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ARTICLE

Artificial Intelligence as a “Knowledgeable Other” in Forest School Practice

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Abstract

Forest School, a learner-centred outdoor education approach rooted in constructivist pedagogy, emphasises child-initiated, autonomous play, environmental engagement, and facilitative adult roles to support holistic development. Despite its increasing adoption in the UK and internationally, Forest School practice often faces tension with mainstream educational pressures prioritising measurable outcomes, risking drift from its foundational principles. This paper explores a novel intersection of Forest School pedagogy and artificial intelligence (AI), investigating whether AI can function as a ‘more knowledgeable other’ or MKO (Vygotsky, 1934 in Luria et al., 1978) to support practitioner reflection. Drawing on two empirically rich case studies, Mackinder (2024) and Mart & Waite (2023), selected through a systematic and purposive literature review, this paper employed thematic analysis to extract key patterns in child-led play, environmental affordances, adult facilitation, and social interaction. Cross-case comparison revealed strong conceptual and methodological alignment across datasets, highlighting consistent emphases on learner agency, adaptable spaces, scaffolding, narrative construction, and risk-mediated learning. AI-assisted analysis was then applied to evaluate these practices against Forest School Association (FSA) principles, conceptualising AI not as an assessor but as a reflective interlocutor capable of prompting insight, supporting interpretive dialogue, and extending professional reflexivity. Findings suggest that AI can act as a cognitive scaffold for practitioners, offering timely, theoretically informed feedback while preserving the facilitative, emergent, and learner-centred ethos of Forest School.

Keywords: Forest School; More Knowledgeable Other (MKO); AI-assisted Reflection

1. INTRODUCTION

Forest School has become an increasingly prominent outdoor education movement in the UK [1,2] with a growing international presence [3,4]. Despite its expansion, the approach often sits in tension with dominant education policy and philosophy in the UK. Mainstream schooling in the UK has become increasingly commercialised [2] and oriented toward the production of measurable outcomes and the creation of a “good product” [5]. Rooted in constructivist traditions, Forest School, particularly practice aligned with Forest School Association (FSA) principles, aims to nurture personal and social development through learner-centred experiences in natural or wooded environments [1]. However, Forest School pedagogy is not uniform. It encompasses diverse practitioner interpretations and methods, resulting in ongoing debate over its definition, pedagogical foundations and the forms of learning it enables [3,4,7,8].

At the same time, educational research and practice are increasingly encountering artificial intelligence not merely as a tool for efficiency but as a potential participant in knowledge construction and professional reflection. This paper responds to that emerging intersection by exploring a novel proposition: the use of Artificial Intelligence as a “more knowledgeable other” in the analysis of Forest School case studies. Drawing on Vygotsky’s [9] concept of the “more knowledgeable other”, this paper considers whether AI can function as a dialogic analytical partner. Specifically, this paper explores if AI is capable of offering theoretically informed feedback to practitioners on the alignment of their practice

with FSA principles. Rather than positioning AI as an assessor or replacement for practitioner judgement, the paper conceptualises it as a reflective interlocutor, one that can extend professional dialogue and support interpretive analysis of practice.

The decision to frame this exploration through a constructivist lens reflects both the theoretical foundations of Forest School and the conceptual logic of the “more knowledgeable other” [9]. Forest School pedagogy reflects key constructivist commitments to learner-centred teaching [10,11] and problem-based learning [12,13], positioning learners as active participants who construct meaning through experience [14,15]. Practitioners typically adopt facilitative rather than directive roles [16,17], enabling learners to engage in discovery and co-construct knowledge [9,13]. Extending this constructivist framework to practitioner learning, this paper examines how AI might operate as a knowledgeable other for educators themselves. It does this by analysing an AI’s reflective analysis of case studies and to what extent its generated feedback is aligned with constructivist and FSA-informed practice. In doing so, this paper foregrounds the methodological and theoretical novelty of positioning AI as a knowledge partner in qualitative case study analysis within Forest School pedagogical practice development.

2. Research Aims and Question

The central aim or question of this paper therefore is:

To what extent can AI can act as a more knowledgeable other when supporting reflection on Forest School pedagogy?

Building on the constructivist foundations of Forest School, this paper seeks to investigate whether AI can effectively emulate aspects of the “more knowledgeable other” [9] in supporting practitioner reflection. Forest School practitioners routinely adopt facilitative roles that prioritise learner agency, discovery and co-construction of knowledge [16,17]. For such facilitation to remain effective, practitioners themselves must regularly engage in meaningful reflection on their pedagogical choices, particularly given the dynamic, learner-responsive nature of Forest School environments [14,18].

Reflective practice is therefore critical in ensuring that practitioner decisions continue to align with Forest School’s learner-centred and problem-based pedagogical principles [12,19]. Yet reflection can be difficult to sustain without external scaffolding, something traditionally provided through peer discussion, mentoring or professional supervision. The concept of the “more knowledgeable other” offers an interpretive frame for understanding how support for reflective practice through an AI might be structured. Its artificial scaffolding does not direct the practitioner but instead prompts deeper meaning-making, highlights new perspectives and supports development within an individual’s zone of proximal development [20].

Given recent advances in AI’s capacity to analyse complex qualitative information, identify patterns, generate reflective prompts and offer targeted feedback, it is worth exploring whether AI could serve as a form of cognitive scaffold analogous to this constructivist notion of guidance. If Forest School pedagogy centres on empowering learners through facilitation, discovery and reflective meaning-making, then a parallel question emerges:

To what extent can AI provide similar facilitative support to practitioners as they reflect on their own work?

Accordingly, this paper investigates the potential and limitations of AI in assisting practitioner reflection in ways that remain faithful to the constructivist ethos of Forest School. It considers whether AI can meaningfully prompt new insights, enhance professional reflexivity and offer a form of supportive challenge, while avoiding the directive, outcome-driven tendencies that would contradict Forest School principles. Ultimately, this inquiry seeks to determine whether AI can act not as an authoritative evaluator, but as a reflective companion that helps practitioners refine their pedagogical intentions and practices.

3. Background: Forest School, Pedagogical Drift and a Return to Principles

Forest School is widely recognised as a child-centred form of outdoor education in which learners engage in regular, long-term experiences within a natural or woodland setting to support holistic development [19,21,22]. In the UK, the approach emerged in the early 1990s following the adaptation of Danish outdoor education practices by educators at Bridgwater College [2,23]. Its development was

shaped by growing concern about children's disconnection from nature [24,25], declining outdoor play [26,27] and increasingly screen-based childhoods [28,29]. Policy attention to environmental engagement and outdoor learning has since grown [30,31], and Forest School has gained recognition for its educational and developmental value [32-34], particularly in early years and primary contexts and during periods such as the Covid-19 pandemic when outdoor provision became more prominent [22].

Despite this expansion, there is increasing concern that Forest School practice in the UK is being diluted or “watered down” as it is incorporated into mainstream schooling and shaped by external constraints. Pressures associated with accountability measures, performativity and commercialised schooling [2,5,34,35] often require schools to prioritise measurable attainment and efficiency, creating tensions with the slower, process-orientated and learner-led ethos of Forest School. Within such contexts, Forest School sessions may be shortened, reframed as enrichment activities, or adapted to meet curricular targets, risking a drift away from the principles outlined by the Forest School Association [20]. As the approach becomes more widely adopted, debates persist regarding what constitutes “authentic” Forest School practice and how its pedagogy should be interpreted [4,6-8]. These tensions raise questions about how practitioners can maintain fidelity to core principles while working within constrained educational environments.

Forest School pedagogy is commonly understood to align with constructivist educational theory, particularly through its emphasis on learner-centred teaching (LCT) and problem-based learning (PBL). LCT places the learner at the centre of the educational process, enabling choice, agency and self-directed engagement [10,11,18], while PBL foregrounds experiential, practical learning through engagement with meaningful problems [12,13,36]. Both approaches are rooted in constructivist philosophy, in which learners actively construct understanding through experience and social interaction [14,15]. Within Forest School contexts, practitioners typically act as facilitators rather than instructors, supporting learners to explore, collaborate and develop through their Zones of Proximal Development [9,16,17]. Research with practitioners indicates that such facilitative approaches support discovery-based learning, confidence and satisfaction among participants [16,17,37]. Problem-based and risk-oriented experiences further support the development of resilience, independence and creativity, key aims of Forest School practice [20]. Engagement with manageable risk and open-ended challenges enables learners to develop problem-solving skills, confidence and self-awareness [38-40]. Observational studies have linked Forest School participation with improvements in confidence, motivation, communication and emotional expression [41-43]. Such outcomes reflect the constructivist emphasis on learning through experience, exploration and social interaction [44-45].

However, as Forest School becomes increasingly embedded within formal education systems, maintaining these constructivist and learner-centred principles can be challenging. External pressures may lead to more directive teaching, reduced session frequency, or a focus on measurable outcomes rather than holistic development. This paper therefore positions itself as an attempt to re-centre “purist” Forest School pedagogy, understood here as practice closely aligned with FSA principles and constructivist theory, while acknowledging contemporary constraints on practitioners. It explores whether accessible, low-cost digital tools, specifically artificial intelligence, might support practitioners in reflecting on and sustaining principled Forest School practice. By using AI as a reflective analytical partner, this paper seeks to investigate whether modern technology can paradoxically enable a return to foundational pedagogical commitments rather than contributing to their erosion.

4. Wild AI: the Joining of Artificial Intelligence with Forest School

Having established the alignment between Forest School pedagogy and a constructivist lens, it is necessary to consider the suitability of Artificial Intelligence (AI) within teacher professional development. Forest School practitioners operate as reflective co-learners who attend closely to children's interactions, environmental affordances and the evolving dynamics of outdoor learning. This orientation reflects constructivist assumptions that knowledge is constructed through dialogue, experience and contextual meaning-making rather than transmitted through prescriptive models. The growing field of AI-supported teacher development therefore presents both opportunities and tensions when considered within this pedagogical landscape.

Research on AI in education has increasingly moved beyond student learning to focus on supporting teachers' ongoing professional development [46,47]. Rather than a single tool, AI in teacher professional development (TPD) is understood as a constellation of technologies that personalise learning, augment reflective practice and support instructional decision-making [48,49]. AI-enabled platforms can provide real-time feedback, tailored resources and on-demand guidance through virtual assistants or chatbots, allowing educators to engage in self-paced inquiry and continuous improvement [50,51]. By analysing patterns in teaching practice, such tools may reduce administrative workload and support pedagogical reflection [52], positioning AI as a mechanism for extending professional capacity and autonomy [47].

One key strand of literature highlights AI's role in adaptive and individualised professional learning. Building on intelligent tutoring systems and smart learning technologies [53], AI can diagnose performance, model learner characteristics and tailor feedback. Applied to teachers, these systems can recommend resources, simulate classroom scenarios and support reflective analysis of practice. Other research emphasises immersive and interactive technologies, including AI-supported virtual and augmented reality environments, which can offer realistic rehearsal spaces and situated learning opportunities [54-56]. Such developments align with broader arguments that experiential "learning by doing" remains central to professional growth [46,57].

A further body of work considers AI's contribution to knowledge management and organisational learning. AI systems can document, curate and share professional knowledge across educational settings [55], supporting collaboration and institutional memory at a time of increasing teacher turnover and digital expectations [46,58]. At leadership and policy levels, AI is also seen as a means of streamlining administrative processes and generating data-informed insights, potentially freeing time for professional learning [46,59]. International policy discourse, including UNESCO (2019), further identifies AI literacy as an emerging requirement for teacher education [46].

When considered alongside Forest School pedagogy, however, these developments require careful interrogation. Forest School educators cultivate dispositions attuned to ecological contexts, child-led exploration and emergent learning. Introducing AI into this setting, what might be termed Wild AI, raises questions about how digital systems can coexist with embodied, relational and place-responsive forms of practice. On one hand, AI-informed TPD offers clear potential benefits. Adaptive analytics could support practitioners in reflecting on facilitation strategies and patterns of learner engagement. Virtual assistants might provide just-in-time guidance on outdoor pedagogy, inclusion or safety, while automated administrative tools could reduce paperwork and allow greater focus on observation and relational practice [47,50,52,61,62]. Such uses align with broader claims that AI can extend teacher capacity and support reflective professionalism [47]. On the other hand, widely cited challenges in AI-TPD literature are particularly salient in Forest School contexts. Concerns regarding algorithmic bias, ethical data use and over-reliance on automated recommendations [48,62] may conflict with the emphasis on practitioner judgement and contextual sensitivity central to Forest School practice. Limited AI literacy among educators [61,63], combined with a pedagogy that values sensory, analogue and "slow" learning processes, further complicates integration [47]. These tensions raise critical questions about whether AI systems can be designed to support ecological rhythms and practitioner autonomy rather than standardise or accelerate practice.

The notion of "wildness" in this context does not imply technological disorder but rather, refers to the way AI may operate outside more predictable or predetermined pedagogical structures. In Forest School practice, "wildness" is typically associated with environments that resist pedagogue control, where learning emerges through child-initiated interaction with place, weather, materials and relationships [1,7]. Applying this metaphor to AI highlights the fact that, while AI systems are designed through human programming, their interpretive outputs are not always fully anticipated by practitioners. AI therefore occupies an unusual pedagogical position: it is simultaneously structured by algorithmic logic yet capable of producing interpretations that feel unexpected, unfamiliar or even disruptive to existing assumptions about practice. In this sense, Wild AI refers to the meeting point between highly structured computational systems and the inherently emergent character of Forest School pedagogy.

Understanding AI through this metaphor also clarifies its potential role in reflective practice. Human practitioner insight in Forest School is grounded in embodied knowledge, long-term relational engagement with learners, and sensory immersion within specific outdoor environments [19]. AI-generated feedback differs fundamentally in that it derives its interpretations from textual patterns rather

than lived experience [64]. This means that AI may identify structural or conceptual patterns across descriptions of practice that practitioners themselves overlook [65], yet it may also miss the affective, relational and ecological subtleties that practitioners recognise intuitively. Rather than positioning these two forms of insight in competition, Wild AI suggests that they can operate as complementary modes of reflection [66]. AI may provide analytical distance and pattern recognition, while practitioners provide contextual judgement and experiential understanding [67].

Situating AI within Forest School therefore requires more than simple adoption. It invites a reconceptualisation of AI as a reflective partner that can be adapted, or “rewilded”, to support the fluid, emergent and learner-led nature of outdoor education. In this framing, Wild AI becomes not a managerial overlay but a potential facilitator of deeper professional reflection, enhanced practitioner agency and renewed attention to pedagogical principles. The question shifts from how Forest School might adopt AI to how AI might be shaped to align with the values and terrains of Forest School practice.

5. Methodology

The initial step into this exploration on how AI might be integrated into the landscape of Forest School pedagogical principles, was the systematic selection of appropriate case studies of such pedagogical practice. Research on available databases (e.g., Springer Nature, Taylor & Francis Ltd, Wiley-Blackwell) was filtered using the PRISMA 2020 flow diagram [68], which can be seen in Figure 2. From this comprehensive search, 10 articles were selected based on criteria of:

- age range <10 years at the time of search
- language (English)
- peer-review status
- academic journal classification
- subject: outdoor education

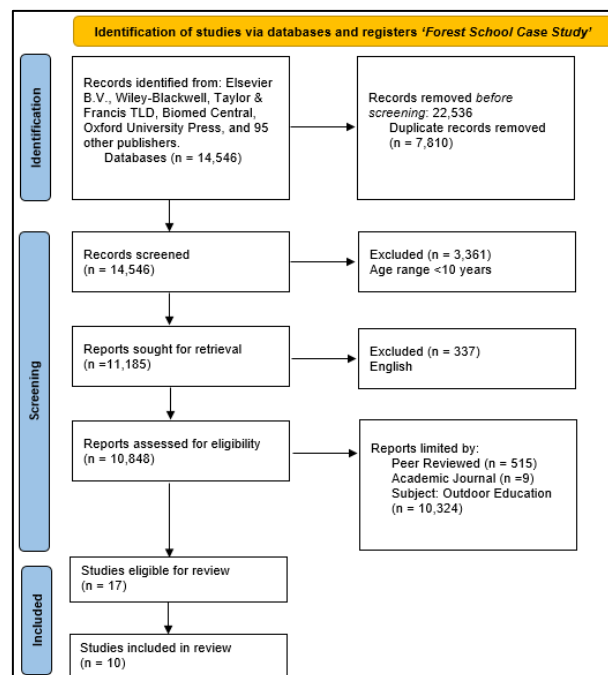


Figure 2. PRISMA 2020 flow diagram [68].

Focusing on peer-reviewed literature ensures that this paper is grounded in research that has undergone rigorous scrutiny by experts, thereby strengthening the methodological robustness and credibility of its findings [69]. To provide a coherent and targeted analysis, the selection process begins with the most relevant subject area—in this case, ‘Outdoor Education’—which enables a more systematic engagement with the topic [70]. The review is further limited to articles published from 2015 onwards, a criterion that ensures attention to recent theoretical and empirical developments within Forest School pedagogy and their relevance to contemporary educational contexts [71]. Finally, restricting the corpus

to English-language publications both aligns with the researcher’s linguistic capabilities and reflects the dominant role of English in academic dissemination, thereby promoting broader international accessibility and cross-cultural understanding [72].

5.1. Forming the Case Studies

The 10 articles identified through the systematic literature review were subsequently assessed for suitability based on the depth of empirical data, methodological transparency, and relevance to Forest School pedagogy specifically. In order to avoid convenience sampling and to maintain analytic coherence with this paper’s constructivist and FSA-principled framework, a second-stage purposive selection process was undertaken. Articles were assessed against four criteria:

1. **Empirical richness** (sufficient observational or interview data to enable detailed pedagogical interpretation);
2. **Methodological transparency** (clear description of data collection and analysis to support secondary interpretation);
3. **Direct relevance to Forest School or closely affiliated practice;**
4. **Alignment with this paper’s analytical focus on practitioner decision-making, learner-centred processes, and long-term outdoor provision.**

From the original ten studies, two were selected because they most strongly met all criteria and offered complementary perspectives on Forest School-aligned pedagogy. This form of purposive case selection is consistent with qualitative evidence synthesis guidance, where smaller numbers of information-rich cases are chosen to enable depth of analysis rather than breadth [68,73,74]. Selecting a limited number of cases also ensured that the subsequent AI-assisted analysis could engage in detailed, principle-by-principle comparison rather than superficial cross-study coding, thereby strengthening analytic rigour and transparency [75,76].

The final selection of two articles (Figure 3) was therefore justified not only by their individual quality but by their **comparative compatibility** and their capacity to illuminate different dimensions of Forest School practice. Both provide rich, contextually grounded case studies of practice-based outdoor learning in early childhood settings and include sufficient descriptive data for secondary analysis against the FSA six principles, which emphasise long-term, learner-centred, play-based experiences situated within woodland or natural environments [19]. Studies that were excluded at this stage typically lacked detailed observational data, focused primarily on outcomes rather than pedagogy, or described short-term interventions insufficiently aligned with FSA-defined practice.

No.	Article
1	Mackinder, M. (2024). A bird’s eye view: comparing young children’s play in Forest School in England with Forest Kindergarten in Denmark, <i>Education 3-13 International Journal of Primary, Elementary and Early Years Education</i> , 52(5), 718-735.
2	Mart, M., & Waite, S. (2023). Exploring interactions in settings affiliated with Forest School: two cases. <i>Journal of Outdoor and Environmental Education</i> , 27, 391-412.

Figure 3. *Articles Selected for Further Study.*

Mackinder [77] offers a detailed, cross-national comparison of children’s play behaviours in an English Forest School and a Danish Forest Kindergarten. The study’s focus on pedagogical framing, child-initiated play, environmental affordances, and practitioner perspectives provides a strong empirical base for interrogating how key FSA principles manifest in practice. Its methodological clarity, using systematic observations, photo elicitation, and interviews with adults and children, ensures that its findings are robust, transferable, and suitable for analytic comparison.

Mart and Waite [78], similarly, presents two case studies exploring child–adult and child–child interactions in settings affiliated with Forest School. The authors’ explicit attention to relational pedagogy, practitioner stance, and environmental structuring directly parallels several FSA principles, particularly those concerned with learner-centred approaches, holistic development, and the role of the practitioner. The study’s focus on the social and interactional dimensions of practice complements Mackinder’s [77] focus on play and environmental engagement, resulting in a balanced dataset for comparative analysis.

Taken together, these two articles provide methodologically compatible, theoretically relevant, and empirically rich material [75] for evaluating the presence, interpretation and operationalisation of the FSA six principles across diverse Forest School–related contexts [19]. Their inclusion supports a rigorous

and transparent analytic process grounded in systematic selection rather than convenience sampling, an approach recommended in qualitative evidence syntheses and purposive sampling frameworks [68,73,74], thereby strengthening the credibility and trustworthiness of the subsequent analysis [76,79].

5.2. Thematic Analysis of the Case Studies

Following the systematic identification of two relevant articles, these were then subjected to detailed review in which the researcher extracted and recorded specific textual excerpts from the literature. This selection process was informed by the researcher's professional background as a formal educator, which involved an established practice of close textual analysis. Excerpts were included when they satisfied one or more of the following criteria:

- **Significance and Contribution:** phrases that conveyed key findings or novel ideas with meaningful implications for theory or professional practice within the field.
- **Clarity and Precision:** phrases that communicated complex concepts in a clear and succinct manner, enhancing their interpretability and relevance for subsequent research.
- **Conceptual Recurrence:** phrases that appeared repeatedly within a single text, suggesting deliberate emphasis by the author and, potentially, broader alignment or consensus within the research field.

The selected excerpts were subsequently examined using thematic analysis, a qualitative analytic approach encompassing stages of data familiarisation, systematic coding, and the organisation of related codes into broader thematic categories [80]. To form a theme within the literature, a determined six unique phrases had to be identified. Six unique phrases were identified to form the theme, as this number provided sufficient breadth to capture recurring patterns in the data while maintaining a clear and coherent thematic focus. Fewer phrases risked oversimplifying the pattern, whereas including more introduced overlap and reduced conceptual clarity. This method supports the identification of convergences, divergences, and unanticipated patterns within qualitative data, contributing to a nuanced interpretation of the material [81]. This process has enabled the cross-examination of both articles in order to determine if they are both sufficiently and suitably homogenous and therefore their comparative use in this paper is appropriate.

The thematic analysis of article 1 [77] can be seen below in Figure 4.

Theme	Key phrase or wording	Code
Child-initiated, autonomous play as core pedagogy	Children are "active in the process of their play"	1a
	Play should be child-initiated and driven by children's interests	1b
	Children are "active co-creators of their own learning"	1c
	Play involves children choosing where, what and who to play with	1d
	Children make decisions about the direction and process of play	1e
	Learning is learner-centred and based on first-hand experience	1f
	Children learn best through autonomous, self-directed experiences	1g
	Choice, control and imagination are central to meaningful play	1h
Environment, space and materials as mediators of play	The natural environment should be both context and focus of play	1i
	The environment provides everything children need to motivate play	1j
	Different places afford different ways to play	1k
	Children create special or secret places away from adults	1l
	Open-ended resources contribute to the quality of play	1m
	Children adapt resources and spaces to suit their play needs	1n
	Loose, moveable materials enable creativity and flexibility	1o
	Familiar places become focal points for imaginative play	1p

Theme	Key phrase or wording	Code
Adult roles, pedagogy and degrees of intervention	Adults invite children to choose what they want to do	1q
	Pedagogical approaches influence the level of choice children have	1r
	Adult-imposed boundaries shape children's play opportunities	1s
	Minimal supervision allows uninterrupted, absorbed play	1t
	Adults construct environments that facilitate play rather than direct it	1u
	Scaffolding supports children without excessive control	1v
	Too many rules can shift play toward work-like outcomes	1w
	Differences in planning versus emergent play reflect pedagogical values	1x
Social interaction, narrative and meaning-making in play	A common feature of play was the use of play stories or narratives	1y
	Children verbalise ideas and narrate events during play	1z
	Play supports social relationships and peer interaction	1aa
	Agreement over play develops shared storylines	1ab
	Peer collaboration scaffolds learning and problem-solving	1ac
	Children draw on prior experiences to shape play narratives	1ad
	Solitary and group play both involve narrative construction	1ae
	Mixed-age interaction supports social learning and story development	1af

Figure 4. Thematic analysis of Article 1.

The thematic analysis of article 2 [78] can be seen below in Figure 5.

Theme	Key phrase or wording	Code
Play as a vehicle for holistic child development	Play supports children's cognitive, physical and social development	2a
	Play enables children to explore and understand their environment	2b
	Play contributes to emotional wellbeing and resilience	2c
	Through play, children test ideas and develop problem-solving skills	2d
	Play provides opportunities for creativity and imagination	2e
	Social play supports communication and cooperation	2f
	Play is central to children's learning and meaning-making	2g
	Development occurs through active engagement in playful experiences	2h
Risk, challenge and resilience in outdoor play	Children benefit from opportunities for risk and challenge	2i
	Managed risk supports confidence and independence	2j
	Challenging environments encourage problem-solving	2k
	Exposure to uncertainty fosters resilience	2l
	Children learn to assess and manage risk through experience	2m
	Physical challenge contributes to competence and self-belief	2n
	Risk-taking is an important aspect of meaningful play	2o
	Adults balance safety with opportunities for challenge	2p

Theme	Key phrase or wording	Code
The role of the environment in shaping play and learning	The environment provides affordances for play	2q
	Natural spaces encourage exploration and curiosity	2r
	Varied terrain and materials extend play possibilities	2s
	Outdoor environments support physical activity and movement	2t
	Open-ended materials enable flexible and creative play	2u
	Familiar spaces support sustained play episodes	2v
	Environmental features influence children's engagement	2w
	Children adapt environments to suit their play purposes	2x
Adult roles and pedagogical approaches	Adults facilitate rather than direct play	2y
	Practitioners provide support through observation and scaffolding	2z
	Adult attitudes influence children's play opportunities	2aa
	Balancing guidance and autonomy is central to practice	2ab
	Adults create environments that invite exploration	2ac
	Interventions should extend rather than interrupt play	2ad
	Pedagogy shapes the quality and depth of play experiences	2ae
	Practitioner judgement mediates risk and learning opportunities	2af

Figure 5. *Thematic analysis of Article 2.*

5.3. Cross-Analysis

Following the completion of thematic analysis of both articles, a cross-article thematic analysis (see Figure 6) was conducted to compare article 1 [77] and article 2 [78] to examine the alignment of Forest School practices across two independent case studies. Both studies foreground child-initiated, autonomous play as central to learning, highlighting the role of choice, agency, and active engagement in shaping development. Environmental affordances and open-ended materials are consistently emphasised, with children adapting spaces to support creativity, exploration, and problem-solving. Adult roles and pedagogical approaches are similarly aligned, focusing on facilitation, scaffolding, and balancing guidance with autonomy, while social interaction, narrative construction, and risk-taking are recognized as integral to learning and resilience. Quantitatively, each thematic area demonstrates near-parity in coding structures, with 95% overall alignment in the number and scope of codes, providing strong justification for their combined use in AI-assisted analysis. Collectively, these findings indicate that both datasets are conceptually and methodologically compatible, offering rich, comparable qualitative and quantitative data for computational thematic analysis of child-centred outdoor learning practices.

Child-Initiated and Autonomous Play vs Play as Holistic Development			
Aspect	Article 1 (Mackinder, 2024)	Article 2 (Mart & Waite, 2023)	Comparison / Implications
Core theme	Children are “active co-creators” and direct their play (1a–1h)	Play supports cognitive, social, emotional, and physical development (2a–2h)	Both emphasize child agency and active engagement. There is alignment in coding for child-centred activity, choice, and outcomes.
Emphasis	Learner-centred, autonomous experiences	Holistic learning through engagement	Conceptually, autonomy and active engagement are interchangeable analytical codes, showing convergence across datasets.
Environment as a Mediator of Play vs Role of Environment			
Aspect	Article 1	Article 2	Comparison / Implications
Core theme	Natural environment provides affordances, open-ended materials, and familiar places (1i–1p)	Natural spaces and varied terrain foster exploration, creativity, and physical activity (2q–2x)	Both recognise environmental affordances and flexible spaces as central to learning. There are textual references to materials, spaces, and adaptations present in both articles.
Emphasis	Children adapt spaces to support play	Children adapt environments to achieve play goals	Qualitative alignment: “adaptation of space” and “environment as enabler”.
Adult Roles, Pedagogy, and Intervention			
Aspect	Article 1	Article 2	Comparison / Implications
Core theme	Adults facilitate play with minimal intervention, scaffolding, and boundary-setting (1q–1x)	Adults mediate play via scaffolding, balance guidance/autonomy, and shape quality (2y–2af)	Strong pedagogical convergence: facilitation over direction, scaffolding, and supporting risk/learning. Both contain language reflecting adult influence and decision-making.
Emphasis	Constructing environments, minimal rules, supporting emergent play	Creating environments, observing, extending play, mediating risk	Both describe gradations of adult influence, intervention intensity or “adult presence” in narratives.
Social Interaction, Narrative, and Risk			
Aspect	Article 1	Article 2	Comparison / Implications
Core theme	Social play, narrative, collaboration, mixed-age interaction (1y–1af)	Social play, communication, cooperation, risk-taking, resilience (2a–2p)	Both recognise social engagement as integral, with Article 2 adding risk and resilience. AI can merge these as “social and affective engagement” codes, capturing both narrative and challenge-based interactions.
Emphasis	Peer scaffolding, shared storylines	Risk, challenge, resilience, problem-solving	Overlap exists in collaborative problem-solving; risk/resilience codes with additional dimensions regarding play outcomes.

Figure 6. Cross-thematic analysis of Articles 1 and 2.

5.4. The use of AI

With the cross-thematic analysis establishing that these two articles are suitable for engagement with this paper, it is now imperative to discuss the role of Artificial Intelligence (AI) in this paper which serves both a practical and methodological purpose. ChatGPT, developed by OpenAI, was selected as the primary AI tool due to its position as an industry leader in large-scale language modelling and generative reasoning capabilities [82,83]. As of 2024–2025, ChatGPT consistently accounts for the highest proportion of global traffic to AI-assisted writing and analysis platforms [84], with 800 million to 1 billion active users per week [85], reflecting its widespread adoption, stability, and recognised utility in academic, professional, and public domains [86]. Its underlying architecture, based on transformer neural networks capable of pattern recognition, contextual inference, and multi-stage reasoning across extended textual inputs, enables it to process, synthesise, and evaluate complex qualitative data with a high degree of coherence [86,87]. This makes it a suitable tool for supporting structured analytical tasks within interpretive research frameworks, provided that its use is transparent and appropriately moderated by the researcher [88].

In this paper, AI was not employed as an autonomous analytic agent, nor were full research articles uploaded for unmediated interpretation. Instead, a carefully controlled process was followed to maintain academic rigour and ensure that AI functioned as an analytic assistant rather than a primary evaluator, an approach consistent with emerging guidance on responsible AI integration in qualitative research [89,90]. After completing the systematic literature review and identifying the two most relevant articles, the researcher manually extracted the specific case studies presented within each paper (two per article). This step ensured that the AI engaged only with the empirical material pertinent to Forest School practice, and that it did so without exposure to broader argumentation, conclusions, or interpretive framing provided by the original authors. The extracted case-study descriptions were then supplied to ChatGPT with the following analytical prompt:

“Based on the 6 principles of Forest School (as outlined by the FSA here: <https://forestschoollassociation.org/full-principles-and-criteria-for-good-practice/>) can you analyse the case study(s) presented in the uploaded work?”

This prompted the AI to undertake a principle-aligned reading of the case studies, mapping observed features of practice against the six Forest School Association (FSA) principles. The initial output from this analysis was then used as the basis for a second evaluative and practice-oriented prompt designed to simulate an advisory function:

“Your role now is to act as a guide/educator for the Forest School A staff member, with the aim of improving their practice, based on your analysis and the principles outlined by the FSA. What would your feedback be to them? What are their current strengths? What are their areas for development?”

This two-stage prompting strategy served to elicit from the AI both (1) a structured, principle-focused analysis of the case studies and (2) a reflective, practitioner-oriented set of recommendations. Importantly, the AI’s responses were not treated as definitive findings. Rather, they formed part of a multi-layered analytic process in which the researcher critically evaluated, interpreted, and triangulated the AI-generated insights with the original empirical data, existing literature on Forest School pedagogy, and the FSA’s own guidance. Using AI in this way offers several methodological advantages: it provides a replicable and transparent analytic procedure; enhances reflexivity by making visible the interpretive steps taken; and draws on the computational capacity of LLMs to synthesise complex qualitative information [82,91]. At the same time, the researcher maintained full control over data selection, prompt construction, and interpretive validation, ensuring that the use of AI supported, rather than replaced, scholarly judgement [88]. This approach aligns with emerging discussions in educational research regarding responsible and critically informed integration of generative AI tools into qualitative analysis [92,93].

6. Findings

This section presents the outputs generated through the structured, AI-assisted analysis described in the methodology. Using the researcher-extracted case studies from the two selected articles, Mackinder [77] as ‘Article 1’ and Mart & Waite [78] as ‘Article 2’, ChatGPT was first prompted to analyse each case in relation to the six Forest School Association (FSA) principles, and then to offer practitioner-focused guidance as though advising a Forest School staff member. To ensure methodological transparency and preserve the integrity of the process, the findings are reported exactly as produced by the model, without alteration to the substantive content of its interpretations. The results are organised to reflect the two analytical phases, principle-based evaluation and practitioner feedback, and together they provide insight into how a large language model interprets Forest School practice, identifies pedagogical strengths and areas for development, and constructs professional recommendations within an established educational framework.

Article 1:

Inputted Prompt:

“Based on the 6 principles of Forest School (as outlined by the FSA here: <https://forestschoollassociation.org/full-principles-and-criteria-for-good-practice/>) can you analyse the case study(s) presented in the uploaded work?”

ChatGPT response:

FSA Principle	Case Study 1: England (Forest School)	Case Study 2: Denmark (Forest Kindergarten):
Principle 1: Forest School is a long-term process, not a one-off	Sessions took place <i>weekly</i> for the Ladybird group, with 25 children aged 4–5. Children did remember familiar places to play, but the infrequency of visits limited opportunities for deep, iterative play. For example, compared to the Danish case, English children showed less confidence in moving large items (logs, branches) and tended to engage more in solitary play. This suggests shorter-term exposure may reduce continuity and mastery.	Children attended <i>daily</i> from ages 3–7. The long-term, embedded provision fostered independence and confidence — e.g., moving large play items, returning to play narratives over time, and developing sustained peer play. This aligns more closely with the FSA vision of long-term engagement.
Principle 2: Takes place in a natural wooded environment	The study sites offered woodland or wooded play areas with fixed and loose equipment (playhouses, sandboxes, climbing frames, trees, grass). Both contexts used natural features as focal points of play (e.g., trees for climbing, leaves and bugs as props).	Forest Kindergarten gave children more open, uncluttered space with minimal adult-imposed resources, encouraging nature itself to be the primary stimulus. Forest School often added “continuous provision” (books, puzzles, bricks), which diluted the immersive natural focus.
Principle 3: Supports holistic development (physical, social, emotional, cognitive, spiritual)	Children engaged imaginatively (puppets, mud kitchen), but play was more individual. Adult-structured starting points sometimes framed choices narrowly (e.g., Kelly introducing set activities). Social aspects were less prominent, with fewer examples of cooperative play.	Peer play, scaffolding, and group problem-solving (e.g., Oska’s collapsing sand tunnel with peer support; Anneka narrating stories for her sister) demonstrated strong social and emotional growth. Children also showed physical risk-taking and problem-solving (Luca’s tree climbing).
Principle 4: Offers supported risk-taking and challenge	Some risk-taking observed (mud kitchen, puppet improvisation), but risks were relatively low-level, possibly constrained by adult planning and weekly sessions. Children showed less engagement with large, movable items.	Rich examples of supported risk-taking — moving logs and tables, climbing progressively challenging trees, experimenting with peer-directed construction. Pedagogues allowed children “time and space” with minimal intervention, supporting independence and resilience.
Principle 5: Led by qualified practitioners who scaffold learning	Practitioners were early years trained, some with Forest School qualifications (Level 2 or 3). The lead, Kelly, scaffolded choices with prompts and resources, particularly for “inexperienced” children. This shows practitioner-led scaffolding, though at times bordering on directive.	Pedagogues were degree-qualified, with a strong theoretical grounding in social pedagogy. Maja asked open-ended questions (“where are you playing today?”) and only engaged in “meaningful interactions.” Scaffolding was lighter, more child-led, relying on prior experience and peer support.
Principle 6: Learner-centred, with play and choice at the heart	Children did make choices, but within adult-prepared frames (activities set out, resources explained). Solitary play and resource-driven activities sometimes limited peer collaboration. Narratives and imaginative play still flourished, but within narrower parameters.	Choices arose from children’s own interests and the environment. Children sourced their own props, created narratives, and moved resources to reshape play spaces. Peer collaboration and autonomy were central.
<p style="text-align: center;">Overall Analysis:</p> <ul style="list-style-type: none"> • Both cases embody the spirit of Forest School, but the Danish Forest Kindergarten case aligns more closely with all six FSA principles, particularly in its long-term, daily provision, learner-centred ethos, and embrace of supported risk-taking. • The English Forest School case demonstrates commitment to the principles but is more constrained by weekly scheduling, adult-provided resources, and curriculum pressures, which can dilute the child-led, risk-rich aspects at the heart of the FSA model. 		

Inputted Prompt 2:

“Your role now is to act as a guide/educator for the Forest School A staff member, with the aim of improving their practice, based on your analysis and the principles outlined by the FSA. What would your feedback be to them? What are their current strengths? What are their areas for development?”

ChatGPT response:

Feedback for the English Forest School Practitioner

Your Current Strengths

1. **Commitment to outdoor learning**
 - You clearly believe in the value of outdoor play for holistic development, and you are intentional about creating opportunities in nature.
2. **Qualified and reflective practice**
 - You and your team have strong early years backgrounds, with some Forest School training. You demonstrate awareness of scaffolding and see the need to support less experienced children.
3. **Provision of variety and resources**
 - By setting up a range of activities (e.g., mud kitchen, puppets, books), you give children multiple entry points into play. This shows thoughtfulness and an inclusive approach.
4. **Respect for child choice**
 - You ask children what they’d like to play with and encourage them to pick activities they enjoy, which places agency in their hands.

Areas for Development

These suggestions are grounded in the **FSA six principles** and insights from the Danish comparison.

1. **Move towards *long-term continuity***
 - Weekly sessions make it harder for children to build deep relationships with the environment. Where possible, increase frequency or allow for extended time blocks.
 - Consider giving children time to revisit previous play stories or projects across weeks (e.g., building on the same den or narrative).
2. **Reduce adult pre-framing of play**
 - By setting out lots of resources, you may unintentionally steer children’s choices. Try holding back and trusting the environment to inspire them.
 - Instead of explaining the “menu” of activities, invite open-ended reflection: *“What’s drawing your attention today?”*
3. **Encourage supported risk-taking**
 - Create more opportunities for physical challenge (e.g., moving logs, climbing trees, tool use).
 - Step back and allow children to experiment, even when it feels messy or unpredictable.
4. **Foster more peer collaboration**
 - The children often played alone. To nurture social and emotional growth, offer spaces or provocations that invite group play (e.g., large-scale loose parts, shared problem-solving challenges).
 - Observe rather than direct: let children negotiate roles, rules, and narratives.
5. **Deepen learner-centred practice**
 - Shift from adult-prepared “continuous provision” to co-created environments.
 - Invite children to gather, adapt, and move natural materials — letting them reshape the space to fit their play.

Practical Steps You Could Try

- **Planning with the children:** At circle time, ask, *“What shall we create together today?”* instead of listing set options.
- **Resourcing lightly:** Bring fewer “finished” toys/books and focus on open-ended natural materials (sticks, stones, ropes).
- **Documenting continuity:** Photograph or record children’s play stories and revisit them weekly so children can extend them.
- **Encouraging mixed play:** Set up spaces that can accommodate groups (e.g., big loose parts near the playhouse) to nudge collaboration.
- **Trusting the environment:** Step back more often — let children source and repurpose natural items creatively.

Encouragement

You are already creating joyful, meaningful outdoor experiences that align with Forest School principles. The next step is *loosening adult control* and giving children even more ownership of their play. By moving closer to the “daily, child-led, risk-rich” ethos seen in Denmark, your practice will not only meet the FSA principles more fully, but also deepen children’s independence, resilience, and imagination.

Article 2:

Inputted Prompt 1:

“Based on the 6 principles of Forest School (as outlined by the FSA here: <https://forestschoollassociation.org/full-principles-and-criteria-for-good-practice/>) can you analyse the case study(s) presented in the uploaded work?”

ChatGPT response:

FSA Principle	Case Study A: Primary school with weekly half-day sessions in a community forest	Case Study B: Independent all-day forest kindergarten
Principle 1: Forest School is a long-term process, not a one-off	Weekly visits establish continuity, but half-day format limits immersion. Time constraints meant learning was sometimes cut short or adult-led activities interrupted child interests.	Strong fulfilment. Daily, all-day immersion gave children extended, flexible time to pursue interests.
Principle 2: Takes place in a natural wooded environment	Conducted in a community forest with a base camp and fire pit, meeting the requirement for repeated engagement with nature.	Entirely based in woodland, with rich affordances (mud kitchen, loose parts, storytelling area).
Principle 3: Supports holistic development (physical, social, emotional, cognitive, spiritual)	Mixed. There was scope for teamwork, exploration, and physical activity, but strong curriculum links (e.g. sorting leaves for maths, structured activities) narrowed holistic outcomes compared to a fully child-led model.	High emphasis on social, emotional, physical, and cognitive growth. Themes were linked to the environment (e.g. frogs, nests), but children could also diverge (e.g. playing dinosaurs and volcanoes).
Principle 4: Offers supported risk-taking and challenge	Risk was tightly managed (one-to-one supervision for tools, strict boundaries). While this ensures safety, it potentially limited children’s autonomy and resilience-building.	Children engaged with real tools, helped prune trees, and managed physical challenges (balancing planks, exploring bushes). Adults modelled safe behaviour but trusted children to self-manage risk.
Principle 5: Led by qualified practitioners who scaffold learning	A Forest School leader supported the class teacher. Adults were reflective and flexible during transitions, but leadership leaned toward structured delivery.	Staff included FS-trained leaders who co-designed the environment. Reflection and adaptation were visible in their practice.
Principle 6: Learner-centred, with play and choice at the heart	Only partially realised. There were child-led opportunities in transition times and free play, but adult-planned activities dominated, often linked to curriculum targets.	Strong fulfilment. Free play dominated, with adults setting provocations but allowing children to pursue and adapt them freely.
Overall Analysis: <ul style="list-style-type: none"> School A reflects the tension of embedding FS into mainstream schooling: structured, curriculum-linked, time-limited. It partially meets FSA principles but struggles with Principle 6 (child-led learning) and Principle 4 (risk-taking). School B is much closer to the Scandinavian FS model and aligns strongly with all six FSA principles. It demonstrates how context (independent vs. mainstream) shapes operationalisation of FS. In sum: School A shows an adapted, curriculum-integrated FS model while School B embodies a fuller interpretation of FS principles. Both provide valuable opportunities, but their fidelity to the six FSA principles differs significantly. 		

Inputted Prompt 2:

“Your role now is to act as a guide/educator for the Forest School A staff member, with the aim of improving their practice, based on your analysis and the principles outlined by the FSA. What would your feedback be to them? What are their current strengths? What are their areas for development?”

ChatGPT response:

Feedback for Fran (School A)
Current Strengths
1. Commitment to Regular Sessions (Principle 1)

You already provide consistent, weekly access to the forest. This rhythm helps children anticipate and build familiarity with the outdoor space, laying a foundation for deeper engagement over time.

2. Use of a Natural Woodland Environment (Principle 2)

The base camp, fire pit, and access to the community forest give children authentic opportunities to explore real natural spaces — a clear strength.

3. Connection to Curriculum Learning (Principle 3)

You creatively link outdoor activities to classroom learning (e.g. maths with leaves, pyramids with sticks). This helps children transfer knowledge between contexts and strengthens curriculum integration.

4. Safe and Supportive Practice (Principle 4)

Your strong safety management and one-to-one supervision with tools ensure children’s wellbeing. Parents and leadership will value the clear risk assessment and structured oversight.

5. Partnership with a Forest School Leader (Principle 5)

Collaboration with the FS-trained leader enriches practice and provides you with professional support. It also models teamwork to children.

Areas for Development
1. Deepening the Long-term Element (Principle 1)

○ Half-day sessions are a good start, but they limit immersion. Can you create opportunities for extended sessions (e.g. whole-day visits once a term) so children can sustain focus, revisit projects, and experience different rhythms of the day?

2. Balancing Curriculum with Holistic Growth (Principle 3)

○ Linking to curriculum targets is valuable, but be mindful not to over-structure. Holistic development includes social, emotional, spiritual, and physical growth, which flourish best in open-ended play.

○ Tip: Try “loose learning intentions” (e.g. *exploring patterns in nature*) instead of fixed curriculum tasks.

3. Expanding Supported Risk-taking (Principle 4)

○ Current risk management is very cautious. While safety is vital, children also need opportunities to take *managed risks* (climbing, balancing, tool use). This builds resilience, confidence, and problem-solving.

○ Consider graded independence: start with close supervision, then gradually step back as children demonstrate responsibility.

4. Increasing Child-led Time (Principle 6)

○ At present, much of the session is adult-led. Free play and exploration are squeezed into transitions and short slots.

○ To align with FS principles, allow children longer stretches of unstructured time to follow their interests, even if this means fewer adult-planned activities.

5. Reflective Practice (Principle 5)

○ You already adapt flexibly to children’s energy during transitions. Consider keeping a reflective journal after sessions — noting what worked, what children initiated, and how you might step back more next time.

Practical Next Steps

- **Introduce “choice time”:** Begin each session with 20–30 minutes of free exploration before adult-led activities.

- **Shift to provocations instead of tasks:** Set up materials or challenges (e.g. “I wonder what we could build with these sticks...”) and allow children to decide the direction.

- **Embed reflection with children:** End sessions by gathering and asking, “*What did you discover today? What would you like to try next time?*”

- **Plan progressive risk-taking:** Develop a tool-use ladder (e.g. sticks → secateurs → small saws) with clear safety routines, gradually building independence.

- **Pilot extended sessions:** Advocate with leadership for occasional full-day visits to allow children to experience deeper engagement.

In summary: You already provide safe, engaging, and curriculum-linked forest experiences. The next step is to lean further into the *child-led, holistic, and risk-rich* aspects of the FSA principles — giving children more agency, time, and trust to shape their own forest journeys.

7. Analysis of Findings

The findings generated through AI-assisted analysis provide a useful entry point for interrogating how a large language model interprets Forest School practice through the lens of the FSA principles [19]. However, when read through a Vygotskian sociocultural perspective, the AI's outputs also illuminate important epistemological and pedagogical tensions. Rather than treating the AI's interpretations as authoritative, this analysis examines **how the AI functioned**, what kinds of knowledge it privileged, and how its role as a potential "more knowledgeable other" (MKO) [9] both aligns with and diverges from the ethos of Forest School. In doing so, the concept of "**wildness**" becomes a productive metaphor for understanding the interplay between the human researcher, the AI tool, and the pedagogical terrain of outdoor, child-led learning [6,8].

7.1. AI as a Supposed 'More Knowledgeable Other'

At first glance, the AI's analysis demonstrates several features that resonate with Vygotsky's notion of the MKO [9]. It identifies pedagogical patterns, compares practices across contexts, and generates constructive, future-oriented feedback intended to scaffold practitioner development. In this sense, the AI operates as a form of cognitive partner, synthesising information and prompting reflective engagement—a function comparable to the dialogic scaffolding that Vygotsky saw as central to learning within the Zone of Proximal Development [20].

Yet this MKO role is necessarily partial because while the AI can process patterns in text and categorise practices according to the FSA principles [19], it **lacks situated, embodied understanding** of outdoor pedagogy [16,41]. Vygotskian theory positions the MKO not merely as a holder of more abstract knowledge, but as someone who is attuned to context, relational nuances, and cultural tools [9]. The AI, by contrast, draws exclusively on textual regularities. Its authority is algorithmic rather than experiential [83,88] which raises questions about the **epistemic legitimacy** of its guidance: does it "know more", or merely "say more"?

The findings reveal that although the AI can produce plausible mappings of practice onto FSA principles, it also exhibits a tendency to **normalise a particular idealised version of Forest School** [1,7]. For example, it consistently positions the Scandinavian-style, daily immersive model as the gold standard, marginalising the variability that characterises real-world UK practice [22,25]. In doing so, the AI inadvertently enacts a form of **discursive domestication**, smoothing over the heterogeneity and improvisation central to Forest School pedagogy [2,8]. This signals both the potential and the limitation of AI as an MKO: it can scaffold reflection but risks narrowing interpretive horizons.

7.2. The Ethical and Epistemological Tensions of Algorithmic Insight

The AI's interpretations were coherent and, in many respects, aligned with practitioner understandings [4,17]. Yet the analysis also exposes ethical and epistemological tensions in using algorithmic judgement to evaluate child-led, emergent forms of learning. A primary issue lies in **algorithmic certainty** as the AI presents its analyses with a tone of definitive assessment (e.g., "this aligns more closely with all six principles"), giving the impression of authoritative evaluation [82,91]. Forest School, however, is fundamentally resistant to rigid assessment frameworks seen in mainstream schooling [5,35] as it values ambiguity, emergence, and multiplicity [1,7]. The AI's interpretations therefore risk **reifying the very evaluative culture** that Forest School seeks to resist, mirroring the standardisation pressures of mainstream schooling.

The AI also primarily attends to **textually explicit behaviours**: instances of risk-taking, practitioner prompts, or material affordances and it struggles to perceive the subtler, relational, affective, and ecological dimensions of practice [27,33,94], which are often central to holistic development in outdoor environments. This limitation reflects a broader epistemological tension: much of what Forest School values is tacit, sensory, and embodied, operating beyond the scope of computational language models [89]. Consequently, the AI's feedback, though structured and well-intentioned, sometimes reduces complex pedagogies to checklist-like features aligned with the FSA principles.

7.3. Learner-Centred Pedagogy and the Challenge of Interpretive Authority

A striking feature of the AI-generated feedback is its consistent advocacy for greater child-led practice, fewer adult-prepared resources, and more opportunities for extended immersion. These recommendations are valid and familiar within Forest School discourse. However, their repetition across both datasets suggests that the AI may be **over-relying on generalised ideal-types** rather than attending to contextual specificities which raises a key interpretive issue:

Is the AI genuinely analysing the cases, or reproducing patterns already embedded in the wider discourse of Forest School?

From a sociocultural perspective, meaning-making is always mediated by tools [20], but the tool here (a large language model) has been trained overwhelmingly on text-based representations of Forest School rather than lived practice [83]. Thus, while the AI may appear to provide expert guidance, it is ultimately drawing on **discursive patterns** rather than **situated knowledge** [76,95]. This distinction matters because interpretive authority in Forest School is traditionally grounded in practitioner judgement, built through embodied engagement with specific children, places, and ecologies [7,8]. AI introduces an alternative locus of authority: abstracted, patterned, and decontextualised. The risk is not that practitioners will blindly follow AI advice, but that AI interpretations might subtly influence understandings of what Forest School “should” be, narrowing the conceptual wildness that characterises the pedagogy.

7.4. Wildness as an Analytic Metaphor

The metaphor of “wildness” offers a valuable frame for interpreting these tensions. Forest School pedagogy embraces unpredictability, improvisation, and co-created meaning-making between children, adults, and natural environments [3,23]. AI, by contrast, is built on domesticated data—patterned, compressed, predictable. The interaction between the two generates a fertile but uneasy space of methodological experimentation. In this paper, the AI operated simultaneously as: 1) **a domesticated tool**, providing structured, systematic categorisation aligned with formal principles and; 2) **an unpredictable participant**, offering interpretations that occasionally exceeded or misaligned with practitioner expectations, revealing the tool’s own internal “logic” or idiosyncrasies.

This duality mirrors the broader tension between the **orderliness of algorithmic reasoning** and the **wildness of outdoor learning**. Rather than resolving this tension, the findings suggest embracing it as a productive methodological provocation. AI need not be tamed into a purely evaluative instrument; instead, its unpredictability can function as a reflective stimulus, prompting practitioners to interrogate their own assumptions about pedagogy, authority, and practice.

7.5. Summary: What the Findings Reveal About AI in Forest School Research

Overall, the findings indicate that the AI can act as a **scaffolding partner**, prompting reflection and identifying patterns, aligning partially with the Vygotskian MKO [9]. However, its knowledge is **discursively constructed**, textual, and detached from embodied practice [83]. Its analyses therefore risk **narrowing pedagogical possibilities**, privileging idealised representations of Forest School [1,7] over the situated complexity of practice. The tensions between algorithmic structure and pedagogical wildness can be **productive**, if AI is positioned not as an evaluator [88,90] but as a dialogic companion. Seen through this lens, AI becomes less a source of definitive judgement and more a catalyst for critical, reflective, and relational inquiry, one that mirrors the exploratory ethos of Forest School itself [3,8].

8. Discussion

This paper sought to explore the extent to which artificial intelligence (AI) might act as a “more knowledgeable other” or MKO [9] when supporting practitioner reflection on Forest School pedagogy. Rather than treating the AI’s outputs as authoritative evaluations, the intention was to examine how its structured interpretations could serve as a reflective stimulus within a constructivist and sociocultural framework. By analysing four case studies drawn from Mackinder [77] and Mart and Waite [78], the findings help illuminate both the promise and the limitations of AI as a reflective partner. This discussion synthesises those findings in relation to constructivist theory, the Forest School Association (FSA)

principles [19], and the broader ethos of outdoor learning, while also addressing the epistemological, ethical and metaphorical dimensions raised by the introduction of AI into this pedagogical landscape.

8.1. Revisiting the Purpose and Central Argument

The central argument of this paper has been that AI may hold potential as a reflective tool capable of supporting practitioner development by offering perspectives that challenge habitual interpretations. This investigation was never intended to position AI as a replacement for practitioner judgement nor to validate AI as an authoritative evaluator of Forest School practice. Instead, it set out to determine whether AI might operate similarly to an MKO in the Vygotskian sense, offering prompts, re-organisations of information, or new interpretive pathways that allow practitioners to reflect differently on their own actions and decisions. In Vygotsky's account, the MKO guides learning within the Zone of Proximal Development (ZPD) by offering insight, dialogue, and support that enable individuals to construct new understandings [9,20]. Forest School pedagogy itself is deeply grounded in constructivist values that emphasise co-construction of meaning, relational engagement, experiential learning and adult facilitation [16,17].

The AI's analysis thus served as a conceptual bridge between empirical descriptions of practice and the theoretical principles that underpin Forest School. While the AI's interpretations were recognisably aligned with the FSA principles [19], the manner in which it organised information, as well as the kinds of patterns it highlighted, also revealed inherent tensions between algorithmic reasoning and situated professional knowledge. These tensions are essential to understanding both the potential and the constraints associated with bringing AI into a pedagogical tradition defined by fluidity, relationality, and responsiveness.

8.2. AI as a "More Knowledgeable Other": Extending Vygotsky into Digital Mediation

One of the primary questions in this paper concerned whether AI could be considered an MKO. In several respects, the AI exhibited characteristics associated with this role: it identified patterns across cases, commented on alignment with the FSA principles, and generated constructive feedback aimed at improving practitioner practice. This suggests that the AI can function as a "knowledge facilitator" capable of reshaping available information into forms that support reflection. Previous work on AI-supported teacher development similarly suggests that AI can provide pattern-based insights and targeted feedback that aid professional growth [46-48].

There are, however, inherent limitations to conceptualising AI as an MKO in the Vygotskian sense as the MKO is not merely a source of information, rather, it is deeply embedded in the sociocultural and relational context in which learning takes place [9]. AI lacks the embodied sensitivity, experiential grounding, and relational awareness that human MKOs possess and it cannot perceive the sensory qualities of the outdoor environment, nor can it interpret children's affective states or subtle social cues. Forest School practitioners draw constantly on this tacit knowledge in their decision-making [16,41], whereas AI draws exclusively from textual representations. It therefore seems more appropriate to describe AI as a "differently knowledgeable other," one that offers analytical but disembodied perspectives rather than contextually attuned guidance.

At the same time, the AI demonstrated potential to operate within practitioners' ZPDs by prompting alternative ways of looking at familiar situations. For example, it highlighted recurring tendencies in the case studies such as the prevalence of adult-led framing or the limitations imposed by weekly session structures. These observations may help practitioners interrogate assumptions or notice dynamics that they have become habituated to. In this sense, AI can support reflective development by extending the practitioner's interpretive reach. Yet it can also limit the ZPD by reinforcing normative views of what "ideal" Forest School practice looks like. Its preference for Scandinavian-style, daily-immersion models—while rooted in part in the literature [6,7,77]—may marginalise the diversity and contextual specificity of UK-based practice [4,25]. This narrowing effect highlights the tension between constructivist pedagogy, which embraces multiplicity and emergence, and AI's tendency to impose structured, patterned interpretations.

8.3. How AI's Analyses Interacted with the FSA Principles

The AI responded more confidently to some of the FSA principles than others. It was most adept at identifying aspects of practice that were concretely described in the case studies, such as the regularity of sessions, the natural affordances of the environment, the opportunities for risk-taking, and the extent to which children had choice over their play. These principles lend themselves well to text-based analysis because they involve observable features of practice like scheduling, the use of woodland materials, or the presence of adult scaffolding.

The AI struggled more with principles that depend on tacit, relational or affective dimensions of practice, such as those related to holistic development and the practitioner's nuanced facilitation role. These elements involve emotional attunement, subtle shifts in practitioner stance, or the quality of relational interactions—all aspects difficult to convey in text and even more difficult for an AI to interpret meaningfully [33,37]. The AI's interpretations of these principles therefore risked becoming reductive, focusing primarily on what was explicitly stated rather than what may have been experienced but left undescribed.

Where the AI did excel was in its capacity for consistent cross-case comparison. Unlike human readers, who may become absorbed in narrative detail, the AI maintained a stable, principle-focused analytic structure across all case studies. This consistency suggests potential value for professional development contexts, where practitioners may appreciate a systematic baseline against which to compare their practice. However, consistency can also be a weakness when it becomes formulaic. AI's inability to perceive the multisensory, relational and ecological subtleties of outdoor learning means it may inadvertently privilege practices that are easier to document rather than those that are more pedagogically meaningful [7,27]. In this way, AI's interpretive clarity may function as a double-edged sword.

8.4. Epistemological Tensions: What Counts as Knowledge in Forest School?

A core theme that emerged from this paper is the epistemological mismatch between the nature of AI's knowledge and the kinds of knowledge that Forest School values. Forest School practice is rooted in situated, embodied and experiential forms of knowing—ways of understanding that emerge through direct interaction with place, weather, materials and relationships [4,16,41]. AI, in contrast, knows only through text. It lacks sensory immersion, emotional resonance, ecological attunement and context-specific judgement. It therefore produces insights that are derivative rather than experiential, lacking the depth that comes from lived practice [83].

This discrepancy raises concerns about privileging text over experience. There is a risk that educators may begin to treat AI-generated insights as inherently authoritative simply because they are articulated in structured analytical language, potentially replicating the performative tendencies of mainstream education systems that prioritise codified knowledge and measurable outcomes [2,35].

Such a shift could undermine the relational and experiential core of Forest School pedagogy, particularly if practitioners start to orient their reflective practice around what AI can “see” rather than what they experience within their Forest School sessions. Yet it is, however, worth noting that this epistemic tension also possesses the potential to be productive. The contrast between AI's interpretation and practitioners' embodied experience may deepen reflexive practice by encouraging practitioners to articulate the tacit knowledge that guides their decisions. When AI presents an interpretation that feels static, overly literal or mismatched to context, practitioners are prompted to clarify their own understanding of what occurred and why. In this way, AI may function as a reflective foil rather than an evaluator, stimulating deeper engagement with the complexity of practice.

8.5. Ethical Considerations: Authority, Surveillance and Practitioner Autonomy

The introduction of AI into Forest School reflection raises several ethical questions. One concern involves the potential for “authority creep,” where AI feedback becomes positioned as objective, leading practitioners to feel compelled to align their work with AI-produced interpretations. This could constrain the creativity, autonomy and local adaptation that are vital to Forest School pedagogy [3,8]. The algorithmic tendencies identified in the findings—such as privileging Scandinavian models—

demonstrate how AI might unintentionally impose normative frameworks on a pedagogy designed to resist standardisation.

There are also important data-ethical considerations due to the fact that case studies involving children contain sensitive information. Although the data used in this paper were anonymised, practitioners must attend to issues of consent and privacy when considering whether to integrate AI into their reflective practices. Forest School narratives often contain intimate, emotional or personally significant moments, and the idea of such data being processed by AI systems may feel misaligned with the ethos of respectful, relational observation that underpins the pedagogy [42]. The risk of algorithmic bias within the pre-existing code which acts as the AI's digital architecture must also be acknowledged. AI systems are trained on existing textual representations of Forest School, many of which reflect specific cultural or structural contexts. The AI's preference for Scandinavian models over UK-based adaptations illustrates how such biases may shape its interpretations. If untreated, these biases could gradually homogenise practice, undermining Forest School's commitment to diversity, local responsiveness and ecological specificity [4,6].

8.6. AI-Generated Feedback and Practitioner Insight in Reflective Practice

Alongside ethical issues in the bringing together of Forest School practice and AI-generated feedback, another central issue emerging from this paper concerns the relationship between AI-generated feedback and the reflective insights of experienced practitioners [96]. Forest School practitioners develop their professional understanding through repeated engagement with places, learners and communities [1,3]. Their interpretations are shaped by tacit knowledge, emotional attunement and sensory awareness developed over time through direct interaction with the environment [8,16,41]. AI-generated feedback, by contrast, is derived from the analysis of textual representations of practice and the statistical patterns embedded within its training data [83,87,88]. This distinction means that AI and practitioners operate with fundamentally different epistemological foundations.

In practice, these epistemological differences shape the kinds of insights that AI and practitioners can offer. AI systems are well suited to identifying recurring structural patterns across multiple accounts of practice, highlighting consistencies or misalignments with articulated pedagogical principles [59,60,93]. Such pattern-based analysis may help practitioners notice tendencies in their facilitation strategies, session structures or descriptions of learner engagement that might otherwise remain implicit [63,97]. However, AI lacks access to the sensory, relational and ecological dimensions of outdoor learning that practitioners experience directly, including subtle shifts in group dynamics, emotional atmosphere and environmental conditions that often shape decision-making in Forest School contexts [8,33]. The earlier metaphor of "wildness" provides a useful lens through which to interpret this dual character. On one hand, the AI functioned as a domesticated analytical tool [98], imposing structure, consistency and clarity by organising complex case-study narratives and aligning interpretations with FSA principles. On the other hand, its responses occasionally revealed an unexpected unpredictability, producing interpretations shaped by patterns in training data rather than the specific contextual nuances of the case studies [99]. This tension between structure and unpredictability echoes the emergent qualities of outdoor learning environments, where unanticipated developments often become catalysts for discovery [1,3]. Rather than viewing such unpredictability solely as a limitation, it may be more productive to treat it as part of a dynamic reflective dialogue in which AI functions as an interpretive collaborator [100] whose observations must be critically examined, contextualised and, where necessary, challenged by practitioners.

For reflective practice, the most productive approach may be to treat AI-generated feedback and practitioner insight as complementary rather than hierarchical forms of knowledge [101]. Practitioners must weigh AI observations against their own contextual understanding, recognising that algorithmic interpretations may reveal useful analytical patterns while also overlooking critical experiential details [82,88]. Engaging in reflective dialogue between these perspectives can deepen professional learning by encouraging practitioners to interrogate assumptions, articulate tacit reasoning and clarify the pedagogical principles guiding their decisions [13,97]. In this sense, AI has potential to function as a reflective companion within professional development when integrated thoughtfully into supervisory or mentoring practices [46,48,49]. Its capacity to synthesise patterns, highlight misalignments and apply FSA principles consistently may support both novice and experienced practitioners [59,93], while its

outputs can be treated as interpretive hypotheses rather than prescriptive recommendations [90,91]. AI should not, however, replace relational forms of truly co-agentic [102] professional development such as co-reflection, peer discussion or shared observations [103], which remain central to the relational nature of Forest School pedagogy [3,8]. Instead, embedding AI-generated prompts within reflective journals, portfolios or supervision discussions may help practitioners explore alternative perspectives while maintaining professional autonomy [47,51]. Ultimately, AI contributes most effectively to CPD when it complements, rather than competes with, the embodied and relational expertise that practitioners cultivate over time [82,88].

8.7. Limitations of AI Interpretation and the Role of Prompt Design

While the findings indicate that AI can offer analytically useful perspectives on Forest School practice, this paper also revealed several limitations in the AI's interpretive capacity. Most significantly, the AI's analysis was constrained by the textual nature of the case studies [104]. Forest School sessions are deeply embodied and place-responsive experiences, yet the AI interacted only with written descriptions of these events [8,16]. As a result, its interpretations were necessarily limited to what had been explicitly documented by the practitioner-researcher. Nuances such as tone of voice, non-verbal communication, environmental atmosphere or moment-to-moment decision-making processes could not be captured fully within the textual dataset and therefore remained outside the AI's interpretive reach [33,41].

A second limitation relates to the influence of prompt design on AI outputs. AI systems do not independently determine the analytical framework through which they interpret data; rather, their responses are shaped significantly by the instructions provided to them [83,87,88]. In this paper, prompts were deliberately structured to align the AI's analysis with the Forest School Association [19] principles and relevant theoretical literature. This design aimed to guide the AI toward constructivist interpretations consistent with the pedagogical framework of the paper. However, such structuring inevitably introduces a degree of researcher mediation, meaning that the resulting outputs represent a form of human–AI co-construction rather than purely autonomous machine analysis [89,90].

To mitigate potential bias, the prompts used in the analysis were designed to be open-ended and reflective rather than evaluative. Instead of directing the AI to judge the quality of practice, the prompts asked it to identify patterns, highlight possible alignments with FSA principles, and suggest questions for further reflection. This approach sought to reduce the likelihood that the AI would produce overly prescriptive or normative assessments of practice [82,88]. Nevertheless, it must be acknowledged that different prompt structures could produce different analytical outcomes. Future research should therefore explore how variations in prompt design influence AI interpretations of educational practice, particularly in pedagogical traditions such as Forest School where contextual sensitivity and practitioner autonomy are central values [3,8].

Recognising these limitations is essential for situating AI appropriately within reflective practice. AI-generated insights should be understood as provisional interpretations shaped by both algorithmic pattern recognition and human prompt design [87,90]. When practitioners engage critically with these outputs, questioning assumptions, contextualising observations and comparing them with their own experiential knowledge [107], AI may contribute meaningfully to reflective dialogue while avoiding the risk of becoming an uncritical authority [13,82].

8.8. Future Research Directions

Several strands of future research emerge from this paper. One immediate next step involves empirically testing the proposition that AI can function as a “more knowledgeable other” in the reflective analysis of Forest School practice. To this end, a practitioner-focused project entitled ‘*Where the Wild AIs Are*’ has been designed and granted ethical clearance to extend the conceptual work of this paper into a small-scale, practice-based inquiry. The project will involve a cohort of qualified Forest School practitioners working across the wider Yorkshire region over a six-month period.

Participants will be invited to integrate AI-supported reflection into their existing professional routines using a structured reflection proforma developed from the findings of this paper and aligned with the Forest School Association (FSA) principles. After delivering a Forest School session, practitioners will complete the proforma to document observations of learner engagement, practitioner

decision-making, environmental affordances and alignment with FSA principles. This written reflection will then be shared with an AI system. Practitioners will subsequently input a researcher-designed “golden prompt”, created to optimise the AI’s analytical response and ensure that feedback is grounded in constructivist theory and FSA-aligned pedagogy.

The golden prompt will draw directly on the analytical framework developed in this paper, guiding the AI to respond as a reflective interlocutor rather than an evaluator. It will ask the AI to identify evidence of learner-centred practice, facilitative pedagogy, risk and problem-based learning, and long-term developmental processes, while also prompting constructive questions for further practitioner reflection. By standardising the prompt across participants, the project aims to examine how AI responses can be shaped to provide consistent, theoretically informed feedback that remains sensitive to contextual variation in practice.

Following this process, participating practitioners will document their responses to the AI feedback, noting areas of agreement, challenge or surprise, and reflecting on whether the interaction influenced subsequent sessions. Practitioners will then share their experiences through collaborative discussions and written reflections, generating qualitative data to address the core questions posed in this paper:

1. Can AI meaningfully function as a “more knowledgeable other” in the reflective analysis of Forest School practice?
2. To what extent do AI-generated reflections align with practitioners’ own interpretations?
3. Does AI-supported reflection support a return to, or strengthening of, FSA-aligned “purist” pedagogy within constrained educational contexts?

This project will therefore create an opportunity to compare AI-generated feedback with practitioner-generated reflection, examining points of convergence and divergence in interpretive analysis. Such comparison responds to calls within the literature to evaluate AI not simply as a technical tool but as a participant in professional knowledge construction. The planned ‘*Where the Wild AIs Are*’ project outlined here aims to move the discussion from conceptual possibility to situated practice. By working collaboratively with practitioners over time, this next phase of research will explore whether AI can act as an accessible, low-cost reflective partner capable of supporting principled Forest School pedagogy while respecting the relational, ecological and learner-led foundations of the approach.

9. Conclusion

This paper explored whether artificial intelligence can act as a form of “knowledgeable other” to support practitioner reflection on Forest School pedagogy, but it is not “more” knowledgeably than the practitioner themselves. The AI-assisted analysis of four case studies demonstrated that AI can offer structured, pattern-based insights that help practitioners notice assumptions, draw comparisons, and generate new lines of reflection. In this sense, AI has potential as a reflective companion or a differently knowledgeable other whose analytical distance can prompt reconsideration and deepen reflexive practice. It must be noted, however, that the paper also highlights important limitations of such applications of AI. Forest School pedagogy is fundamentally embodied, relational, and place-responsive. It relies on practitioners’ attunement to children, weather, materials, and the ecological rhythms of outdoor learning and such forms of knowledge cannot be replicated or fully recognised by an AI system trained solely on textual patterns. As a result, AI interpretations risk narrowing the richness of practice, privileging idealised models, or overlooking subtle relational and sensory dimensions central to holistic development.

The metaphor of wildness helps illuminate this tension as while AI provides domesticated, patterned readings of practice, it also produces unexpected or misaligned interpretations that resist full control. When treated not as an evaluator but as a provocateur, this “wildness” can be productive: it challenges practitioners to articulate tacit knowledge, defend contextual decisions, and reflect more critically on their pedagogy. AI cannot therefore replicate the sensory, relational and ecological richness of Forest School, but it can support thoughtful, dialogic reflection and its value lies not in offering authoritative conclusions, but in providing alternative perspectives that practitioners can interpret, contest or build upon. Used critically, ethically and collaboratively, AI can enhance reflective practice while preserving the child-centred, emergent ethos at the heart of Forest School.

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