an open parkland, where children come to play and build dens out of school. The class is split into two groups, and today we are learning about soil.

We wend our way down a slope, bigger children and adults stooping to get under branches, until we reach the edge of a boggy area at the bottom near a stream, where our fieldwork will take place. Children are milling about, paddling the mud beneath their feet and waiting for the workshop to begin.

> *Today we are learning about* [/from/through] *soil* [mud].
> *Ed is our Treescapes scientist, I am his assistant for the day.*
> Ed: *Why find out about soil?*
> Children: *Animals, 'I think I saw deer footprints…' 'I saw a fox…'.*
> Ed: *Trees like different soils. What's in soil?*

The boy next to me starts to tell me about how the soil was different in India, that when he goes to visit relatives it is very hot and very dry [in contrast to the soft, boggy surface we are standing on]; in fact, it was so hot his granny let him have ice cream every day.

Demonstrating

Ed has brought the tools he uses for his fieldwork: a soil auger, some distilled water, beakers, a red (pH) meter, a blue (conductivity) meter, a soil moisture probe, a Munsell Soil Chart and a recording sheet.

> Ed: Why do we investigate soil?
> Child: *To make sure it's healthy.*
> Ed: *What type of plants grow here?*

Ed demonstrates the process of collecting a soil sample with the auger and creating a soil solution (whose properties can be measured using the field meters). He begins by using the auger and shows the children what came out (the soil profile under their feet). They come up

close and look intently… [I am watching the children's feet puddle the mud, rocking from side to side, feeling the damp, glutinous mud squelch as they stand and watch Ed.]

Pointing to the earth in the bucket of the auger, Ed notes to the class: '*… clay, stones, rotten things…*'.

Ed's explanations of scientific terms, equipment and purposes are child-friendly, and the children are making links between the recording sheet and the equipment.

Sometimes I ask Ed a question.

Liz: *Ed, can you tell us what makes your lab water 'neutral?'*

Ed has a great analogy with bottled mineral water. He asks the children if they know what is in bottled water as well as water? They tell him about the minerals listed on the label and that water is H_2O. Ed explains that if his lab water was in a bottle there would be no minerals listed, nothing except water.

Ed explains the pH meter and what kind of reading he expects because the soil is from boggy, peaty ground. With a bit of prompting, the children are able to come up with everyday examples of what common things they encounter that are acidic. I do not think anyone understands the blue meter, as it measures the concentration of things in the water (dissolved elements). Looking at Ed's diluted solution, a child says '*it looks like coffee*'.

Moving out: Proliferating soil knowledges

Now, excited groups of children have a go at augering to take their own samples, from different sections of the slope. Their teacher, a soil scientist in a previous life, is very involved. She calls out that her group have a worm in their sample. The children observe the different colours of soil in their sample, '*light at the top, darker underneath*'. There is excitement as their teacher recalls just how much she loves the Munsell Soil Chart; she and the children together are discussing which shade of colour—from pale cream to dark chocolatey brown—best matches the swatch of soil from their sample.

The expert is everywhere as the children use the auger, to collect a sample, smear a bit on their recording sheet, create a soil solution, measure its pH and record the number from the blue meter and the percentage of water contained in the area that the sample was taken from. Their teacher encourages them to make predictions as to which part of the slope will be driest and whether there will be a difference in the pH from different parts of the slope. Ed takes his samples back to his lab; the children will be taking their recordings back to the classroom and will be using the data they have collected to create graphs to represent the samples taken from different positions on the slope. Like Ed, they are doing science and maths in the 'real' world.

MUD PLAYING, MUD GETTING ALONG WITH CHILDREN

With soils still in mind, the pieces of writing below, presented as traces of practice, from Bolton and Aberdeen, produce mud as a mode of engagement. We have written them in a way that is sensory and embodied; they reflect the way that the intra-action of mud + child joins bodies and materials together and splits them apart (Ingold, 2013). This work takes from Ingold (2011) the idea of perception as connected to the object, to the 'vibrant matter' of the woodlands (Bennett, 2010). Here, objects teach us how to learn and how to feel our way into the woodlands. We cannot quite grasp what it feels like to slide in the mud and break the sticks, or to squelch in it with wellies and fall over. Here we describe the children's intra-action with mud through an immersive description of the process we watched.

Bolton

A group of three young girls started playing with the mud. The girls' movement with/on the mud turned into playing, jumping and stamping. The mud as active material invited the girls to feel itself closely through their touches and senses and become part of the mud world (Ingold, 2013).

> The girls grappling the chunks of the mud on their hands. The mud inviting the girls to place parts of their bodies on its own body. One of the girls stretches her legs and becomes part of the mud. Next to her is another girl sitting on the mud and holding the mud in her hands. She slowly starts getting up and looks at the mud staying on her hands. She bends her knees and touches the mud. She then stood up, slowly leaving the hugging body of the mud and starts tapping on the mud with her boots. The other girl joins the jumping game. Both girls move their bodies around in a circle, jumping up and down along with the body of the mud. The mud jumps up and down along with girls and girls' boots also joining the jumps. The mud stays in the air for a while and then falls on the ground. The third girl watching the other two girls. Later, she joins the moving crew with the mud and with girls. She slowly walks on the mud, jumps on the tree log, and watches girls and the mud walking and jumping. She jumps on the tree log, standing and watching, walking, stamping on the mud, seeing and feeling the mud on their hands.

Girls being part of it and letting the mud be part of them (Ingold, 2013) and engaging a self-discovery mode of learning through playing with the mud. As we watched—adults in a play space—we were drawn through the children's engagement with mud to their engagement with twigs.

The girls playing with twigs, picking mud from the ground, carrying the mud on twigs and gently rubbing the mud on the surface of the tree log.

Making a thick layer of the mud on the tree trunk.

Working together, we can hear girls whispering and talking about layers of mud on the tree log. Hearing small voices of the mud when it rides on the twig to be placed on the tree log. The mud sticking and getting along with the tree log. At the same time being moved in a circle on the tree log, touching twigs and human hands.

Aberdeen

Throughout the time, children are engaging in the scientific, systematic sampling of soil (see 'soil stories' above) and recording its texture, colour, pH and consistency, children are carrying out their own embodied explorations of the soil/earth/mud beneath their feet.

In the bog. A girl in pink and black spotty wellies squelched until she fell over and in, there's lots of laughter from the child and her teacher, who helps to pull her out minus one of her wellies.

While Ed is demonstrating how to use the auger, one boy is intently watching, and two others are watching each other and testing out the bog beneath their feet. One goes right in with one foot and squelches, the other in wellies, also keeps testing.

Another small group of children paddle the mud. Feet engaged and eyes watching their feet beneath them.

After completing their soil sample, one group asks me if they can explore … they head off to the burn which runs at the other side of the bog.

PLAYING DENS, MAKING AND LEARNING

Here we describe the process of learning in the woods. This involved children learning about coppicing, den building and hedgerow making from the coppiced wood. In the United Kingdom, coppicing is a traditional, locally honed process of cutting back low branches to make the tree produce straight sticks. Coppicing took place on the mature trees planted in the Forest School. Is dwelling a tentative, precarious form of *dwelling*, creating a site for *belonging*?

This is a way of enabling children to learn to live with nature in harmony, to help it live longer without exploiting it, as the Forest School teacher (Richard) explained in an interview filmed by us: *We don't cut down the tree, we coppice trees and we can use this coppiced like these hedgerows* (interview, 14 March 2023).

These stories of mud playing and den making let children manage their own personal risks, self-regulate and understand the value of group work. They also enable the children to learn traditional *skills*, honed over centuries in this region of England—but without necessarily being weighed down by the history or any perceived 'rightness' of those skills. As we watched, children were going into the den and coming out of it, holding bricks and tree twigs. These are also about (literally) constructing the curriculum as a combination of understanding the trees, understanding the relation on a set of trees and children, and how these relations can be seen as valuable. These could be described, in the words of Community Forester Dave Armson, from The Mersey Forest (and one of the paper's authors), as '*woodland methodologies*'.

This understanding of human and tree relations is generated through children's ongoing engagement in coppicing, den and hedge making. Knowledge of tree/human relations is not understood as a transmission of complex structures and classified as thinking or making (Ingold, 2011). Like the encounters with soil and mud, knowledge of/with treescapes is openended, proliferating, continually ongoing (Horton & Kraftl, 2006), equally processing bodies, actions and perception in every movement (Ingold, 2011: 159).
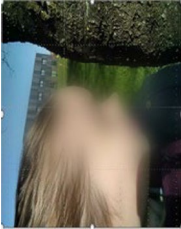
GETTING THE MEASURE OF TREES

Back in Bolton, we are measuring trees. Year 3 (ages 7–8) children accompanied by our research team including two scientists, an artist, a philosopher, a geographer, two childhood studies researchers and class teachers were in the school playground. Each group of children was asked to find a tree and measure it using special diameter tapes to measure the trunks through the (apparently) age-old skill of taking its diameter at breast height (rather ironic, given the height of the tree). Children were also expected to observe and note down tree diameters on worksheets. These worksheets were specifically designed by our colleagues (scientists).

Children in all groups were measuring trees with tapes, recording their observations on the worksheets and filming the activity. As with the proliferation of activities invoked by the soil science in our earlier case study, we noted how different modes—including using tablets, writing boards, paper worksheets, trees, green grassy fields, the school playground, the fence surrounding the school field, tree shades, measuring tapes, children's bodies and their senses—were all becoming, unbecoming and re-becoming part (Jewitt et al., 2017) of the 'measuring the tree' activity. We use snippets of video footage recorded by the children to describe the trees, to tease out the ways in which the measuring activity became a complex, interconnected, multiple and situated activity.

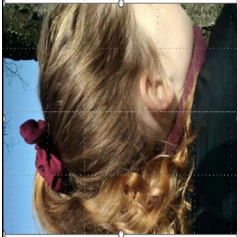We found out that there are thousands of ways to measure a tree (Pahl et al., forthcoming).

In Table 1, the relationship between the elements becomes clearer if a wider multimodal analytic gaze is placed on the trees and the children together. Drawing on the work of

TABLE 1 Video stills witnessing children's gazing on (and with) trees. [Colour table can be viewed at wileyonlinelibrary.com]

Time	Footage	Objects	Senses	Talks	Actions
00:03:00		Tree bark, tree branch	Children's step making noises, grass is making noises (crunch-ing)	Wait… Charlie could not video this (another child is saying)	Children are stepping on the grass and the girl keeps moving
00:03:25		Tree bark, tiny tree branch, grass in between tree and the girl, school building block in the background	Sounds of tik tik	Wait (another child is saying)	The girl is now looking towards the school playground… looking far away
00:03:50		Tree bark, tiny tree branch, grass in between tree and the girl, school building block in the background			The girl is standing but the camera is moving. The gap between the tree and the girl is widening and the camera is capturing the playground in the background
00:03:75		Tree bark, blue sky, tree branch			The camera is moving, the girl is walking, and she is getting closer to the tree

(Continues)

T A B L E 1 (Continued)

Time	Footage	Objects	Senses	Talks	Actions
00:04:00		Tree bark, tree branch			The girl and the tree are getting very close to one another

Flewitt et al. (2009), we produced an analytic table that paid attention to the child's gaze, including patterns of bodily movement, sensory activity, the affective and the feel of interactions with trees, alongside other children's movements, together with speech and language plus the tree itself. The children made a vast quantity of videos (over 300) during their tree-planting and tree-measuring experiences. Watching them through showed a myriad of ways in which the children interacted with trees, from climbing, hugging, talking, becoming, seeing trees as actors and experiencing bark (Pahl et al., forthcoming). Our mechanism for understanding this was close multimodal analysis of the children's own videos. With the stance of learning from children's perspectives, rather than extracting data (see Spyrou, 2023), an attentiveness to these traces produced new theoretical insights into children's relationship with trees, leading to the concept of starting with trees.

Our table emphasises the objects, sense, talk, actions and movement associated with the tree. The tree also becomes an actor in the process of being engaged with. This produces an account of tree/child relations which moves the human—the child—in and out of focus (Kraftl, 2020).

CONCLUSION

In this paper, we have sought to open out dwelling, skilling and (be)longing as a non-exhaustive framework for research and pedagogies through which we can learn to move, feel and learn in, through and with treescapes. Equally, this framework might afford a starting point for doing so in other environments, however characterised. The three concepts offer a framework, which enables a more experiential and felt mode of engagement, in contrast to many forms of curricula and approaches to environmental education that are more decontextualised. This then opens out a new way of conceiving education through experience.

Not only are there thousands of ways to measure a tree, but also thousands of ways to *start with trees*. Thousands of ways of *dwelling*, *skilling* and *(be)longing*. In this paper, via a series of traces of research–practice–learning, we have sought to open out—to *proliferate* and render *ongoing* and unrestricted—how starting with trees can invoke so many other material forms and processes, embodied practices, utterances, feelings and forms of learning. All of these modes of proliferation weave, stretch and even break free from lines that take us—mud, researchers, soils, children, sticks, teachers, soils, practitioners, dens—on journeys between and beyond environmental education. This resonates with work that focuses closely on children's engagement with the materialities of trees (e.g., see Harwood & Collier, 2017).

Dwelling requires, in part, an attunement and responsiveness to place (Lynch & Mannion, 2021). Yet, that attunement does not necessarily require the acquisition or even awareness of *particular* histories or knowledge about a place. It may, in fact, not matter precisely *where* we start with trees (in the sense of being at a particular, named place). Perhaps paradoxically, some aspects of dwelling with trees require particular forms of disposition, and engagement with the material facets of a space—sticks, dens, branches, trunks—and with the technologies that we may have to hand—rules, tapes, laser scanners, clipboards, tablets. If dwelling is fundamentally about forging some kind of (even temporary) connection with a space, through climbing, playing, squelching, stroking, then in some ways it can take place anywhere, starting with any tree (as our critique of some forms of environmental education, in the early parts of this paper, suggested).

Skilling may also proceed through particular dispositions, but operates in a way that does not foreclose multiple ways of knowing or learning about trees. For skilling may

also involve the admixture of 'traditional' forestry techniques—such as coppicing—that may be peculiar to a region or even a specific place, and their unique ways of managing the land that may stretch back for centuries. Moreover, skilling may involve and invoke 'scientific' knowledges and techniques—measuring pH or the diameter of a tree at breast height, learning what a laser scanner does, calculating the carbon mass of a tree through an established technique. What we have sought to highlight in the case studies above, however, is how such historical and scientific knowledges—which may come to dominate environmental education, and especially learning about trees—might move in and out of focus (Kraftl, 2020), becoming woven into a proliferation of ways for learning about and experiencing trees. Other stories—children's memories, stories passed through generations, speculative accounts—may warrant equal attention and, in fact, combine with dominant historical or scientific knowledges to produce even more powerful accounts of what trees do, and our relationships with them. Perhaps the *real* skill is in enabling those knowledges to combine and proliferate, and in finding ways to account for the learning that might ensue. This would require a disciplinary, methodological and professional openness, modesty and willingness to cede *some* control.

(Be)longing—understood as an affective condition that arises from encounters with trees and treescapes—witnesses the ongoingness and incompleteness of starting with trees. (Be)longing folds together pasts (including skilling), presents (including dwelling) and futures (through longing, hope and desire). Those futures might stretch from the apparently simple, immediate desire to climb a tree, or to get the measure of a treescape, to plans for a future treescape yet to be planted, its care, its potential for play or promulgating greater liveliness, vibrancy and diversity (the latter understood in both social and ecological senses). (Be)longing—perhaps more so than dwelling and skilling—is something that not only moves between mainstream pedagogies of environmental education but beyond: it is febrile, slippery, intangible, ephemeral. Yet, as Bennett (2010) reminds us, the constant vibrancy and movement of the world does not mean that, as humans, we should abrogate our responsibility for it: this goes as much for attempts to address climate change and environmental degradation as it does our ways of learning about it and hoping for better futures. Hence, (be)longing should more properly only operate in combination with dwelling, skilling and manifold other ways of conceiving, feeling, engaging and *starting*-with trees, to which this paper has only begun to attend.

Taken together, it is our contention that *dwelling–skilling–(be)longing* offer a framework—only *a* framework, but we argue a very important one—for future research and pedagogic practice in environmental and climate change education. We provided embodied traces of practice to offer insights into what such research and practice might look like, although these are meant as points of departure, invitations to consider and experiment, rather than as any kinds of 'exemplars'. Yet, we argue, they afford ways of starting with trees that might enable a proliferation of ways to work, play, move, feel, hope and even enact change—between and beyond environmental education.

CONFLICT OF INTEREST STATEMENT
The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT
Once the project is completed (December 2024), any materials not redacted for ethical or data protection reasons will be deposited on the UK Data Archive to comply with funder requirements (searchable using the project's title: Voices of the Future: Collaborating with Children and Young People to Re-imagine Treescapes).

ETHICS STATEMENT
The project on which this paper is based was given full ethical approval by Manchester Metropolitan University as the lead organisation (subsequently, the same ethics application was approved by all of the partner institutions). The project upheld strict ethical principles in terms of informed consent, confidentiality, anonymity, safeguarding, withdrawal and co-production, and all organisations and research participants (including children and young people) were actively involved in discussing the ethics process.

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