RESEARCHING THE DEVELOPMENT OF CHILDREN'S ENVIRONMENTAL VALUES IN THE EARLY SCHOOL YEARS

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Introduction

In 1998 I left a full time teaching post to take up a research studentship for three years, driven by questions that would not go away about the ways in which young children developed their understanding of the world around them. I had had responsibilities as geography, environmental education and Eco-schools coordinator and it was through close encounters with these areas of learning that my questions grew. I was concerned that many young children starting school appeared to have limited first-hand experience of the world around them and this appeared to be reflected in their vocabulary and knowledge of the outdoor environment. These early years of schooling are crucial in laying firm foundations for future values and attitudes and so I wanted to know how we as practitioners could best help children develop.

My overarching aim was to investigate how children's environmental values developed during the early school years within school contexts. The key questions of the research were:

- What aspects of the environment did children value and why?
- How and why did these values develop and/or change?
- Was there any evidence that long-lasting values were being developed?
- How were environmental values translated into action?
- How relevant (for all the above questions) was school context in terms of provision, access, ethos and curriculum?

Literature review

In the impressionable years of early schooling, educators have opportunities to enable children to construct meanings and form values from outdoor experiences that may last into adulthood. However, the fabric of social and family life has greatly changed over the last three decades. There are less opportunities for first-hand outdoor experiences during childhood than thirty years ago, the reasons being a complex mix of parental fear of 'stranger danger', restricted access to the natural environment
because of dangerous boundaries, e.g. main roads, or increased building and enclosure, and increased car travel (Hillman, 1998).

The last ten years have seen an explosion of media culture reach overwhelming proportions in modern society. Now, most families have television, personal computer, mobile phone and video or DVD players. Nearly two decades ago when Spencer et al (1989) explained that children used a combination of mediated and first hand experiences to learn about the world it was perhaps unimaginable that such rich sources of mediated experience would be available in modern society and begs the question what outcomes are there when this balance is tipped in favour of the mediated world at the expense of first hand experience?

While it is true that learning about our immediate environment can be done through a variety of sources, really knowing a place arguably involves a range of cognitive, physical and emotional responses. Tuan (1977, 184) summed the fullness of this process in the following passage:

> While abstract knowledge about a place can be acquired quite quickly, feeling about a place takes longer as it is made up of a succession of experiences repeated day after day, year after year. It encapsulates blends of sights, sounds, rhythms (natural and artificial), and is even apparent in the way that our bodies have learned to respond to the physicality of place e.g. through developing certain muscles.

Indeed, the role of place attachment in the development of self-identity has been well documented in environmental psychology literature (see Bonnes & Sechiaroli, 1995, for a comprehensive reading list) while significant research has suggested that positive experiences in the outdoor natural settings, in early childhood have been instrumental in developing pro-environmental attitudes and behaviours, (Palmer et al, 1998; Tanner, 1998; Chawla, 1998). In this contested body of research, termed Significant Life Experiences, adults identified as having either pro-environmental attitudes or behaviours gave autobiographical accounts of early childhood experiences that they claimed had a significant effect on their later thinking.

However, the term, ‘pro-environmental behaviour’ is one that is, by its value-driven nature, difficult to define. For example, while Palmer has applied the term to encompass those in careers concerned with the environment, such as teachers and with those who have a regard and concern for the environment, Tanner (1998) argued that only environmental activists exhibited such behaviour and that Palmer et al's definition was too loose. Other criticisms of these research findings have included Gough's (1999) comments that the research neglected to recognise that the contexts of children growing up today are vastly different to those a generation or more ago, while Chawla (1998) has suggested that in order to lend credence to this theory, investigations should be made into children's memorable experiences as all research has hitherto concentrated on the recollections of adults. The healthy debate in this area has emphasised its prominence in environmental education research.
Key research into children's perceptions of place and environmental preferences, for example Hart (1979), Moore (1986) and Matthews (1992), has been particularly valuable but there has been, and still is, a great deal of controversy about the perceived 'gap' between environmental attitudes and action, (see Scott, 2002). It was with these thoughts that the research was designed to discover what kinds of environmental experiences young children were having, how these had been laid down into memory and how this affected the development of their values, skills, knowledge and capacity for action. The school setting was chosen for this research because of its common frame of reference for all children and potential for influence on their development.

**Research methodology**

In the past, researchers in environmental education have been orientated towards a belief in the doctrines of logical empiricism and positivist thinking (Gerber, 1996). Tilbury and Walford (1996) described this orientation as being partly to blame for the reason that the goals of environmental education had not been fully realised, although Williams (1996) suggested that the positivist tradition in geographical education was relatively underdeveloped. Generally, there has been a growing rejection of positivistic approaches in environmental education because of a perceived lack of applicability to the real questions and sought answers of today's researchers. For example, Robottom (1999) has stated that the behaviourist perspective of the positivist tradition meant that within a deterministic framework, researchers sought to impose their values whether social, environmental or educational, upon practitioners and pupils in a way that disempowered them. Today there is a growing emphasis on an educational approach in which the empowerment of pupils is desirable and learning is constructed rather than given (Hart, 1997; Catling, 2003; Owens, 2003), and so the climate of thinking has tended to influence researchers away from a positivistic approach.

While positivism is associated with the predominant scientific approach characterised by elements of predetermination, behaviourism and quantifiable methods of data collection and analysis, the newer paradigms have reflected a move towards qualitative studies. However there are some, for example Norwich (1998), who have argued that both the 'old' and 'new' paradigmatic approaches could be constructively interwoven. Such views concur with Slater's (1994) view that rather than take note of the differences between the various paradigmatic approaches, which she offered as comprising essentially scientific, interpretative and action research, we should be considering common elements and how each adds to the other.

Tilbury and Walford (1996) made a similar point, and argued that for example, while research in environmental education has been hampered by the dominance of a positivistic approach, there is no advantage to be gained by the total rejection of quantifiable methodology. Tilbury and Walford (1996) advised that research methodology in environmental education should reflect the diverse and wide
ranging area of the subject, and that we should therefore, be prepared to use a 'range of disciplinary perspectives and conceptually diverse frameworks of investigation' (Tilbury and Walford, 1996, 53).

Since the aim of this research was to access individual children's thoughts, memories and voices of outdoor experiences and to analyse them individually as well as compare them across age ranges and school settings, it was considered beneficial to use a combination of qualitative and quantitative approaches. The former would enable individual voices to be heard whilst the latter would afford generalisations or permit themes to emerge.

**Research methods**

**Tools**
Matthews (1992), authoritatively summarised a number of methodological approaches undertaken with children, and warned that when working with young children it is a problem to find suitable methodologies that will reflect the true extent of their environmental capabilities. However, Matthews (1992) suggested that a study of the content of children's maps, or of their drawings gives an indication as to what children consider important in their world through what he termed 'affective imagery' (Matthews, 1992, 102).

Barraza (1999) also favoured a graphical approach, using a drawing technique to elicit the environmental perceptions of Mexican children aged seven to nine years, and concluded that children's drawings were a useful tool for this purpose. Barraza's rationale was that most children enjoyed drawing, it was a relatively tension free activity and it provided a way to compare groups of children with different languages and abilities. Prompted by this particular piece of research and by the knowledge that a graphical approach would be especially useful with young children, a key research tool was developed and successfully trialled, (Owens, 2000), to test its efficacy in accessing children's memories of important outdoor environmental experiences. This 'concept drawing' tool was adopted as the main research tool and was used in conjunction with questionnaires, informal interviews and observations of practice and documentation.
<table>
<thead>
<tr>
<th>School</th>
<th>Type</th>
<th>Location</th>
<th>Participants</th>
<th>Research Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>East</td>
<td>First</td>
<td>Village</td>
<td>135</td>
<td>▪ Concept drawings and taped interviews with all Foundation and KS1 pupils, (carried out at the start and end of an academic year.)&lt;br&gt;▪ Informal interviews with staff and observations of practice&lt;br&gt;▪ Case study</td>
</tr>
<tr>
<td>Town</td>
<td>First</td>
<td>Urban centre</td>
<td>88</td>
<td>▪ Concept drawings and taped interviews with all Foundation and KS1 pupils (carried out at the start and end of an academic year.)&lt;br&gt;▪ Informal interviews with staff and observations of practice</td>
</tr>
<tr>
<td>Edge</td>
<td>First</td>
<td>Urban periphery</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>Primary</td>
<td>Inner city</td>
<td>20</td>
<td>▪ Concept drawings and taped interviews with a sample of Nursery and Reception children carried out once&lt;br&gt;▪ Informal interviews with staff and observations of practice&lt;br&gt;▪ Snapshot study</td>
</tr>
</tbody>
</table>

**Figure 1**: Research Overview

Pupils from three Kent schools to undertake Concept Mapping at the beginning and end of the school year. These results will be compared for themes and surprises. Questionnaires to staff and Governors and observations of practice and ethos will inform and underpin findings.

**Figure 2**: Pyramid Research Design

- A snapshot study of an inner-city London school.
- A case study of one of the Kent schools (East School).
- Children’s voices from two of the Kent schools, (East and Edge School) to be examined in more depth through a closer analysis of data from Concept Mapping.

http://www.geography.org.uk/eyprimary/primaryresearch/researcharticles
Research practice

The research was undertaken as follows:

- For the Concept Drawings, the children were arranged randomly within classes into small groups of four to six pupils and were asked if they could draw and talk (from memory), about things that were special and of value in the school grounds. This was an important stage of the research as it normally involved a negotiation of meaning with the children to ensure that they understood what was involved. All the sessions were taped.

- Questionnaires were given to staff and governors similar in design to those given by Palmer and Suggate in determining the environmental orientation of adults in their SLE studies, (Suggate, 1998). While these questionnaires contained some closed questions they also invited open comments. School staff were also observed teaching and notes from informal interviews were kept in a research journal.

- For the case study, many days were spent in school as a 'participant observer'. This involved observing lessons, teaching lessons, attending school council and staff meetings and speaking to parents, teaching assistants and older children. Policy and planning documents were examined for content and use.

Four schools gave their informed consent to participate in the research and an outline of the participants and research methods used is given in Figures 1 and 2.

Findings

Concept Drawings
Analyses of the concept drawings were undertaken on two levels. First, a quantitative analysis was undertaken to compare the data between and within schools generally. Second, a more in depth qualitative analysis was undertaken to probe individual and group trends and relate them to specific learning contexts. The second stage was more complex, involving the integration and evaluation of the evidence from children's comments, schools' practices and documentation within and against the more generalised quantitative framework.

Quantitative Analysis of Concept Drawings
A quantitative analysis was done which summed the total drawn and named features by each child for each phase of the research. This was then used as the basis to work out a pupil feature ratio (PFR) using different criteria. For example, the sum of all features for all year one children in all schools was divided by the total number of these children to give an average number of features drawn by this age group. These features, or remembered images from the children were also classified as either 'natural', 'constructed or man-made' or 'activity' dependant on the child's given meaning. These categories permitted further comparison between schools and year groups as to what kinds of memories were...
significant and how they related to discernible teaching and practice. Figure 3 summarises the total number of features remembered by the children at the beginning (Phase 1) and end (Phase 2) of the year.

The number of features remembered and valued by children increased with age. While this result was expected as children's communicative ability and environmental experience generally increases between the ages of four and seven years other results were of significance. There was considerable variation between schools, East School having a much higher number of remembered features from all year groups than did the other two schools. For example in Phase 1, East School Year One pupils gave almost twice as many features than Year One pupils at Edge School did (Figure 3). The abundant significant memories of environmental experiences at East School appeared to be linked to a mix of active outdoor teaching and the school ethos which promoted children's participation in their environment.

<table>
<thead>
<tr>
<th>Data from Concept drawings</th>
<th>Total features drawn</th>
<th>Expessed as a Pupil Feature Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCHOOL</td>
<td>Year Group</td>
<td>Number of Pupils</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edge School</td>
<td>Reception</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Year One</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Year Two</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>88</td>
</tr>
<tr>
<td>Town School</td>
<td>Reception</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Year One</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Year Two</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>87</td>
</tr>
<tr>
<td>East School</td>
<td>Reception</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>Year One</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Year Two</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>135</td>
</tr>
<tr>
<td>All Schools</td>
<td>Reception</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>Year One</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>Year Two</td>
<td>118</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>310</td>
</tr>
</tbody>
</table>

**Figure 3**: Differences between and within schools in the number of features drawn and described as being valued

The predominant category of response from pupils at all schools was that of natural elements of the environment (see Figure 4). Within this category, references to animals (other than humans) and to humans only were separated in order to compare these memories more accurately against practice. For example, at Edge School the Year Two children initially gave very few animal references but following a sustained active investigation of their pond the children's responses increased in number and contained a great deal of specific animal names.

**Qualitative analysis of concept drawings**
Following transcription of the children's comments, key responses were collected in tabular form for ease of viewing and comparison. For example, Figure 5 gives one such table for one group's responses. This phase of the research proved particularly useful in highlighting children's voices within the research, something which Catling, (2003) has suggested we should pay more attention to, and allowed children to explain not just what they valued but why.

The key findings can be briefly summarised as follows:
- First hand experience and contexts were linked to enhanced vocabulary acquisition.
- The reasons for valuing features could be simply and consistently categorised. For example, children generally valued features because they could offer one or more of the following: play, access, movement, warmth, comfort, safety, friendship and learning, (extrinsic value). Or, features were valued just because they existed, (intrinsic value).
- The types of features mentioned by the children were often linked with playtime opportunities as this was a predominant and constant outdoor experience.

**All features and sub categories for both Phases for all Schools**

<table>
<thead>
<tr>
<th>Feature Type</th>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural features</td>
<td>2.4</td>
<td>2.5</td>
</tr>
<tr>
<td>Built features</td>
<td>1.0</td>
<td>1.3</td>
</tr>
<tr>
<td>Activity features</td>
<td>1.3</td>
<td>1.2</td>
</tr>
<tr>
<td>Animals</td>
<td>0.3</td>
<td>0.4</td>
</tr>
<tr>
<td>People</td>
<td>0.4</td>
<td>0.4</td>
</tr>
</tbody>
</table>

**Figure 4:** Average number and types of environmental feature given by all children
• Children valued rules that they had been given and where they saw them being consistently applied, they derived positive connotations from them. For example, while the youngest children in East school said that you mustn't put litter on the floor, older children at the same school said that bins were valued because you could put litter in them.

• Where outdoor curricular learning had taken place it was apparent in the additional learnt vocabulary of the children, for example groups of Year Two children at Edge School had mentioned mostly playtime activities at the start of the year but in July, after a successful topic investigating the school pond, their drawings reflected the learning and specialised vocabulary they had acquired. Their reasons for valuing these features were mostly intrinsic, e.g. frogs because they were living things.

• Collaborations between children and adults were valued by children, for example the joint community building of a gazebo at Edge School was mentioned by a high proportion of pupils from all age groups at the school.

• Some outdoor learning experiences were long lasting, for example a group of Year Two children at East School fondly recalled gathering autumn leaves and looking for animals with their Reception teacher.

• Children remembered and valued activities that they had fully participated in, for example at East School a large proportion of children valued the planting of a willow shelter and knew that it helped other animals to live.

• There was a strong peer effect at work in groups across all age groups and schools. In nearly all groups there was evidence of the same feature or features being drawn within groups. This enabled the sharing and joint construction of existing and new knowledge and misconceptions.

The peer effect within groups was very interesting. Invariably, there would be at least one occasion, and sometimes several, where in each group a feature drawn and described by one child would be picked up by others who copied it. Sometimes a child would give the same reason for valuing it as their neighbour. In a few extreme cases, children next to each other would have almost identical elements to their drawings. There are three suggested explanations for this, although they may not be mutually exclusive:

• One is that a child does not understand the task and so copies another's ideas so as to please the researcher by producing something rather than admitting that they have no idea what is required of them.

• Second, a child understands the task but may not be able to think of anything that they consider special and so relies on another's ideas.

• Third, while they are searching their memory and thinking what to draw; they hear or see a feature that reminds them that they too, like that particular thing. In some examples, children drew similar things but gave different and plausible reasons for valuing them.
The last scenario was the most commonly observed where children appeared to be acting as catalysts for each other; prompting memory recall and sharing language as they fed on and extended ideas. Where such group activity occurred, a vibrant and animated exchange was created that produced a wealth of responses. The common denominator for such an exchange was always a shared memorable experience outdoors.

Sometimes children would drift into reverie once the structure of their responses had been established. For example, when recalling a shared pond activity, one child had remembered similar features to others in the group but was alone in drawing gravel and stones around the pond. He said:

I like the pond because the birds come. There is gravel and stones by the pond and I want to walk on it. I wish I could go back there.

As well as appreciating the wildlife around the pond, the boy's comments implied that he wanted access to this area but that this was not possible. Another child then said:

... the pond is quiet but we can't always go there.

The inference that children had little access to the pond was drawn from a mixture of knowledge about prior events, school rules and geographical layout as well as the children's comments. Comments taken out of geographical and historical context are difficult to analyse and so every effort was taken to understand the way in which children's comments were embedded in their day to day lives and settings. The class had visited the pond in the previous school year for a small project in which they looked at the development of tadpoles. Outside of directed curriculum time however, the pond was out of bounds as is normal practice in schools due to health and safety regulations.
<table>
<thead>
<tr>
<th>Phase 2 (July 2000)</th>
<th>East School</th>
<th>Reception</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How drawings were classified</strong></td>
<td><strong>Analyses from child comments whilst doing drawings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural</td>
<td>Activity</td>
<td>Built</td>
<td>Child comment</td>
</tr>
<tr>
<td>Clouds, sun, me, flowers, tree</td>
<td>playground</td>
<td></td>
<td>A tree so they make the school look nice. Flowers, I like them. Clouds ‘cause they make the sun come out. Me playing on the playground.</td>
</tr>
<tr>
<td></td>
<td>Race track</td>
<td>Sun cream</td>
<td>Clouds ... it makes the sun. Flowers, you get to make daisy chains. Field you get to play on it. Grass, you can hide. Racetrack, you get to do races. Trees with apples, you can grow them and you get to eat them.</td>
</tr>
<tr>
<td>Me, sun, cloud</td>
<td>playground</td>
<td></td>
<td>The playground ‘cause we get to play on it.</td>
</tr>
<tr>
<td>Blue sky, sun, me, trees, flowers</td>
<td></td>
<td></td>
<td>The sun .. it gives you a sun tan. Me racing .. I'm going past the trees and the flowers. Flowers, you can make daisy chains. Trees, they keep growing.</td>
</tr>
</tbody>
</table>
Trees, clouds, apples, flowers, sun, children

Making a daisy chain

Sun, it makes it sunny and all lovely - if it rains.. it won't look all blue. Tree 'cause I love the pretty flowers and apples it grows, and it grows birds. Cloud 'cause it makes the sun.

Warmth. Access, intrinsic, aesthetic valued as an important feature in children's lives because of its basic life giving properties, something that we as adults often take for granted.

Figure 5: Responses from children during the construction of their Concept Drawings

Case study
The case study of East School, (reported in full in Owens, 2003), revealed the ways in which pupils were given a say in their school through their School Council. Since their initial Eco-School, award in 1998, the school had worked to continue to fulfil seven criteria established by Eco-Schools (ENCAM, 2003).

These are:
- Establishment of a committee prominently made up of school pupils who make real, purposeful decisions;
- The development and use of an Eco-code which shows the key principles held by the school;
- An annual environmental review of the school;
- An action plan made each year from the review;
- A commitment to informing and involving the local community;
- Adapting and using the school curriculum to deliver Eco – school objectives;
- Continuous monitoring and evaluation of the Eco – school process.

From discussion with teachers and pupils, observation of curricular and extra curricular activities and an examination of planning and policy documents a picture emerged of school ethos, policy and practice. When this was combined with the knowledge gleaned from the quantitative and qualitative aspects of the research, a clearer understanding of the educational processes at work emerged. The key findings were:
- The apprenticeship mode of learning was valued by practitioners and children alike. The ethos and aims of the school were transparent and reiterated throughout school life in many different guises.
- Relationships between staff, pupils and parents were good.
- The school grounds were stimulating and developed through ongoing participative structures.
- Children were given responsibilities for environmental practices, for example Energy Monitors patrolled the school and kept account of meter readings, Recycling Monitors collected used...
paper daily from each class in school, Playtime Buddies helped children play at playtimes and each class had School Councillors who reported to and from classes.

- Pupil's self esteem was generally high and they spoke with pride about their school.
- The school had a high profile within the local community and had regular community helpers, for example some senior citizens worked within the school grounds with pupils to grow vegetables that were used in the school kitchen, sold to staff and parents and entered for local gardening competitions.
- The school worked regularly with local bodies, such as Groundwork UK, on environmental projects.
- School ethos was important in defining children's relationships with the environment and each other, for example the value bestowed upon the School Council at East School gave a greater significance to its actions.

Overall, the children at East School appeared to have a higher degree of involvement in the running of their school through the democratic and participative structures in place. The children appeared to be more confident and have more critical skills, i.e. they were more willing to question environmental practices in their school and suggest alternatives. Arguably, these critical thinking skills were better developed because of the responsibility they have been given to make creative choices concerning their own environment. The active involvement in their school environment may also explain why these children had a greater vocabulary relating to outdoor features, as shown by the greater number of responses in their Concept Drawings. The recall of some Year Two children suggested that positive environmental experiences in the outdoors with supportive practitioners during the Reception Year remained with children over time. These memories appeared to be reinforced by school ethos and resulted in concerned motivation from the pupils to maintain the status quo. This was evidence of early awareness of the concept of stewardship, i.e. valuing, evaluating and striving to conserve the environment.

It was also evident that children experiencing the Foundation Stage Curriculum were given more opportunities for curricular-linked outdoor experiences than were children who followed the National Curriculum. This was a common theme throughout all the schools.

**Snapshot of an inner city school**

Briefly, this stage of the research revealed that while the children had beautifully cared for and stimulating outdoor provision they had little opportunity for direct decision making within it. This appeared to detract from both their environmental perception and vocabulary acquisition, with Foundation Stage children indicating a greater affective bond and knowledge of their environment than older children did.(reported fully in Owens, 2004) In this way, the outdoor curriculum provided for the Foundation Stage proved more supportive than the National Curriculum although neither was supported by environmental interaction such as that evidenced by Eco-school participation at East School.
While it had been expected that the English language used by children for whom it was an additional language would be sparse, the potential for accurate and detailed environmental vocabulary acquisition was revealed through the children's concept drawings. In these drawings and discussions, children with the least environmental access, (playtime access only) had been unable to name or recall but one environmental feature, the climbing frame. However, some of their memories contained a rich mix of mediated sourced images, particularly from television cartoons and the language base used was rich, detailed and precise. For example, some children gave complex cartoon character names, (even spelling them out), recalled storylines and used appropriate adjectives. Arguably, if this propensity for language acquisition had been harnessed to stimulating play situations in the outdoors then they could have just as easily acquired a vocabulary base that reflected environmental features. Instead in their recalls they were utilising mediated rather than real experiences of the outdoor environment. Indeed, when observed outdoors, these children spent the majority of their time enacting fictional situations within what could be termed conceptually, a 'fantasy space', within the given physical parameters of their real environment.

**Conclusions**

Children appear to value environmental features and experiences for a mixture of extrinsic and intrinsic reasons which are driven by simple basic needs and an appreciation of other life forms, the latter being enhanced and extended through practical teaching activities in the outdoors. Where teachers modelled values, the learning was all the more effective, a point made by Siraj-Blatchford (1996). It is not merely enough to provide stimulating school grounds if the children are not shown how to investigate and participate in them. The most enthusiastic children were those who had been motivated and involved in their surroundings.

Children construct their ideas jointly and peer interaction is a very important part of the hidden curriculum, helping to shape values and attitudes. In this way, positive and negative ideas can quickly grow or wane in popularity so practitioners need to be aware of the values and ideas that pupils hold at any time and challenge or reinforce positive concepts and attitudes. This necessarily involves an investment of time allotted to discussion and investigation and stresses again the need for jointly constructed knowledge rather than didactic teaching methods. Peer groups can be powerful learning spheres and should not be underestimated in their propensity to fuel children's natural thirst for learning so it is important that we recognise and listen to children's voices.

Nearly all of the features that children said they valued came from the sphere of their first hand experience and were fed by the school ethos in which they operated. There was also evidence to suggest that memories of significant experiences were sustained over time. This once again stresses the overwhelming importance of first hand environmental experience in developing language and
other connotations of place. Above all, it demonstrates the importance of setting such experiences within a context of a school ethos that reinforces and encourages value acquisition through a sense of shared community and purposeful participation.

**Implications for teaching, learning and future research**

As practitioners, we need to ensure that we make the best possible use of outdoor areas, both in school and the locality. As well as providing exciting, stimulating and sensory surroundings for our children we also need to ensure that they are given the responsibility to make real decisions about their environment and that their views are valued. A truly democratic format, when applied with transparency and real participation, permits children the luxury of challenging other views in a safe environment. A safe environment in this case describes a space where children feel that they can equally contribute to learning and decision making processes without fear of ridicule and know that their ideas are important. It is in these kinds of contexts that children can be encouraged to risk new and radical ideas, collaborate with others and become critical and creative thinkers and doers.

Several questions stand out from many at the end of this period of the research, (does research ever have an end?) What kind of citizens will these children make as adults? How concerned will they be about their environment? What early outdoor experiences will they remember as being of particular significance? While we may believe that, as educators, it is important to educate children to value the environment from an early age it is, as previously stated, difficult to define and measure pro-environmental behaviour. This is problematic because the outcomes of our efforts are only truly gauged in the long term. In the meanwhile, perhaps we can hope that our best efforts lay in teaching and developing knowledge, attitudes, values and skills that give children the potential to act responsibly in a range of diverse and varied cultural contexts. I will end this chapter by suggesting we use first hand environmental experience to concentrate on four such attributes: enquiry, evaluation, empathy and empowerment.

**References**

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