

Forest School and its impacts on young children: Case studies in Britain

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Abstract

As Forest School has become more widespread throughout Britain an understanding is needed of its impact. This paper outlines a two-phase evaluation project undertaken in Wales and England from 2002 to 2005. The evaluation was undertaken through a partnership between Forest Research and the New Economics Foundation. A methodology was developed to explore the impacts of Forest School on children and this was then used to track changes in 24 children at three case study areas over an 8-month period. The research highlights that children can benefit in a range of ways. Six themes emerged from the data of the positive impacts on children in terms of confidence, social skills, language and communication, motivation and concentration, physical skills and knowledge and understanding. Two further themes highlight the wider impacts of Forest School on teachers, parents, and the extended family. Contact with the natural environment can be limited for children and young people in contemporary society due to concerns about safety outdoors and issues of risk and liability. Forest School provides an important opportunity for children to gain access to and become familiar with woodlands on a regular basis, while learning academic and practical skills. The constructivist theory of learning seems to be particularly suited to the Forest School approach as children make meaning from their direct experiences. The participatory action research approach taken in this study promoted reflective practice amongst the stakeholders involved and provided them with a sense of ownership of the study, as well as an opportunity to learn from each other.

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Introduction

“Forest School is an inspirational process that offers all ages regular opportunities to achieve and develop confidence through hands-on learning in a woodland environment” (Murray and O'Brien, 2005, p. 11). This is the definition of Forest School that has been developed in Great Britain. While the majority of Forest Schools are being run for children and young people in full-time

education, this does not have to be the case. The Forest School approach is also being used on a more limited basis with teenagers and adults who have emotional and behavioural difficulties. The aim of this two-phase research project was to develop a methodology for evaluating Forest School, and to use the approach to observe changes in the behaviour of the children who take part. The work started in Wales where a methodology was developed with the help of a range of stakeholders connected to two Forest School settings. It was then tested in Wales before being used in three settings in England. This paper will focus primarily on the work in England where 24 children were observed at Forest School over an 8-month period.

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Forest School is based on a Scandinavian approach to teaching that highlights the importance of children having contact with nature from an early age (Grahn, 1996; Dietrich et al., 2007). Research in this area has been undertaken but is often not available in English. Following a study visit to a Forest School setting in Denmark, a group of students from Bridgwater College in Somerset recognised the potential for developing a similar outdoor learning approach for the college's Early Years Learning Centre (Kirkham, 2005; Forest Education Initiative, 2006). Since then the number of Forest Schools has increased across Britain as the idea has become more widely known. The schools that participate send a selected group of their pupils to Forest School once a week or fortnight over periods in the school term of between 2 and 12 months; depending on the circumstances of each school. These Forest Schools can be privately run or, more likely, are supported by Local Education Authorities (LEA). Some LEAs are enabling schools to identify a suitable woodland site to develop Forest School (Parsons, 2006). Qualified Forest School leaders run the sessions supported by teachers and teaching assistants. These leaders may be self-employed, work for the LEA or be teachers themselves. For the schools that participate, teachers are encouraged to train as Forest School leaders so that the approach can be mainstreamed within their school. Some schools have woodland nearby that can be used, while others may have to travel a short distance by mini-bus to reach a suitable site. The activities that are undertaken are wide ranging and can be linked to the national curriculum and foundation stage objectives. The national curriculum is a framework used by all schools to ensure that teaching and learning is consistent (Direct Gov., 2006). The activities can involve teamwork such as building a shelter in the wood, collecting twigs as part of a maths lesson in order to make a fire, and finding flora and fauna. As part of these activities the children explore the woodland setting using all their senses, they learn about wildlife and undertake a variety of activities. The idea of Forest School is to set the curriculum in another context rather than teaching children only about the environment (Massey, 2004).

The importance of learning in the outdoor environment

Experience of outdoor activities can prove to be a vital part of a child's development. Research in America has found that children who play in natural environments undertake more creative, diverse and imaginative play; which is seen as an important element in children's development (Sobel, 1993; Grahn, 1996; Taylor et al., 1998; Derr, 2001; Kellert, 2002; Fjortoft, 2004). Many

children prefer outdoor activities, and they engage in more explorative play and activities when in natural spaces that they can adapt and modify to meet their own needs (Moore and Young, 1978; Kirkby, 1989; Bingley and Milligan, 2004). In response to this idea, a range of institutions across Britain are involved in providing opportunities for young people such as outdoor activity centres, field study centres, and farm, country park or woodland visits (Dillon et al., 2005). Traditionally, outdoor learning in Britain has encompassed nature oriented and adventure activities that are primarily undertaken outside of school hours. However, the current focus on outdoor learning embraces a broader concept of learning that is more integrated into school activities. Thomas and Thompson (2004) carried out research to explore why the environment matters to children. The authors suggest that every child should be entitled to outdoor learning. Opportunities have decreased in this area in Britain over the past decade primarily due to concerns about children's safety on trips outside the classroom, the administrative burden of forms that teachers have to complete before going on any trip, and fears of being held liable if something goes wrong. A number of organisations and networks such as the 'Campaign for Adventure' are lobbying Government to promote outdoor education (Lewis, 2005). In the past few years more interest has been shown in using the outdoors for learning. The 'Growing Schools' programme is a Government initiative which aims to encourage all schools to use the outdoor classroom as a context for learning across the curriculum (Teacher-net, 2006). The British government has stated that "there is strong evidence that good quality learning outside the classroom adds much value to classroom learning" (Department for Education and Skills, 2006, p. 5). The Office for Standards in Education (Ofsted, 2004, p. 2) explains that "outdoor education gives depth to the curriculum and makes an important contribution to students' physical, personal and social education". The Forestry Commission (FC) has a tradition of facilitating and supporting school visits to woodlands. In East England the FC has recently created a Woodland Improvement Challenge Fund to help develop Forest Schools in the region. The FC suggests that children should have the opportunity to use woodlands from an early age and on a regular basis, particularly those in urban environments.

The Education and Skills Committee in England undertook an inquiry into Education outside the Classroom and reported in early 2005 (House of Commons Education and Skills Committee, 2005). The report emphasised the value of education outside the classroom both in supporting academic achievements and in developing social skills. The Committee argued that outdoor education is declining, that provision by schools is uneven across the country, and that the

Department for Education and Skills (DfES) has not done enough to describe the benefits of outdoor learning. Risk and bureaucracy, as mentioned above, are often raised as key issues that deter schools from taking children outdoors. The Committee argued that the DfES should issue a document and the 'Learning outside the Classroom Manifesto' was launched after consultation in late 2006. The vision in the Manifesto states that "we believe every child and young person should experience the world beyond the classroom as an essential part of their learning and personal development, whatever their age, ability or circumstances" (Department for Education and Skills, 2006, p. 2). With this interest in outdoor learning, Forest School provides an opportunity for children to benefit from long-term regular contact with a woodland environment whilst undertaking a variety of learning activities. However, there are also increasing concerns about children's safety in outdoors spaces (Valentine, 1996a, b; O'Brien and Tabbush, 2005). Thus, for some children opportunities are being lost for them to play in natural environments and new approaches such as Forest School are needed to address this.

The green paper 'Every child matters' was produced by Government in 2003 after consultation with children, young people and families and supports a holistic view of child development (Department for Education and Skills, 2003). The young people and other consultees identified five outcomes that they believed were key to well-being in childhood and later life (Table 1). Outdoor learning can help to contribute to some of these identified outcomes. For example, the health of children and young people is currently a crucial issue as childhood obesity has risen dramatically in the past few decades (Department of Health, 2004). Forest School provides a chance for children to improve their gross and fine motor skills; they gain stamina as they undertake a range of activities and learn to move over the rough terrain of the woodland floor. Their experience can help lead to the development of healthier

lifestyles as children ask their parents to take them on trips to woodland outside of school hours.

Pedagogical principles and learning theory

According to Siraj-Blatchford and Sylva (2002) effective pedagogy is teaching and the provision of instructive learning environments and routines. Work by Waite et al. (2006) explored the pedagogical principles of Forest School with a number of practitioners in England. From their research they suggest that the four most highly ranked principles were: (1) a supportive environment; (2) tasks separated into small achievable chunks; (3) the use of the natural environment; and (4) engaging with all the senses. Small manageable tasks enable the children to succeed quickly and are designed to build confidence. The first hand experiences of being in a woodland and using all the senses is something the children can enjoy, and this can be a major factor in motivation. The Biophilia hypothesis developed by Wilson (1984) suggests that we have an innate affinity with nature and focuses on the connections we seek with the rest of life. In terms of forestry policy in Britain the Forest School approach is seen as important in introducing children, and familiarising them, with woodland environments. Research has shown that children who use woodlands when young are more likely to use them as adults (Ward Thompson et al., 2002). It is also suggested that understanding and appreciation of nature can be developed through hands on active involvement, interaction and direct experiences (Kahn and Kellert, 2002; Phenice and Griffore, 2003).

Kahn (1999) argues the importance of constructivist learning theory, this is based on structural development theory which suggests that development is grounded in people's values and knowledge as they construct ways of understanding the world. In the constructivist approach, priority is given to the active mental life of the child and "in the ways in which children construct increasingly more adequate ways of understanding their world and of acting upon it" (Kahn, 1999, p. 213). This approach allows for experimentation and problem solving through hands-on experience and through this the children make meaning of the world and engage with problems and issues that interest them (Thanasoulas, 2006). The Forest School ethos often appears to adopt this constructivist approach as practitioners shape teaching methods to child led learning. They see how the child engages with Forest School and what interests them, and lessons are adapted to take account of this. This fuels the child's interest, using the pedagogical principle of engaging with all the senses as outlined above. The child is engaged with the natural world and not passively absorbing information. The learning at Forest School is

Table 1. Every child matters (Department for Education and Skills, 2003)

Being healthy	Enjoying good physical and mental health and living a healthy lifestyle
Staying safe	Being protected from harm and neglect
Enjoying and achieving	Getting the most out life and developing the skills for adulthood
Making a positive contribution	Being involved with the community and society and not engaging in anti-social or offending behaviour
Economic well-being	Not being prevented by economic disadvantage from achieving their full potential in life

also often a social activity: using conversation, interaction with others as an important aspect of learning (Hein, 1991).

It is suggested from this work on Forest School (following the analysis of Dillon et al. (2005, p. 22) that there were:

- *Cognitive impacts* – The children started to gain a better understanding of the environment, they started to remember the names of plants for example (see Knowledge and Understanding theme);
- *Affective impacts* – There were some recorded incidences of children developing respect for the environment and informing other children how to protect flora and fauna (see Knowledge and Understanding theme);
- *Interpersonal and social impacts* – Improvements in team working were noted by practitioners and the use of descriptive language used by the children (see Physical skills theme);
- *Physical and behavioural impacts* – Advances in stamina and improvements in balance were recorded (Physical skills theme).

Methods

This project used a participatory action research approach to enable stakeholders to be closely involved with the work throughout all its stages (Greenwood et al., 1993; Dillon et al., 2005). The approach brought together a range of stakeholders including teachers, representatives of the Forest Education Initiative (set up in 1992 as a partnership of organisations that want to increase understanding among young people of the environmental, social and economic potential of trees and woods), LEAs, and members of local communities in order to work through a three-step approach designed to evaluate the positive impacts of Forest School on children. The three stages were:

- (1) *The Storyboard* – A participative discussion exercise for stakeholders to establish the ‘theory of change’ about how an intervention leads to a range of desired outcomes and impacts (described as propositions) whilst also establishing a framework and agreeing on suitable ways of collecting data.
- (2) *Data collection and analysis* – The use of templates, based on the propositions developed in the Storyboard workshop, to observe and describe changes in the children over time. These involved using descriptive observations and also interview data from parents and teachers to create a narrative outlining how the Forest School setting was benefiting the children.
- (3) *A Reflection poster* – Another participative workshop, based on an interactive poster for stakeholders to review the results of the data and share learning experiences and implications for best practice.

The first of the two phases of work was undertaken in Wales where there were two case studies: one in South Wales and the other in North Wales. The involvement of stakeholders in shaping the evaluation and collecting data was central to the approach, and so they were encouraged to take a full part in the process (for more details see the report by Murray (2003) which provides instructions on how to run a Storyboard workshop, provides examples of templates that can be used to collect data and illustrates how a Reflection workshop should be run.). The lessons learnt from the Welsh work were incorporated into phase 2 where the methodology was used in England in three Forest School case studies over an 8-month period.

The three case study areas were Shropshire, Worcestershire and Oxfordshire. Twenty-four children were involved and observed over an 8-month period as they attended Forest School in 2004 and 2005. Children from seven schools were involved: two schools in Worcestershire, two in Shropshire and three in Oxfordshire. Four of the schools are located in urban areas and three are in rural areas. All of the schools try to ensure that they use woodland as close to the school as possible so that travel time is minimised. The children studied were in classes that attended Forest School and were randomly selected by their teachers to be observed as part of this study. Permission for the observations to be made was obtained from the parents of each child. The children’s names have been changed to preserve anonymity.

The children across the case study areas attended Forest School every week or fortnight for a morning or afternoon. On average, the children attended 15 sessions each, which amounts to at least 45–60 h of contact time at Forest School. At every weekly or fortnightly session the practitioners (teachers or Forest School Leaders) used prepared written templates (one for each child) to record progress towards achieving the propositions developed in the Storyboard exercise (see next section and Fig. 1). The practitioners also recorded data on the aims of each session, the activities undertaken, the weather, how many adults were present, and the changes in behaviour they had expected to see in the children, as well as any general comments. In total, 360 observations were made of the 24 children. Data were analysed by Forest Research and the New Economics Foundation and a series of themes emerged that related to the propositions identified by the stakeholders in each case study. Over the 8-month period and for each of the individual children, there were descriptions of change relating to a range of criteria, including for example

Observations of Individual Pupils

(For scores and/or comments)	General Comments	Changes in self-esteem and self-confidence	Changes in ability to work cooperatively and awareness of others.	Changes in levels of motivation and attitudes towards learning	Contribution to language and communication skills*	Knowledge and understanding of the environment	Changes in physical motor skills*
Name of Pupil							

* Key Skills: Speaking = S Listening = L Reading = R Writing = W Numeracy = N Information Communication Technology = ICT Personal, Social, Health Education = PSHE

Fig. 1. Forest School leader reporting template: by session.

each child's levels of self-esteem, physical ability and their ability to work with others.

To add to the observations made on site, informal interviews took place in Oxfordshire with all the parents of the nine children in that case study and one member of staff. Questionnaires were completed by four parents of children in the Shropshire case study, and by the Shropshire practitioners. All of the six children in the Shropshire case study had an informal group session in which a range of photographs were used to talk about what they did at Forest School. The voice of the children and their experiences needs to be a stronger part of any future Forest School evaluation to a much greater extent than was carried out in this work. The quotes used in this paper are presented to illustrate common themes rather than highlighting what is unique about an individual's experience. There was some triangulation of the data, for example if a particular improvement in a child was noted by the teacher, as well as the Forest School leader and a parent then this suggests that the impacts were noticeable to all.

Results

The Storyboard workshop

At the 1-day workshops held in both Wales and England (one per case study area) the participants discussed the theory of change (literally the 'story') of how Forest School was working in their area. The workshop participants consisted of stakeholders drawn from those involved in delivering and developing Forest School such as Forest School leaders, teachers, education co-ordinators or those who had a specific interest such as community representatives and parents. In the workshops, the participants were asked to identify what they thought was the ethos of Forest School and to describe the activities that took place there. They were then asked to explore in detail what effects they might expect to see (or had seen) in the children as a result of that ethos and the experiences the children were gaining over the short, medium and long-term. From these discussions, a number of propositions were developed as to how Forest School can have an impact on children. Although there were some minor variations between case studies overall the propositions developed in Wales and England were similar. They were that Forest School:

- Increases the self-esteem and confidence of those individuals who take part.
- Improves an individual's ability to work co-operatively and increases their awareness of others.
- Increases motivation and concentration.
- Contributes to the development of language and communication skills.

- Improves physical motor skills.
- Contributes to an individual's knowledge and understanding of the environment.

Once these propositions were agreed by all participants, after deliberation, they were used to structure the recording templates. The templates were used on site by practitioners to observe the children's actions and behaviour over the 8-month period (Fig. 1).

Data collection and analysis

The practitioners who collected the data were considered to be the people best placed to notice and understand the sometimes subtle changes that took place in the children. In the England case studies teachers recorded the observations in four schools, while in two schools it was the Forest School leader and in one school it was the pre-school leader who collected the data. All these practitioners stated that they were very familiar with the children they were observing and so could gain an understanding of whether any of the changes they observed in a specific child were associated with Forest School. There could be potential bias due to the familiarity of the recording practitioners with the children, however, the authors argue that knowing the children well was important for the evaluation. The practitioners knew enough about the children and how they behaved in different situations to have a good understanding of the impact of the Forest School sessions on them. The 24 children started Forest School in September and November 2004; they had not previously participated. The children ranged in age: in one group the children were from 5 to 9 years old and were drawn from a range of schools within Worcestershire as they had specific speech and language difficulties. In all of the other groups the children were aged from 3.2 to 5.5 years. The themes that emerged from the data related to the six propositions (outlined above), but there were also two further themes that related to the wider impacts of Forest School on parents and teachers. These had not been identified in the original Storyboard exercises. All of the themes (Fig. 2) were observed at each case study area and help strengthen the case for them being generic to Forest School. In this paper, we focus on three of the themes: physical skills, knowledge and understanding, and the 'ripple' effects beyond Forest School. We have chosen these themes to illustrate some of the impacts of Forest School on young children. Fig. 3 shows the observations made of one child in the Shropshire case study over a 6-week period. Fig. 4 provides details about the case study areas, highlighting whether the school was urban or rural based, who owned the sites, who recorded the data and how familiar the practitioners were with the children.

1. Confidence	2. Social Skills	3. Language and Communication	4. Motivation and Concentration
<p>Characterised by the self-confidence and self-belief that comes from children having the freedom and the time and space to learn, grow and demonstrate their independence.</p>	<p>Characterised by an increased awareness of the consequences of actions on other people (peers and adults), the acquired ability to undertake activities with others either by sharing tools and tasks, or by taking part in co-operative play.</p>	<p>Characterised by the development of more sophisticated uses of both written and spoken language (vocabulary and syntax) that is prompted by the visual and other sensory experiences of a child taking part in Forest School. At the same time these experiences can stimulate and inspire conversation amongst children who are otherwise reluctant to engage in meaningful dialogue with peers and adults.</p>	<p>Characterised by keenness to participate in exploratory, learning and play activities, as well as an ability to focus on specific tasks and to concentrate for extended periods of time. In conversation at school or at home they display a positive attitude towards Forest School in particular, and towards learning in general.</p>
5. Physical skills	6. Knowledge and understanding	7. New Perspectives	8. Ripple Effects beyond Forest School
<p>Characterised by the development of physical stamina and gross motor skills - the physical skills and co-ordination allowing the free and easy movement around the Forest School site, as well as the development of fine motor skills – the effective use of tools and the ability to make structures and objects (e.g. shelters, dens or creative art projects)</p>	<p>Characterised by a respect for the environment and an interest in their natural surroundings; making observations and insights into natural phenomena such as seasonal change and the ability to identify different species of flora and fauna. This can be reflected in improved academic attainment.</p>	<p>Forest School can give teachers and practitioners a new perspective and understanding of the child as they observe them in a different setting. A different relationship can develop between children and teachers as children see the teachers in a different setting, and coping with some of the same challenges as them.</p> <p>The Forest School setting also provides the evaluative space to identify the individual learning styles of the children.</p>	<p>As a result of taking an active part in Forest School teachers gain the opportunity to inform their own practice, and to adapt their approaches to outdoors learning.</p> <p>Due to children's enthusiasm for Forest School, they bring the experience 'home'. This can result in changes to out-of-school routines and behaviour with parents taking their children 'outdoors' more.</p> <p>Parental interest in and attitude towards Forest School can change over time; it gives them the chance to obtain a different attitude towards the outdoors such as their perception of risks.</p>

Fig. 2. Themes of the impacts of Forest School.

Secret Hills Discovery Centre, Shropshire						
Data: Weekly Comments			School: Longnor Primary (Approximate age 5.5 years)			Pupils name: Practitioners name:
Main activity for the session:	Exploring the forest boundary.	Digging for bugs.	Building a house for Sally Squirrel.	Playing a game of 'Will o' the Wisp'.	Collecting sticks and snapping to correct size for the fire.	Hide and Seek (Child-Initiated Session).
Propositions	16/09/2004	11/11/2004	18/11/2004	24/11/2004	09/12/2004	30/06/2005
Self Esteem	Showing very little confidence or independence. Insists on holding an adult's hand. Worried about where he was walking.	Not independent. Dependent on adults. Scared of taking risks.	Took risks today - tramping through mud/using a trowel.	Dug in the mud for the first time independently. Took his gloves off and got his hands dirty. Enjoyed paddling in the mud.	Confidence shown in moving to collect sticks. Working well with a partner not needing adult support.	Amazing development and growth in self-esteem, confidence and risk-taking from Forest School experience, seen now in child-initiated sessions.
Social Skills	No co-operation or collaboration showed. No smiles. Just worried and not joining in with others.	Did not join in - just held the pot.	Co-operative under adult direction. Not working collaboratively with partner.	Worked well with Edward - tried to help him get rid of his nightmare.	Co-operating well with partner.	Now playing as part of a larger group, not just with one 'safe to be with' friend.
Motivation and Concentration	Not seemingly enjoying the forest - concentrating on what was underfoot.	Good concentration but not motivated to task.	Good concentration. Poor self-motivation.	Good.	Not really wanting to keep on task motivated from previous week to continue building a den for Sally Squirrel.	Fully motivated.
Language and Communication	Verbally very good but expressing worries.	Very good language and communication with the adult.	Communication with partner confined to telling him what not to do (things that interfered with personal wishes).	Focused.	Talking about evaporation of water from the plastic on the roof (explained previously) to partner.	Advanced.
Physical Motor skills	Poor.	Poor.	Poor.	Showing more confidence today.	Moving with much more confidence now.	Much improved. Now has the confidence to move freely and skillfully through the wood.
Knowledge, awareness and respect for the environment.	Poor.	General knowledge appears to be book-led.	Enjoyed watching the rain.	Beginning to explore the environment.	Not afraid now to dig in the mud or get hands and knees dirty. Enjoys playing with the muddy water.	[pupil name] retains information well so his knowledge of the woodland is now excellent. He has a great respect for this environment.

Fig. 3. Example of an MS Excel spreadsheet presenting data for a Shropshire Forest School pupil.

Pilot Region	Worcestershire Group 1	Worcestershire Group 2 and 3	Oxfordshire Group C	Oxfordshire Group A	Oxfordshire Group B	Shropshire Group D	Shropshire Group E
Ownership of site (public / private):	National Grid Transco	National Grid Transco	Private	Private	Private	Private	Private
Is the site fenced off?	yes	Yes	Yes	Yes	Yes	Yes	Yes
Role of recording practitioner	Class Teacher	Teacher (nursery)	Lynne-Teacher, FS Leader	Forest School Leader and Nursery Nurse	Forest School Leader	Pre - School Leader	Teacher
Number of children in Study Group being observed	3	6 - (3 in the AM group and 3 in the PM group)	3	3	3	3	3
Number of children in the Forest School group:	10	12 (in each group)	16	10	12	8	17
Age range of the group:	5-9 Years	3 - 4 Years	4 - 7 Years	3- 5 Years	3- 5 Years	3/4 Yrs	4,5 and 6 yrs
Travel time from School to Forest School site	20 minutes	20 Mins	15 Mins	15 mins	10 Mins	5 Mins	10 Min
How familiar is the recording practitioner with the children being monitored?	Would have been familiar with some at the beginning- others new to group	Very, She is Class teacher to group	Very	Very	Very	Very	Very
How much discussion is there between the recording practitioner and the class teacher of the children being monitored?	They are the same person. Dialogue with FSL each session.	Discussion after each session between F.S leader and class teacher.	Full discussion after each session	Full	Full	Same person	Same person
How long has the school been sending children to Forest School?	School year 04/05	School Year 01/05	2 Yrs	2 Yrs	3 Yrs	1 Year and 1 term	1 Year
How did they find out about Forest School? (Who approached who first?)	Head of school approached Forest School Co-Ordinator	F.S. Co-ordinator approached as it is a fresh start school	Taster Day	Taster Day for teachers	Through Taster Days	Approached by S. county council	SCC approached school
School setting (E.g. Urban / rural)	Urban	Urban	Rural	Urban	Urban	Rural	Rural
Socio-economic status of the children in the study (if known)	Mixed- all backgrounds	Inner City. High unemployment/ low wage. High % lone parents	Professional Intake	Education Action Zone (Oxford Excellence Cluster)	Inner City	Professional	Professional (including Farming)

Fig. 4. The pilot group compared 2004–2005.

Theme: physical skills

Forest School presents challenges to children's physicality. This manifests itself in a number of ways, for example as they deal with the rough terrain of the woodland floor and walk to and from the site (either from their school or from where the mini-bus stops to drop them off). The children undertake activities for each session and also handle tools and equipment. Rather than bring equipment from school the practitioners try to make use of the natural materials they find in the woodland, letting the children use them to create dens and shelters. In this way, children are able to develop both gross and fine motor skills and are physically active for most of their time at Forest School. To develop gross motor skills the children use their entire body and may develop a better range of movement or increased muscle strength. Fine motor skills involve small and intricate movements such as tying knots, using tools or using a stick to draw (Fig. 5). The practitioners recorded improvements in the children's stamina over the months, particularly those aged under 5 years; this links to the physical impacts outlined by Dillon et al. (2005). At first, practitioners noted that the children were very tired after their sessions as they walked back to their mini-bus or school. Three of the schools organised a 3-mile walk in early 2005 in aid of the Asian Tsunami Fund and it was observed that the children coped well with this and that as the months progressed they were not as tired.

"Not tired at all, quicker on the walk back" (Angel age 4, group 2, Worcestershire).

"Joshua's ability to maintain stamina has improved" (age 5–9 group 3, Worcestershire).

"Coped with the three mile walk without a problem" (Leanne age 4.5, group A, Oxfordshire).

A parent of a child from the Oxfordshire case study felt that the outdoor experience was important for her child whom she identified as "not very sporty". She felt her child benefited from improved balance as well as in terms of her overall health.

"Because she's a 'wheezy' child anything outside helps" (Esta age 4.5, parent comment, group C, Oxfordshire).

The children gained confidence in undertaking a range of activities whether that was climbing trees or building dens, they also explored the space at Forest School to find wildlife or new trees to climb. As part of the Forest School process the children learn to take managed risks and gain an understanding of the meaning of risk. For example, they are told how to observe fire safety rules that they must adhere to when toasting marshmallows on the fire or when moving around the fire area. Group 1 in Worcestershire allocated session 12 (e.g., after 3 months of Forest School visits) to shelter building and it was noted that Barry (age 3.5) was gaining confidence in physical work.



Fig. 5. Learning to use tools and developing fine motor skills.

“Excellent! Barry started quietly, joining in and went looking for sticks and spotted planks. He looked to the adult for permission and then enthusiastically began carrying them to the other adult. He then took further risks, positioning them so that he could balance. He happily included others and showed a lovely sense of humour. A confidence not seen before” (group 1, Worcestershire).

One boy was particularly cautious and was not physically confident, he felt unable to face physical challenges. His lack of activity led him to get cold very easily in the winter sessions. He had good fine motor skills but his gross motor skills were poor. After his 5th session at Forest School he was becoming slightly happier with physical situations and by his 14th session he was improving considerably.

“Improving week by week and significant this week. He set himself a real challenge to balance on a log over a bridge. Needed help at first but managed on his own later” (Mark, age 4.5, group C, Oxfordshire).

Mark’s teacher observed that he became more confident in his physical education classes in school due to the progress he made at Forest School. He was noted to be showing greater perseverance and was starting to see physical challenges as fun rather than frightening thus helping him both indoors and outdoors.

The tactile nature of the woodland environment is important and it was clear that the children enjoyed touching and feeling what they found around them. All the children experienced a session in the snow in January 2005 and the recorded observations illustrate how they made snowmen, had snowball fights and stamped on icy puddles to break the ice. When it rains the children might open their mouths to feel the water on their tongues; they go out in all weathers. It was repeatedly noted across all the children that at the beginning of their first few sessions at Forest School those who lacked confidence and were unfamiliar with the outdoor environment became cold quickly. Once they became familiar with Forest School they were much more active around the site and kept busy, thus keeping warm in the colder weather. Practitioners were also sometimes surprised by what the children could do, or the difference that being outdoors made. Outside of the confined space of the classroom Justin was able to move more freely over a wider area giving him a chance for greater self-expression.

“Justin shows no sign outside of the clumsiness or lack of spatial awareness he sometimes shows inside” (age 4.5, group C, Oxfordshire).

It has been suggested that movement is connected to children’s physical, intellectual and emotional develop-

ment. The children are able to express their emotions through movement at Forest School, for example, by skipping for joy or stamping their feet in anger. The children were also able to gain some independence through physical activity as they explored the boundaries of the woodland.

Theme: knowledge and understanding

This theme was characterised by respect for the environment and an interest in the woodland. The children became familiar with the woodland setting at their own pace and they were encouraged to use all of their senses to observe flora and fauna and changes in the weather and seasons. As a result of this the children became eager to discover things for themselves and were motivated to learn. In doing this they start, as Kahn (1999) suggests, to make meaning of what they are discovering; i.e. the constructivist learning approach. For example, a child may look under a log and find mini-beasts, the practitioner can use positive reinforcement to say “I like the way you picked up that log, shall we try it again or where else shall we look for small creatures”. The child then starts to understand where particular creatures can be found and can use this knowledge to look for them in other places. For some children, particularly those in urban areas, it was clear that they had little or no experience of using woodland. For example, one mother explained that using woods or the countryside was “not her thing”. The family had no garden and her child sometimes visited a nearby playground but was not allowed further. For children such as this, Forest School provides an opportunity to experience the natural world. It also outlines potential justification for a policy of planting trees and woodlands near to where people live.

Through the repeated visits to the woodland setting the children become familiar with the environment and acquire knowledge of natural phenomena. The children develop a curiosity about the unfamiliar things they find around them and are inspired to ask questions about them. Practitioners can adapt future sessions based on their observations of the child week by week as to what excites their curiosity and desire to learn. Knowledge is developed through the expertise of the practitioner who is there to guide and explain, but learning also comes from child-initiated exploration. The children started to learn about the names for plants and also develop a concern for protection of the environment and a sense of ownership of the Forest School site. Over time the children make meaning of what is around them and begin to remember where things are and are eager to show their teachers and peers (see quotes below). This highlights cognitive impacts as the children gain a better understanding of the woodland.

“Chloe is certainly now more aware of the natural environment and enjoys pointing things out” (age 4.5, parent comment, group B Oxfordshire).

“She is knowledgeable about each week’s activity, e.g. splitting wood with a bill hook, and how it is done safely or sitting round the fire toasting marshmallows, how to approach the fire, how long to blow on the marshmallow to make sure it’s not hot. She enjoys the tasks and the opportunity to use tools” (Erin age 4.5, group D, practitioner comment, Shropshire).

“To start with he said he didn’t want to go but now he checks every day to see if it’s Thursday and he can go to Forest School” (Jeremy age 4.5, parent comment, group A, Oxfordshire).

“She shows lots of interest in plants, trees and animals and their habitat” (Fiona age 4.5, parent comment, group D, Shropshire).

Remembering routines and understanding safety are also important features of Forest School especially where safety around the fire is considered. Gareth (age 5.5) was observed to be sensibly obeying the fire area rules by sitting on a log and stepping over it in the correct way, e.g., not walking across the fire area. He listened to the practitioner carefully and she asked “Would it be safe to leave the fire burning”? He replied “no you could burn yourself hotly”. She asked him “how could we put it out”? He suggested “get water and throw it onto it”.

Theme: effects beyond Forest School

Although the children who attended Forest School gained benefits that had been anticipated in the Story-board exercises, e.g., the propositions; it also emerged from the analysis of the data that there were impacts beyond those identified for the children. Each of the case study areas organises open days inviting parents, siblings and teachers not involved in Forest School to find out about it (Fig. 6). This helps to allay concerns parents may have about risks, the process of learning or exposure to inclement weather. The children are able to demonstrate their achievements at these events. Siblings gain an interest and want to take part and parents have the opportunity to gain a different view of the outdoors. It also became clear from some of the parent’s comments that their child wanted to take them to a woodland or their Forest School site at weekends. One parent described how this had become a family weekend ritual, they all put their wellington boots on and took the snacks and drinks that their child described having during her Forest School sessions. Parents took more interest in Forest School due to their child’s enthusiasm and sometimes visited the outdoors more often because of this. Leanne’s mother noted that Forest School had a positive effect on her older brother who was not particularly interested in the outdoors. However, after hearing about what Leanne had done he started to ask about visiting local woods and is keen to get the opportunity to go to Forest School.



Fig. 6. Celebration event; having a family barbecue.

“The benefits of Forest School far outweigh a few muddy clothes each week. The learning that goes on each week is valuable and far different from that which might happen in the normal curriculum” (Esta, age 4.5, parent comment, group C, Oxfordshire).

The children who attended Forest School were noticed to transfer some of the skills they developed to different settings such as the home or school environment (Fig. 7). The practitioner who taught Esta found that Forest School enabled her to interact with older children more than she would normally and her vocabulary improved because of this. For two children in Group 3 (Worcestershire) their teacher described how they were much calmer in the classroom after a Forest School session. Mark was noted to be more confident in the classroom environment, and after attending Forest School for a few months he started participating in group discussions and offering information; something he had not done previously.

Reflection workshop

After the first 6 months of data collection ‘Reflection’ workshops were organised in the three case study areas in England to bring stakeholders back together to discuss progress and initial results. Data were collected slightly differently in the three case study areas and stakeholders discussed the approach they had each taken and what had, and had not, worked. Each stakeholder felt that they had benefited from learning from each other’s experiences and how each county approached Forest School provision. Stakeholders were encouraged to consider the ‘highs’ and ‘lows’ of the project as well the impacts and learning that took place. The final part of the workshop was spent in considering the future and how the issues that the stakeholders had learnt might be put into practice.

In the discussions the stakeholders described, and came to an agreement about what they thought were the key features of Forest School that cut across the case

Child's name	Comment by	School	Skills transferred to a different setting
Greg	Parent	Shropshire, Longnor	He is now more concerned about wildlife and animals and is very protective of them.
Lisa	Parent	Shropshire, Longnor	She has become more confident at school and is mixing better with other children.
Fiona	Parent	Shropshire, Condover	Shows lots of interest in plants/trees and animals, and their habitats.
Erin	Parent Practitioner	Shropshire, Condover	Is so confident in the outdoors it's incredible. Now enjoys using tools.
Jeremy	Parent	Oxfordshire, Pegasus	His vocabulary has improved and he names plants. When he first started he always needed to come to the library where they met before going to Forest School with an adult. After a couple of months he started to feel happy enough to come to the meeting point with another child.
Serena	Practitioner	Oxfordshire, Pegasus	Looking out for things on other journeys and making comments which is unusual for her. Confident in going to new places and carrying out new activities.
Leanne	Parent	Oxfordshire, Pegasus	She has learnt the days of the week so that she can work out how many days she has to wait until Forest School. Confidently climbs trees on family outings. The family now go to Shotover wood every week. She knows what clothes to wear outdoors and identifies plants.
Merlin	Practitioner	Oxfordshire, Finmere	More confident in the classroom environment, offers information and participates in group discussions. Improvements in physical ability. Shows more perseverance in Physical Education classes as he is starting to see physical challenges as fun rather than frightening.
Esta	Practitioner and parent	Oxfordshire, Finmere	Forest School has enabled her to interact with older children who she might not normally work with. Her vocabulary has improved in class. Her balance has improved at home. Discussion and good interaction at school with peers about what they will do at Forest School.
Wayne	Parent	Oxfordshire, New Hinksey	He is less frightened and knows more about bugs and flowers.
Chloe	Parent	Oxfordshire, New Hinksey	More aware of the natural environment and enjoys pointing things out.
DL and KG	Practitioner	Worcester, Group 3	Calmer in the classroom after a Forest School session.

Fig. 7. Transferring skills developed at Forest School to other settings.

study settings. While the features outlined are not unique to Forest School, when combined they set it apart from other outdoor learning experiences available in Britain (Table 2). The data from the interviews and questionnaires with parents, practitioners and children were also assessed to gain an understanding of progress or problems raised. Many of the responses were positive as people outlined the changes they had seen take place over the months.

“This experience has been incredibly valuable to our children. We have been lucky enough to have

Table 2. Key features of Forest School

The use of a woodland setting	Framed by strict safety routines and established boundaries that allows the flexibility and freedom for child initiated learning to take place. The woodland setting is important particularly for children from areas of the country where there is little opportunity for contact with the natural environment.
Learning that can be linked to the national curriculum and foundation stage objectives	Allows these objectives to be set in a different context and is not focused just on the natural environment. The children are encouraged to develop their innate curiosity and motivation to learn. This is particularly important for those who find it difficult to assimilate knowledge in the classroom environment.
The freedom to explore using multiple senses	This is important for encouraging creative, diverse and imaginative play. The focus is on the whole child, not just their academic ability, and how they can develop their own learning styles at their own pace.
Regular contact for the children over a significant period of time	All year round and in all weathers. Regular can mean every week or fortnight during a school term for a morning, afternoon or whole day. This can take place from two to twelve months or more.
A high adult to pupil ratio	Groups are small with approximately 12 children per session. It allows practitioners to get to know the individual learning styles, abilities and characteristics of the children in their charge.

experienced a full year at Forest School and the benefits have been striking. These children are now independent and confident. They are keen to try new experiences both in and out of the classroom and are not afraid of taking risks. Their love of nature is growing as is their understanding of the world around them – and I mean real understanding that can only come through valuable practical experience” (Teacher of group E, Shropshire).

While the propositions developed focused purposefully on the positive aspects of Forest School, it was clear from the analysis of the data that at first, some of the experiences that the children and practitioners had were negative. Stakeholders in the reflection workshop identified a number of reasons for this:

- Some of the children were unfamiliar with, and uneasy, in the woodland setting at first.
- Being out in all weathers meant that at times the children got wet, muddy and physically uncomfortable. Practitioners noted this in the first few sessions particularly in the children who were not absorbed in activities because they were not used to being in woodland.
- Some of the teachers were unfamiliar with teaching children in an outdoor setting and where nervous of this.
- Occasionally there were logistical problems, particularly concerning transport to and from the Forest School sites, failures in communication and resulting delays meant that valuable time on site could be lost.

Once these issues were highlighted the stakeholders were able to consider how they might be addressed through training, better communication, or Forest School taster sessions that would allow teachers and children to understand what was involved in the process.

Discussion and conclusions

The participatory action research approach taken allowed for on-going reflection to take place alongside the collection of evidence. The evaluation was developed with stakeholders in Wales and tested with stakeholders in England. By getting involved in all stages of the project the stakeholders were able to provide themselves as well as others with evidence of the impacts of Forest School. They were also able to improve their own practice by acknowledging and discussing with others successes and failures. Forest School provides teachers and practitioners with a formal yet non-classroom oriented arena for the assessment of a child's abilities and progress towards academic and other developmental objectives. The Forest School approach seems to allow for constructivist learning to take place in which

children are given the space and encouragement to make meaning from their hands on experiences (Kahn, 1999). In terms of the research process, stakeholders in each of the case study areas reported that this was a useful way to learn from each other of the benefits and problems of running and evaluating Forest School. The recording practitioners and wider stakeholders gained a sense of ownership of the work because they had been involved from the beginning and had themselves developed the propositions that they felt outlined how Forest School had an impact on children. They found that the self-appraisal approach identified a useful and unexplored aspect of their work. Therefore, we suggest that this method of evaluating Forest School could be usefully applied by others. However, we would advocate that children's experiences should be part of the data collected. Children should be interviewed or part of group discussions, using photographs or videotapes of their experiences to explore the impact of Forest School. A weakness of this work was that only a few comments from children were gained and because of this they have not been included in the results; future work needs to resolve this issue. There are difficulties with accessing this type of information with very young children and suitable methods are needed to engage them.

Kirkby (1989) outlines that children engage in more imaginative and dramatic play when in natural environments and suggests that this is because there are greater opportunities to manipulate objects and modify the landscape to make special spaces for play. It was clear from the data, and in particular, the observations by teachers and parents not directly involved with delivering Forest School, that some of the children displayed changes in behaviour, which were as far as they were concerned wholly or partly attributable to their involvement in Forest School. Some of the changes were subtle and gradual which is why the practitioners being familiar with the child was a potential advantage rather than a disadvantage. However, we need to be cautious as a child's behaviour is affected by many things that occur at home or in the school environment. In this study, we did not collect data on the children when they were not at Forest School that could have allowed us to explore some of these issues. The children may have improved anyway through natural development as they get older and become more used to their peers and school life. Further research should include a control group or longitudinal data so that a better understanding is gained of the children both before and after the Forest School experience. However, the quality and nature of the Forest School experience seems to be important and the regular contact with woodland is something that children often remember as fun and exciting. Psychological research has shown that children's senses are stimulated by nature and that these

experiences form children's relation to natural areas and are often remembered into adult life (Kaplan and Kaplan, 1989; Ward Thompson et al., 2002). Pyle (2002, p. 315) states that "when experiential contact with nature, in the broadest sense, is diminished, negative impacts spread out at every cultural level". Children who have no contact with nature lose many physical, emotional and intellectual opportunities such as exploring special places, climbing trees and discovering hidden spaces for themselves.

Forest School provides an opportunity for regular and critical observation of the ways that children take advantage of given freedoms (within a controlled setting) to express themselves physically and verbally. Long-term contact with Forest School involving regular and frequent sessions is important in allowing children the time and opportunity to learn and develop confidence at their own pace. The more relaxed and freer atmosphere provides a contrast to the classroom environment that suits some children who learn more easily from practical hands on involvement, such as kinaesthetic learners (Gardner, 1983; Becta, 1992; Dillon et al., 2005). However, not all children will benefit from this type of approach. This work highlights that Forest School seems to benefit some of the children involved in a number of ways and it could be used on a wider basis as an important part of children's outdoor learning experience. The Forest School approach fits in with the Government's manifesto on learning outdoors. LEA support is important and the three case studies in this research all benefited from this. Successful examples of Forest School could be more widely promoted to educationalists, parents and environmentalists so that a better understanding is gained about Forest School, the impact it can have on children and how learning takes place. The evaluative methodology established by this study should help practitioners to gather some evidence of the benefits of Forest School.

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