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Forest Schools and environmental attitudes: A case study of children aged 8–11 years

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Abstract: There is growing evidence that children in the UK are suffering from a lack of engagement with nature and the outdoor environment. This paper investigates the attitudes of children towards the natural environment and focuses on Forest School programmes as a mechanism to promote a "pro-environmental" attitude. The study identified that there was a statistically significant difference in environmental attitude between groups of children that had participated in a Forest Schools programme and those that had not participated, with children who have taken part in Forest Schools demonstrating a more pro-environmental attitude. Whilst it is recognised that Forest Schools may not be the only factor influencing these attitudes, this is still an important finding that adds to the overall benefits of participation in Forest Schools programmes.

Subjects: Development Studies; Education; Geography

Keywords: Forest Schools; experiential learning; environmental education

1. Introduction

There is a growing amount of concern that children in the UK are suffering from a lack of engagement with nature and the outdoor environment (e.g. Knight, 2009a; Louv, 2005; Moss, 2012; Natural England, 2009). This "Nature Deficit Disorder" has been described by Louv (2005, p. 34) in terms of "the human costs of alienation from nature, among them: diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses". In addition, Moss (2012) relates the lack of experiential outdoor learning to a child's inability to assess risks to themselves and to others. It is also important to consider the growth of virtual play, as opposed to reality-based play as having an effect on children's lives (Kolbert, 2012; Pyle, 2003).

Knight (2009a) believes these factors are a form of current crisis in the UK and relates them to childhood obesity, behavioural problems and poor social skills. She states that in the past, "Changes in attitudes to early years practice and education policy have come about in response to crises in society" (Knight, 2009a, p. 30). Accordingly, there is evidence that the role of experiential learning in an outdoor environment is highly valuable and has a range of short-term and long-term benefits (Moss, 2012).

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PUBLIC INTEREST STATEMENT

Forest School programmes are an increasingly popular way of providing quality outdoor experiences for children. This study was designed to investigate the effects such programmes can have on children's relationship towards nature. Although it is recognised that Forest Schools may not be the only factor influencing attitudes, the study shows that children that have participated in these programmes demonstrated a more "pro-environmental" attitude.

This paper investigates the attitudes of children towards the natural environment and focuses on Forest School programmes as a mechanism to promote a "pro-environmental attitude". Whilst there are different forms of Forest Schools, the approach broadly follows a holistic approach to learning, and is normally carried out in a natural or wild place such as a forest and is child led (Maynard, 2007). The aims of the research were first, to investigate (using questionnaires) the role of Forest Schools in facilitating a "pro-environmental" attitude amongst child participants and second, to "naturalistically" explore the experiences of children taking part in Forest Schools activities for the first time. Ethical approval was granted in accordance with university policy.

There has been a move away from seeing outdoor play merely as a release of energy before the "proper" work begins in the classroom environment. Increased contact with nature is seen as an integral and vital component of education, particularly in early years settings where Forest Schools are being introduced. Since the eighteenth century, pioneers of early education, namely Froebel, Montessori and Steiner, have valued the outdoors and recognised the importance of contact with nature, with particular reference to learning through active, hands-on play (Constable, 2012). The foundations of Forest Schools as childcare provision originate from Denmark and other Scandinavian countries, where children often spend their whole time at kindergarten outdoors. Forest Schools were introduced to the UK in the 1990s, after a group of Early Years Professionals from Bridgewater College in Somerset were inspired to set up their own version following a visit to Denmark. They then provided Forest Schools in the area and began to support staff in other early years settings. More recently, Forest Schools have become an integral part of many pre-school and school settings (Constable, 2012), with a growing number of providers offering training courses.

Forest Schools provide an innovative educational approach to outdoor play and learning (Maynard, 2007; O'Brien & Murray, 2007) and in recent years, they have become increasingly popular, partly due to support from the Forest Education Initiative (FEI). The FEI aims to increase the knowledge and appreciation of woodlands, particularly with children, and to support and help establish Forest Schools throughout the UK. In England, the FEI has set up groups that are supporting the development of Forest Schools in 30 county/areas and the Institute of Outdoor Learning has created a Special Interest Group. In Wales, the FEI has been developing Forest Schools since 2002 and in Scotland, the FEI is taking a lead in developing Forest School awareness; this has sparked the interest of the Scottish Government and local education initiatives within councils (FEI, 2010).

The work of Sara Knight has been particularly important in terms of implementing Forest School approaches in learning environments (e.g. Knight, 2009a, 2009b, 2011). We have therefore used her eight characteristics of a Forest School to frame the qualitative phase of our research (Table 1). Although Knight makes limited reference to the underpinning theoretical support and justification for the approach, her widespread influence on the practical administration of Forest Schools in the UK is substantial. Knight's (2009a) eight characteristics set out specific features, such as where, how and who should be involved in Forest Schools. The resulting distinctive "ethos" involves encouraging, valuing and inspiring all abilities through positive outdoor experiences. This is carried out by participating in engaging activities in an outdoor setting, so children can have the opportunity to develop motivation, emotional and social skills.

One of the most important attributes of a Forest School is that learning is play based, child initiated and child led as far as possible (Knight, 2009a). Conway (2008) describes a child-led approach where play is freely chosen, personally directed and intrinsically motivated. In this way, the potential to enable open-ended deep play is maximised (Knight, 2009b). The phenomenon of deep-level play is the ecstatic form of play and testifies to *how* something happens, not *what* happens (Ackerman, 1999). It describes deep-level, high-quality, intense play and is observed when children are fully engaged in an activity.

The Early Years Foundation Stage shows particular impetus for outdoor play and places an important emphasis on the characteristics of effective learning, specifically how children learn and

Table 1. The eight characteristics of a Forest School as given by Knight (2009a)

Attribute	Characteristics
Setting	Not the usual one, ideally in a wood or other outdoor area
	A place where Forest School rules apply
Risk	The area is made as safe as is reasonably possible in order to facilitate risk-taking
	Enables children to learn to respect the environment and move around safely and comfortably
	Leaders are trained to risk assess
	The environment is "safe enough", not risk free
Time	Leaders recommend blocks of 6–10 sessions to maximise benefits
	Children given longer opportunities to play which accommodates deeper and more meaningful play
Weather conditions	There is no such thing as bad weather, only inappropriate clothing
	The only time that it is unsafe to go into a wood is in high winds when it is advised to find an open space
Trust	Adults trust the children to follow the Forest School rules and vice versa
	Sessions include getting to know the staff and the Forest Schools way
Learning is play based	Play is child initiated and child led as far as possible
	There are no time constraints and risk-taking is facilitated
	Focus is on open-ended play
Beginnings and ends	Each block and session have a distinct beginning and end
	The block ends in a significant final session
Trained staff	Sessions are run by a trained Forest School leader
	The leader is assisted by other suitably trained staff
	Staff/student ratio is appropriate to the setting and children

develop (Department for Education, 2012). Forest Schools provide opportunities to examine this further, as it is possible to observe children in action and gain valuable insight into their individual learning styles. Also, many activities are more suited to outdoor learning and not possible/applicable for a classroom setting. A study on specific learning styles found that the majority of students were kinaesthetic learners (37%) compared to 29% visual and 34% auditory (Miller, 2001). Kinaesthetic learners achieve maximum development through tactile, hands-on approaches and tend to lose concentration if there is little or no external stimulation or movement. Experiential learning through Forest Schools may therefore appear to be highly valuable as it suits a large proportion of children. Furthermore, the ethos and approach of Forest Schools can be directly related to the key aims of Every Child Matters: being healthy; staying safe; enjoying and achieving; making a positive contribution; and enjoying economic well-being (Department for Education and Skills, 2003).

The emotional content of risk-taking is an important experience for children. Gill (2007) identifies reasons for giving children the chance to take risks and the need for "proportion and balance", that is, assessing risks in relation to a particular activity, situation or individual. He argues risk in childhood helps children learn how to understand safety and manage risk; have health and developmental benefits; and build character and personality traits, such as resilience and self-reliance. Gill (2007) also discusses children's natural need for risk-taking and maintains that exposing children to reasonable risks provides an opportunity to feed this and prevent them from finding greater unmanaged risks for themselves. In addition, O'Brien and Murray (2007) discuss the benefit of engaging children with their environment at the sensory and intellectual levels. This is seen as another outcome of play involving an element of risk, which allows children to connect with their environment and help understand it.

Many Forest School studies have focused on either its use and impact on young children in the Early Years or disaffected pupils (e.g. Knight, 2009a; Palmer, 2006); but some research has shown that Forest School projects have noticeable benefits for children across the learning spectrum. Specifically, Hughes (2007) evaluated a 14-week Forest School programme and found children displayed increased self-esteem and self-confidence; improved social and physical motor skills; improved motivation and concentration; contributed to the development of language and social skills; and enhanced children's knowledge and understanding of the environment. However, with regard to the last benefit, it is recognised that establishing a baseline assessment for environmental awareness is important but can also be difficult to determine accurately.

Forest School experiences have been used many times as successful springboards to other learning. For example, it has been suggested that outdoor experiential learning can go some way to address the underachievement of boys (Bilton, 2003). More specifically, Butwright, Falch-Lovesey, and Lord (2007) have described how Forest School experiences stimulated boys' engagement with literacy.

1.1. Children and environmental education

There is a varied body of research suggesting that activities and learning experiences carried out in a natural environment can encourage much greater awareness of environmental issues, whilst also fostering empathy towards the natural environment (Ballantyne & Packer, 2002; Barak, 2009; Golden, 2010; Louv, 2005; Lugg, 2007; Nichol & Higgins, 2008; O'Connell, Potter, Curthoys, Dyment, & Cuthbertson, 2005; Tilbury, 1999; White & Stoecklin, 2008). Environmental education, whilst a relatively new discipline, has had an increasingly important influence on the UK educational policy and curriculum development over the last few years (Rickinson, 2002). Indeed, there has been a drive towards increasing children's knowledge of the environment, sense of (environmental) respect and helping secure children's commitment to sustainability (Rickinson, 2002).

We recognise that the term "pro-environmental" is contested. Our use in this paper follows Legault and Pelletier (2000) and Kollmuss and Agyeman (2002) and relates to a demonstration of ecological awareness and concern for the natural world and its components, leading to involvement in, and knowledge of, activities that have a positive impact on the environment for extrinsic reasons.

There are, of course, a range of similar terms to describe environmental awareness and concern. For example, Schultz (2000) coined the term "biospheric concern", which encompasses values that could be described as having a pro-environmental attitude, such as believing in the intrinsic value of all living things and having an unselfish—rather than egotistical—view of the natural world. Schultz (2000) suggests that this value or behaviour was due to the ways in which people see themselves as being connected to, or part, of nature. He concludes that this feeling of biospheric concern can be developed though experiences that break down the barriers of separation with the natural world and, therefore, give people a chance to feel connected to it, helping develop empathy towards the environment (Schultz, 2000; Schultz, Shriver, Tabanico, & Khazian, 2004).

Wilson (1894, cited in Kahn, 1999, p. 9) hypothesised that humans have a genetic connection with the natural world and have a need to empathise and connect with life ("biophillia"). Kaplan and Kaplan (1989) also attempt to discuss and interpret the emotional feelings that we have towards the natural world, which they describe as anywhere that nature is present; parks; roadsides; wasteland; and so forth. They also suggest that, when given the choice, people prefer landscapes that consist of the natural environment, usually looking out over water. These landscapes can be described as park-like or savannah. This is supported by a recent UK well-being survey conducted by the Office for National Statistics, which indicated that the availability of green spaces is a major factor in improving well-being (Randall, 2012).

There is evidence that the younger a child is when they first experiences the natural world, the more likely they are to develop a connection with nature and the environment (O'Connell et al.,

2005; White & Stoecklin, 2008). White and Stoecklin (2008) also suggest that nursery schools provide some of the best examples of this occurring. This is very much in line with the ethos of Forest Schools. As already discussed, Forest School programmes are typically delivered in a natural woodland setting and actively encourage children to explore the surrounding environment, allowing children to build a connection with nature (Blackwell, 2011).

Forest School programmes thus potentially play an important role in shaping pro-environmental attitudes in children. Wells and Lekies (2006) suggest that the experiences children have in natural areas such as in the woods, particularly without adult supervision, have been shown to increase the likelihood of the same children returning to these places and enjoying them as adults. There is also evidence that there is a link between children who have had experiences in nature and adults who have followed a career in conservation. For example, Chawla (2006) explored what experiences influenced environmentalists in Norway and the USA. She found that the most common reason for entering into an environmental career was due to childhood experiences of nature. It would seem that developing an emotional attachment and affiliation to nature in childhood may result in a feeling of responsibility and willingness to protect and care for the environment later in life.

There is evidence that the mental health and general well-being of children improve whenever they take part in practical activities conducted outdoors (Maller & Townsend, 2006). Wells and Evans (2003) carried out research on life stress and rural children and discovered that children who have a significant opportunity to be in contact with the natural environment appear to have more of an ability to cope and deal with stress associated with everyday life. Further to this, children are the future policy-makers. Providing them with positive environmental experiences may enable them to make better decisions in the future regarding the natural world and its resources (Legault & Pelletier, 2000; McKnight, 2010).

2. Methods

Schools were purposefully recruited to the study on the basis of their participation/non-participation in Forest School programmes, the socio-economic characteristics of the school catchment areas [the median annual income for each respective borough council area was taken from a HM Revenue and Customs dataset (2012) and is given to indicate broad socio-economic comparability] and the degree of rural/urban location (Table 2). All schools were located in Cumbria, apart from School 4 (Glasgow).

The non-Forest Schools were selected using personal and professional contacts. Schools who had taken part in Forest Schools were identified by obtaining contact details of practitioners from a training website and contacting them to see if they were willing to participate in the study. The principle investigator had no prior contact with the schools and did not visit any of the schools either during or after the research had taken place.

Table 2. Typology of schools participating in the study

School	Forest School	Location	Annual median income for borough (HM Revenue and Customs, 2012) (£)
1	Yes	Rural	20,700
2	Yes	Urban	18,600
3	Yes	Rural	20,700
4	No	Urban	18,600
5	No	Rural	17,700
6	No	Urban	17,700

Each school was sent out (either by post or email) a set of questionnaires to measure the environmental attitude of children. The questionnaire was adapted from a previous study concerning the environmental attitudes of children aged between eight and eleven years by Musser and Malkus (1994). The same age cohort was used for this study; thus, both primary schools and junior schools were included in the sample. In each school, the class teacher, who also assisted the children in completing the questionnaire, administered the questionnaire. Each school had been given the option of the researcher assisting with the administration of the questionnaire; all schools decided against this option. In order to ensure consistency, each teacher was given instructions regarding the administration of the questionnaire. A total of 195 usable questionnaires were returned (some forms were incomplete or were incorrectly completed); 136 from non-Forest Schools and 59 from schools that had completed a Forest Schools programme.

Whilst the use of questionnaires in research involving children is often fraught with difficulty, it is nevertheless important to consider as fully as possible the attitudes and opinions of children. Leeuw, Borgers, and Smits (2004) suggest that from the age of seven, children are capable of expressing their opinions, and when coupled with developing reading and writing skills and assistance from teaching staff, we would argue that questionnaires are a viable method of data collection in school-based research.

Musser and Malkus (1994) contend that their questionnaire is comparable between different programmes of study and is relatively free of bias. It is based on psychometric principals so that the scale used is high on internal consistency reliability and test–retest reliability. Twenty-five questions were selected to give an impression of children's awareness about different environmental issues and their attitudes relating to recycling, conservation, animal rights/protection, nature appreciation and pollution. Each question has two statements. Each statement has two boxes beside it, one large and one small. The children have to decide which statement they most agree with and then decide if they are: "a lot" like the statement describes (they tick the larger box) or "a little" like the statement describes (they tick the smaller box). Each box is graded on a scale of one to four (the children cannot see this score, just the boxes), with the higher the score equalling the more pro-environmental attitude (Figure 1).

Upon completion, a participant is allocated a score, with the higher score indicating a more pro-environmental attitude. The rationale for using this "off the peg" questionnaire was due to issues of validity and reliability. The Musser and Malkus questionnaire has been used effectively in educational research elsewhere, for example, by Smith-Sebasto and Semrau (2004) and a modified version for a study on children in Turkey by Gülay (2011). Minor changes were made to the questionnaire, largely reflecting differences in American English and UK English; for example, "car pooling" was changed to "car or lift sharing" to make it more understandable to a UK sample.

All data were analysed using SPSS version 15 and statistical tests were carried out according to Dytham (2011). The data were then transcribed onto an excel spreadsheet. A test for normality was carried out which showed the data were normally distributed, so the independent sample *t*-test was chosen to analyse the data.

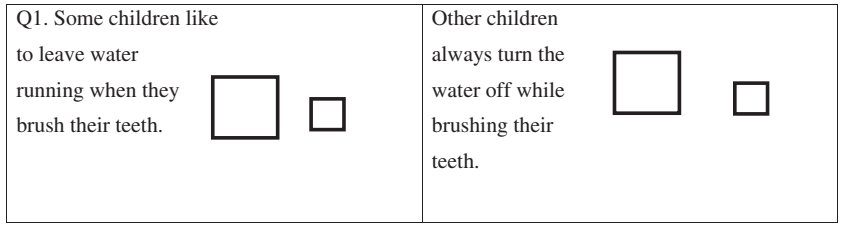

Figure 1. Exemplar question from the questionnaire.

The secondary aim of the research was to explore the experiences of children taking part in Forest Schools activities for the first time in order to capture the voice of the child and also to gain a perspective on the forms of environmental learning that can take place. To meet this aim, a naturalistic inquiry-based study day was conducted with children from one of the sample schools (School 6) as part of an exploratory Forest School session. This was based on Knight's eight characteristics, that is, the session took place in a woodland environment; the environment was "safe enough" to enable children to move around safely and comfortably; children were given the opportunity for "deeper and more meaningful play"; there were elements of child-initiated play (appropriate for a first Forest Schools experience); the session had a distinctive beginning and end; and the session was run by a trained Forest Schools leader.

All of the children had visited woodlands with their families, though this was their first Forest Schools experience. This work was completed after the questionnaire survey. With reference to Knight's eight characteristics of Forest Schools (Table 1), the session comprised the given attributes of a Forest School experience. For example, the woodland setting was safe enough, but not "risk-free" and the session had a distinct beginning and end. An evaluation was carried out during the session.

3. Results

A normality test (Shapiro–Wilk) was carried out to determine if the data collected were normally distributed or not. All p values were >0.05, indicating that the data were normally distributed. A t-test was therefore used to analyse the data. Figure 2 indicates the average environmental attitudes of children in participating schools. School 2 (Forest Schools) had the most pro-environmental attitude score of 80.550 ± 1.538, followed by School 5 (non-Forest Schools), with a score of 76.571 ± 1.493, and School 1 (Forest Schools), with a score of 75.600 ± 1.508. The school with the lowest pro-environmental attitude was School 4 (non-Forest Schools), with a score of 67.925 ± 1.311, followed by School 3 (Forest Schools), with a score of 74.700 ± 1.308, and School 6 (non-Forest Schools), with a score of 75.000 ± 2.121.

The data were grouped into Forest Schools and non-Forest Schools to compare the differences in the environmental attitude score. The test returned a p value of 0.003, indicating that there was a significant difference between the schools that have taken part in Forest Schools and those that have not.

Figure 3 shows that mean environmental attitude score of children who have taken part in Forest Schools is 76.95 ± 0.891 compared with a score of 73.165 ± 0.990 for non-Forest Schools (a difference of 3.785).

In summary, the results show that there is a significant difference between the environmental attitude of children who have taken part in schools and those that have not, with children who have taken part in Forest Schools displaying a more pro-environmental attitude.

As discussed above, following the questionnaire study, some additional work was carried out with a small group of children from School 6, as part of a Forest Schools exploratory day. This was carried out in order to gain a perspective on the different forms of environmental learning that take place during Forest Schools sessions. Table 3 shows the plan of activities for the day and incorporates the attributes highlighted as important by Knight (2009a). The session took place in a woodland setting and followed a defined pattern with a distinct beginning and end, starting with an opportunity for the children to experience their surroundings before risks, hazards and Forest School rules were discussed. The session concluded with an open discussion in which everyone contributed. Some of the most successful elements from the session involved exploration of the woodland using different senses and included mini-world den building and nightline activities. During these particular activities, high levels of engagement and enjoyment were exhibited by the children. For example, one

particular child was so involved in her mini-den building she appeared to "zone-out" and experience a level of deep play.

Figure 4 shows some of the children's feedback comments and photographs taken during the session. Feedback from the children was extremely positive, and it was interesting to note that when asked if there was anything they had not liked during the day, one child said, "I was a bit scared at first when F was leading me, but I liked taking pictures". She was referring to the Camera Clicks activity and was initially visibly uncomfortable with being blindfolded. However, her level of trust increased during the activity, which helped her cope with the risk of the subsequent nightline (blindfold) activity. The emotional content of risk-taking is an important experience for children and is one of the main attributes of Forest Schools (Knight, 2009a). Gill (2007) identifies reasons for giving children the chance to take risks and the need for "proportion and balance", that is, assessing risks in relation to a particular activity, situation or individual. He argues risk in childhood helps children learn how to understand safety and manage risk; have health and developmental benefits; and build character and personality traits, such as resilience and self-reliance. Gill (2007) also discusses children's natural need for risk-taking and maintains that exposing children to reasonable risks provides an opportunity to feed this and prevent them from finding greater unmanaged risks for themselves. In addition, O'Brien and Murray (2007) discuss the benefit of engaging children with their environment at the sensory and intellectual levels. This is seen as another outcome of play involving an element of risk, which allows children to connect with their environment and help understand it.

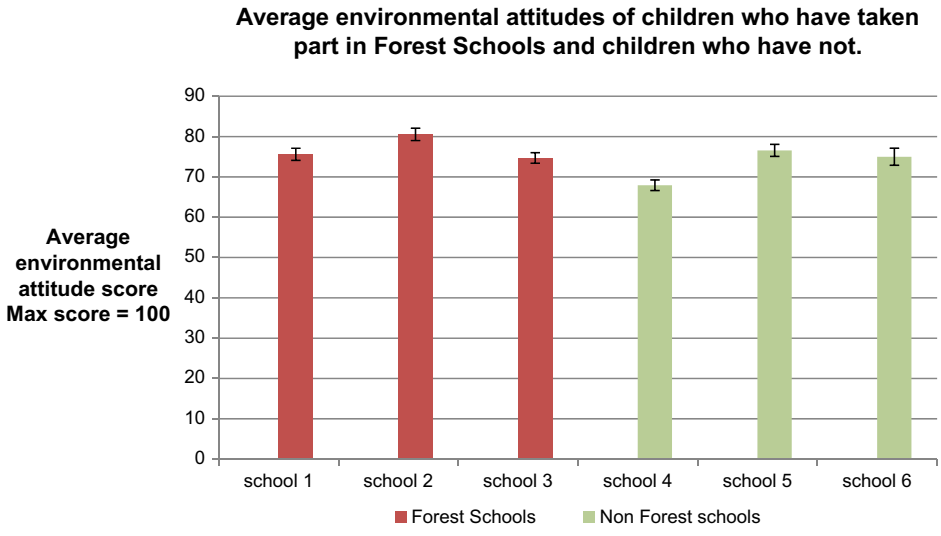

Figure 2. Average environmental attitude of children participating in the study.

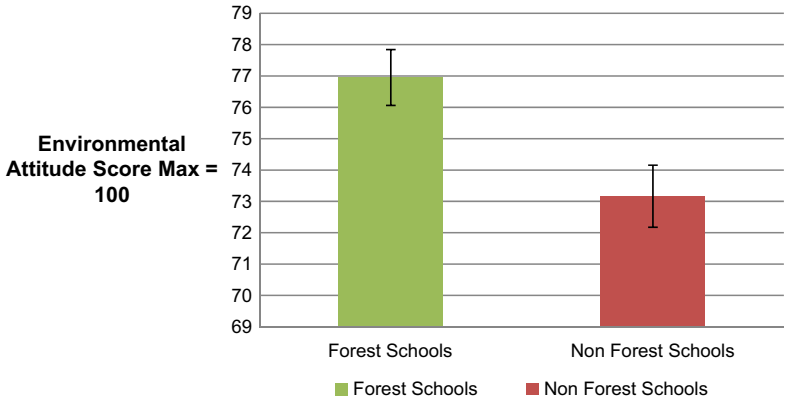

Figure 3. Mean environmental attitude scores.

Table 3. Plan of activities for the Forest Schools day with School 6

Subject: Forest Schools	**Teacher: X**			**Date: 1/11/2012**	**Location: X**
Age of children: 5–9 years	**Number of children: 3**	**B**	**G**	**Adult support**	**Lesson context/prior learning**
		0	**3**	**X + 1**	**Children have been introduced to basic safety rules and the woodland environment**

Times	**Activity**	**Resources**
10:00	**Starter/warm up—Woodland journey I**	
	We walk from into the woods and down the path to the starting point/meeting area. Children are encouraged to use all their senses during the journey and discuss everything they hear, smell, feel, taste, etc.	
10:10	**Health and safety brief**	
	Discuss what we mean by a "hazard" and a "risk"?	
	Children are asked to identify hazards in the immediate area	
	Talk about the overall site, the associated hazards and what we can do about them	
	Children to establish rules and boundaries to follow in the woodland (and reminded of these throughout the day)	
10:25	**Activity 1: Mini-world den building**	A playmobil person for each child
	Children are asked to explore the immediate surrounding are and use natural materials to build a house/den for their playmobil person	
10:40	**Activity 2: Woodland journey II—Un-nature trail**	A collection of items not found within a woodland setting
	Children are asked to take a journey down through the woodland from the top of the slope, down towards the glade near the riverside track. Adults to supervise journey at all times	
	Children are asked to explore their route and identify and remember any (pre-placed) items they would not normally find within a woodland, e.g. a clothes line, a light switch and a sift toy	
	At the end of the journey, can the children remember everything they found? Was there anything they missed? Why? Potentially introduce camouflage?	
11:00	**Activity 3: Duplication game**	Natural objects found within the woodland, e.g. pine cone, feather, moss
	Show the children a set of natural objects collected from the woodland and placed within a frame made from sticks. The children are then asked to duplicate this and add any extras they find interesting	
11:15	**Activity 4: Blindfold journey—Camera clicks**	Blindfolds
	One child acts as a guide and leads another child (who is blindfolded) through an area of woodland (within the established boundaries). The children stop occasionally so the blindfolded child can briefly remove the blindfold and take a mental picture of what they can see	
	Children are encouraged to talk about their other senses while they carry out this activity	
	What did they see? How did it feel to be led? How did it feel to lead someone? What other senses did they use?	
11:45	**Snack**	Hot drinks and a snack
12:00	**Activity 5: Nightline**	Length of rope
	Children set up a route within the woodland by attaching a rope to a tree and weaving it around others at varying heights to incorporate different terrain. The children are then blindfolded and led by their partners along the route to gain a different sensory experience	
12:30	**Plenary**	
	In a group circle, discuss the day's activities. Encourage everyone to participate, taking turns to speak and listen. Adults to ask questions to prompt further discussion and deeper thought. What did they enjoy doing most? Was there anything they didn't enjoy? Why? What have they learnt about the woodland? Each other?	

Figure 4. Exploratory Forest Schools day.

4. Discussion

This study suggests that children who have taken part in Forest Schools demonstrate a significantly higher pro-environmental attitude than children who have not taken part in the programme. There is a growing body of evidence to support this finding, and as Helen Meech recently stated in the

Guardian newspaper, "people who spend more time outdoors as kids are the ones who have a stronger interest in environmental issues and protecting the planet" (Meech, 2014).

There are, however, a number of limitations to this study. First, participation in Forest Schools was the only variable tested in relation to environmental attitudes. We were unable to control other variables, such as involvement in environmental education, outdoor education or the promotion of environmentally sustainable behaviour. This is clearly problematic, for as Huddart-Kennedy, Beckley, McFarlane, and Nadeau (2009) note: environmentally sensitive behaviour is likely to be affected by a range of services and facilities.

Second, borough median income was used to represent broader socio-economic factors. Whilst the variation in median income across the sample was relatively low, our approach is overly simplistic and a more balanced set of measures is required.

Third, the sample size (n = 6) in terms of participating schools was relatively low and there was only one school from outside of Cumbria (which raises the issue of other confounding factors). Fourth, the questionnaire used for the study has been criticised by Evans et al. (2007) for a lack of theoretical and empirical grounding and also because attitudes and behaviours are included together, which may limit the information that the questionnaire provides. They raise concerns about children's ability to understand the questionnaire and their patience and attention to answer the questionnaire accurately, and suggest the use of more interactive approaches (such as games) to ascertain children's environmental attitudes. These are valid criticisms, but must be weighed against the increase in workload associated with more interactive approaches.

However, despite these criticisms, these are nonetheless interesting findings in a relatively under-researched area (Maynard, 2007). Much of the literature reviewed discussed how the experiences that children have in nature when they are younger, particularly under 12 years, help them build up a connection with the natural world and the environment (O'Connell et al., 2005; White & Stoecklin, 2008). Our finding that children who have taken part in Forest Schools have a more pro-environmental attitude than children who have not, broadly supports this literature. Further study would be needed to see if these children continue to value the environment as they progress through school. Although experiences gained within Forest Schools are not directly intended to deliver environmental education (Maynard, 2007), it is perhaps not unexpected that children who have taken part in Forest Schools have a more pro-environmental attitude than children who have not.

There is a lack of clarity in the literature regarding the influence of rural and urban locations on environmental attitude (Huddart-Kennedy et al., 2009; Jones & Dunlap, 1992; Saphores, Nixon, Ogunseitan, & Shapiro, 2006; Smith & Krannich, 2000). In our research, the school with the highest average score of environmental attitude was a school that had taken part in Forest Schools and was located in a rural area. The school with the lowest average environmental attitude did not take part in Forest Schools and was located in an urban area. This supports Berenguer, Corraliza, and Martín (2005) research, stating that there is a difference in attitudes between rural and urban populations. However, they state that better questionnaires are required to more accurately measure environmental attitudes in rural and urban areas.

We also found that the Forest Schools activity conducted with a small group of children from School 6 provided an interesting perspective on the different forms of environmental learning that takes place during Forest Schools sessions, and supported the main finding regarding the development of pro-environmental attitudes from the questionnaire study. Whilst the activities were initially adult directed, there was sufficient flexibility to allow time for child-initiated, open-ended play, which was intrinsically motivated (and still appropriate for an initial Forest Schools experience). Overall, the day encompassed many attributes of a Forest Schools experience, namely, elements of risk, motivation, trust, use of all senses, exploration and discovery (Knight, 2011) and provided opportunities for deep play.

Forest Schools develop over time as experience, knowledge and confidence grow, and the children use the same setting on a regular basis. Therefore, insight and evaluation of a discrete first session are going to be limited. However, it is clear that important learning has taken place during these initial activities and more visits would further develop experience and trust as described in Knight's eight characteristics of Forest Schools (Table 1), resulting in wide-ranging physical, mental and health-related benefits (Moss, 2012) and, we would argue, the development of pro-environmental attitudes in the participating children.

5. Conclusion

In conclusion, the research has met the objectives outlined in the introduction, namely to measure environmental attitudes between children who had taken part in Forest Schools and those that had not. The study identified that there was a significant difference between the two groups, with children who have taken part in Forest Schools demonstrating a more pro-environmental attitude than those who have not taken part. Whilst it is recognised that Forest Schools may not be the only factor influencing attitudes, this is still an important finding that adds to the overall benefits of participation in Forest School programmes. There is, however, a need for research into the longer term impact of Forest Schools and how these programmes might change the attitudes of children towards the natural environment, particularly during and after transition to secondary school.

Forest School experiences have been used many times as successful springboards to other learning. The role they have in providing an enjoyable holistic learning experience is a process, rather than a product. As Kolbert (2012) indicates, Forest Schools encompass practical skills and this has been shown to build on the understanding of the environment and human connection with it. Through play, children can gain an understanding and appreciation of the natural environment and at the same time, improve physical, social and emotional well-being. The process acts to empower children, allowing them to reflect and share their experiences and help understand how their actions affected others, themselves and the environment.

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