

TRANSFORMING OUTDOOR LEARNING IN SCHOOLS

LESSONS FROM THE NATURAL CONNECTIONS PROJECT



'You kind of tend to work better outside because you are more relaxed... you are not stuck in the same place, you are able to move around, you are able to experience different things using your senses.' (Pupil)

'Every single subject in the curriculum has been delivered outside...the benefits are massive in terms of student motivation, student behaviour and teacher motivation and our involvement in the Natural Connections Project over the past 4 years has cost the school less than we spend on tea and coffee!' (Assistant Head)



INTRODUCTION

Welcome. This booklet aims to provide school staff with a compelling introduction to the value and impact of well-planned regular outdoor learning for pupils, teachers and schools as a whole. It sets out the evidence for outdoor learning and shows how schools and their staff can overcome challenges to outdoor learning, and embed it into their policy and practice. Outdoor learning can cost very little, and yet can help schools achieve their priorities in ways that engage children with learning.

Natural Connections was a four year project (2012 to 2016) funded by Defra, Natural England and Historic England, and delivered by Plymouth University. Existing research on the barriers to and the benefits of learning outside the classroom in natural environments (referenced in this booklet as outdoor learning) was used to develop and test more effective ways to provide local support to schools and teachers to enable outdoor learning. The project has shown that high quality, local independent support can be very effective in establishing outdoor learning in schools and in making a real contribution to achieving school priorities. The project's scale has also enabled it to add significantly to the evidence on outdoor learning and its positive outcomes for pupils, teachers and schools.

Outdoor learning isn't a subject or topic; **it's a way of teaching**. Natural Connections has shown that it's possible for school grounds and local greenspaces to be used daily to enhance teaching and learning right across the curriculum, and to deliver a wide range of associated benefits, including promoting children's social and emotional skills and their engagement with learning.

The project also found that the major challenges to outdoor learning, such as staff confidence in teaching outside and uncertainty how to deliver the curriculum through outdoor learning, can be overcome by enabling teachers and schools to work with and learn from each other.

This booklet makes a strong case for outdoor learning and hopes to provide schools and school networks with the starting points that might enable more schools to develop their own plans for outdoor learning.



THE NATURAL CONNECTIONS APPROACH

The project worked with 125 schools (primary, secondary and special) in the South West of England. Participants in the project included over 40,000 pupils, 2,500 teachers and 2,500 teaching assistants. The project evaluation was extensive and included surveys, interviews and case studies. This evidence was used to assess the ways to best support schools and to understand the benefits of outdoor learning.

Delivering the Natural Connections project

Natural Connections had a distributed model of delivery:

central team → hub leaders → beacon schools → cluster schools

A central team at Plymouth University recruited 'hub leaders' in five areas of deprivation across Bristol, Cornwall, North Somerset, Plymouth and Torbay. Hub leaders worked with schools across a wide range of circumstances.

Hub leaders built local networks, first recruiting and enriching the work of schools that were already delivering some outdoor learning (beacon schools). With the support of the hub leaders, beacon schools then recruited and supported less experienced schools (cluster schools) to develop their outdoor learning. Hub leaders worked with schools to create mutually supportive communities for outdoor learning.



Hub leaders offered schools the expert, independent, face-to-face advice needed to build awareness, understanding and confidence in outdoor learning. Development activities were shaped to meet individual schools' circumstances, needs and priorities. Support for schools was focused on building in-house responsibility, skills and confidence to plan curricular learning in school grounds and local green spaces. Schools then developed specific innovative and effective ways to enable outdoor learning across their curriculum.

Each project school established an outdoor learning team (including an outdoor learning lead, member of senior management, a governor, parent, teachers and other staff) to ensure that responsibility for outdoor learning was shared. This approach aimed to support a sustainable change in teaching practice across the school to ensure that activity continued beyond the project lifetime.

The Natural Connections local delivery model is characterised by:

- ✿ Sustainable approaches to outdoor learning in schools, embedded through whole school involvement
- ✿ Tailored support to meet the needs, priorities and challenges of individual schools
- ✿ Enabling schools to deliver outdoor learning themselves, as part of everyday teaching
- ✿ Provision of impartial and independent support through local hub leaders
- ✿ Low cost, by using school grounds and local greenspaces within walking distance.



THE BENEFITS OF OUTDOOR LEARNING IN SCHOOLS

Competing pressures mean that opportunities for children and young people to value and enjoy nature and the environment are under threat. According to the Monitor of Engagement with the Natural Environment Survey, in an average month in 2013-14 only 8% of all children in England (aged 5-16) visited natural environments with their schools. In their leisure time, the area that children explore and play around their homes has reduced by 90% over the past 20 years. A similar decline in opportunity has been observed in children's school access to the outdoors from Foundation Stage onwards, and many thousands of children across England have not even been to their local beach, park or woodland.

These trends are undoubtedly contributing to major challenges facing society today, such as the rise in childhood obesity, mental health issues, and the struggle to build a sense of place and community.

Yet evidence shows that giving children the opportunity to discover, learn about and experience the natural world is hugely important - it can help create a sense of belonging rooted in their local environment, enhancing their health, wellbeing and educational outcomes. For example, greater amounts of natural space in or around living or learning environments is associated with higher levels of physical activity, better emotional, behavioural and cognitive outcomes and with children developing a greater sense of connectedness to nature.



In addition, a substantial body of research and evidence points to a diverse range of positive outcomes for learners of all ages, including personal, social, educational, developmental and health outcomes. Particular studies highlight:

- ✿ Engagement in learning and academic achievement
- ✿ Better motor skills and increased levels of physical activity
- ✿ Improved mental health and wellbeing
- ✿ Improvement in behaviour and attendance rates
- ✿ Fostering pride, belonging and involvement in the community

These benefits are being recognised by Ofsted, the UK government select committee on education and skills, Local Education Authorities and many others.

‘Pupils also enjoy an increasing range of opportunities for outdoor education which broadens their horizons and enhances their progress in classroom work. These activities contribute to pupils’ improving spiritual, moral, social and cultural development’.

(Natural Connections school Ofsted report June 2014)

The Natural Connections Project has contributed significantly to the existing evidence around outdoor learning – being the largest project of its kind in England. A snapshot of the findings on the benefits is provided below.

Outdoor learning supports teaching across the curriculum

Outdoor learning was used by Natural Connections schools across all curriculum areas, most regularly and consistently in the core subjects of science, English and maths. The use of outdoor learning in these important subjects reflects that teachers were confident that curriculum objectives could be met through this approach. Schools also reported that outdoor learning greatly enhanced lessons, motivated the children and encouraged teachers to try new things. Teachers told us they particularly valued outdoor learning for:

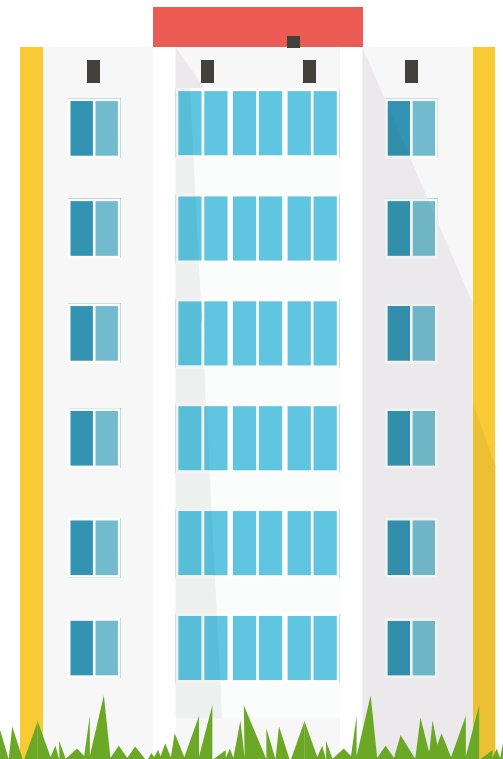
- ✿ **Inspiring creativity.** Outdoor learning in English/literacy sparked greater creativity in pupils’ work by firing their imaginations, and provided them with first-hand experiences to write about: **‘I will do a lot of stories based in the woodland, using artefacts and natural objects... And we are always searching for a great hook for our learning experiences to try to get pupils enthused ... I’ve seen a real improvement in children’s writing’ (Teacher).**

- ✿ **Supporting particular concepts.** Most schools taught maths outside, finding outdoor learning useful for **'making abstract concepts real'**. 'I see pupils learning things sometimes that they don't perhaps make sense of quite so quickly indoors ... This morning with the numeracy, I know a lot of children would have really struggled with grasping the concept of perimeters, but being able to walk it out ... made a lot more sense to them' (Teacher).
- ✿ **Providing experience and wonder.** The experiential and hands on nature of outdoor learning experience made the curriculum come alive for pupils: **'One of the key bits of the science curriculum is the wonderment of science. I think it is hard to bring in the wonderment of science stuck in a science lab for the whole year, whereas if you get outside you can give some people a real 'Oh My Gosh!''** (Teacher).

Benefits for pupils

The Natural Connections project collected data on a range of impacts of outdoor learning. Natural Connections schools reported that learning in natural environments had a positive impact on their pupils:

- ✿ **Enjoyment of lessons (95%)**
- ✿ **Engagement with and understanding of nature (94%)**
- ✿ **Social skills (93%)**
- ✿ **Engagement with learning (92%)**
- ✿ **Health and wellbeing (92%)**
- ✿ **Behaviour (85%)**
- ✿ **Attainment (57%)**



Health and Wellbeing, Character, Enjoyment and **Attainment** emerged as prominent themes in project interviews with headteachers, teachers, teaching assistants, other school staff, volunteers, parents and pupils.

Health and wellbeing

This was a very important pupil outcome of outdoor learning according to schools. Specifically, outdoor learning was reported by school staff to offer children the space to reflect, allow children to escape the pressures of the classroom and to provide them with the space and time to be physically active.

'...you go home feeling quite good about yourself.' (Pupil)

Character

(non-cognitive impacts on learning outcomes such as social skills, engagement, behaviour, confidence, self-esteem)

Outdoor learning was reported as supporting features of character education. In particular,

- ✿ **Confidence and self-esteem.** Case-study participants emphasised the value of confidence in successful learning, commenting that outdoor learning often led children to have greater confidence in their own abilities, sometimes through taking more risks, so that they were willing to try different challenges within and outside the classroom



'It has huge impact on confidence, self-esteem and language ... massive, we do see other things ...but those are the things that are most obvious ...We do think of it as like a magic wand.' (Teacher)

- ✿ **Social Skills.** Specifically outdoor learning was seen to encourage and develop communication, teamwork, new friendships, kindness and leadership.
'Unless you get this bit right, you don't get anything right in schools because ultimately it's about people.' (Teacher)
- ✿ **Engagement with learning.** Schools and teachers reported that outdoor learning consistently enthused and motivated children resulting in greater engagement with learning.
'We have got pressures for attainment but actually if we can achieve engagement, we can increase attainment because we get the children on board because they're interested.' (Teacher)
- ✿ **Behaviour.** The opportunities to develop confidence and self-esteem, motivation, communication, teamwork, kindness, risk and ownership of their own learning in contexts outside the classroom contributed to improved behaviour, according to headteachers and teachers. During outdoor learning... **'They follow their own lines of enquiry or create something of their own, but it is always purposeful and there aren't any issues with behaviour with them now.'** (Teacher)

Enjoyment

Children themselves mentioned several different enjoyable aspects to learning outside. The enjoyment of fresh air, new experiences and a practical context were all important to them. Teachers attributed this to the ability of outdoor learning to continually provide new experiences, a practical context for learning, the chance to learn in different ways and opportunities to succeed that may not be provided for some children in the classroom.

'I enjoy doing the orienteering. We did that for maths. So we had to work out equations to find out the number we had to go to on the map. It was a fun way of doing maths which I think a lot of people enjoyed'. (Pupil)

'...they are so engaged in the things that are around them outside, they don't see it as learning as such, classrooms have always been perceived as the 'learning' environment and I think when you take it outside children just think this is fun and they don't see it necessarily as learning...they can be independent, they can be collaborative, they can do all sorts, using their imaginations; inside, some children are restricted...'. (Teacher)

Attainment

The relatively short timescale of the project made some schools cautious about making direct links between outdoor learning and school attainment. However case-study schools reported that they engaged with outdoor learning for reasons that were important for attainment, including health and wellbeing benefits, non-cognitive skills and increased pupil enjoyment. These were seen as foundational to successful learning.

'I believe I will see good progress from outdoor learning with the children because already I am seeing better engagement, and better engagement means they are doing more, so there is going to be better progress' (Teacher).

Evidencing improvements in attainment was not straightforward over the limited project period, however teachers did feel that outdoor learning played a significant role in many cases. In one school the headteacher attributed improvement in writing scores to outdoor learning **'part of our journey with that has been to develop experiences for the children to write about, and a large number of those experiences are based in the outdoors ... Our writing results are now slightly above national average whereas they were well below before'**.

Benefits for teachers

The Natural Connections project also found that outdoor learning can be a powerful vehicle for improving teachers' job satisfaction, their teaching practice and their skills.

Natural Connections project schools reported positive impacts for teachers on their:

- ✿ **Teaching practice (79%)**
- ✿ **Health and wellbeing (72%)**
- ✿ **Professional development (69%)**
- ✿ **Job satisfaction (69%)**

These are important findings that address teacher morale and retention, in the context of continuing pressures on teachers to raise attainment.

'Outdoor learning allows me to use different skills in a different environment to the classroom. It has helped me gain confidence in a range of teaching methods and styles - delivery in the classroom is very methodical. Outside you can give pupils the resources and the methods to use and they can explore. It's more than just us delivering to them all the time' (Teacher).

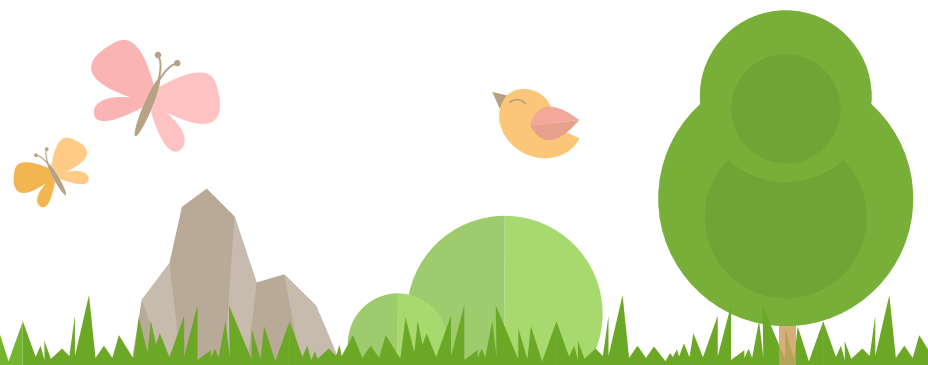


'Outdoor learning offers more exciting resources and ideas. It motivates learners which is what teachers aspire to. Teachers are excited and braver to experiment with ideas' (Teacher).

In summary, the benefits of outdoor teaching and learning are:

- ✿ Benefits for pupils, including greater engagement with learning, enjoyment of lessons, and delivery of health, wellbeing and character outcomes.
- ✿ Benefits for teachers, including positive impacts on teaching practice, professional development and skills, health and wellbeing, and job satisfaction.

The short Natural Connections Project Film <http://tinyurl.com/j62mh9x> and The Natural Connections Project Report <http://tinyurl.com/h8vwznz> provide further insight and examples of the benefits and impacts of outdoor teaching and learning.



DEVELOPING OUTDOOR LEARNING IN SCHOOLS

Outdoor learning is just one part of the many opportunities and experiences that schools offer their pupils. Natural Connections project schools have shown that outdoor teaching and learning can be a really important tool for helping address schools' priorities and to support many schools' initiatives and values.

The tailored support provided by skilled local hub leaders clearly worked for the Natural Connections schools by helping them make outdoor learning an integral part of what they do; project surveys were consistent in the finding that outdoor learning was used across all curriculum areas.

The adoption of outdoor learning into everyday practice was sustained throughout the project and was indicated by:

- ✿ **90% of schools who agreed that outdoor learning was useful for curriculum delivery**
- ✿ **75% of schools who included outdoor learning in school policies and plans**
- ✿ **66% increase in the average time spent on outdoor learning over the course of the project**
- ✿ **63% increase in the proportion of teachers involved in outdoor learning.**

In an ideal world, all schools would have access to a local hub leader or mentor to support their outdoor learning. This would help them to link with local providers, bring them together with other like-minded schools, source Continuing Professional Development (CPD) to meet their needs and assist them in meeting the challenges to outdoor learning through planning and sharing experiences.

The coordinating role of hub leaders with strong, local educational networks, supported by school-based outdoor learning leads, was critical to effective delivery of the project.



The current Natural Connections Hub Leaders and schools, in the light of their experiences and gathered evidence, offer through this booklet some guidance on the factors that they found to be particularly important for outdoor learning to thrive in schools, in the hope that other schools can also work towards these independently.

1. Getting the whole school on board with outdoor learning

Outdoor learning needs to be supported by senior leaders, governors and a knowledgeable and enthusiastic outdoor learning lead who can inspire others. Schools felt that

'A gradualist approach is always a good one in terms of embedding outdoor learning because it allows teachers to develop their practice and 'feel safe' (Teacher).

Sometimes all it needs is a little bit of inspiration and having a go to show that confidence does increase and that outdoor learning supports curriculum delivery; money is not always needed and it doesn't take too much time to do things differently.



Getting everyone on board may include:

- ✿ **Seeing** – demonstrating and witnessing the benefits of outdoor learning. This was achieved through the example shown by beacon or partner schools, and often through whole school inset days or themed initiatives such as 'empty classroom day' or 'no-electricity day' as a way of encouraging everyone to get outside and see the contribution outdoor learning can make.

Example - whole school training: a transformative initiative

One urban school in Plymouth had a whole school INSET day on using school grounds in the curriculum for teaching. The headteacher reported this had an impact on all staff in terms of awareness and enthusiasm for outdoor learning. Before the training staff felt there were challenges around **'...the quality of the environment... and knowing what we could do with that environment...and lack of understanding...people didn't see it in such a creative way as we do now'.**

The outdoor learning team reported that the training provided a lot of good ideas for where they could make links with the outdoors. Staff have developed activities and lessons including in depth science investigations, for example on resistance, mini-beasts, storysticks and cooking outside.

✿ **Doing** - building confidence and practice slowly, using outdoor learning to support curriculum delivery as staff try new activities outdoors and see the benefits it can bring to their class. Most schools preferred developing their own in-house skills over engaging external providers (whether voluntary or paid) to deliver lessons. Staff new to outdoor learning also planned and/or taught alongside teachers more experienced in teaching outside.

Example - developing the confidence to work outdoors

The approach to building confidence in outdoor learning in one primary school was to use the school's established 'Fab Fridays'. Staff were encouraged to work outside during the summer term enrichment activity days, often using Forest School type activities. This approach enabled staff to develop confidence and understanding of the possibilities that working outdoors can offer. Staff then felt able to progress to using outdoor spaces to support curriculum learning.

Staff felt that pupils understanding of working outside improved too and modified their school behaviours as they became accustomed to working outside. 'I feel I can let them go. I don't have to have them within my sight every moment because I think they are learning to be responsible in their own right.' (Teacher).

With the result that '...I think that ... there is much more laughter ... a lot of enjoyment ... a bit more freedom, a bit more creativity' (Teacher).

✿ **Integrating** - outdoor learning was used as a tool to achieve existing school priorities and link with the school vision and values. Examples included the UNICEF 'Rights Respecting Schools' agenda, supporting 'Building Learning Power' and linking with the THRIVE programme to support emotional development in young people.

Example - developing the confidence to work outdoors

In one special school, there was recognition of the need to improve the coordination skills of many pupils. The school developed a simple mountain bike course around the perimeter of the school grounds and purchased a number of bikes. When the children started using the track, staff reported an upturn in writing levels, attributed to greater levels of coordination and concentration. Staff also reported a particular increase in pupil confidence as riding bikes can be a rite of passage for children, affirming their independence.



✿ **Increasing frequency** - getting out more and more often.

Natural Connections found that schools' aspiration to increase the amount and regularity of their outdoor learning increased during the project. A pattern of adoption emerged:

- schools firstly understood the benefits to pupils and teachers, through example and practice
- then augmented the amount of time they spent teaching and learning outdoors
- then increased the regularity and spread across the school of outdoor learning activity.

✿ **Documenting and embedding** - referencing outdoor learning in the school improvement plan or other important documentation.

Embedding in policies demonstrated the importance that outdoor learning can play in achieving school priorities. One school development plan, for example, covered both financial considerations (e.g. budget for grounds development) and development needs beyond formal CPD (e.g. recognition of the time that staff may need to visit other schools for ideas and develop contacts). **'It's part of our ethos that we would be outside and it's part of our school improvement plan' (Teacher)**. Schools also used lesson observations and reports to demonstrate the importance and integration of outdoor learning to their whole school approach.

✿ **Sharing success** - telling everyone involved what has been achieved through outdoor learning.

A number of Natural Connections schools now have outdoor learning display boards and/or a page on the school website so everyone in their community can see what is happening outside the classroom and how it relates to the school's ethos. Children use these boards to share what they have done with friends and parents through photographs and work such as poetry, painting and stories inspired by the outdoors.

✿ **Celebrating** - Gaining external recognition of schools' outdoor learning work.

For example, through local 'Green Schools' or 'Healthy Schools' awards or accreditation. A number of schools used their success as a way of showcasing pupils' work in local papers and attracting new pupils and parents to their schools. One headteacher reported that **'when we show parents around... and talk about the amount of outdoor learning we do, the general response from parents is wow, that is fantastic, I want my children to come here...it's a real selling point for the school'**.



2. Collaboration and networking

Opportunities to meet and discuss ideas around outdoor learning with staff from other schools enthused, excited and inspired teachers. This collaborative and participatory approach enabled school staff to tap directly into other teachers' experiences and ideas.

'There is nothing more powerful than having another teacher say ... This is how I did it! ... And understanding how that teacher overcame different challenges' (Hub leader).

'... strong collaboration and support with other local schools - it helps to make outdoor learning happen!' (Teacher).

Example - using outdoor learning to support skills and transition

One large urban primary school developed relationships with their local secondary school and worked with teachers and students there to develop a set of resource boxes for teaching primary maths outdoors. This supported the secondary pupils' own development as well as having benefits for the primary pupils' transition to secondary school.

3. Developing school grounds and making use of local spaces for outdoor learning

During the project, Natural Connections schools concentrated on working in and developing their school grounds for outdoor learning where possible. This enabled them to build their confidence and practice in a familiar and controlled environment. Schools in urban settings reported that school ground development provided pupils with the chance to experience the natural world. In one school where 80% of pupils spoke English as an additional language, the school used their grounds to provide pupils with outdoor opportunities which they would not otherwise experience.



Schools found that grounds needed to be thought about differently - as spaces for teaching - rather than just for playtime and sport. Schools found a mixture of spaces for different purposes was important. Teachers used some spaces for investigation and/or inspiration, others for practical activity and yet others for reflecting on or summarising work. Playgrounds and tarmac spaces, although not part of the natural environment, were also important for teachers new to outdoor learning to develop their confidence and outdoor practice close to the school and as spaces for group demonstration and/or discussion.

Example - developing school grounds to support teaching and learning

A primary school in a housing estate chose to develop a small area of woodland in their school grounds. They had always used their school grounds but the development of this area as part of the Natural Connections Project enabled them to support the curriculum through outdoor learning and ignited an increase in staff awareness and interest. Features included as a willow tunnel, pond, mini-beast hotels and an outdoor classroom area. Pupils were involved in decision making and practical work to develop the spaces around the school for learning.

Many schools accessed support to develop their school grounds, from organisations such as the local Wildlife Trust or local gardening groups and volunteers. This process of developing grounds for outdoor learning was important for creating 'ownership', sense of pride and achievement (for staff and pupils) and increasing staff confidence to teach outside. Hub leaders reported that grounds development raised awareness of outdoor learning throughout the school and 'gave permission' to take lessons outside, and that an important step towards embedding outdoor learning was often to ensure that the school grounds provided a safe and functional area for outdoor learning.

One school field '**...wasn't previously being used a great deal ...discussions turned to the outdoor space, with simple ideas being suggested just to get the children outside. The ideas subsequently got bigger and bigger - a pond, a growing space, a greenhouse and so on. The children were really excited about these proposals and came up with their own ideas...**' (Headteacher)

Local parks and other natural places provided important spaces for teaching and learning too. For example, schools with limited availability within school grounds tended to use local greenspace. Many local places also provided opportunities for progression, enhancing curriculum learning opportunities further with links to local heritage and a greater variety of natural habitats.

4. Continuing Professional Development (CPD)

All schools and teachers know the importance of CPD in developing their practice and understanding in a fast changing educational environment. CPD was a central part of the Natural Connections project. Hub leaders, beacon schools and the central team all helped facilitate both formal and informal outdoor learning professional development opportunities for all schools across a range of topics and priorities. This also provided chances to form useful contacts, collaborate and celebrate achievements. Those attending were able to receive feedback from other teachers and experts in a friendly, mutually-supportive atmosphere.

Schools accessed CPD both from the project team and many other providers. Many schools ran in-house whole staff or department CPD to bring people together and develop a shared understanding of the role that outdoor learning could play in their school.

The CPD delivered was based on:

- ✿ Developing knowledge, understanding, good practice and confidence in outdoor learning.

- ✿ Practical experience and observation of impacts on students' learning - 'seeing it work and making a difference'.

'Teachers told us that the day made them feel more confident about teaching outdoors, particularly for curriculum-linked activities such as poetry'. (Workshop leader)

- ✿ Specific training for schools to overcome practical challenges such as funding, grounds development, lesson planning, and health and safety requirements.

Example - Tailored CPD to support school priorities

Hub leaders were able to respond to school CPD needs reported during the project. In one area teachers requested detailed ideas for teaching maths outdoors, including which aspect of maths, e.g. algebra, can be delivered better outdoors and also the resources to cascade learning to their colleagues in staff meetings. The hub leader was able to source and deliver training to do this.

5. Demonstrating successful learning

Demonstrating progress when working outside was important. This presented its own set of challenges for schools as pupils may not record work in books in the same way as in class, and evidencing progress for those who have not seen pupils' work first-hand can be tricky.

In response to the need to produce evidence for learning, one school borrowed the idea of a scrapbook with photographs from a fellow school. Every class across the school had a 'maths outdoors' scrapbook with photos, comments, annotation and pieces of work. Classes update these once a term and they are then shared amongst staff to enable moderation.

By comparing work done outside with that done inside (for example through levelling pieces of creative writing), teachers provided evidence for those not sure about the benefits that outdoor learning. Quizzes at the beginning and end of programmes of work can also be used to evidence changes in skills, knowledge and understanding.

5 ways to embed outdoor learning into school practice

1. **Get the whole school on board** with outdoor learning
2. **Collaborate and network** with others outside of the school to develop outdoor learning
3. **Make use of school grounds and local spaces**
4. **Provide formal and informal CPD opportunities** to build confidence and practice
5. **Demonstrate and record progress**

Example – demonstrating learning through a targeted intervention

One primary school ran a series of maths intervention groups but used outdoor maths for one group only. The intervention was designed to develop maths (especially around space, shape, time and measurement) in different contexts and provide pupils with increased confidence. The outdoor maths intervention group made more progress than non-outdoor maths intervention groups. This targeted intervention enabled assessment of outdoor learning in this context.

FURTHER INFORMATION / RESOURCES

There is a wide range of knowledge and expertise available to support outdoor teaching and learning, including schools' own sources and contacts. One of the key challenges for hub leaders was to help schools make sense of the wealth of local and national resources. As a starting point, these three sites provide activities, evidence and examples of how outdoor learning can make a difference to your school.

- ✿ Council for Learning Outside the Classroom resources at <http://tinyurl.com/jljhugh>
- ✿ Countryside Classroom resources at <http://tinyurl.com/grtny56>
- ✿ TES outdoor learning resources at <http://tinyurl.com/j3ws58c>

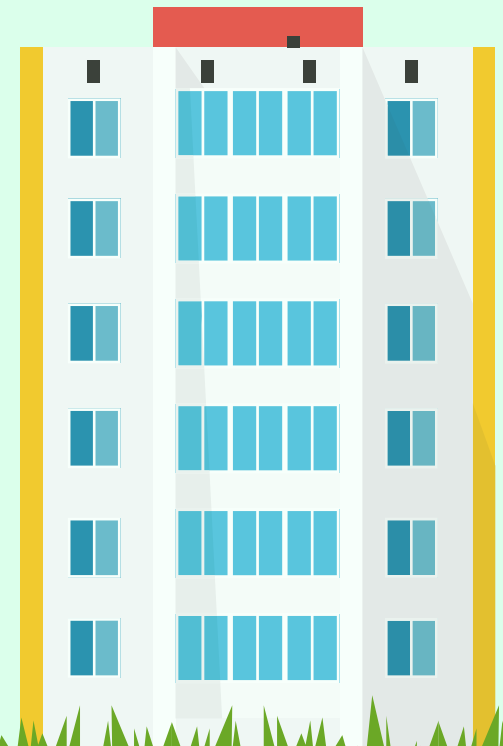
Further Reading

To read the full Natural Connections project findings:

- ✿ Natural Connections Demonstration Project, 2012-2016: Final Report <http://tinyurl.com/h8vwznz>

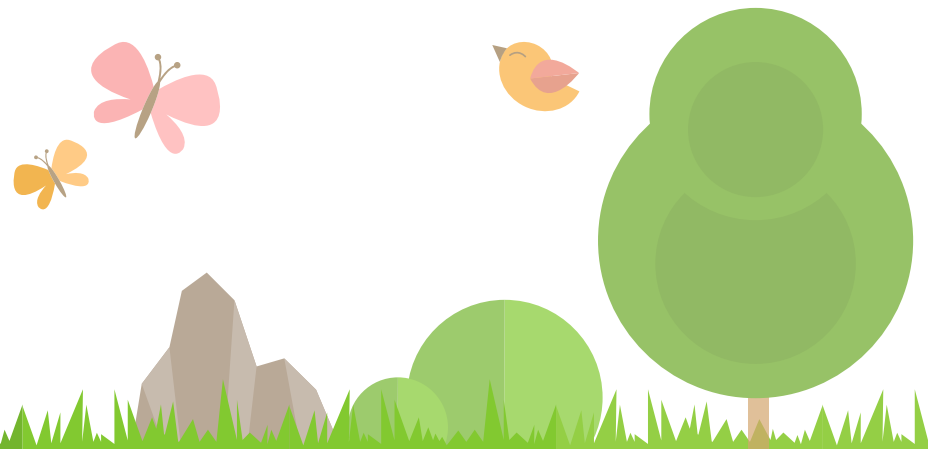
To read the latest short summary of the literature on outdoor learning:

- ✿ Natural England Access to Evidence Information Note EIN017 Links between natural environments and learning <http://tinyurl.com/j47ymmw>



Other research relevant to the content of this document:

- ✿ Losing our way?: declining outdoor opportunities for learning for children aged between 2 and 11. Journal of Adventure Education and Outdoor Learning. 10 (2), 111- 126, Waite, S. (2010). <http://hdl.handle.net/10026.1/5476>
- ✿ Learning in the Natural Environment: Review of social and economic benefits and barriers Dillon, J. & Dickie, I. (2012). <http://tinyurl.com/go5y6da>
- ✿ The Impact of Children's Connection to Nature RSPB Report. Richardson, M., Sheffield, D, Harvey, C. & Petronzi, D. (2015). <http://tinyurl.com/zaoy23h>
- ✿ Monitor of Engagement with the Natural Environment: survey purpose and results (August 2014- February 2016). <http://tinyurl.com/havnwdd>



THANK YOU...

Warm thanks to all the schools, hub leaders and others who were involved in the Natural Connections Project; your inspiration, commitment and enthusiasm made the project a success.

'We try to look at learning as something pupils enjoy, and they absolutely love outdoor learning and enjoy it. And when you get enjoyment, you get enthusiasm and you get raised results. So it's a win-win!' (Teacher)

Designed and published by Plymouth University, September 2016 , with special thanks to Martin Gilchrist and Caroline Emmerson at Natural England.

The project was supported and funded by the Department for the Environment, Food and Rural Affairs, Natural England and Historic England.

**DISCOVER
WITH
PLYMOUTH
UNIVERSITY**

