Independent Autism Reviewer for Northern Ireland

# The Nature Advantage

## Outdoor Education in Northern Ireland

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**Acknowledgments**

A very special thank you to Mrs. Pamela Muir, Principal of Dunclug Nursery School, who generously shared her time, insights, and expertise in preparing the case study. Her dedication and commitment to fostering outdoor education are truly appreciated, and her contributions have been invaluable to this Report.

*"Nature became so much more than an escape; it became a life-support system…"*

*(Dara McNulty BEM, autistic naturalist and author)*

## WHY OUTDOOR EDUCATION AND WHY NOW?

In an era of budgetary constraints and a rapidly changing world, both schools and students alike face mounting pressures and challenges within our education system.

The world is more volatile, uncertain, complex and ambiguous that ever before and, as humans, we feel the impact emotionally and physically.

Can outdoor education and 'Forest Schools' offer an opportunity to foster resilience, well-being, and enhanced learning through hands-on experiences in nature?

Dr Hannah Armitt, co-lead in an ongoing research project,[1] led by the University of York and Humber Teaching NHS Foundation Trust said,

> *"There is a growing body of evidence which highlights how individuals who feel more connected with nature tend to experience greater happiness and a sense of purpose in life.*
>
> *However, many children currently have limited access to green spaces and the benefits they offer for play and connection with nature."*

Commenting on Forest Schools Dr Armitt recognised that,

> *"Forest schools provide an immersive, child-led environment that contrasts with traditional classroom settings.*
>
> *By allowing children to explore their interests and experiment, forest schools foster self-esteem and purpose beyond academic achievement. Teachers report improved school attendance and enjoyment, with some children attending school exclusively on forest school days."*

[1] Ongoing research project led by the University of York and Humber Teaching NHS Foundation Trust to gather robust evidence on whether Forest Schools can improve the mental health and wellbeing of primary school children across the country. https://www.york.ac.uk/news-and-events/news/2024/research/children-mental-health/ accessed March 2025

Leading UK-based charity, 'Learning through Landscapes',[2] reports that when education takes place outside,

> "…*one of the positive benefits is it becomes a really inclusive space. A child or young person that may be struggling within the classroom can thrive learning outdoors because it's a different way of learning."*

## WHAT IS OUTDOOR EDUCATION?

Outdoor education involves structured learning beyond the traditional classroom, using natural settings to achieve educational outcomes and enrich students' learning experience, within school grounds, educational visits and residential experiences.

It can enhance various areas of the curriculum, including literacy, numeracy, STEM topics as well as ecological awareness.

The process engages children and young people in many different ways, with educators as *"facilitators, using multi-sensory and experiential approaches*".[3]

Learning in an outdoor environment *"encourages children and young people to become involved in emotional, physical, aesthetic, spiritual and cognitive experiences as part of their learning".*[4]

It harnesses the natural curiosity of children and young people and provides memorable, authentic and contextualised experiences to extend classroom-based activities.[5]

## THE AUTISTIC PERSPECTIVE

Autism is a natural and intrinsic variation of human neurology, present across all ages, stages and walks of life. It is not an illness or a medical condition or a flaw.

Autism is a difference in how the brain processes information.

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[2] https://ltl.org.uk/about-us/ Case Study: United Kingdom | Learning through Landscapes | Children & Nature Network accessed March, 2025

[3] Education Scotland, Outdoor Learning: Practical guidance, ideas and support for teachers and practitioners in Scotland https://education.gov.scot/media/0fklf35p/hwb24-ol-support.pdf accessed February, 2025

[4] Ibid

[5] Karppinen, S. J. A. (2011). Outdoor adventure education in a formal education curriculum in Finland: action research application. *Journal of Adventure Education and Outdoor Learning*, *12*(1), 41–62.

Despite the known relationship between nature and wellbeing, few researchers have formally considered the experience of autistic children and young people in nature and how it may impact their learning.

One small-scale study by Bradley and Male (2017)[6] explored Forest School's impact on four autistic male pupils who also had additional learning difficulties.

Through semi-structured interviews, parents and professionals identified key benefits,

> *"forming friendships, overcoming fears, developing social and physical skills, and gaining environmental awareness*".[7]

Children were seen to problem solve and demonstrate a greater awareness of the natural environment. They also expressed unanimous enjoyment and confidence in facing challenges, while adults highlighted the value of a supportive, boundary-pushing environment.

Outside of the research and studies that I considered for this Report, the most persuasive and valuable insight came from Dara McAnulty BEM, an autistic naturalist and author from Northern Ireland.

Dara describes classrooms at school as *"claustrophobic",*

> *"…Through the stale air I'm bombarded with fidgets, sighs shifts, rustles as loud as rumbles. The rooms are bright, so bright that the reds and yellows pierce my retinas. Fluorescents drowning the natural light. I can't see outside. I feel boxed in, a wild thing caged…"*[8]

Many autistic children and young people struggle within the school environment. This is often expressed through the distress behaviours they exhibit in school or when they return home from school.

Just as canaries in coal mines signalled danger, the experiences of autistic students reveal where systems are failing and where change is needed.

In his book Dara reflects,

> "*I like school, I really want to learn….outside, the world is so much easier to condense, to understand. You can focus in on one thing: a flower, a bird, a sound, an insect.*
>
> *School is the opposite. I can never think straight.*

[6] Bradley, K. and Male, B.D., (2017). 'Forest school is muddy and I like it': perspectives of young children with autism spectrum disorders, their parents and educational professionals. Educational and Child Psychology.
[7] Ibid
[8] McNulty, D (2021) 'Diary Of A Young Naturalist', Ebury Press.

*My brain becomes engulfed by colour and noise and remembering to be organised. Ticking things off brain-lists.*

*Always trying to hold in nervous anxiety. To keep myself together."*

And he calls for,

"...*an education system that acknowledges the natural world as our greatest teacher."*

## WHY CONSIDER THE 'AUTISM PERSPECTIVE'?

*"When we make the world more accessible for one group, we often end up making it better for everyone."* [9]

An increasing shift towards better understanding of autism and its occurrence within our population has the unforeseen, and welcome, advantage of illustrating the value of inclusive design and policies for the whole of society - the *"Kerb Cut Effect"*. [10]

There is also a financial advantage to the 'autism perspective'. A growing and persuasive body of evidence demonstrates that investment in systems, policies, and services designed to support autistic individuals deliver broader societal benefits – often reported as the *"Autism Dividend".*[11]

## OUTDOOR EDUCATION IN PRACTICE – A CASE STUDY

This case study from a County Antrim Nursery School illustrates the tangible benefits and value of their Outdoor Education provision.

[9] Oxford Review Briefings, People & Organisational Research – Curb cut Effect – Definition and Explanation Curb cut effect - Definition and Explanation accessed January 2025

[10] *"The Kerb Cut Effect"* – originating from the pavement modifications initially designed for those with physical disabilities. Dropped kerbs soon proved useful for others - parents pushing prams, cyclists, and delivery workers. See Angela Glover Blackwell,The Curb-Cut Effect. Stanford Social Innovation Review, 2016

[11] National Autism Project – The Autism Dividend – National Autistic Taskforce and comprehensive-submission-Australian-Autism-Alliance-Senate-Inquiry-into-Autism-Aug-2020.pdf

Dunclug Nursery School

# THE BENEFITS OF OUTDOOR LEARNING FOR PRE-SCHOOL AGED CHILDREN

**Our context** –

We are a controlled, cross community Nursery School located in an area of high Social Need in an urban setting. We currently have 83 children enrolled, comprising of one Full-Time and two Part-Time classes and a small group provision for 6 children who have autism and moderate to severe learning difficulties, alongside other complex needs.

Our Nursery School motto is 'Learning to be a wonderful me' and providing for all children's development, regardless of their starting point, together with promoting their health and wellbeing, are important aspects of our Mission Statement.

Over the past five years, staff have noted that there are increasing numbers of children in our intakes who have difficulties with attention and focus, sensory processing needs, emotional regulation, and what may be considered delay in language, social, physical and play skills throughout all classes (some children with these difficulties already have identified additional needs and others have not.)

Through School Development Planning staff have engaged in collaborative work to evaluate our setting's ability to provide for our pupils' differing needs, health and wellbeing and varied stages of skill development. We have subsequently sourced training on the benefits of Outdoor Learning for pre-school children's development, as well as training on brain development from birth to five years. We feel that developing our Outdoor Learning provision has and will continue to make a valuable contribution we seek to provide experiences that could enable us to secure better outcomes for all children attending our Nursery School.

Phase one of our Outdoor transformation is now complete, with investment in an Outdoor Classroom, Sand area, large construction equipment, a sensory den, chalk and whiteboards, a mixing table and mud kitchen, a water wall, music hut, digging area, trim trail and planters.

We have planned for learning in these areas, which are used every day. Work on Phase two of our plan, to remodel our Play Park to include large equipment

that will provide opportunities for children to climb, balance, slide, crawl, hang and swing, is due to commence later this month.

**Staff in our setting have observed the following benefits for all of the children in our setting –**

- improved physical skills, both gross and fine, and improved spatial awareness
- lower stress levels, as sensory needs are met through physical play and during time spent outdoors
- better relationships with peers, through development of social skills of sharing, waiting and turn-taking – e.g. 'It's (Jack's) turn to climb the ladder, we will wait until he reaches the top…now it's your turn!'
- increased awareness of, and sense of belonging to, the Nursery School environment, which has helped some children who were finding it hard to settle in a new setting, away from their primary caregiver
- improved confidence and awareness of safety when engaging in more 'risky' play
- development of a sense of wonder / curiosity about natural items
- improved problem-solving skills through engagement with open-ended play opportunities using resources that can be used imaginatively – e.g. crates / tyres / planks that can be arranged by the children to make a trim trail
- improved focus / attention skills on return to the indoor classroom
- language development - increased naming and descriptive vocabulary

**We have observed the following additional benefits for children in our Nursery School with identified Special Educational Needs** –

- Outdoor learning provides opportunities for natural integration with their peers – e.g. children who are not yet able to communicate their needs through speech due to SENs or when learning English as an additional language, can interact with peers physically, such as by touch to initiate or participate in a game of catch.
- Children with SENs may have similar competence to their peers in gross motor skills, such as running, climbing, balancing. Being able to use these

skills in the larger group setting highlights *similarities* with their peers, which can help to nurture peer relationships.

- The larger area available for play gives freedom to explore, roam, engage in physical play and provides a break from indoor environments which can be overstimulating to a child's sensory system due to noise, visual stimuli, smells, room temperature and the general busyness of a small space accommodating a large number of pupils who are moving around for the duration of their play session.
- Outdoor Learning presents opportunities to develop children's language skills in an environment where more of their senses are engaged simultaneously, which has proven benefits for language acquisition. It also provides opportunities for adults and other children to model naming and descriptive language relating to real objects, e.g. drawing attention to an aeroplane in the sky or a car passing – real items that may have a better reference point for children with additional needs than pictures of the same when presented to them in the indoor environment.
- Children with SENs can experience more autonomy and independence outdoors, particularly for those children who receive one to one assistance for the majority of their time indoors in Nursery. This helps to nurture their self-esteem and self- confidence.
- Social skills can be developed well outside, as children with SENs share space and resources with their peers. Adults can sensitively support children when using resources that are highly motivating, such as the slide or swing – to develop sharing, waiting and taking turns skills alongside an adult or another child, which can then be extended to include more children.
- Outdoor Learning provides opportunities for children with Sensory Processing needs to receive the input they seek in order to regulate their sensory system that cannot always be provided in the classroom, e.g. opportunities to hang upside down, to swing back and forth, to carry out 'heavy load' tasks. Providing for these needs improves their emotional well-being and helps with attention and focus.
- Opportunities to develop core strength, gross and fine motor skills, cross-body movements and spatial awareness are important components of physical development. Outdoor learning provides opportunities for development of these movement patterns through play. This can also help to develop motor-planning, which is something that children with SENs who attend our Nursery School have difficulty with.

- Research into brain development shows that engaging in activities that stimulate a number of areas of a child's brain simultaneously, helps neural pathways to form, e.g. throwing a ball uses 5 parts of the brain, therefore this activity grows the brain for learning. The Outdoor environment is much better suited for these kinds of movement activities than a busy indoor classroom.

**Benefits for Staff** -

Outdoor learning also has benefits for staff working with children of this age!

- Periods of learning outdoors can provide a sensory break for staff, away from the stimuli that working with a larger group of young children provides indoors.
- For staff who provide support to an individual child with SENs, outdoor learning as part of the bigger group can provide a welcome break from the intensity of one to one assistance.
- Outdoor learning provides opportunities to engage with other staff and children in the group and to engage children in small group activities.
- Outdoor areas provide another area/activities that can be incorporated into a child's daily routine, adding to the variety of learning opportunities for the child to engage with.
- When a child is more regulated following outdoor learning, staff find that focus and attention improves, which helps with retention of learning from activities provided during and following outdoor learning experiences.
- Outdoor Learning gives staff opportunities to observe and assess children's progress and development in all areas, rather than being narrowly focused on observing progress towards targets specified on pupils' Personal Learning Plans.
- Learning outdoors has a positive impact on relationships at all levels – for an opportunity to nurture relationships with children by sharing enjoyment, following their lead and showing interest in their play outdoors, as well as with other staff as they work together to support all children in the group.

Could these early experiences of outdoor education and learning shape lifelong habits for physical and emotional wellbeing, and well as environmental stewardship?

## A LONG TERM INVESTMENT?

If children consistently experience the benefits from being outdoors during school, even subconsciously, they form implicit positive associations between nature and well-being.

Exposure to outdoor education may have the potential to have a lasting impact into adulthood, with adults feeling drawn to nature in times of stress, even if they don't explicitly remember why.

Dr. Bruce Perry explains that,

> *"…childhood experiences involving nature can rewire the brain for emotional regulation and resilience."* [12]

More recent research from 2023 found that outdoor learning reduces cortisol levels, suggesting that these benefits persist into adulthood, helping individuals manage stress throughout their lives. [13]

Several psychological and neuroscientific theories, as well as longitudinal studies, show that childhood exposure to green spaces correlates with higher well-being and increased nature-seeking behaviours in adulthood. [14]

The potential to carry this positive interaction with nature into adulthood could be very significant.

> *"When I am ambushed by the anxiety army, when it comes stomping back, I'll be ready to fight, armed with the wild cries of Rathlin Island."* [15]

[12] Perry, B. (2006). *Childhood Experience and the Expression of Genetic Potential: What Childhood Neglect Tells Us About Nature and Nurture*.
[13] *Dettweiler, U., Gerchen, M., Mall, C., Simon, P., Kirsch, P., (2022). Choice matters: Pupils' stress regulation, brain development and brain function in an outdoor education project. British Journal of Educational Psychology, 93(1),* 152-173
[14] *Ward Thompson, C., Aspinall, P., Montarzino, A., (2008). The childhood factor - Adult visits to green places and the significance of childhood experience. Environment and Behavior, 40(1),* 111-143.
[15] McNulty, D (2021) 'Diary Of A Young Naturalist', Ebury Press

## FINAL THOUGHTS

## FUNDING CONSTRAINTS AND FACING THE ELEMENTS?

Schools are inherently creative environments, with educators consistently finding innovative ways to make a meaningful impact within the constraints of available resources.

However, to fully realise the transformative potential of outdoor education there must be targeted investment.

Only with such investment can we ensure that outdoor education becomes a permanent, accessible, and integral part of both the curriculum and the wider education system.

And what about the weather? We often experience four seasons in one day, but as the Scandinavian motto goes, *"There is no bad weather, only bad clothing."*

## APPENDIX A

### Defining Autism.

Autism is a natural and intrinsic variation of human neurology which presents across all ages, stages and walks of life.

Current diagnostic classification defines autism as *"Persistent deficits in social communication and social interaction…Restricted, repetitive patterns behaviours, interest, or activities…"* [16] However, this description can often lead to a deficit-based view that overlooks the unique ways in which autistic individuals process the world.

Dr. Peter Vermeulen's scientifically grounded 'predictive brain theory' offers a compelling alternative. [17] He frames autism, not as a flaw, but as a difference in how the brain processes information.

The autistic brain operates by creating rigid, detailed models of the world, heavily relying on predictions.

Unlike neurotypical [18] brains, which adapt flexibly to new information, autistic brains may struggle to adjust to unexpected stimuli or ambiguity. This often leads to heightened sensitivity and difficulty interpreting the world around them.

Predictive brain theory and processing, is a widely discussed concept in cognitive neuroscience, perception, and developmental psychology, and has garnered significant attention among neuroscientists. Dr Vermeulen's empathic perspective highlights the unique cognitive strengths of many autistic individuals without disregarding the challenges they face in navigating a world that is volatile, uncertain, complex, and ambiguous.

By shifting the focus away from deficits, we gain a better understanding of behaviours like insistence on sameness or difficulty with change, which can be seen as responses to a different way of interpreting the world.

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[16] American Psychiatric Association: Desk Reference to the Diagnostic Criteria From DSM-5-TR

[17] Peter Vermeulen, Autism and the predictive brain: absolute thinking in a relative world (Routledge, 2023)

[18] 'Neurotypical' refers to individuals whose cognitive development aligns with societal expectations and typical patterns of functioning

Understanding autism through this lens is crucial when developing effective support systems, in particular health and social care systems.

By creating structured, predictable environments, reducing sensory overload, and providing clear, consistent social cues, we can better accommodate the unique cognitive styles of autistic individuals.

## APPENDIX B

### The Independent Autism Reviewer

Appointed by Minister Nesbitt, I began my role as Northern Ireland's first Independent Autism Reviewer on September 2, 2024, for a five-year term. This role operates independently of all Northern Ireland government departments.

As a statutory 'scrutiny mechanism,' the Autism Reviewer's responsibilities and functions are defined under sections 3C and 3D of the Autism Act (Northern Ireland) 2011.[19] My work involves targeted examination of decisions[20] across all government departments.

Given the early stages of my appointment, I have not yet had the opportunity to consult directly with the autistic community on issues to which this Report pertains.

## APPENDIX C

Further research and case studies into the impact of outdoor learning and education which includes the voice of autistic students, and input from the adult autistic community is required.

['Students' for the purposes of this Report include children and young people in pre-school, primary, post-primary and post-19 education. It includes children and young people with and without a learning disability, with and without a physical disability,

[19] Autism Act (Northern Ireland) 2011

[20] **'decisions'** for these purposes refer to prospective decisions, those decisions at planning stage, decisions taken , and decisions that have already been implemented in respect of autism.

speaking and non-speaking, verbal and non-verbal, d/Deaf children and young people, and visually impaired children and young people.]

It would be interesting to explore any connection between outdoor learning during school years and subsequent adult attitudes to the outdoors and nature, particularly in relation to mental health and wellbeing, in a Northern Ireland specific study which takes account of our socio-economic and regional factors.