

A REVIEW OF **Research on Outdoor Learning**



March 2004

Mark Rickinson, Justin Dillon, Kelly Teamey, Marian Morris,
Mee Young Choi, Dawn Sanders, Pauline Benefield

*National Foundation for Educational Research
and King's College London*

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Executive summary

Introduction

There is growing concern that opportunities for outdoor learning by school students in England have decreased substantially in recent years. In response to this, and recent Government calls for 'schools to make better use of the outdoor classroom as a context for teaching and learning',¹ the Field Studies Council (FSC) and several partner organisations commissioned the National Foundation for Educational Research (NFER) to undertake a review of research on outdoor learning.

This document summarises the key findings of this review, which critically examined 150 pieces of research on outdoor learning published in English between 1993 and 2003. The literature encompassed three main types of outdoor learning with primary school pupils, secondary school students and undergraduate learners:

- fieldwork and outdoor visits
- outdoor adventure education
- school grounds/community projects.

The project was undertaken during a six-month period from August 2003 to January 2004, and was funded by the Field Studies Council, Department for Education and Skills, English Outdoor Council, Groundwork, Royal Society for the Protection of Birds, and Wildfowl and Wetlands Trust.

The impact of fieldwork and visits

- Substantial evidence exists to indicate that fieldwork, properly conceived, adequately planned, well taught and effectively followed up, offers learners opportunities to develop their knowledge and skills in ways that add value to their everyday experiences in the classroom.

- Specifically, fieldwork can have a positive impact on long-term memory due to the memorable nature of the fieldwork setting. Effective fieldwork, and residential experience in particular, can lead to individual growth and improvements in social skills. More importantly, there can be reinforcement between the affective and the cognitive, with each influencing the other and providing a bridge to higher order learning.

- Despite the substantial evidence of the potential of fieldwork to raise standards of attainment and improve attitudes towards the environment there is evidence that the amount of fieldwork that takes place in the UK and in some other parts of the world is severely restricted, particularly in science.

- The number of studies that address the experience of particular groups (e.g. girls) or students with specific needs is negligible, although those that have been done draw conclusions that are important in terms of both policy and practice. Some children are more likely to take part in fieldwork than others for a range of reasons, many of which could and should be addressed.

- A minority of studies provide a health warning to proponents of outdoor education. Poor fieldwork is likely to lead to poor learning. Students quickly forget irrelevant information that has been inadequately presented.

The impact of outdoor adventure activities

- Strong evidence of the benefits of outdoor adventure education is provided by two meta-analyses of previous research. Looking across a wide range of outcome measures, these studies identify not only positive effects in the short term, but also continued gains in the long term. However, within these broad trends, there can be considerable variation between different kinds of programmes, and different types of outcomes.

¹ <http://www.teachernet.gov.uk/teachingandlearning/resourcematerials/growingschools/>

- There is substantial research evidence to suggest that outdoor adventure programmes can impact positively on young people's:

- > attitudes, beliefs and self-perceptions – examples of outcomes include independence, confidence, self-esteem, locus of control, self-efficacy, personal effectiveness and coping strategies

- > interpersonal and social skills – such as social effectiveness, communication skills, group cohesion and teamwork.

- The evidence base for cognitive and physical/behavioural benefits is less strong than for affective and interpersonal/social outcomes. In cases where there is a focus on such measures, however, there are examples of outdoor adventure programmes yielding benefits in terms of:

- > the development of general and specific academic skills, as well as improved engagement and achievement

- > the promotion of positive behaviour and reduced rates of re-offending, and improved physical self-image and fitness.

- In relation to fostering environmental concern and awareness, the evidence of a positive link between outdoor adventure activities and environmental understanding and values is not strong. There seems to be a strong case for questioning the notion that nature experience *automatically* contributes to environmental awareness, commitment and action.

The impact of school grounds/community projects

- School grounds/community projects have the capacity to link with most curriculum areas. Two specific examples of benefits stemming from this are positive gains in science process skills and improved understanding of design and technology-related issues.

- In the affective domain, the most important impacts of learning in school grounds/community settings include greater confidence, renewed pride in community, stronger motivation toward learning, and greater sense of belonging and responsibility.

- There is significant evidence that social development and greater community involvement can result from engagement in school grounds projects. Students develop more positive relationships with each other, with their teachers and with the wider community through participating in school grounds improvements.

- Few studies have focused on physical and behavioural impacts of school grounds/community projects. However, there is some evidence that school grounds educational projects are able to improve children's physical being through better quality play and through an increased motivation to eat more healthily and to take more exercise.

- Compared with research on fieldwork/visits and outdoor adventure education, there is a need for a greater number of rigorous in-depth studies on outdoor learning in school grounds and community settings.

Factors influencing outdoor learning and its provision

- The review suggests that it is helpful to distinguish between:

- > factors that can influence *the provision* of outdoor learning by schools, teachers and others

- > factors that can influence *the nature and quality* of young people's learning in outdoor settings.

- It is clear that the provision of outdoor learning in schools and universities is affected by a wide range of barriers and opportunities. Notable barriers include: (i) fear and concern about health and safety; (ii) teachers' lack of confidence in teaching outdoors; (iii) school and university curriculum requirements limiting opportunities for outdoor learning; (iv) shortages of time, resources and support; and (v) wider changes within and beyond the education sector.

- Opportunities for outdoor learning provision, though, are also noted in the form of: (i) new legislation and regulations such as those relating to safety at outdoor activity centres; (ii) recent curriculum developments and initiatives such as the

revised National Curriculum in 2000; and (iii) developments in UK higher education that (as well as challenges) have provided scope for innovation in university fieldwork teaching.

- These various factors make clear the complexity of the challenge facing policy makers, practitioners and others who are seeking to increase and improve young people's access to learning beyond the classroom and the school.

- The research that has been undertaken into students' experiences of outdoor learning activities suggests that there are several factors that can facilitate and/or impede learning in outdoor settings. These can be conceptualised in terms of:

- > programme factors – including the structure, duration and pedagogy of outdoor education programmes
- > participant factors – including the characteristics, interests and preferences of learners
- > place factors – relating to the nature and novelty of the outdoor learning setting.

Taken together, these factors provide a framework for thinking about how efforts to improve the quality and depth of young people's outdoor learning might be directed.

Conclusions and implications

Against the backdrop of calls for educational practice and policy to become more evidence-based, there is much in this review that is of relevance and use to practitioners, policy makers and researchers. With this in mind, it is important that the findings of this review are considered not just in terms of how they might help to *prove the value* of outdoor learning, but also in terms of how they might help to *improve its quality*.

Key messages for practice

- The review highlights demonstrable benefits for several types of outdoor learning. These findings should provide a source of support and justification for practitioners seeking an evidence base for the area of work in which they operate.

- More specifically, the review gives a clear endorsement for certain kinds of outdoor learning provision. Research indicates the value of programmes which: (i) provide longer, more sustained outdoor experiences than is often provided; (ii) incorporate well-designed preparatory and follow-up work; (iii) use a range of carefully-structured learning activities and assessments linked to the school curriculum; (iv) recognise and emphasise the role of facilitation in the learning process and (v) develop close links between programme aims and programme practices.

- The research also throws up several important challenges for practitioners. These include: the fact that the aims of outdoor learning are not always realised in practice; the different types of barriers faced by individual students in learning out-of-doors; the unresolved issue of the relative benefits of novelty and/or familiarity with the outdoor learning setting; and the fact that the benefits of outdoor learning are not always sustained over time.

- These challenges raise important questions for those involved in organising and undertaking outdoor learning activities. Deliberation and reflection about such issues could help to inform the strategic planning and development of organisations involved in providing outdoor learning opportunities for young people. They could also help to direct the ways in which school staff think about the structure, focus and timing of outdoor learning within and beyond the curriculum.

Key messages for policy

- Those with a statutory and non-statutory responsibility for policy relating to outdoor education should be in no doubt that there is a considerable body of empirical research evidence to support and inform their work.

- Policy makers at all levels need to be aware of the benefits that are associated with different types of outdoor learning. The findings of this review make clear that learners of all ages can benefit from effective outdoor education. However, despite such positive research evidence and the long tradition of outdoor learning in this country, there is growing evidence that opportunities for outdoor learning are in decline and under threat.

- There is an urgent need for policy makers at all levels and in many sectors to consider their role in:
 - > tackling barriers that stand in the way of the provision of effective outdoor education for all students
 - > encouraging good programmes and practices and capitalising on policy developments, for example, by linking initiatives in different sectors
 - > supporting research, development and training so that good practice can be understood, disseminated and fostered.
- This has implications for action across a range of policy sectors nationally, regionally and locally, including education, health, environment and science.

Key messages for research

- This review makes clear the substantial amount and range of research that has been carried out in outdoor learning in the 1990s and 2000s. It also highlights a number of encouraging signs in this field, such as a diversification of research approaches and foci, and a growth in theoretical/critical exploration and meta-analyses/research syntheses.
- The current evidence base, however, is not without weaknesses or potential areas for improvement. A good proportion of the research in this review originated from beyond the UK, and there is a particular need for more UK-based research into a number of aspects of outdoor learning. Examples include: the extent of outdoor learning provision available to school and university learners in this country; the effectiveness of outdoor learning programmes that seek to build progression from local environments to more distant learning contexts; the sorts of fears and concerns that young people can bring to different kinds of learning situations beyond the classroom; teachers' and outdoor educators' conceptions of 'the outdoor classroom'; and the cost-effectiveness of different kinds of outdoor learning.
- In order for these gaps to be addressed, attention will need to be given to two important issues. The first is how to improve the methodological rigour of outdoor learning research and evaluation. There was a range of methodological weaknesses evident within certain

parts of the literature in this review, including poor conceptualisation and research design, and little or no follow-up in the medium to long term. The second issue is how to improve and deepen the research-based understandings of the outdoor learning *process*. To put it simply, there is still much to be learnt about how and why programmes work or not.

- Finally, there is a case to be made for greater theoretical and empirical attention being given to three significant 'blind spots' in the current literature. These concern: (i) the nature of the 'learning' in outdoor education; (ii) the relationship between indoor learning and outdoor learning; and (iii) the historical and political aspects of outdoor education policy and curricula.

Review methods

The project involved a systematic and critical review of research on outdoor learning published internationally in English from 1993 to 2003. The international scope was important in order to be able to draw lessons from research in other countries and identify gaps in the UK-based research literature. The inclusion of studies published from 1993 to 2003 reflected a desire to examine the most recent research findings.

Relevant research was identified using a number of complementary search methods, including bibliographic database searches, hand searches of key research journals, previous reviews/bibliographies and websites, and e-mail requests to researchers working in this area. Publications were selected on the basis of whether they included a clear research/evaluation dimension (as opposed to programme description), and whether the focus was in line with the parameters of the review. Overall, the review identified 150 relevant research publications.

Copies of the full report '*Review of Research on Outdoor Learning*' are available from the Field Studies Council.

Telephone: 0845 3454072.

Email: publications@field-studies-council.org

Web: www.field-studies-council.org/index.asp

1. Introduction

This chapter explains the background, aims and structure of the review. It contextualises the project in relation to the history of outdoor learning in this country, and recent developments in related policy and practice.

1.1 Background

There is growing concern that opportunities for outdoor learning by school students in England have decreased substantially in recent years (for example, Harris, 1999; Barker *et al.*, 2002). It is difficult, if not impossible, to quantify the total amount of outdoor learning that takes place each year with any degree of certainty. However, it is clear that there is a perception in schools and elsewhere that organising outdoor learning activities has become more, rather than less, challenging over recent years.

It has to be said that fieldwork and outdoor activities have been and continue to be very safe in comparison with other activities undertaken by young people (Jacobs, 1996; AALA, 2002). Dr John Dunford, General Secretary of the Secondary Heads Association, was quoted recently as saying that:

Parents can be reassured about the precautions taken by headteachers to ensure that school visits are safe. Schools now take such care in the planning and risk assessment for all school visits that children are probably safer and more closely supervised on a school trip than on a family holiday... School visits are important in broadening the education of children, especially those from less privileged backgrounds who have few opportunities to go away with their families. I hope very much that teachers will continue to volunteer to lead school visits, so that children's horizons can be widened in this way. (DfES, 2003a).

Despite such wholehearted support, the increased perception of the risks together with a crowded curriculum and a rigid assessment system have led to a situation where the benefits of fieldwork and other kinds of outdoor learning do not appear to be fully appreciated.

In response to this situation and recent Government calls for 'schools to make better use of the outdoor classroom as a context for teaching and learning' (<http://www.teachernet.gov.uk/teachingandlearning/resourcemat/learn/growingschools/>), the Field Studies Council (FSC) and several partner organisations commissioned the National Foundation for Educational Research (NFER) to undertake a review of research on outdoor learning. The project was undertaken during a six month period between August 2003 and January 2004, and was funded by the Field Studies Council, Department for Education and Skills, English Outdoor Council, Groundwork, Royal Society for the Protection of Birds, Wildfowl and Wetlands Trust, British Ecological Society and Skills Active.

1.2 Research aims

The research team was asked to critically examine research on outdoor learning published internationally in English between 1993 and 2003. For the purposes of this review, outdoor learning is defined as learning that accrues or is derived from activities undertaken in outdoor locations beyond the school classroom. As explained in more detail in Chapter 2, this is taken to encompass three main kinds of activities:

- fieldwork and visits to field study centres, nature centres, farms, parks or gardens
- outdoor adventure education in local or distant settings
- projects in school grounds or the local community.

In response to the project funders' core interests and the practical need to define limits for the project, the research team did not look at research on learning beyond the classroom in *indoor* settings, such as museums, art galleries and zoos. For similar reasons, we also excluded research on general school sport and physical education *except* that involving outdoor adventure activities, and work looking at virtual field trips *except* where these had been investigated alongside actual field trips. The age ranges considered included work with primary school pupils, secondary school students and undergraduate learners.

The specific aims of the project were:

- to establish what is known (and not known) about:
 - > young people's experiences of outdoor learning
 - > the impact of outdoor learning activities on young people
 - > factors that can impede or facilitate young people's learning in the outdoors
 - > factors that can impede or facilitate the provision of outdoor learning
- to identify the implications of the research for future practice, policy and research in outdoor learning.

More details about how these aims were addressed are provided in Chapters 2 and 3. Before this, though, it is important to consider the historical development and contemporary policy context of outdoor learning in this country.

1.3 Historical development of outdoor learning

Outdoor education has a long and rich history in the UK, within which there is a diversity of views about what outdoor education constitutes and who it should involve. This historical overview seeks to highlight some key traditions that have influenced the culture of outdoor education provision in the UK.

The nature study movement

A major milestone in the early history of outdoor education was the impact on teaching of the nature study movement in the classrooms of Victorian and Edwardian England. This was not an isolated activity, in that much of society at the time held a fascination for flora and fauna, both domestic and exotic (see, for example, Baratay and Hardouin-Fugier, 2002). Of interest, particularly in the context of this review, was the role of HMI in this movement. Inspectors such as J.G. Rooper wrote extensively in magazines such as *Teacher's Aid* on the importance of utilising living specimens in their habitats rather than specimens that were, 'dried and ticketed in a museum' (Rooper, 1894, p. 530). During this period, the study of botany in particular was considered to be one of the few

scientific and outdoor educational activities appropriate for women (Shteir, 1996), and it is against this cultural background that botanical educators, such as Dr Lilian Clarke teaching at a south London girls' school, developed innovative teaching practices in the design and use of school gardens.

Clarke taught at the school from 1896 to 1926 and was one of the first six women to be elected a Fellow of the Linnaean Society of London. Her legacy for contemporary outdoor education/field studies was to:

- promulgate the use of the 'outdoor classroom'
- have a proactive view of learner's creating their own textbooks from 'hands-on' work in the garden
- recognise that teachers and learners contribute to the pace of the lesson
- document her teaching to share with others (see Clarke, 1922, 1935)
- form partnerships with external agencies and institutions.

School journeys

The Nature Study Movement and botanical pursuits were not the only influences on outdoor education. In the late nineteenth century, Catherine Dodd is credited with adopting the concept of the school journey from Germany (Jenkins, 1980; Cook, 2001), an idea that greatly enlarged the range of environments that children could experience. Dodd herself used excursions into rural Derbyshire for 'observation and discussion on geographical, historical, biological and aesthetic topics' (Cook, 2001, p. 44). In 1911 the School Journey Association was formed and, according to Jenkins (1980, p. 61), 'flourished until the Great War'. School journeys have become an integral part of the lives of many schoolchildren today.

Field studies

The recent 60th Anniversary Celebration Conference of the Field Studies Council (FSC) highlighted the role that field studies has played in the development of outdoor learning in this country. The establishment of the Council for the Promotion of Field Studies (the forerunner to the FSC) in 1943 initiated a network of

centres dedicated to 'bringing environmental understanding to all' through first-hand study in the field. Francis Butler, in his letter to the Secretary for the Society for the Promotion of Nature Reserves which led to the founding of the first field study centre in 1943, argued that:

Children are keen on studying living plants and animals in their natural environment and it is coming to be realised amongst educationalists that this aspect of the subject needs to be encouraged. (Butler, 1943)

Since that time, the FSC has developed a national network of 17 education centres providing a wide range of outdoor learning fieldwork activities for students, teachers and visitors. It is important to recognise that these FSC centres are part of a much larger number of residential and day centres throughout the country, as noted by the 1983 HMI publication *Learning Out of Doors*, which recorded over 2,500 such centres in the early 1980s (DES, 1983). The decade that followed the publication of that report, however, saw the closure of large numbers of these centres, particularly ones owned by LEAs. Over recent years, there has also been mounting concern about the increased difficulties facing schools and teachers wishing to undertake out-of-classroom learning at field study centres and other kinds of outdoor centres. This is an important part of the contemporary context of this review (Section 1.4).

Rural studies

Carson and Colton (1962) trace the origins of rural studies as a school subject to the 'teaching of vegetable gardening in rural elementary schools in the days before the First World War' (p. 1). They note that although vegetable gardening in school had been regarded as 'a patriotic duty', the educational value of gardening had been recognised and 'gardening remained established as a subject of the curriculum' (ibid.). Interestingly, Carson and Colton also noted that, 'it has been said by some that rural studies is a method of teaching rather than a subject' (ibid.). They went on to comment that:

A rural studies teacher develops from his closer and more personal contact with his pupils than that of a "classroom" teacher. Method and subject are closely interconnected. To our minds, there would be very much less value in the

subject if it were taught merely as an assemblage of the facts concerning plants and animals, or merely as instruction in the crafts of gardening and livestock keeping, important as these aspects are. It is in the use of the subject in the educational development of the children that the real value of rural studies lies. (p. 4)

On the issue of gender and rural studies, Hilton (1959), considering 'Rural Science and School Gardening', notes that 'girls should share experiences in rural science and gardening equally with boys. Gardening is our greatest national hobby, and it is enjoyed by both men and women, on the allotment or round the house' (p. 6).

Rural Studies was considered by some to be a practical subject particularly suited to certain students attending secondary modern schools, with their emphasis on vocational skills. Carson and Colton (1962), however, were critical of this focus and castigated schools where rural studies was aimed at 'children who do not shine at classroom subjects' (p. 10). Gradually, Rural Studies disappeared from the curriculum and currently exists only in a diluted form, embedded within another subject such as science, or as an extra-curricular activity such as a gardening club.

Urban studies

Outdoor learning has not only been focused on rural contexts. In addition to bringing nature into schools and taking classes on fieldwork visits, an important part of the history of outdoor education has been that of the urban studies movement. In Britain, an influential text for this movement was the publication in 1978 of *The Child in the City* by Colin Ward. Ward (1978) uses examples from cities all over the world to encourage educators to consider cities as learning environments where children can not only study environmental education, but participate in the decision-making that goes into aspects of town planning. He observes that:

The city is in itself an environmental education, and can be used to provide one, whether we are thinking of learning through the city, learning about the city, learning to use the city, to control the city or to change the city. (ibid., p.176). [original emphases]

He describes what he considers exemplary examples of this kind of education, one exemplar being the work of The Notting Dale Urban Studies Centre in London. The Director at the time, Chris Webb, considered that a key focus of their programmes was 'to allow things to happen which perhaps couldn't happen in schools. The aim is to make a much more potent population - people who can cope with local authorities, who can get over the feeling that they have no power' (ibid., p.201).

Outdoor adventure activities

For many commentators 'outdoor education' is synonymous with adventurous activities such as mountaineering, climbing, orienteering and canoeing. In an article about *Outdoor Education and its Educational Objectives*, for example, Smith (1987) traces the origins of 'the outdoor pursuits strand of outdoor education' back to a Board of Education document on 'Camping in Education' published in the 1920s (p. 211). In considering such developments, Cook (2001) emphasises the military origins of much outdoor adventure education: 'Fitness for war and service in the British Empire underlay the use of the outdoors for educational purposes for boys in the early part of the twentieth century' (p. 44). Baden-Powell's scouting movement was built on this same militaristic philosophy.

Nichol (2002a) considers that the aims of the Outward Bound movement were not 'simply intrinsic and psychological, but instrumental and social' (p. 33). Girls were usually peripheral to these early programmes. Indeed later in the twentieth century, as Cook (2001) states, girls were subsumed into programmes already in existence:

As outdoor education expanded in the 1960s, it seems that although girls were increasingly given equal access to outdoor education, they were absorbed into courses designed for boys. It seems outdoor education generally reflected wider social assumptions about gender rather than challenged them. (p. 50)

An exception to these military origins was the socialist-inspired woodcraft movements, initiated in the early part of the twentieth century. As Cook observes, these movements were mostly associated with Quaker schools, 'aimed to be genuinely democratic and ...

open to both girls and boys' (2001, p. 45). The primary focus of these movements was to give children the opportunity for 'individual development in natural surroundings' (Cook, 2001, p. 45).

This brief historical overview shows that outdoor education in the UK has been wide-ranging, in both content and context, for more than a century. It has also demonstrated that many of the current debates about outdoor education are not new. Much of today's policy and practice can trace its origins back many years.

1.4 Contemporary policy and practice

This review needs to be seen in the context of several areas of concern relating to contemporary policy and practice in outdoor learning.

Declining opportunities for fieldwork

This review has been prompted partly by the growing awareness that teaching science outside the classroom could be 'heading for extinction', to borrow from the title of a report published in October 2003 by the Field Studies Council and the British Ecological Society (Barker *et al.*, 2002). Endorsing the report, Professor Lord May of Oxford, President of the Royal Society remarked that, 'our young people are being let down if their science education does not include a field experience ...' (ibid., p. 2). Additionally, however, there is concern among some practitioners that existing policy, whether it be at a national level or at a school level, is not taking account of the needs of young people with respect to opportunities to learn out-of-doors.

Some measure of the Government's perspective can be gleaned from the reply to a question tabled in the House of Lords in September 2003. In response to the question, Baroness Ashton of Upholland stated that:

There are no plans to review the provision for fieldwork within science GCSE or A-level. The existing science national curriculum at key stages 1 to 4, together with current GCSE and A-level syllabuses, encourages fieldwork. There is also a pilot at A-level which places particular emphasis on it. Additionally, all primary and

secondary schools are required to make provision for fieldwork for all pupils as part of the geography curriculum. (<http://www.parliament.thestationeryoffice.co.uk/pa/ld199900/ldhansrd/pdvn/lds03/text/30908w12.htm>).

She went on to add that the DfES 'does not collect information centrally about the provision of science or biology fieldwork opportunities for pupils' (ibid.). She also pointed to the 'Growing Schools' initiative which, she stated, 'encourages schools to use the "outdoor classroom" as a resource in all subjects including science' (ibid.).

Students' understanding of food, farming and rural issues

The lack of understanding of farming and the countryside amongst young people and members of the public was highlighted by the recent report of the Policy Commission on the Future of Food and Farming (Policy Commission, 2002). The Commission argued that 'the key objective of public policy should be to reconnect our food and farming industry ... to reconnect consumers with what they eat and how it is produced' (ibid., p. 6). This policy objective has implications for educational provision, both within and beyond schools.

The Policy Commission explicitly pointed out the need for schools to develop stronger links with farms. The Government responded that it recognised the importance of young people experiencing the 'outdoor classroom' and noted that 'children benefit from hands-on experiences of plants and animals, within school grounds, through visits to farms, woodlands or field study centres' (England. Parliament. HoC, 2002, p. 47).

In connection with this, the Growing Schools Innovation Fund brought together schools, local communities, colleges and voluntary groups to develop and disseminate good practice, including farm visits. It aimed to:

- encourage schools to increase the level of pupil participation in learning which uses farms/growing as a resource, and preferably by direct hands-on experience

- offer teachers easier access to information, teaching resources and professional development opportunities
- identify good practice examples that illustrate: how commonly perceived difficulties can be overcome; how farms/growing can be used effectively as a teaching tool across the curriculum at each key stage; the benefits of farms/growing in terms of achievement/other outcomes; and effective support structures
- encourage teachers to explore a wider range of teaching and learning approaches so that they and their pupils have a more challenging and exciting experience.

The Government has worked with Farming and Countryside in Education (FACE) and the Countryside Agency to research perceived barriers to farm visits and to examine ways of encouraging more schools to visit farms. A partnership of national organisations, Access to Farms, was established in 2002 to promote good quality educational visits to farms (<http://www.farmsforteachers.org.uk/>).

Safety and out-of-school activities

In the aftermath of several recent accidents on out-of-school activities, the Department for Education and Skills issued guidance to schools entitled *Health and Safety of Pupils on Educational Visits* in 1998 (DfEE, 1998). Subsequently, this advice was supplemented with additional handbooks to increase the competence and confidence of group leaders and other teachers when supervising pupils on visits. The handbooks were entitled: *Standards for LEAs in Overseeing Education Visits; Standards for Adventure; A Handbook for Group Leaders*, and *Group Safety at Water Margins* (DfES, 2003b, c, d, and e).

During the school year, 2002-3, the DfES distributed £3.5 million to all local education authorities in England to fund, *inter alia*, the training of school Educational Visits Co-ordinators. A 'training-the-trainers' course was organised by the Outdoor Education Advisers' Panel. The training is designed to improve teachers' management of risk in outdoor education.

As well as providing funding for training, the DfES sponsors the Adventure Activities Licensing Authority (AALA). The authority inspects and licenses over 1,000 organisations which offer climbing,

caving, trekking or waterborne facilities to schools and other groups of under-18s.

On 25th September, 2003, David Miliband MP, the School Standards Minister stated publicly that:

Teachers should not abandon school visits - safely conducted and properly supervised, they are an important part of any child's education. We value, and are committed to support, the professional competence of teachers who supervise educational visits, many of whom do so in their own spare time. (DfES, 2003a)

In spite of such statements, the country's second largest teaching union (NASUWT) was recently reported to have 'advised its 223,000 members not to take children on school trips' because of fears associated with pupil safety (Clare, 2004).

School grounds, citizenship and education for sustainable development

Outdoor learning is also connected with questions of sustainable development and citizenship, and issues of learning within school grounds. The DfES has recently published the Government's Sustainable Development Action Plan for Education and Skills (DfES, 2002b). The first of the plan's four objectives includes reference to education for sustainable development and states the Government's aim to ensure that 'All learners will develop the skills, knowledge and value base to be active citizens in creating a more sustainable society'. It is hoped that this will be achieved by a range of measures implemented by partner organisations such as the Teacher Training Agency (TTA) who 'will ensure ESD is incorporated into subject - specific induction packs and programmes for new teacher trainers' (ibid.). The role of outdoor learning in developing an understanding of links between the environment and development is discussed elsewhere in this report.

Other policy initiatives, such as the introduction of Citizenship into the National Curriculum, also have implications for the planning and delivery of outdoor learning (see, for example, <http://www.nc.uk.net/nc/contents/Ci-4—POS.html>). The dimension of 'active citizenship', with its focus on student involvement in decision-making and change within

school and the local community, has clear links to outdoor learning in school grounds and community settings. Furthermore, the programme of study for Citizenship at key stage 4 includes the requirement that pupils should be taught 'to use their imagination to consider other people's experiences and be able to think about, express, explain and critically evaluate views that are not their own' (ibid.). Some of the examples given elsewhere in this report show how fieldwork and visits have been used to illustrate the need to appreciate the range of views that may need to be taken into account when considering environmental issues.

Finally, there are signs of increased interest in the potential of school grounds as sites for school-based outdoor learning. The DfES-funded *Schools for the Future* (DfES, 2002a) and *Classrooms of the Future* (DfES, 2003f) initiatives, for example, are based on the premise 'We need to look at ways of designing inspiring buildings [and learning environments] that can adapt to educational and technological change' (DfES, 2003f, p. iii). Within some of the school case studies featured in these initiatives, there is evidence of a focus on the development of the outdoor learning environment. For example, in Bournemouth, a 'sustainable centre of e-learning and environmental discovery is being created at a Site of Special Scientific Interest at Hengistbury Head, with electronic links to satellite sites in schools and to remote centres worldwide' (DfES, 2003f, p. 13).

1.5 Structure of the report

The remainder of this report is in seven chapters. Chapter 2 provides an overview of the key terms used in the report – 'outdoor learning' and 'research and evidence'. Chapter 3 describes the search strategy and the methods used by the research team in identifying and reviewing sources of information. The remaining sections summarise the project team's findings. Chapter 4 describes the research evidence on the impact of fieldwork and visits. Chapter 5 focuses on the impact of outdoor adventure activities, and Chapter 6 looks at the impact of school ground/community projects. Chapter 7 looks at the evidence on the factors influencing outdoor learning and its provision. Chapter 8 summarises the key messages emerging from the research and their implications for practice, policy and research.

2. Conceptual overview

This chapter provides a brief introduction to the concepts of 'outdoor learning' and 'research'. It seeks to outline the conceptual understandings that underpin this review and much of the literature that it has examined.

2.1 Outdoor learning

The concept of 'outdoor learning' is a broad and complex one, which touches on a wide range of educational activities in many different settings. Relevant examples include outdoor adventure education, field studies, nature studies, outdoor play, heritage education, environmental education, experiential education, and agricultural education.

Within and between these different types of activities there are many different conceptions of 'outdoor learning'. This is a point that was well recognised by US researchers writing in the 1950s who talked about outdoor education as 'education *in, about and for the outdoors*' (Donaldson and Donaldson, 1958, p. 17) [original emphasis]. In seeking to understand this diversity, it is helpful to draw on a recent elaboration of differing conceptions of 'environmental learning' developed by Scott and Gough (2003, p. 54). In their book *Sustainable Development and Learning*, they set out 'nine categories of interest which capture, albeit in a rather tentative way, a range of different focuses and objectives of those who espouse and promote environmental learning' (p. 53). Applying this idea to outdoor education, it seems that outdoor learning can be seen as a concept and practice with a range of different foci, outcomes, and locations.

The **foci** of outdoor learning, for example, can include:

- learning about nature, as in outdoor ecological field study
- learning about society, as in community-based gardening initiatives
- learning about nature-society interactions, as in visits to outdoor nature centres
- learning about oneself, as in therapeutic adventure education
- learning about others, as in small-group fieldwork
- learning new skills, as in outdoor adventurous activities.

The intended **outcomes** of outdoor learning, meanwhile, can include:

- knowledge and understanding of, for example, geographical processes or food growing techniques
- attitudes towards, for example, the future or peers/family
- values and feelings about, for example, the environment or oneself
- skills such as orienteering or communication
- behaviours such as group interactions or personal coping strategies
- personal development, such as self-confidence or personal effectiveness.

The **locations** of outdoor learning can encompass:

- school grounds or gardens
- wilderness areas
- urban spaces
- rural or city farms
- parks and gardens
- field study/nature centres.

In the light of this variety, the review has attempted to frame the literature using: (i) a three-fold categorisation of outdoor learning activities; and (ii) a four-fold breakdown of their possible learning

outcomes. In presenting these categorisations, it is important to make clear that they are not being proposed for definitional purposes, but rather as frameworks for making sense of the literature.

The review drew distinctions between three kinds of outdoor learning activities:

- **fieldwork and outdoor visits** – where the focus is on undertaking learning activities, often linked with particular curriculum subjects such as science, geography or environmental studies, in outdoor settings such as field study centres, nature centres, farms, parks or gardens
- **outdoor adventure education** – where the focus is on participation in outdoor adventurous activities often (but not always) in settings a considerable distance from students' everyday environments, and usually with the primary aim of promoting personal and/or interpersonal growth
- **school grounds and community-based projects** – where learning activities take place in or near to the school, with a range of curricular, cross-curricular and/or extra-curricular purposes connected to notions of personal and social education, active citizenship, health/environmental action or play.

As stated earlier, this excluded (i) learning activities in *indoor* settings such as museums, art galleries and zoos; (ii) general school sport and physical education *except* that involving outdoor adventure activities; and (iii) virtual field trips *except* those undertaken in conjunction with actual field trips.

In order to make sense of the many possible learning outcomes both within and between the three categories of learning activities, the review used a four-fold breakdown. This distinguished between:

- **cognitive impacts** – concerning knowledge, understanding and other academic outcomes
- **affective impacts** – encompassing attitudes, values, beliefs and self-perceptions
- **interpersonal/social impacts** – including communication skills, leadership and teamwork
- **physical/behavioural impacts** – relating to physical fitness, physical skills, personal behaviours and social actions.

In both sets of categories, there is a considerable degree of possible overlap between the categories. Despite this, we would argue that these categorisations have been helpful in framing the literature for this review, not least because they reflect the conceptualisations used in much of the available research. We also hope that these categories would be recognisable and understandable to practitioners within the outdoor sector, who are the major audience for this review.

2.2 Research

As with research into any kind of learning, there are many ways in which this can be approached, and methodological preferences have not been static over time. In other words, outdoor education research has been part of wider changes in educational and social science research over recent decades.

Research in the social sciences has undergone dramatic change over the last forty or fifty years. Central to this has been a questioning of the appropriateness of research approaches derived from the physical sciences for use in social inquiry. Broadly speaking, quantitative methods underpinned by positivism have been challenged by a range of alternative approaches grounded in interpretivism and critical theory.

The growth of interpretivist and critical approaches has brought about a far greater diversity and complexity in social science research. Most notable has been what Denzin and Lincoln (1998, p. vii) refer to as 'the qualitative revolution', whereby 'the social sciences and humanities have drawn closer together in a mutual focus on an interpretative, qualitative approach to research and theory'.

The effects of such developments can be seen in a number of trends within recent research in outdoor education. In particular, it is clear that:

- research on outdoor education prior to and during the early 1990s was dominated by quantitative (positivistic) studies which sought to evaluate the impacts of adventure programmes and field trips through pre-test/post-test designs

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- a number of reviews and meta-analyses of outdoor education research in the mid-1990s expressed concerns about (i) the methodological weaknesses evident in some of the quantitative research in the field; and (ii) the need for greater understanding of the process aspects of outdoor education through qualitative inquiry and mixed-method studies (for example, Cason and Gillis, 1994; Hattie *et al.*, 1997; Reddrop, 1997)
 - the late 1990s/early 2000s have seen a greater number of qualitative and mixed-method studies on topics such as students' expectations and experiences of different kinds of outdoor learning, and the variation in learning outcomes between different groups of learners (for example, Ballantyne and Packer, 2002; Purdie *et al.*, 2002)
 - there is evidence of the emergence of more critical explorations of the conceptual and theoretical aspects of outdoor education (for example, Healey *et al.*, 2001; Humberstone *et al.*, 2003).

2.3 Summary

This brief conceptual overview has revealed some of the complexity implicit in the terms 'outdoor learning' and 'research'. It has suggested that outdoor learning, like environmental learning, is a concept and practice that can encompass a range of different foci, outcomes and locations.

For the purposes of this review, outdoor learning is explored in terms of three main categories: fieldwork and outdoor visits; outdoor adventure education; and school grounds and community-based projects. Research evidence relating to each of these is examined in terms of cognitive impacts, affective impacts, interpersonal/social impacts, and physical/behavioural impacts.

In considering the available evidence, though, it is important to recognise that the nature and approaches of outdoor education research have themselves changed and developed during the timescale of this review (1993-2003). Broadly speaking, this has been characterised by a growth in qualitative and/or mixed-method approaches, and greater interest in the process aspects of outdoor learning.

3. Search strategy and methods

This chapter outlines the review's search strategy and methods. It considers the selection criteria for including/excluding material, the search methods used to identify relevant research, and the review processes by which relevant studies were analysed and appraised.

3.1 Selection criteria

The scope of this review was determined by a series of search parameters decided through discussions with FSC and its partners at the start of the project (Figure 1).

Overall focus	Empirical research on outdoor learning including outdoor adventure education, fieldwork/educational visits and school grounds/community projects
Timescale	Work published from 1993-2003
Age range	Primary school, secondary school and undergraduate
Geographical scope	International (articles published in English only)
Sources	Published articles, research reports, books and government/international publications

Figure 1: The Search Parameters

These search parameters were designed to provide international research evidence relating to a wide range of outdoor learning activities. The international scope was important in order to be able to draw lessons from research in other countries and identify gaps in the UK-based research literature. The inclusion of studies published 1993-2003 reflected a desire to examine the most recent research findings. Unfortunately, due to cost and time constraints, the research team were not able to include Masters and PhD theses, except where they were published as journal articles or books.

3.2 Search methods

In accordance with the search parameters, relevant research literature was identified using a number of complementary search methods. These included:

- bibliographic database searches of education/social science research databases, as well as more specialist records
- hand searches of key research journals relating to outdoor education
- hand searches of previous reviews and bibliographies of relevance to this review
- online searches of websites relating to outdoor learning research and practice
- e-mail requests to researchers working in this area through various regional, national, and international networks and organisations.

Full details of all of these search methods are given in Appendix 1.

These searches identified a huge number of potentially relevant studies, from which the research team selected a short list of studies to review in detail. This selection was based on whether a publication included a clear research/evaluation dimension (as opposed to programme description), and whether the focus was in line with the parameters of the review. Examples of excluded studies included: studies published prior to 1993; evaluations of outdoor education programmes with adults rather than school/university students; research on informal learning in indoor contexts such as museums. Overall, this report is based on an analysis of 150 research publications.

3.3 Review processes

Individual research reports were categorised in terms of their focus on either fieldwork and educational visits, outdoor adventure education or school grounds/community projects. The literature connected with each of these types of outdoor learning was then reviewed by a member of the research team. In order to ensure commonality and comprehensiveness in the review process, all publications were reviewed using a common framework (see Appendix 2). The framework was designed to generate information for three purposes:

- **Cataloguing and reporting** – Basic descriptive information (such as full publication details, geographical location and age of learners), as well as a category descriptor (concerning broad, substantive focus of a study) were included in order to facilitate cataloguing and subsequent analysis and reporting of large numbers of studies.
- **Evaluation** – As well as descriptive information, this framework was also designed to generate evaluative information about the depth of detail provided about the different aspects of each study (conceptual/theoretical framework, sample, methodology, validity measures, methods, main findings, key conclusions, and author's view of implications), and any particular strengths and potential weaknesses that were apparent to the reviewer within the work as reported.
- **Evidence base analysis** – The third purpose of the framework was to enable the generation of ideas about (i) the contribution that individual papers made to the evidence base (i.e. main findings, key conclusions, author's view of implications, researcher's view of implications), and (ii) cases of agreement and disagreement between the evidence generated by different papers (i.e. links).

An important part of the review process was critical analysis of the available evidence, both in terms of the validity or trustworthiness of individual studies' findings, and the strengths and weaknesses of the evidence base as a whole. The project team sought to do this by:

- **Recognising the importance of different research paradigms** – A conscious effort was made to review pieces of work from within the research tradition (or paradigm) that the research had been conceived and undertaken. For example, quantitative (pre-test/post-test) programme evaluations were considered in terms of positivistic research traditions, while qualitative case studies were examined from the perspective of interpretivistic and/or socially critical inquiry. The concern was to examine how well the researchers had carried out what they had intended according to the paradigm in which they were operating.
- **Distinguishing between evidence that is more conclusive and less conclusive** – Through identifying methodological strengths and weaknesses of each individual study, it was possible to make distinctions between evidence that was more reliable and conclusive, and evidence that was more questionable or preliminary. This involved distinguishing between: findings based on empirical evidence and those based on anecdotal reflection or unjustified prior assumptions; claims based on empirical findings and those based on speculation about empirical findings; statistically significant results and those based on description of trends; and survey findings based on very small samples and those based on larger representative samples.

4. The impact of fieldwork and visits

This chapter considers the research evidence relating to the impact of fieldwork and visits. It begins by discussing the rationale for fieldwork and educational visits. It then provides information about the following types of impact: cognitive; affective; social/interpersonal; and physical/behavioural.

4.1 Introduction

One lesson outdoors is worth seven inside. (Tim Brighouse, quoted in May *et al.*, 1993, p. 2)

The importance of fieldwork to geographers is beyond question (Smith, 1999, p. 181)

Although many of the studies on fieldwork and visits are descriptive rather than empirical, several do report research that is qualitative, quantitative or a combination of the two. Some studies (for example, Manner, 1995; Zelezny, 1999) pull together research from other studies either statistically or more discursively.

A small number of studies discuss fieldwork in terms of learning models, justifying the activity on pedagogic grounds. Although these are predominantly theoretical commentaries, they provide an interesting dimension to the literature (for example, Cooper, 1991). In general, however, the rationale for using fieldwork is explained in terms of a philosophy (for example, the quote from Tim Brighouse above) or a more utilitarian reason (for example, fieldwork is essential in the training of naturalists). There are some researchers who see the rationale for using fieldwork in psychological terms, either derived from empirical research or culled from other studies (Wilson, 1995). Some advocates of fieldwork claim that it is a 'creative form' of learning (Baker-Graham, 1994), although the range of purposes is wide (see Lock and Tilling, 2002, for a description of the reasons why 14-19 year-old students engage in fieldwork).

In a recent summary of research on the role of fieldwork in students' learning, Nundy (2001) highlighted three major benefits associated with fieldwork:

- a positive impact on long-term memory due to the memorable nature of the fieldwork setting
- affective benefits of the residential experience, such as individual growth and improvements in social skills
- reinforcement between the affective and the cognitive, with each influencing the other and providing a bridge to higher order learning.

This list of benefits points to the complexity of measuring the impact of fieldwork and field trips. Few studies have looked explicitly at the impact on students' knowledge. The majority of studies stress outcomes which are either in the affective domain (for example, attitudes and values) or can be classified as social/interpersonal (for example, communication skills or leadership) but in reality the impacts are likely to be in more than one domain.

4.2 Cognitive impacts

Nundy (1998, 1999a and b) explored the role and effectiveness of residential fieldwork on UK upper primary school students. He found a strong relationship between the principal learning domains – that is to say improvements in the affective domain can lead to improvements in cognitive outcomes.

Residential fieldwork is capable not only of generating positive cognitive and affective learning amongst students, but this may be enhanced significantly compared to that achievable within a classroom environment. (Nundy, 1999a, p. 190)

Nundy's findings concerning long-term memory retention from fieldwork experiences echo an earlier study by Dierking and Falk (1997) who found that 96 per cent of a group (128 children and adults) could

specifically recall field trips taken during the early years of school. The most frequently recalled trips were those to natural sites and nature centres and farms. However, simply recalling a visit does not mean that it was an effective learning experience or that the time could not be more usefully spent in the classroom.

Secondary students from eleven Californian schools undertaking outdoor environmental learning scored higher in 72 per cent of the academic assessments (reading, science, maths, higher attendance rates and grade point averages) as compared with students from traditional schools in research by the California State Education and Environment Roundtable (SEER, 2000). Similarly, Eaton (2000) found that outdoor learning experiences were more effective for developing cognitive skills than classroom-based learning. Such comparative studies, though important, are rare and very difficult to carry out. In one such study, Fuller *et al.* (2000) studied two methods of teaching about fluvial studies at undergraduate level. They found that the 'traditional descriptive-explanation mode' was more effective than the 'analytical-predictive mode' of teaching.

Milton *et al.* (1995), in what they describe as a pilot project, studied the experience of 46 fifth graders in a US park. Graduate (doctoral) students in environmental studies conducted field studies in ecology with the school children. The authors found that the programme increased ecological knowledge and improved the social skills of the students. As the researchers report, 'The process of developing teamwork through cooperative games and group projects ... instilled in the children a sense of ownership and internalization of their knowledge of the park' (*ibid.*, p. 32).

Also in the US, McNamara and Fowler (1975) carried out a study of eighth and ninth grade students, using control and experimental groups. The authors found that earth science concepts were better learned through fieldwork. In Spain, Manzanal *et al.* (1999) found that fieldwork aided the conceptual understanding of 14-16 year old students and 'intervenes directly in the development of more favorable attitudes towards the defense of the ecosystem' (p. 431). The 67 students who took part in

the main part of the research were allocated to either a control or an experimental group. Both groups undertook about 20 hours of study but the experimental group engaged in sample collection and fieldwork at a freshwater system. Pre- and post-tests of knowledge were administered, attitude surveys were conducted and interviews were held with participants.

Elsewhere in Europe, Bogner (1999) reported gains in knowledge and attitudes of 10-16 year old students engaged in an extra-curricula project that involved examining the swift, an endangered bird. In a later study, Bogner (2002) reported that special residential fieldwork enhanced facets of pupils' environmental perception.

In a large-scale study involving 643 high school students in 28 classes from 18 urban high schools in Israel, Orion *et al.* (1997) examined three different types of field trip - Biology, Chemistry and Earth Sciences. In order to examine the effectiveness of the trips, they developed a Science Outdoor Learning Environment Inventory which is a 55 item instrument. Also in Israel, Tal (2001) examined the views of two groups of Israeli science teachers (both pre-service and in-service), and proposed the use of Systems Theory as applied to a visit to an environment centre.

Mittelstaedt *et al.* (1999) looked at the impact of a week-long experiential programme on the environmental attitudes and awareness of 46 children aged from 9-12. The children (31 male; 15 female), all from Cincinnati and the surrounding areas, attended the Edge of Appalachia Summer School for a 5-day programme of biodiversity activities. The authors found that 'even though the children arrived with a positive attitude toward the environment, they left with an even stronger positive attitude' (p. 147). Just over half (25) of the campers returned the following year and were asked about the impact of the initial visit on their environmental behaviour. Many children were able to identify significant numbers of pro-environmental actions that they had carried out which they attributed to the camp experience. Although there was no control group, the children had chosen to go to the camp and were reporting their behaviours, the authors are confident of the validity of their findings.

4.3 Affective impacts

In a study referred to in Section 4.2, the experience of primary-age students working in a park helped by US doctoral students changed the perceptions of the teachers and students toward each other, towards the park and of themselves (Milton *et al.*, 1995).

In a study carried out by Knapp and Barrie (2001), approximately 500 students (US Grades 4-6) from three urban school districts in Indiana were taken on field trips to a park. Students experienced one or other of two approaches to the fieldwork. The data indicate that the focus of the study of the programme (ecology or environmental issues) did not significantly alter the way students responded to the knowledge section of the evaluation instruments. The post-visit evaluation showed that there was little impact on students' attitudes towards the park site or to the related subject matter following either presentation type. It did not seem to matter what students did on the field trip – the impact on their knowledge was the same in both cases. For most students, the trips had a negligible impact on attitudes. Knapp and Poff (2001) showed that students taking part in a one-day visit to a US Forest Service site forgot most of what they had learned within four weeks of the trip. However, the visit had a strong positive impact on students' attitudes toward the site.

Nundy (1999b and 2001) in a study discussed above, explored the relationship between the affective and the cognitive domains amongst a group of 10-11 year-old students participating in a residential fieldwork course in the south of England. Nundy concluded that gains in one domain reinforce gains in the other.

Forest School, an educational initiative which originated in Scandinavia in the 1950s, was brought to the UK in 1995. The Forest School approach involves a range of activities taught in the forest as well as in the classroom, for example: building structures; learning safety routines; making objects; games; small achievable tasks and co-operative tasks (NEF, 2004, p. 36). A pilot evaluation of two Welsh Forest Schools involved children who were 'thought to be particularly vulnerable, demonstrated nuisance

behaviour or were thought to be at risk of "dropping out" of the education system (*ibid.*, p. 7). Students aged 5-9 and 9-11 took part in the scheme for either half a day per week for a term or in a mixture of day and half-day sessions combined with three consecutive days at a summer school plus regular sessions in school during the Autumn Term. Children who took part in the activities showed 'positive outcomes that relate to their motivation, pride in, and understanding of their surroundings' (*ibid.*, p. 5). It should be stated, however, that the evidence provided for the various outcomes is somewhat brief and anecdotal (see, for example, *ibid.*, pp. 16-20).

Uzzell and colleagues sound a note of caution about making too many assumptions about the relative permanency of attitudinal changes (Uzzell *et al.*, 1995; Uzzell, 1999). The researchers report on an investigation into what it is that children learn from a hands-on experiential encounter with the environment. In examining young people's perceptions of the severity of environmental problems at both local and global levels, they studied female Year 10 students' views about environmental problems at the 'You', 'Town', 'Britain' and 'World' levels. Groups of students were asked about their perceptions before a field visit, just after it and six weeks after. At first, children were more concerned about problems at a global level than at a local level. Afterwards there was an increase in perceived severity but after 6 weeks the levels went back to below the original concerns. The point that the studies highlight is that environmental attitudes are fairly well entrenched: 'What they learn ...both in the classroom and in the field, only serves to strengthen their views and perhaps heighten their sense of action paralysis' (Uzzell *et al.*, 1995, p. 177).

4.4 Social/interpersonal impacts

Commenting on the lack of coherence between purpose and outcome in environmental science fieldwork in the early 1980s, Wilby (1984) stated that 'It is as if our intentions were academic and exam orientated, whereas the outcomes are pupil-centred, related to personal and social development' (p. 13).

He also noted that 'there is certainly a need for more careful evaluation of the outcomes of this very expensive activity and the extent to which it is available to the whole of the school population' (p. 13). To some extent there is still a need for more work on the outcomes of fieldwork in science education although some studies have been carried out in the intervening 20 years. In a study referred to in previous sections, Milton *et al.* (1995) reported that the social skills of primary school children improved during their field studies in ecology.

Cunniff and McMillen (1996) describe a four-week summer school at a field research station in Maryland, USA. Participating students carry out scientific research during their stay and the authors report that teamwork skills of the 10th and 11th grade pupils develop during the activity. However, no evaluation data are provided by the authors.

Nundy (1999b and 2001) in a study discussed in Sections 4.1 and 4.2, looked at the experiences of 10-11-year-old students during residential fieldwork in Hampshire. Nundy noted that the collaborative tasks that the students engaged in had a positive impact on their co-operation skills, leadership qualities, perseverance, reliability, initiative and motivation.

The pilot evaluation of two Welsh Forest Schools, mentioned in Section 4.3, claimed to show that the children involved in the initiative demonstrated increased self-confidence, self-esteem and teamworking skills (NEF, 2004, p. 5). As noted earlier, the evidence base for this evaluation appears quite weak.

4.5 Physical/Behavioural Impacts

Bogner (1998) tested 1-day and 5-day versions of a long-established outdoor ecological programme with 700 students aged 11-13, in a national park in Germany. Bogner reported that 'the 5-day program explicitly provoked favorable shifts in individual behavior, both actual and intended' (p. 17). This well documented study involved pre-, post- and delayed (either one or six months) testing. The most important

conclusion of the study, according to the author, was that 'students could be provided with additional tools to make responsible environmental decisions by means of a combination of first-hand experience, participatory interaction, adequate preparation, and subsequent reinforcement' (p. 27).

In a paper published in 1999, Zelezny 'compared the effectiveness of educational interventions (n=18) conducted in classrooms and in non-traditional settings in improving environmental behaviour' (p. 5). The studies were carried out between 1975 and 1995. By comparing and analyzing the statistical data from others' studies, Zelezny concluded that 'classroom interventions improved environmental behaviour more effectively ... than interventions in non-traditional settings...' (p. 5). According to the author, the 'interventions that most effectively improved environmental behaviour actively involved participants and used young participants' (p. 5). However, as the author pointed out 'few of the studies examined measured actual behaviour, and often poor research methods were used' (p. 5). Given the diverse nature of the interventions studied and the author's caveat, the conclusiveness of this meta-analysis has to be questioned.

Doyle and Krasny (2003), in a thorough and carefully researched study linked to the Cornell University 'Garden Mosaics' program, investigated the use of Participatory Rural Appraisal (PRA), a hands-on approach using techniques such as participatory mapping and diagramming resources flows. Through the project, young people learnt about ethnic gardening practices in urban community gardens using research methods adapted from PRA. The project involved 31 educators and 85 youth in conjunction with 26 gardeners at community and home gardens. The authors noted that:

Although youth and educators experienced a number of challenges in facilitating the more hands-on activities (for example, participatory mapping, drawing diagrams of resource flows), the PRA approach does offer valuable insights for environmental educators whose goals include incorporating ethnic diversity and engaging youth in research leading to community action. (p. 91)

4.6 Summary

This chapter has examined studies of fieldwork and outdoor visits near to the school and some way from it. Summarising the literature on school field trips Bitgood (1989) wrote that:

much of the literature... has focused on: whether or not students learn; what they learn; or methods of conducting field trips. A review of the literature provides a convincing argument that students can learn as much or more on a field trip as in the classroom. (p. 6)

That was the situation in the late 1980s and we believe that not much has changed in the intervening time.

The studies examined during this review build on a large body of evidence carried out in many parts of the world at primary, secondary and tertiary levels. Although many of the studies on fieldwork and visits are descriptive rather than empirical, several report research that is qualitative, quantitative or a combination of the two. The main points arising from an analysis of the research findings are as follows:

- Substantial evidence exists to indicate that fieldwork, properly conceived, adequately planned, well-taught and effectively followed up, offers learners opportunities to develop their knowledge and skills in ways that add value to their everyday experiences in the classroom.
- Although the rationale for using fieldwork is often explained in terms of a philosophy or a utilitarian reason, there is enough evidence to suggest that fieldwork should be employed more widely and more frequently than is now the case because of the potential learning, attitudinal, interpersonal and social outcomes.
- Specifically, fieldwork can have a positive impact on long-term memory due to the memorable nature of the fieldwork setting. Effective fieldwork, and residential experience in particular, can lead to individual growth and improvements in social skills. More importantly, there can be reinforcement between the affective and the cognitive, with each influencing the other and providing a bridge to higher order learning.

- Student opinions about fieldwork appear to be positive, on the whole, particularly in courses that they have chosen to study.
- The difficulty of identifying, measuring and evaluating the benefits of fieldwork and field trips should not be underestimated by researchers, practitioners or policy makers. There are far too many poorly conceptualised, badly designed and inadequately carried out studies.
- Despite the substantial evidence of the potential of fieldwork to raise standards of attainment and improve attitudes towards the environment there is evidence that the amount of fieldwork that takes place in the UK and in some other parts of the world is severely restricted, particularly in science (see further discussion in Chapter 7).
- The number of studies that address the experience of particular groups (e.g. girls) or students with specific needs is negligible, although those that have been done draw conclusions that are important in terms of both policy and practice. Some children are more likely to take part in fieldwork than others for a range of reasons, many of which could and should be addressed (see Chapter 7).
- A minority of studies provide a health warning to proponents of outdoor education. Poor fieldwork is likely to lead to poor learning. Students quickly forget irrelevant information that has been inadequately presented. It is also naïve to think that short excursions to ‘the environment’ will become significant life experiences. As Uzzell *et al.* (1995) wrote in noting that environmental attitudes are fairly well entrenched ‘What they learnt both in the classroom and in the field, only serves to strengthen their views and perhaps heighten their sense of action paralysis’ (p. 177). This paralysis can be addressed by teaching students to ‘make responsible environmental decisions by means of a combination of first-hand experience, participatory interaction, adequate preparation, and subsequent reinforcement’ (Bogner, 1998, p. 27).

5. The impact of outdoor adventure activities

This chapter reports on research into the impacts of outdoor adventure education on young people. It considers evidence of the general impacts of outdoor adventure programmes, as well as more detailed research findings relating to cognitive, affective, social/interpersonal and physical/behavioural outcomes.

5.1 Introduction

Outdoor adventure education encompasses a wide range of activities including Outward Bound programmes, residential or day visits to outdoor activity centres, school-based outdoor education lessons or clubs, wilderness trips and summer camps. Such activities often take place in areas far away from where young people live, although they can be undertaken in settings in or near to the school (Clay, 1999; Beedie, 2000). In the school context, Harris (1999) explains that outdoor education can take place in three ways, 'as a timetabled subject; within the physical education curriculum; and as an extra-curricular activity both on residential and non-residential courses or as an after school or lunchtime activity' (p. 7). This kind of outdoor learning can involve various groups of young people such as school students, young offenders, children with special educational needs, young people with emotional and behavioural difficulties, and university students.

It has been argued that 'the most striking common denominator of adventure programs is that they involve doing physically active things away from the person's normal environment' (Hattie *et al.*, 1997, p. 44). According to Fox and Avramidis (2003) 'learning objectives are achieved alongside enjoyable and challenging activities which cannot be performed in conventional settings' (p. 268). It is important to recognise, however, that the aims of such programmes can emphasise the therapeutic, the educational

and/or the recreational to different degrees. As argued by Cason and Gillis (1994):

While some approaches to adventure programming are predominantly recreational in nature, others include sophisticated introductions and activity framings geared towards educational or therapeutic goals. (p. 40)

There is a well-developed research literature relating to this type of outdoor learning. It is important to note, though, that much of the research has been undertaken outside of the UK, particularly in North America and Australasia. That said, the fact that there is a considerable amount of empirical evidence in this area has made it possible for researchers to undertake 'meta-analysis' of previous studies' findings. Meta-analysis is a statistical technique that involves synthesising the findings of large numbers of existing quantitative studies to give an overall measure of impact (called an 'effect size'). Two such meta-analyses have been undertaken in relation to outdoor adventure education (Cason and Gillis, 1994; Hattie *et al.*, 1997).

Drawing on the findings of 96 previous studies (1,728 effect sizes, and 151 samples),² Hattie *et al.* (1997) established that 'the overall immediate effect size from these various adventure programs is 0.34' (p. 55). This, they explain, is equivalent to a 15 per cent improvement in the rate of learning, or 65 per cent of students who participate in an adventure programme exceeding the learning of those who do not participate in such a programme. This is described as 'comparable to achievement and affective outcomes from typical educational interventions' (p. 55). Furthermore, when longer term effects were analysed, the picture was even more favourable:

In a remarkable contrast to most educational research, these short-term or immediate gains were followed up by

² It should be pointed out that, although Hattie *et al.*'s meta-analysis was published in 1997, several of the 96 studies it draws upon were undertaken before the timescale of this review (1993-2003). The same is true of the Cason and Gillis (1994) meta-analysis.

substantial additional gains between the end of the program and follow-up assessments (Effect Size = 0.17). (p. 43)

In other words, 'it seems that adventure programs have a major impact on the lives of participants, and this impact is lasting' (p. 70).

A few years before this, Cason and Gillis (1994) reported similar findings. Through meta-analysis of 43 studies of adolescent adventure programmes, they found an average effect size of 0.31 (or a 12.2 per cent improvement in the rate of learning for the average adolescent).

Taken together, these two studies provide strong support for the beneficial impact of outdoor adventure education programmes on young people. This is a point reinforced by others writing in the area:

The consistency of these meta-analytic results strengthens the conclusion that, on average, outdoor education programs have a positive impact on the self-perceptions of participants. (Neill and Richards, 1998, p. 2)

In both cases, though, these studies also raise questions about the impacts of different kinds of programmes on different kinds of outcome measures. To look into this variability, it is necessary to consider impacts in the different realms of the cognitive, the affective, the social and the physical.

5.2 Cognitive impacts

Impacts on young people's knowledge, understanding and cognitive skills is arguably the least strongly-evidenced aspect of outdoor adventure education. In many cases, this simply reflects that fact that '[most] adventure programs [do not] have specific aims with respect to academic goals' (Hattie *et al.*, 1997, p. 68). A review of research on young offenders' outdoor adventure programmes, for example, reports few studies that have focused on, or found positive evidence of, cognitive impacts (Reddrop, 1997, pp. 10-13). In the school context, a recent OFSTED survey of outdoor adventure education in English primary, secondary and special schools found that 'structured assessment and recording of outdoor and

adventurous activities work, and its impact on pupils ... was rarely found in any type of school' (Clay, 1999, p. 85).

However, where outdoor adventure programmes do have aims relating to specific academic skills, it is reported that 'the effects on academic performance are most impressive' (Hattie *et al.*, 1997, p. 68). A similar point is made in relation to more general academic skills such as problem-solving, whereby 'it can be claimed that adventure programs enhance general problem-solving competencies' (*ibid.*, p. 68).

A recent example of a study focused on academic outcomes is Fox and Avramadis' (2003) evaluation of an outdoor education programme for 13-15 year old students with emotional and behavioural difficulties (EBD) in south-west England. Based on systematic participant observation and in-depth interviews with students and instructors during two seven-week courses (involving one afternoon of outdoor activities per week), the researchers tracked participants' (n=14) academic achievement in terms of 'participation in the task and achievement of learning objectives' (*ibid.*, p. 273). The findings indicated 'considerable variation in the degree of academic success', but the researchers' conclude that while the findings are not clear-cut, 'important academic gains were noted for at least one of the participating groups (whilst the underperformance of the other could be attributed to poor attendance)' (p. 280). This conclusion needs to be seen in the light of certain limitations of this study acknowledged by the authors, most notably the size and specificity of the sample (11 boys from one independent residential special school who expressed an interest in outdoor education).

Another area of cognition that has been explored by some studies is the impact of outdoor adventure education on young people's environmental knowledge and understanding. In contrast to the research on fieldwork in Chapter 4, the evidence of a positive link between outdoor adventure activities and environmental understanding is not strong. Hattie *et al.* (1997), for example, find limited evidence relating to environmental awareness and, where it is measured, 'the effect sizes are very low' (p. 76).

Keighley (1997) reported a similar finding 'there was a limited amount of literature or documented evidence to illustrate the influences of outdoor studies upon the development of environmental awareness' (p. 29). Furthermore, as discussed in the next section (Section 5.3), there are several authors who challenge the notion that nature experience '*automatically* contributes to environmental awareness, commitment and action' (Russell, 1999, p. 124). [original emphasis]

5.3 Affective impacts

There is considerable evidence to suggest that outdoor adventure programmes can impact positively on young people's attitudes, beliefs and self-perceptions.

With respect to **self-perceptions**, Reddrop (1997) reports several evaluations of programmes with young offenders that have recorded positive impacts in terms of participants' self-esteem, self-concept and locus of control (see pp. 10-11). Similarly, Hattie *et al.* (1997) note that 'the greatest effects of the adventure programs in the self-concept domain were for independence, confidence, self-efficacy, and self-understanding, and these were further enhanced during follow-up periods' (p. 67). They also found that, relative to other outcomes, the effect size for self-concept was particularly high at the follow-up stage, as compared with immediately after a programme.

Drawing on a range of previous studies, Hattie *et al.* (1997) put forward several explanations for these effects. For example:

- outdoor programmes provide young people with an opportunity to act successfully in a variety of challenging situations which thereby increases their self-confidence and self-efficacy
- the challenging and unpredictable nature of wilderness environments require participants to modify their own behaviour, thus enhancing their self-control and independence.

Four UK studies present evidence that supports such arguments. The recent evaluation of the government-funded 'Pilot Summer Activities Programme for 16 Year Olds' noted a number of benefits stemming from

the summer pilot projects, many of which involved outdoor adventure-type activities for an average of five days (Thom, 2002; see also Brown and Humberstone, 2003). The aims of the programme were: to encourage young people who are undecided about their future at 16+ years to re-engage with further education and training; to increase confidence and self-esteem, team working, leadership and life skills. The evaluation was based on a questionnaire survey of participants before (n=6,547) and after (n=2,998) the programme, and follow-up telephone interviews with a sample of participants (n=300) and parents/guardians (n=298) some three to four months after the programme. Based on analysis of the before/after differences for the 1,103 young people who completed both the pre - and post-programme survey, it was found that:

participants recorded significant improvements in self-esteem, leadership skills and confidence [and] the key driver of this was where young people had undertaken an expedition as part of their residential experience. (Thom, 2002, pp. 45, 51)

Furthermore, the follow-up interviews with participants and parents/guardians, 'confirmed that these effects appeared to last beyond the immediate end of the programme' (*ibid.*, p. iv).

Another relevant UK study is the 1999 OFSTED survey of outdoor and adventurous activities (OAA) in 33 schools in England (Clay, 1999). This reported that 'pupils' attainment in OAA was good; they demonstrated decision-making, problem-solving and interpersonal skills in a range of activities and in response to different types of challenge' (*ibid.*, p. 84). Furthermore, with respect to students with emotional and behavioural difficulties, it was noted that:

OAA provided many opportunities for them to build their confidence, skills and abilities in both cooperative and competitive situations. (*ibid.*, pp. 84-5).

Similarly, two small-scale UK studies suggest self-esteem benefits stemming from the Duke of Edinburgh's Award Scheme expedition (Gibbs and Bunyan, 1997) and a 31-day residential course for young offenders (McRoberts, 1994). The first of these

reports statistically significant increases in a range of physical self-perception measures (physical self-worth, sports competence, physical condition, body attractiveness, and physical strength) and general self-esteem for 126 teenage boys and girls after taking part in expeditions for their Duke of Edinburgh Scheme bronze, silver or gold award (Gibbs and Bunyan, 1997). Unfortunately longer-term follow-up measures were not included within this study, so no conclusions can be drawn about the durability of such changes.

One study that did look at longer-term trends is Pommier and Witt's (1995) evaluation of a young offenders' programme that incorporated Outward Bound and family training. The inclusion of a family training element aimed 'to help overcome some of the problems incurred when participants return to the same environment that they left before participating in a traditional Outward Bound Program' (ibid., p. 88). Through analysis of participants' survey responses before, after and four-months following the programme, it was found that 'for several variables scores of the Self-Perception Profile for Adolescents and the Family Functioning variables, differences [between the treatment and the control group] had disappeared by the time the second post-test was conducted' (ibid., p. 87). In other words, with this particular programme there was 'a tendency for initial improvements to dissipate over time' (ibid., p. 95).

Further evidence relating to self-concept and personal effectiveness comes from a study of 177 Australian high school students participating in an outdoor education programme (Purdie *et al.*, 2002). Through detailed analysis of responses to the Review of Personal Effectiveness (ROPE) scale, described as 'an instrument designed specifically to assess change in personal qualities that are the focus of many outdoor experiential programs', the authors find that 'significant gains were recorded on 9 of the 10 subscales' (p. 38). Beneath these broad trends, though, was a more varied story:

Most of the gains were made by students who rated themselves as totally Australian, and not by students who expressed somewhat of a lesser affiliation with an Australian identity, particularly those who were low in expressed levels of Australianness. (p. 38)

This issue of students' cultural identity impacting upon the nature and extent of their outdoor learning outcomes is considered further in Chapter 7.

In a qualitative study of four 18-19 year olds undertaking outdoor education at a Catholic, New Zealand secondary school, Davidson (2001) reports several examples of students 'building confidence and mental strength' (p. 17). These relate to 'pushing personal limits of achievement', 'persevering until one achieves one's goal' and 'learning how to survive even if it's in the city' (p. 17). The small scale of this study, however, places obvious limitations on the conclusiveness and generalisability of its findings.

Another area of affective impact is that of young people's **cop**ing strategies. This was the focus of an Australian study of 251 high school students (14-15 years) taking part in nine to ten day Outward Bound courses (Neill and Heubeck, 1997). Based on responses to a modified version of the Adolescent Coping Scale questionnaire, they found that 'participants reported utilising more productive coping strategies during the outdoor education programs than adolescents in normative settings' (p. 227). For example, the outdoor participants reported greater use of strategies such as 'Focus on Solving the Problem', 'Focus on the Positive' and 'Seek Social Support', and less use of strategies such as 'Relaxing Diversions', 'Worry', 'Self-Blame' and 'Ignore the Problem'. The authors also found that there were still examples of non-productive coping strategies amongst the outdoor participants, such as 'thinking about home' or 'going to bed early'. Furthermore, a significant correlation was found between use of such non-productive responses and higher levels of psychological stress both during and after the programme. The researchers argue that 'by helping participants to find positive and functional alternatives to non-productive coping responses it appears that mental health benefits can follow' (p. 247).

Research has also been undertaken into the extent to which outdoor adventure education can act as a stimulus for the development of **environmental concern and ecological attitudes and values**. The research evidence, however, is neither strong nor

consistent. On the one hand, there are two studies which suggest that outdoor adventure education can impact in this domain. Emmons' (1997) qualitative case study of 10 Belizean high school students during a five-day environmental education course at a wildlife sanctuary is one. This reports outcomes of increased sensitivity for the environment and more caring attitudes towards specific animals, as well as 'fewer expressions of "fear" by the students of the forest habitat' (ibid., p. 331). The study's small sample size and lack of a control/comparison group, however, mean that its findings are not conclusive for (in the author's words) 'it is difficult to determine how much growth [in the students' environmental sensitivity] can be attributed to the programme itself' (ibid., p. 342).

A Finnish study has looked at 11 and 12-year old students with different levels of involvement in activities such as field trips, hiking, camping and adventure activities (Palmberg and Kuru, 2000). They report that 'comparing pupils who are experienced in outdoor education with pupils who were not, it was found that the former seemed to have a strong and clearly definable empathetic relationship to nature'. Unfortunately, though, there is little evidence to back up this claim, and the study is based on a small sample of 22 pupils from two schools 'that had continuous outdoor education' and six pupils from another school 'that had only one outdoor program or sports day a year'.

On the other hand, however, there are three Canadian studies (all published in the same edition of the *Journal of Experiential Education*), which explore and challenge the relationship between outdoor adventure experiences and environmental learning. In a paper entitled 'Problematizing nature experience in environmental education', Russell (1999) seeks to challenge the way in which 'nature experience is often seen to *automatically* contribute to environmental awareness, commitment, and action' (p. 124) [original emphasis]. Drawing on research with ecotourists in Borneo and whalewatchers on the St Lawrence River, she argues that 'nature experiences are taken up in multiple ways' (p. 127). Along similar lines, Simpson (1999) argues that 'experiential educators sometimes

pat themselves on the back for just getting students into natural areas, but getting them there just to use nature as a backdrop is not enough' (p. 119).

This point is supported and illustrated by Haluza-DeLay's (1999) ethnographic study of a 12-day wilderness adventure trip in Alberta. Through participant observation and interviews with the eight youth participants (14-16 years) before, during and after the trip, it was found that 'the natural world was viewed as a valued location for the trip, but ignored on most other levels' (p. 135). Amongst the young people, there was a noticeable focus on the social as opposed to the natural, and within the programme, 'planned opportunities for self-reflection or environmental awareness were minimal' (p. 135). The conclusion drawn from this is that:

Youth without a social scheme that supports attention to nature or environmental concern are not likely to go against social standards that see these interests as irrelevant. (p. 135)

In other words, wilderness programmes do not necessarily equate to environmental education experiences. A similar point is made by Hattie *et al.* (1997) towards the end of their meta-analysis:

The effect sizes relating to environmental awareness are very low, and clearly adventure programs have not capitalized on the uniqueness of their environment. (p. 76).

5.4 Social/interpersonal impacts

The potential for outdoor adventure activities to benefit participants in terms of the development of social and interpersonal skills is a commonly-expressed claim (for example, Cooper, 1994). Within the research identified for this review, it seems to be fairly well supported.

Hattie *et al.* (1997), for example, are very clear that:

In our meta-analysis, across all interpersonal dimensions, there are marked increases as a consequence of the adventure programs [...] It certainly appears that adventure programs affect the social skills of participants in desirable ways. (p. 69)

This was particularly so for measures of social competence, co-operation and interpersonal communication. The same was true for 'most leadership competencies', such as decision-making, teamwork, time management and organizational ability (p. 66).

This corresponds with the findings of Thom's (2002) evaluation of the 'Pilot Summer Activities Programme for 16 Year Olds' in England (see earlier). This reported significant post-programme improvements in participants' leadership skills (although this was not matched in their communication skills), and follow-up benefits confirmed by parent/guardian interviews of 'better group working skills and enhanced communication skills' (ibid., p. 56).

Farnham and Mutrie's (1997) study of a four-day residential outdoor education programme for 19 young people (13–17 years) with special educational needs and emotional/behavioural difficulties in Scotland, provides evidence of several interpersonal benefits. Through student questionnaires (pre-and post-programme) and observation and staff interviews (during the programme), they found evidence of (i) a decrease in tension and anxiety, and loud and aggressive behaviour within the group; and (ii) an improvement in overall group cohesion, such as willingness to participate in extra-curricular activities and group discussions.

The researchers also undertook follow-up interviews with staff and students six weeks after the programme, and found continuation of the improved group cohesion ('teachers and students felt they were communicating with each other more and learning to trust each other'), but no lasting impact on tension and anxiety ('The improvements in self-confidence and esteem have diminished back in the normal school environment') (ibid., p. 36). As with several other studies in this chapter, it is important to point out the small and specific nature of this study's sample (18 volunteer SEN/EBD students from one special school), and the lack of any comparison/control group.

Some interesting findings relating to impacts in the interpersonal/social impacts emerge from a recent Australian study (Purdie *et al.*, 2002). Surveys of 177 Australian high school students before, after and eight weeks following an outdoor education programme, showed significant gains in participants' 'social effectiveness' (competence in communicating and operating in social situations) and 'same-sex and opposite-sex relations' (interactions with peers of the same and of the opposite sex'). Interestingly, though, no such positive trend was found in relation to students' 'co-operative teamwork' (co-operation in team situations). The authors suggest that this is likely to:

reflect the formation of specific friendships during the 5-6 day period rather than a more generalised improved ability to get on with people ... In some respect the formation of specific friendships could be counter to the development of co-operative teamwork because cliques and gangs become competitive rather than interdependent (ibid., p. 38).

This example underlines the complexity of social/interpersonal impacts, and the importance of research that seeks to understand the interactions between different aspects of the social and interpersonal.

5.5 Physical/behavioural impacts

There is some evidence to suggest that outdoor adventure education can benefit students in terms of improving physical fitness and promoting positive behaviours.

The question of behavioural impacts of outdoor adventure education is explored by Fox and Avramidis (2003) in their study of students with emotional and behavioural difficulties (EBD). Through systematic observation and in-depth interviews with 11 EBD students during outdoor education lessons over several weeks, they generated evidence that 'the programme was successful in promoting positive behaviour' (p. 273) in terms of following general rules, meeting individual behavioural objectives, and completing learning tasks.

In particular, there were five students whose consistently positive behaviour during outdoor education lessons was in marked contrast to their generally inconsistent, poor behaviour in other lessons. These observational findings were echoed by interviews with support staff from the school, who 'reaffirmed the success of the programme in promoting positive behaviour' (p. 275).

A similar point is made about EBD children in an OFSTED survey of outdoor and adventurous activities at 33 schools in England: 'The experiences were clearly helping these pupils to control their behaviour and to develop responsible attitudes to their personal safety and that of others' (Clay, 1999, p. 85). The same was true of students in mainstream primary and secondary schools whose behaviour during outdoor activities was described as 'often exemplary, with mature responses to challenging activities' (ibid., p. 85).

With respect to young offenders, there has been considerable attention given to the impact of outdoor education on recidivism rates. Reddrop's (1997) comprehensive synthesis of this research seems to suggest that, while there are several studies that have found a significant reduction in re-offending, there is also no shortage of studies registering either a negative program impact or a fading of positive program impacts over the long-term (two to five years and over). That said, Reddrop's overall conclusion is that:

There is sufficient evidence to conclude that, in the short-term, wilderness and survival outdoor programs do have the ability to impact positively upon participants who are juvenile offenders'. (p. 14)

Reddrop's use of the qualifier 'in the short-term' is clearly supported by Pommier and Witt's (1995) study of an 'Outward Bound School Plus Family Training Programme' for young offenders. As reported earlier in this chapter, the main findings of this evaluation was that 'there is a tendency for initial improvements to dissipate over time' (ibid., p. 95).

Several studies mentioned earlier in this chapter have touched on outdoor education participants' perceptions of their physical self and physical capabilities. Strong evidence of positive impacts in

these areas is provided by Purdie *et al.*'s (2002) Australian study. In contrast to this, however, a UK study with SEN/EBD students found no significant change in their perceptions of 'physical self-worth' or 'sports competence' at the end of a four day outdoor programme (Farnham and Mutrie, 1997). Differently again, Hattie *et al.* (1997) find a marked distinction between the impacts on physical self-concept (small short-term gains, greater long-term gains) and on actual physical fitness (substantial short-term gains, little long-term gains). The suggestion is that:

while the short-term gains in physical fitness are partly eroded by the time of follow-up assessments ... the apparent "sleeper" effect for physical self-concept may reflect frame of reference effects at the end of programs (i.e., comparison with other participants who are likely to be self-selected in terms of physical fitness and in comparison with the challenging physical demands of the immediate environment) that are altered when participants return to their normal environments'. (p. 71)

As with the distinction noted earlier between impacts on social effectiveness and co-operative teamwork, this difference between physical self-perceptions and physical fitness highlights the complexity of understanding outdoor education programmes and their impacts.

5.6 Summary

There is a well-developed research literature relating to outdoor adventure education, a large proportion of which stems from North America and Australasia. The key findings relating to impacts can be summarised as follows.

- Strong evidence of the benefits of outdoor adventure education is provided by two meta-analyses of previous research. Looking across a wide range of outcome measures, these studies identify not only positive effects in the short-term, but also continued gains in the long-term. In other words, 'it seems that adventure programs have a major impact on the lives of participants, and this impact is lasting' (Hattie *et al.*, 1997, p. 70).

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- Within the broad trends, there can be considerable variation between different kinds of programmes, and different types of outcomes. As Hattie *et al.* (1997) emphasise, 'only some adventure programs are effective, and then on only some outcomes'. (p.70)
 - There is substantial research evidence to suggest that outdoor adventure programmes can impact positively on young people's:
 - > attitudes, beliefs and self-perceptions – examples of outcomes include independence, confidence, self-esteem, locus of control, self-efficacy, personal effectiveness, and coping strategies
 - > interpersonal and social skills – such as social effectiveness, communication skills, group cohesion and teamwork.
 - The evidence base for cognitive and physical/behavioural benefits is less strong than for cognitive and interpersonal/social outcomes. This seems to reflect the fact that academic and/or physical outcomes are seldom the primary focus of outdoor adventure programmes and/or their evaluations. In cases where there is a focus on such measures, however, there are examples of outdoor adventure programmes yielding benefits in terms of:
 - > the development of general and specific academic skills, as well as improved engagement and achievement
 - > the promotion of positive behaviour and reduced rates of re-offending, and improved physical self-image and fitness.
 - In relation to fostering environmental concern and awareness, the evidence of a positive link between outdoor adventure activities and environmental understanding and values is not strong. There seems to be a strong case for questioning the notion that nature experience '*automatically* contributes to environmental awareness, commitment and action' (Russell, 1999, p. 124) [original emphasis].

6. The impact of school grounds/ community projects

This chapter considers outdoor learning on or near the school site, in areas such as school grounds, school gardens and local community settings. It looks at the rationales that underpin educational activities in such locations, and then examines evidence for impacts in the cognitive, the affective, the social/interpersonal and the physical/behavioural domains.

6.1 Introduction

School ground/community projects encompasses a range of activities including school grounds improvement and greening initiatives, horticultural growing projects in and around the school, outdoor play developments and community-based environmental work. Such projects can involve a wide range of learners from early years to older adolescents, and there is often a strong element of community involvement.

Outdoor learning in school/community settings is seen as important for a number of reasons. Firstly, it has become clear that many children and young people have lost access to traditional outdoor play environments, including streets, play areas, and wild spaces (Malone and Tranter, 2003a). This is partly a consequence of parental fears about traffic danger, bullying and 'stranger danger', and partly a result of the loss of natural spaces and play areas (see, for example, Tranter and Pawson, 2001). This means that school grounds and gardens are some of the few outdoor spaces that are still accessible to children and young people.

Second, there is a strong case for outdoor play opportunities in terms of the role that outdoor play has in children's social development and learning. Malone and Tranter (2003a) identify three main categories of development associated with children's play: physical/motor skill development; social

development; cognitive development. They argue that:

Play is not only inherently valuable as an enjoyable activity, it is also a process through which children learn. Play enhances problem solving and promotes opportunities to experiment with creative thought. (Malone and Tranter, 2003a, p. 6)

In a similar way, Titman (1994) identifies four benefits of school grounds in the minds of school children: (i) a place for doing (opportunity for physical activities); (ii) a place for thinking (intellectual stimulation); (iii) a place for feeling (presenting colour, beauty and interest); (iv) a place for being (to be themselves).

Another dimension of school grounds/community-based outdoor learning is its potential links with wider concerns relating to citizenship education, environmental learning and community action. According to Evergreen (2000), for example, school ground development is:

a process involving students, teachers and parents and often administrators and community volunteers in the collaborative improvement of school grounds for the purpose of addressing the healthy physical, social, emotional and intellectual development of students. (p. 1)

Finally, given that outdoor learning in distant settings is becoming increasingly difficult, there is also a feeling that school grounds and community settings offer a positive alternative and/or an important starting point. Beedie (2000), for example, argues that school- or locally-based outdoor education offers 'an opportunity for all pupils to have an outdoor experiential experience' (p. 20). Building on this, there are others who stress the importance that school grounds can play as the place from which to develop a progression towards taking groups to more distant and complex outdoor learning situations (Nundy, 2004, personal communication).

Turning to the research in this area, it should be recognised that, until fairly recently, outdoor learning in school grounds and community settings has not been the focus of a great deal of empirical inquiry. However, two recently published reviews of research into school grounds demonstrate the fact that this is a developing field of interest (Evergreen, 2000; Dymont, 2004).

6.2 Cognitive impacts

Several studies have focused on measuring attainment resulting from engagement in school grounds projects. Though these studies provide quantitative data about impacts, specific details about what the outdoor learning projects actually involved were noticeably absent. In 1994, the California State Education and Environment Roundtable (SEER) conducted an assessment of schools, across the state, incorporating environmental and outdoor learning in a significant fashion into their curriculum. SEER gathered comparative standardised data from eleven paired populations of treatment and control students. The methods of analysis involved standardised test information and a qualitative rubric with six key points that included natural and community setting, local environment as a context for learning, problem-based instruction and learner-centred methods. The findings from three of the paired comparisons are particularly relevant for this section of the review. Students from all three schools incorporating the six rubrics scored higher than traditional classrooms in reading, science and mathematics and had higher attendance rates and grade point averages (a US measure of academic attainment).

Simone (2002) discovered a relationship between school ground greening and academic performance at 16 elementary schools in Ontario, Canada. Students in Grades 3 and 6 attending schools with green grounds performed better on province-wide standardized tests than those students who did not. The greening initiatives had a stronger effect on cognitive achievements for students from poorer neighbourhoods as compared to those from wealthier neighbourhoods.

Based upon an extensive literature review, Dymont (2004) concluded that school ground greening initiatives might positively influence students' academic achievements. Examples from the literature cited by the author suggest that numerous 'subjects' can be formally taught on green school grounds – reading, writing, maths, science, art, environmental education, health, drama and social studies. She also argues that natural environments can provide a venue for developing cognitive skills related to critical thinking, creative inquiry, problem solving and creative development.

Reports of cognitive gains and academic improvements *without* measurements are common in particular subject areas and more generally. In an anecdotal account of a teacher's experience improving school grounds, Reid (2002) reported that the children involved in the planning and creation of the school's wildlife area were simultaneously exposed to many new and different aspects of mathematics, physics and chemistry. For example, students were involved in testing soil pH to decide which plants could be grown. Reid reported that achievement levels were raised in all areas of school life from behaviour to numeracy.

In another research report, commissioned by the Education Development Center in Boston (2000), high-quality school grounds reportedly led to greater opportunities for recreation and physical education, increased social development and better academic learning. In the study, questionnaires were sent to 200 educators involved in school grounds programmes in four countries (Finland, Sweden, the UK and the US). Sixty percent of the respondents felt that their school garden programmes improved academic learning: science processing skills, numeracy, art, language and reading.

Evergreen (2000), in another review of the literature, discovered a common thread of teacher benefits in participating in school grounds projects: new curriculum connections; increased morale and enthusiasm for teaching; new reasons to go outside; increased engagement and enthusiasm for learning; reduced discipline and classroom management problems. From this the review argues that:

it matters not what curriculum application is made in the outdoor context; any topic or subject can come to life when

a teacher moves to enhance the hidden curriculum of school ground. (Evergreen, 2000, p. 12)

Several studies reporting general cognitive gains involve work in either school gardens or school farms. Alexander *et al.* (1995) showed that participation in school gardening enhanced academic performance. The work in the school garden was cross-curricular and provided opportunities to learn about different sources of food and parts of plants. In another study using Froebel's Kindergarten learning approach, a teacher described her experiences guiding a class of six to seven year olds to design and build a small farm on the Laboratory school grounds in Georgia, USA (Poulsen, 1992). She found that the whole curriculum was touched by the farm – students wrote in their journals during the experience, read books about stories on farms as well as developing numeracy skills through the design of the farm and its maintenance. Students learned about life-cycles by incubating eggs that their chickens laid. Similar kinds of findings are reported in relation to school gardening in the Shiga Prefecture in Japan (Konoshima, 1995), and aquaculture programmes in New England secondary schools in the US (Wingenbach *et al.*, 1999).

In another US study, Eden (1998) wrote about her observations of six private schools in New England, USA that have working farms on site. Eden reported that the farms were beneficial in providing some academic enrichment. However, she also identified a gap between the activities the children engaged in on the farms and the school curriculum. Research by Canaris (1995) on a school garden in Vermont indicated that it was a source for mathematics problems and map-making skills. Students developed their knowledge of agricultural practices including finding out about alternatives to pesticides. Eventually, the students became interested in an indoor garden and built a small greenhouse, thus extending the outdoor garden even more directly into the classroom.

Moore and Wong (1997) provided a detailed study of the impact of the development of the grounds of a US school by examining the views of the children originally involved in its construction over many

years. Changes in the school ground design encouraged teachers to utilise the new space as an outdoor classroom, resulting in connections developing between children's play experiences and the formal curriculum. Children took on the role of knowledge generators rather than just knowledge consumers. The authors noted that:

the academic performance of the Washington children, as measured by standardized tests, was highly competitive with that of students from other schools. The repertoire of children's behaviour broadened enormously with the increase in physical diversity of the school site. From this we concluded that opportunities for learning and development also increased. (Moore and Wong, 1997, p. 181)

Two recent studies have reported on both the positive and negative aspects of school grounds projects with respect to developing knowledge and understanding. Rickinson *et al.* (2003a and b) reported on a three-year research project involving six English secondary schools participating in a school grounds improvement scheme called the 'Grounds for Improvement Secondary Action Research Programme' (SARP). Based on annual in-depth interviews and questionnaire surveys of staff and students at each of the schools, this study generates evidence of cognitive impacts in terms of students' learning and skill development. These are summarised as follows:

The process of being involved in a school grounds steering group, of trying to find out what one's peers think about the grounds, of undertaking group work about the grounds as part of technology, science, IT or PSHE, of helping to select a landscape architect, and of working with a designer, can benefit participating students in important and powerful ways. It can support enriched understandings of consultation, collaboration, decision-making, and compromise; contribute to improved skills and knowledge in particular curriculum areas such as design and technology; [and] provide opportunities for reflection about future career ideas'. (Rickinson et al., 2003b, p. 28)

As well as these potential benefits, though, there were also difficulties. The active, collaborative nature of the process of undertaking school grounds development through the curriculum, presented a considerable

challenge for the teachers and students at some of the schools. The departure from the curriculum was a problem for some students as the changes were too extensive and attempted too quickly. There were also difficulties because of conflicts between the school grounds work and students' other activities or lessons. As one teacher stated, 'pulling students from lessons on a regular basis so that they are missing class is not easy' (Rickinson *et al.*, 2003b, p. 27).

A recent initiative of the New South Wales Department of Education and Training - 'Learnsapes' - involves teaching and learning experiences in school grounds. Skamp and Bergmann (2001) conducted qualitative research in two provincial schools investigating their involvement in the process and describing details of existing Learnsapes projects. Three separate interviews were held with fifteen teachers, principals and external Learnsapes co-ordinators. It was reported that the majority of secondary teachers were not regularly using Learnsapes or the outdoors (only 15% reported using them regularly). In contrast, primary teachers used Learnsapes as often as possible. Learnsapes was perceived as enhancing student learning because of the 'reality' it provided and because it helped with developing an appreciation of classroom 'theory'. Most of the teachers believed that the Learnscape project had not directly influenced their practice, though more than half reported that it had influenced their thinking about teaching practice. Nine of the fifteen teachers perceived positive benefits for student learning and an increased sense of ownership in learning.

The barriers to using Learnsapes were that some topics or subjects (computer studies, history and mathematics) were not suited to the Learnsapes approach and the management of students outdoors proved too difficult. There was uncertainty about how to use/incorporate Learnsapes and there was a lack of desire to change practices. Outdoor teaching was not perceived as 'real' teaching and there were impediments to going outside. Planning for outdoor classes was seen as more complex than planning for ordinary lessons and teachers reported the time pressures resulting from increased external syllabus changes.

There are few studies that have looked in detail at *how* outdoor learning in school grounds/community settings brings about benefits in students' learning. Important exceptions to this are two research projects on outdoor science and environmental learning. Rahm (2002) conducted a participatory action research study of learning opportunities for inner-city youth (n=6) in a summer gardening programme called 'City Farmers'. She actively participated with the students and recorded their conversations in order to identify the types of learning that different students experienced. The unstructured questions initiated by the young people led to the development of inadvertent deeper scientific understandings of the food cycle, evolution and environmental management. By doing the planting, harvesting and the marketing in teams under adult guidance, the young people learned first-hand what gardeners and marketers do on a daily basis.

Mabie and Baker (1996) designed an experimental study to assess the impact that two different types of experiential agricultural instructional strategies had upon science process skills development (one was through in-class project work and the other was activities in the school garden) in comparison with traditional classroom instruction. Data were collected in two urban inner-city Los Angeles schools with five 5th and 6th grade classes (n=147) participating in the experiment. The results demonstrated that though students from all three groups increased their knowledge base, those groups participating in the experiential activities had greater increases in observational, communication and comparison science processing skills than did the control group learning from the traditional teacher-oriented approach. The experiential group that conducted their activities in the school garden demonstrated the greatest improvements in science processing skills, followed by the short project group and the control group, respectively.

6.3 Affective impacts

There are a range of affective impacts that have been associated with school ground learning experiences. In Dymont's (2004) recent synthesis of the literature, for example, two of the overarching themes concern the impact of green school grounds on social/behavioural development and on environmental ethics. Similarly, Evergreen (2000) identifies various affective student benefits from involvement in school grounds projects. With reference to high school students, for example, this review talks of:

greater pride in and ownership of learning, positive effects of working as equals with new adult role models, [and] creation of a lasting sense of place. (ibid., p. 7).

More detailed evidence of these kinds of impacts can be seen in a number of individual research studies.

Alexander *et al.*'s (1995) study of a Master Gardener Project in Texas described various benefits to the participating students from an inner-city school. Using a range of videotaped interviews, five main themes emerged involving the values of the school garden. These included moral development, academic learning, parent/child interaction, pleasant experiences, and the positive influence of the master gardener as a community role model. In relation to moral development, participants were reported to have gained independence and increased self-esteem by nurturing living things, and working with adult role models within the local area (the 'master gardeners').

Similar kinds of claims are made by an ethnographic study of inner-city gardening conducted in Boston (Andrews, 2001). This study found that the young people involved in the summer gardening programme experienced a transformative learning experience by developing problem-solving skills and stronger community sense through a deep relationship with the plants and the gardeners.

There are a number of studies that highlight changes in self-esteem and confidence through participation in improvement projects within school/community settings. Reid (2002) found that the children's

confidence grew greatly as they realised the strategies they used to solve problems and increase their enquiry/questioning skills in their school ground learning experiences. In the UK context, Learning through Landscapes (2003) conducted a survey of 91 of the 198 schools in London that had undertaken funded improvements in their grounds. This found that teachers in 57 per cent of the surveyed schools reported an improvement in student self-esteem as a result of involvement with this work. This survey, however, did not generate insight into why or how this might be the case.

Some insights into the process of students' involvement with school grounds improvement emerge from another Learning through Landscapes research project (Rickinson *et al.*, 2003a and b). Based on qualitative and quantitative data from six participating secondary schools, this study suggests that 'the process of participative school ground development can build students' self-confidence' in various ways (p. 55). This confidence came through feeling that their ideas had been listened to, gaining a sense of satisfaction through having done something to help the schools, and being involved in new and demanding tasks such as working with adults outside of the school and consulting the view of other peers. An important point to note, however, is that such benefits can be limited by '(i) the consultation process taking too long; (ii) students feeling hopeless about the likelihood of future vandalism; or (iii) students' plans not making it into practice' (p. 55).

Another theme in the literature is that of students' attitudes towards the school and its grounds. Investigating the 'Learnsapes' project, Skamp and Bergmann (2001) found that six of the fifteen secondary teachers believed that Learnsapes encouraged students to change their perceptions of school; students developed improved attitudes towards school and one result was a better general appearance and overall feel of each school. Teachers stated that students felt a renewed pride in and ownership of the school grounds. This was echoed by Rickinson *et al.*'s (2003a and b) work on the SARP project, which found evidence in some of the participating schools of 'positive changes in students' attitudes and feeling about school and

break/lunchtime' (p. 30). Similarly, the Learning through Landscapes' (2003) survey of 91 schools which had undertaken grounds improvements, reported that 94 per cent of students enjoyed and had fun on their newly improved school grounds, whilst 60 per cent of teachers believed the grounds had improved attitudes towards learning. Looking at attitudes more broadly, Eden (1998) reported that the school farms she observed were beneficial in providing psychological/spiritual growth for the students. Each school used their farm to foster a stronger work ethic amongst the students.

Several research studies have provided evidence of improved environmental attitudes as a result of school grounds projects. Alexander *et al.* (1995) showed that school gardening helped to foster a greater respect for living things. In a study as part of a masters degree at the Dominican University of California, Brynjegard (2001) explored three cases of the uses and impacts of school gardens at three different schools using interviews and ethnographic observations. She found that, at all three schools, the students exhibited a great amount of pride toward their garden and a desire to take care of the garden and treat it with tenderness. The students were knowledgeable about native plants and different food areas. All three school gardens stimulated positive feelings within the students towards their educational experience and to nature.

Skelly and Zajicek (1998) compared the environmental attitudes of students that had participated in a school gardening project (n=153) with those that had only experienced traditional classroom instruction (n=84). They concluded that students participating in the gardening project had higher positive environmental attitudes than the control group. Groundwork (2002a) demonstrated that students participating in their projects developed greater 'real-life' awareness of environmental issues and practical solutions toward solving them (see also Randall and Whitaker, 2002; and Cooke *et al.*, 2003). Finally, Shapiro (1995) reported that involvement in community restoration projects resulted in impacts on students' attitudes in terms of 'a sense of dignity and belonging, a tolerance for diversity and a sustainable ecological sensibility' (p. 225).

6.4 Social/interpersonal impacts

Reported impacts of educational experiences on the social/interpersonal domain include the enhancement of relationships between pupils either at play or through teamwork, and stronger links between the school and the wider community.

Four research studies focused on the links between school grounds and the quality of children's play. Dymont (2004) commented on the potential of green school grounds to enhance social/behavioural development. She discussed the specific values of green school ground space for the development of pre-school children in two studies in particular (Moore, 1986; Huttenmoser, 1995). Moore (1986) observed that pre-school-age children in well-defined childcare settings were engaged in more exploratory behaviour and more positive social interactions through their play. Huttenmoser (1995) compared social behaviours between two groups of five year old children in Switzerland. Children that were allowed unaccompanied outdoor access were reported having twice as many friends as those living in places with restricted outdoor access.

Bilton (1993) described outdoor play for pre-school children as providing the 'foundation of nursery provision concerning physical development, imaginative play, linguistic and social development, explorations of the natural world' (p. 17). In a study of a long-term project in a primary school in Berkeley, California, Moore and Wong (1997) demonstrated the impact of redesigning the school grounds on children's play and social behaviours. Part of the asphalt school grounds were transformed into natural features such as woodland, gardens and ponds. These transformations led to children developing more positive relationships with each other in these natural areas and exhibiting more creative play and learning activity. It was concluded that well-designed school grounds provided opportunities for young people to socialise with each other and facilitate positive interpersonal relations.

Malone and Tranter (2003b) conducted a qualitative study of primary school grounds in Melbourne and

Canberra, Australia. Aimed at informing schools of ways to better design and utilise school grounds to improve children's environmental learning, this research focused on samples of ten children, from years three/four, at each of the five schools studied. It used systematic observational and mapping techniques to identify children's behaviours, as well as interviews and structured observations of children's use of the school grounds in order to identify patterns that indicated the nature of learning. The study found that some types of play behaviour were more prevalent in particular schools, and that this was related to (i) the value placed by the school on environmental learning as an important outcome of children's play, and (ii) the nature of the outdoor setting.

Two studies have looked at improvements in teamwork and co-operation skills. Students participating in the SARP work (Rickinson *et al.*, 2003a and b) developed skills that were transferable to a range of subjects. Examples reported by staff and students included gaining first-hand experience of processes of consultation, teamwork, and group decision-making. Similarly, Australian students involved in the Learnscapes project planning group developed better co-operative skills, becoming more unified as a group and reaching a consensus (Skamp and Bergmann, 2001). They also demonstrated better lateral thinking in considering practicalities in planning. However, some students felt Learnscapes belonged to the classes that developed them and they resented sharing the end product with others. Teachers stressed student negativity associated with repetitive uses of Learnscapes across primary grades and secondary school subjects.

Another dimension of social/interpersonal impacts associated with school grounds/community projects is improved connection between schools and their communities. In reviewing the literature, Evergreen (2000) cites evidence suggesting that a school benefits when:

school grounds are shared spaces, they become physical connection zones, places for overlap between community and school ... when projects work they often involve parents, experts, and/or volunteers from the local community. (p. 14)

Evergreen (2000) noted that using school grounds that are designed to maximise learning can lead to a reduction in anti-social behaviour, better connections to community and an increased pride in school. The community as a whole can benefit as a stronger sense of community might is established, there is an increase in community satisfaction, stronger social capital networking, improvements in community health, better and more active involvement by parents, improvements in the natural environment and possible financial earnings and savings.

The Learnscapes project (Skamp and Bergmann, 2001) demonstrated an attraction and greater involvement of the community outside the walls of the school:

Parents are recognising that different teachers have different styles of teaching and learning and parents will say – 'oh I hope my child gets to spend at least a year in... class' or 'I hope my child gets to spend at least a year in ... class' because of the way that – the way they use ... parents don't necessarily call them Learnscapes ... features of the school that help with their children's learning. (Primary principal). (p. 6)

Five research studies looking at the value of school gardens and farms demonstrated links between the community and school. Poulsen (1992) found that a school farm also brought the community together through a more active involvement of the students' parents. The school garden constructed at a primary school in Westminster, Vermont became a community resource (Canaris 1995). The aim of the school garden evolved from a focus on developing nutritional awareness toward much deeper and more meaningful learning experiences. The teachers and students began the construction of the school garden with parents and older adult volunteers joining in and continuing to maintain the garden. The community involvement was essential to the development of the garden and helped to stimulate the children to interact and increase their communication skills.

Alexander *et al.* (1995) demonstrated that school gardening increased positive interactions with parents and other adults, resulting in increased parental enthusiasm, the initiation of gardening at home, and a developing sense of belonging to a larger community.

The Educational Development Center research in Boston (2000) demonstrated that over 80% of the 200 international respondents who had developed school gardens, felt that their programmes had increased a sense of environmental stewardship amongst the school community.

6.5 Physical/behavioural impacts

Research suggest that school grounds projects can lead to improvements in nutritional practices. In the school gardens study in Vermont, Canaris (1995) found that the students became aware of different types of food, how they are grown and their nutritional value. Students changed their nutrition habits and began eating more vegetables from the garden and advocated the importance of nutrition by holding campaigns and giving away some of their harvest to local food banks. Morris *et al.* (2002, p. 175) describe 'an innovative approach to nutrition education that accurately and effectively ties nutrition and gardening lessons together'. The series of nine activities which linked a gardening activity with nutrition education led to significant changes to students' reported eating behaviours, increasing environmental awareness, providing reinforcement of nutrition lessons and changing nutritional habits through the availability of healthy snacks.

Different uses of school grounds, whether it be for play or for gardening, are also associated with health improvements. Grahn *et al.* (1997) found that children attending an 'outdoors in all weather' day care facility took fewer sick days from their programme than their peers who attended an urban day-care facility surrounded by tall buildings. In the Learnscapes projects Skamp and Bergmann (2001) demonstrated more specific behavioural effects on students as calming effects, reduced vandalism and littering and a deeper staff-student relationship.

Bilton (1993) argued that physical exercise, running, climbing and games skills can only be effectively and safely organised outside where there is ample space. Bilton conducted research on the uses and values of outdoor space in three classes at different nursery schools with very different sizes, layouts and materials (although all had land around the classroom for garden space). Semi-structured interviews were conducted with teachers, and it was found that the problems associated with using the outdoor space were related to weather, supervision (concern about accidents), layout and size of garden, safety, storage issues, security and the cost of resourcing. Central to the success of the garden and the overcoming of problems has to be its availability at all times. The quality of play dramatically improved and became more focused and informed when children had access to the garden at all times. Bilton observed a mismatch between theory and practice (assumed value of playing outside and actual usage) and suggested that the attitude of the staff is central in making the garden work or fail as a learning environment.

In addition to physical benefits for an individual, there are physical benefits for the entire environment of the school and community through school grounds projects. The research on the SARP project, for example, noted that:

The impact of participative school grounds development includes improved facilities and new activities within the grounds, positive changes in students' attitudes, and new resources for curriculum teaching and learning. (Rickinson *et al.*, 2003a, p. 1)

In the Learning through Landscapes (2003) survey, 90 per cent of the schools questioned reported that students perceived an improved quality of the environment. Malone and Tranter (2003b) listed a few examples of school ground improvement projects across the USA including an asphalt playground being transformed into an 'Edible Schoolyard' (an organic garden), and a wildflower meadow.

6.6 Summary

The research in this chapter can be summarised in terms of the following key points.

- School ground projects have the capacity to link with most curriculum areas. Two examples of benefits stemming from this are positive gains in science process skills and improved understanding of design and technology-related issues.
- There are major challenges in implementing school ground projects within the curriculum. These are mainly associated with time, opposition to new curriculum structures and ill-perceived benefits of outdoor learning. Primary school teachers appear to have an easier time implementing school ground projects than secondary teachers.
- In the affective domain, the most important impacts of learning in school grounds/community settings include greater confidence, renewed pride in community, stronger motivation toward learning, and greater sense of belonging and responsibility.
- There is significant evidence that social development and greater community involvement can result from engagement in school grounds projects. Students develop more positive relationships between themselves, their teachers and the wider community through participating in school grounds improvements. There is also evidence that such projects result in more positive parental participation in their children's learning.
- Few studies have focused on physical and behavioural impacts of school grounds/community projects. However, there is some evidence that school ground educational projects are able to improve children's physical being through better quality play and through an increased motivation to eat more healthily and to take more exercise.
- Compared with research on fieldwork/visits and outdoor adventure education, there is a need for a greater number of rigorous in-depth studies on outdoor learning in school grounds and community settings.

7. Factors influencing outdoor learning and its provision

Having considered the impacts of different kinds of outdoor education, this chapter focuses more generally on the provision and the processes of outdoor learning. It discusses research which has explored the factors that can influence:

- the provision of outdoor learning by schools, teachers and others
- the nature and quality of young people's learning in outdoor settings.

Evidence relating to these influencing factors is important because it can help to highlight ways of increasing and improving outdoor learning opportunities for young people.

7.1 Factors influencing provision

There is a lot written about the problem of declining opportunities for outdoor education in this country (for example, Harris, 1999; Barker *et al.*, 2002). There is, however, considerably less published research into the factors (both real and perceived) that might help to explain such trends. The research that is available, though, suggests that there are a number of challenges and opportunities that have affected the provision of outdoor education over recent years.

Challenges to outdoor learning provision

A frequently-cited challenge for outdoor learning provision is **fear and concern about young people's health and safety**. One source of such fear has been 'a number of well-publicised accidents involving school children', which have served to overshadow 'the educational benefits of the off-site and outdoor classroom' (Thomas, 1999, p. 131). In her discussion of the impact of the Lyme Bay tragedy in which four teenagers died on a sea kayaking trip in 1993, for example, Jacobs (1996) reports that:

some headteachers stopped sending their pupils on activity holidays because their confidence in activity centres had been undermined. Many centres reported that there had been a fall in business by up to one-third in the 15 months following the incident. (p. 296)

Concern has also arisen recently in relation to farm visits following a civil court case concerning a child contracting an *E. Coli* infection during an organised school visit to an 'Open' farm in 1997 (Richardson, 2000). This is reported to have led to heightened anxiety amongst 'parents, teachers, educational employers [as well as] many farmers and organisations involved in farm visit schemes' (*ibid.*, p. 62). This point is well illustrated by one of the largest teaching unions (NASUWT) recently advising 'members against taking school trips because society no longer appears to accept the concept of a genuine accident' (Clare, 2004).

Studies that have investigated school teachers' thinking about teaching beyond the classroom suggest that health and safety issues represents one of a number of difficulties facing school staff. This was the case, for example, for 65 physical/outdoor education teachers in southern England (Harris, 1999), 59 elementary school teachers in and around Chicago (Simmons, 1998), and 28 secondary school science teachers in Darwin, northern Australia (Michie, 1998). It also featured as one of several barriers reported by teachers and outdoor educators involved in the current Growing Schools Initiative in England (Scott *et al.*, 2003).

It is important to recognise that concerns about children's well-being and safety are part of what Thomas (1999) calls 'a prevailing social trend, not only towards making things safer, but also towards seeking compensation for acts or omissions that result in personal injury' (p. 131). In other words, the growth of a litigation culture is another dimension of educators' and schools/centres' concerns about outdoor learning.

Another major challenge is **teachers' confidence and expertise in teaching and learning outdoors**. A recent OFSTED survey of Outdoor and Adventurous Activities (OAA) in 33 English schools noted 'teachers' experience' as a key factor affecting the quality of OAA in different schools (Clay, 1999). This was particularly evident in the differences between primary school and secondary school provision.

The teachers with more experience of working in the outdoors made greater demands on pupils ... Enthusiastic but less experienced teachers – usually in primary schools – tended to opt for lower levels of challenge well within the capacity of the pupils. (p. 84)

This is echoed by Beedie (1998) who argues that the delivery of OAA by schools is constrained by 'limited perspectives from PE staff', possibly as a result of 'lack of training' (p. 19). In a UK project called *Farmlink*, which aimed to facilitate long-term relationships between schools and local farms through educational visits, one of the problems encountered was teachers' lack of knowledge about farming (Groundwork, 2002b). The recent evaluation of the Growing Schools Initiative made a similar point (Scott *et al.*, 2003). The same seems to be true for teaching and learning in school grounds. A qualitative study of 32 secondary schools in England found that one of the barriers to working in the grounds cited by teachers was 'personal and professional limitations [such as] lack of training [and] fear of lack of control' (Titman, 1999, p. 10). This is echoed by more recent school grounds research in England and Australia (Skamp and Bergman, 2001; Malone and Tranter, 2003a and b; Rickinson *et al.*, 2003a and b), as well as studies into teachers' ability to provide opportunities for active citizenship within and beyond the school (Kerr and Cleaver, 2004, forthcoming).

The prospects for addressing the needs of teachers in this area, however, are not encouraging. In the UK, Barker *et al.* (2002) point out that:

The decline in fieldwork is also evident in initial teacher training [...and...] in-service experience is becoming less likely. (p. 7)

These challenges have not been helped by: the increasing number of non-specialists teaching secondary school subjects especially at key stage 3 and the decline in advisory support for outdoor learning within many LEAs.

Similar issues are raised by Simmons (1998) in her research on Chicago teachers' willingness to use outdoor natural settings (rivers, ponds and marshes; deep woods; country parks; and urban nature) for environmental education. Based on interviews with 59 elementary school teachers 'with widely differing experiences in providing EE in natural settings', the study found that:

the teachers did not believe that they were particularly well trained to teach in natural areas ... they seemed to believe that their classes were too large to manage and that they lacked the necessary background to teach in [such places]. (p. 31)

The requirements of school and university curricula and timetables are another reported constraint on outdoor learning. This can manifest itself in various ways:

- secondary school teachers in England citing that 'the main reason for not using the [school] grounds was the belief that the National Curriculum neither prescribes nor provides sufficient flexibility to permit the use of school grounds for teaching' (Titman, 1999, p. 10)
- secondary school timetables in various countries meaning that teachers have insufficient time to undertake work in the school grounds during a single lesson period (Titman, 1999), or are unwilling to extend field trips beyond a double lesson for fear of 'incurring the wrath of their peers for taking students out of their classes and/or generating relief lessons' (Michie, 1998, p. 47)
- the English National Curriculum's focus on 'Outdoor and Adventurous Activities' within the remit of Physical Education resulting in an overemphasis on the physical (as opposed to the personal/social, and environmental) aspects of outdoor education (Humberstone, 1993; Beedie, 1998; Clay, 1999)

- changes in secondary school science syllabus requirements meaning that ‘coursework and individual investigations now take precedence [over] developing a sense of place’ (Barker *et al.*, 2002, p. 7)
- the growth of institution-wide timetabling arrangements and modular courses in UK universities meaning that ‘opportunities for field excursions in the local area’ are more limited (Clark, 1997, p. 390).

Alongside curriculum constraints are difficulties due to **shortages of time, resources and support** for outdoor learning. Harris’ (1999) survey of 65 secondary school/teachers in the south of England noted ‘a lack of time and a lack of money’ as the top two obstacles to outdoor education (p. 8). In Australia, Michie (1998, p. 48) reports that ‘time and effort on the part of the teacher were often seen as negative factors’ associated with organising and undertaking fieldwork. Tasks such as visiting venues, contacting resource people, preparing resource materials, organising relief lessons, collecting students’ money and using one’s out-of-school time were all noted as difficulties. Another issue raised by the secondary school science teachers in Michie’s (1998) study was transportation.

Class sizes in junior secondary science were generally greater than the size of the group that could be transported with a small bus ... Bigger buses are not only more expensive to buy and maintain, but also they require different licensing arrangements. (p. 47)

The same issue is reported as a difficulty for undertaking farm visits (Groundwork, 2002b). The recent Growing Schools evaluation, for example, highlighted a number of barriers relating to fund raising, transportation, and costs to parents (Scott *et al.*, 2003). Likewise, Fisher (2001), writing about research into fieldwork in science based on interviews with teachers and administrators in 30 secondary schools in south-west England, noted that:

For students aged 11-16 years, structured scientific fieldwork away from the school grounds may now be rare. For students aged 16-18 years ... fieldwork has become regarded as a luxury and is usually limited to the minimum required by the examination scheme and to the extent students can fund these activities themselves. (p. 76)

Even with outdoor learning on the school site, the question of resources in terms of the availability of well-designed facilities and curriculum-resource materials remains a challenge for many secondary schools. As noted by Titman (1999), ‘other than provision for sports, there was little evidence of school grounds having been designed initially to support the formal, informal and hidden curriculum’ (p. 8). A key issue in this study, though, was the support or otherwise of the school senior management team.

Schools which had made most use of sites correlated in the main with those where the head was actively involved in and committed to the concept. In these schools the grounds had status and profile. On a practical level interested headteachers are also more likely to facilitate use through management structures, for example by creating a special responsibility post/allowance. (p. 10)

Related to this are schools’ and teachers’ philosophies of learning and the extent to which these incorporate a conception of learning as an indoor *and outdoor* activity. As Malone and Tranter (2003b) found in their study of Australian primary schools:

The school ground design, although instrumental in the potential for extending curricula, is not as vital as having a view of learning that does not distinguish between the indoor-outdoor environments. (p. 299)

Finally, outdoor education is subject to **wider changes within the education sector and beyond**, and this can be another area of challenge. This is well illustrated by the fate of fieldwork within UK university degree courses over the last decade. Clark (1997) highlights a number of ways in which the purpose and role of geography fieldwork have been affected by ‘the emergence of a new higher education system’. He draws attention to the impact of changing:

- student/staff numbers – ‘rising student numbers and student/staff ratios mean that staffing levels on fieldwork have fallen [and] staff-led small-group teaching is often no longer practicable’
- course structures – ‘it is difficult to specify learning objectives, and to devise realistic and fair methods of assessing fieldwork, when students are drawn from a wide range of backgrounds and may be studying varying amounts of geography within loosely-knit modular degree schemes’

- timetabling – ‘institution-wide timetables, in which the working day is divided into a series of two- or three-hour blocks, commonly limit the opportunities for field excursions in the local area’
- resource levels – ‘reductions in resources and increasing student indebtedness threaten residential fieldwork, especially in overseas locations’. (Clark, 1997, p. 390; see also McEwan, 1996)

Another example is outdoor adventure education in the secondary school sector. In an article exploring ‘school-based’ and ‘residential’ delivery of Outdoor and Adventurous Activities (OAA), Beedie (2000) makes clear that the debate has been shaped by ‘a climate of change in secondary education’.

School managed budgets, legislation following high profile tragedies such as Lyme Bay, undermining of LEA power, changing perceptions of risk and financial pressure on outdoor centres have all contributed to our present educational circumstances in ways which have a direct bearing on potential OAA programmes. (p. 18)

A similar point is made by Barker *et al.* (2002) about the negative effects that ‘changes in school management’ have had on field studies.

Opportunities for outdoor learning provision

As well as highlighting challenges, the literature also reveals factors that can provide opportunities for outdoor education.

The first of these is **new legislation relating to outdoor education with young people**. In her discussion of the legal developments since the Lyme Bay tragedy, Jacobs (1996) argues that the *Activity Centres (Young Persons’ Safety) Act 1995* and the *Adventure Activities Regulations 1996* should:

go some way to reassure schools and parents that some of their fears at safety adventure activities centres are unjustified ... The additional advantage of the legal developments, as far as schools and governors are concerned, is the shift of liability away from them to the providers of adventure activities. (p. 304)

Having said this, the more recent guidance issued by the DfES (1998; 2003 b, c, d and e) makes clear that, while centres have technical responsibility, the duty of care still lies with the teacher leading the group, the headteacher and the LEA.

Another example of legislation related to outdoor learning provision is new anti-discrimination laws and regulatory frameworks for education in the UK. Healey *et al.*’s (2001) web-based guide on *Issues in Providing Learning Support for Disabled Students Undertaking Fieldwork and Related Activities*, explains the significance of the *Disability Discrimination Act 1995* and the *Special Educational Needs and Disability Act 2001* for fieldwork in UK higher and further education.

Another opportunity referred to in the literature is recent **curriculum developments and initiatives**. Cooper (2000) sees the 1999 revisions to the National Curriculum as a welcome change for advocates of outdoor education.

Outdoor education has suffered from an overloaded, content-based National Curriculum ... There are, however, signs that priorities are changing [in terms of] revisions that emphasise the importance of personal, social and environmental education [which] are at the heart of outdoor education. (p. 26)

Initiatives such as Citizenship and Education for Sustainable Development are also part of this picture, as are the recent DfES strategy for ‘*Excellence and Enjoyment*’ in primary schools (DfES, 2003g), and the interim report of the working group on the reform of 14-19 education (Working Group on 14-19 Reform, 2004). In addition, there are a number of DfES programmes, such as the ‘Summer Activities for 16 Year Olds’ and the New Opportunities Fund ‘Get REAL (Residential Exciting-Active Leisure time)’ initiative for 11-17 year olds, which make reference to outdoor education as a means of developing self-confidence, self-esteem and motivation in young people (Thom, 2002; NOF, 2004).

More recently, concern about young people’s lack of understanding of food, farming and countryside issues has given rise to renewed interest in learning

beyond the classroom and farm/countryside visits (Policy Commission on the Future of Farming and Food, 2002). Connected with this, the government's Growing Schools Initiative seeks to enable 'schools to make better use of the outdoor classroom as a context for teaching and learning' (Growing Schools website, <http://www.teachernet.gov.uk/teachingandlearning/resourcematerials/growingschools/>). Such developments in the UK mirror trends in food, farming and health education in several other countries (Desmond, 1998; Dillon *et al.*, 2003).

Finally, a number of writers have highlighted the ways in which **developments in UK higher education** have provided scope for innovation and change in university fieldwork. Arguing that 'some of the elements of traditional fieldwork were of questionable educational value', Clark (1997) identifies several positive opportunities for change:

- to shift the emphasis from teaching in the field to learning in the field
- to use fieldwork as a means of developing a wider range of technical, attitudinal, and enterprise skills
- to introduce innovative methods of assessment and encourage student-centred study and group work
- to make full use of field opportunities in the local area instead of more expensive locations further afield.

A recent bibliography of research on university fieldwork in geography and the earth sciences suggests that such developments are indeed taking place (Cottingham *et al.*, 2001).

7.2 Factors influencing students' learning

A recurring message from reviews of outdoor education research in the 1990s was the urgent need for greater understanding of the process of young people's outdoor learning. Hattie *et al.* (1997) articulated this in terms of an imbalance between formative and summative research:

Most of the studies, and this meta-analysis, have concentrated on the summative rather than the formative or process aspects of adventure programs. It is critical that

such formative studies are part of research programmes that investigate theoretical concerns and processes that lead to positive change. (p. 74)

The evidence examined for this review suggests that insights are beginning to emerge into the formative factors that can facilitate or impede students' learning in outdoor settings. Such factors can be considered in terms of three main categories:

- **programme factors** – including the structure, duration and pedagogy of outdoor education programmes
- **participant factors** – including the characteristics, interests and preferences of learners
- **place factors** – relating to the nature and novelty of the outdoor learning setting.

Programme factors

Through comparing the outcomes of different outdoor education programmes, research studies and meta-analyses have been able to identify certain programme characteristics that seem to be important determinants of effectiveness in terms of students' learning outcomes. In addition, qualitative studies that have investigated practitioners' and participants' experiences of particular kinds of outdoor learning have generated insights into aspects of programmes that are important to learners. The evidence examined for this review highlights a range of factors.

Several studies have explored **programme duration**, and there is considerable evidence indicating that longer programmes are more effective than shorter ones. Two meta-analyses of outdoor adventure programmes found that the effects were greater for programmes lasting longer than three weeks (Cason and Gillis, 1994; Hattie *et al.*, 1997). This is supported by studies of outdoor environmental education programmes. Bogner's (1998) evaluation of two versions of an outdoor ecology programme (a one-day and a five-day) found that, while both versions impacted positively on students' environmental knowledge and attitudes, 'only the residential five-day programme had any effect on behavioural levels, (p. 26). Emmons' (1997) study of an outdoor environmental education programme in Belize argued that:

'the length of time that students spent at Cockscomb (five days for most) appeared to be important in the reduction of negative perceptions of the environment, including fears. [...] A shorter environmental education programme may not have had the same effect'. (p. 342)

Zelezny's (1999) meta-analysis of environmental education programmes identified a trend of intervention effectiveness being greater with participants who were 18 years or younger which, the author suggests may be due to the fact that interventions with this age group tended to be more prolonged than those with older participants.

The value of **preparatory work** prior to outdoor learning is another programme factor well-evidenced in the literature. In their study of nature-based excursions in Queensland, Ballantyne and Packer (2002) found significant differences between students who had done pre-visit activities and those who had not. The former both looked forward to, and enjoyed, their visit more than the latter. Work by Orion and Hofstein (1994) in Israel provides a strong rationale for preparatory work that introduces students to the cognitive (field trip concepts and skills), geographic (field trip setting), and psychological (field trip processes) aspects of fieldwork. Along similar lines, a recent evaluation of Forest Schools in Wales identifies 'close contact and good communication between the school staff and the Forest School Leaders' as a critical success factor in this programme (NEF, 2004, p. 23). The benefit of preparatory meetings, discussions, explanations and materials for creating accessible and inclusive field courses is stressed by Healey *et al.* (2001). One strategy for achieving this in a university context, is through the creation of online resources providing academic and organisational materials in advance of the trip (Warburton and Higgitt, 1997; Phipps and Stainfield, 1998). Another approach that has been advocated is to use problem-based learning in the preparation of students for field classes (Bradbeer, 1996). An interesting strategy used with nine to ten year old children in Spain focused on the pupils elaborating a behaviour code for a field trip in a nearby nature centre (Aleixandre and Rodriguez, 2001).

In connection with preparatory work, the need for **effective follow-up work** after outdoor learning experiences is stressed by several authors. Farmer and Wott (1995) examined the impact of 'Field trips and Follow-Up Activities' on 'Fourth Graders in a Public Garden'. The study, which involved 111 students, compared the impact of follow-up activities carried out two-weeks after the visit, on students' knowledge. The authors claim that the follow-up activities reinforced some of the concepts presented during the field trip and argued that follow-up activities could be more effective if led by museum teachers. Pommier and Witt (1995) argue that their study 'points out once again the need for increased long-term intervention and support to both the adolescents and their families if positive program impacts are to be maintained' (p. 95). A similar issue in relation to school fieldwork is raised by Orion and Hofstein (1994), who suggest that 'the field trip should be placed early in the concrete part of the total learning activity' and should be an 'integral part of the curriculum rather than an isolated activity' (p. 1117). Likewise, Uzzell *et al.* (1995) emphasise the need for clear links to be made between outdoor learning ('the world of our physical surroundings') and indoor learning ('the world of the school').

Several research studies highlight the importance of **carefully-designed learning activities and assessment** for students' outdoor learning. The NEF Forest Schools evaluation emphasised the importance of using learning activities that (i) 'can assist teachers in delivering key parts of the curriculum', and (ii) encompass 'familiar routines and structure to sessions' in order to establish trust, ensure discipline and safety, and increase pupils' confidence in an unfamiliar environment (NEF, 2004, pp. 24-5). Ballantyne and Packer (2002, p. 228) warn that 'environmental educators and school teachers who teach in natural environments should be wary of over-structuring the learning activities they design'. They found that 'the use of worksheets, note-taking and reports were all unpopular with students, and did not appear to contribute greatly to [their] environmental learning'. Instead they suggest that 'the opportunity to touch and interact with wildlife ... is likely to have [a more] significant impact' (p. 229). This echoes an

earlier study in Israel, which emphasised the importance of 'a field trip which directs the students to concrete interactions with the environment' (Orion and Hofstein, 1994, p. 1116). Emmons' (1997) study of a five day field course in Belize reports that students' learning was facilitated by their shared and direct experience of the surroundings, as well as their teachers' role modelling of their interests and likes about the forest. In relation to outdoor adventure education, Keighley (1993) warns of the tendency for 'the experience and activity [to] become so important that rigorous planning in terms of curriculum objectives [are] neglected' (ibid., p. 20). Clay (1999) makes the same point in his survey of school-based outdoor adventure education, 'the full benefit of OAA ... is often lost because of inadequate assessment and record-keeping practices' (p. 89). Findings from a recent UK study suggest that the expedition element of outdoor education programmes is particularly important in terms of affective and social/interpersonal outcomes. Thom's (2002) evaluation of the DfES-funded 'Pilot Summer Activities Programme for 16 Year Olds' found that 'the key driver of [improvements in participants' self-esteem, leadership skills and confidence] was where young people had undertaken an expedition as part of their residential experience' (p. 51).

Alongside well-designed learning activities, research has also focused on **the role of instructors and educators** in facilitating young people's outdoor learning. Neill and Heubeck's (1997) work on Australian high school students' coping strategies on Outward Bound courses suggest that instructors could 'help participants to find positive and functional alternatives to non-productive coping strategies' (p. 237). The ability to choose between different kinds of learning activities and tasks appears to be an important requirement for students. With regard to outdoor adventure education, Boniface (2000) argues that activities must be voluntary and enable participants to 'accurately evaluate and confront the environmental dangers being pursued' (p. 65). Openshaw and Whittle (1993) comment upon the need for teachers and outdoor educators to balance 'the students' desire for a structure within which they can feel comfortable and not threatened

and the added excitement caused by the unexpected' (p. 63-4). In a similar way, Clay (1999) stresses the importance of teachers selecting tasks that give students appropriate levels of challenge in their outdoor and adventurous activities (see also Richards, 2004). An in-depth qualitative study of the 'practice-theories' of Outward Bound guides in Belgium underlines the complex nature of facilitating outdoor learning, and argues that 'facilitation is a matter of noticing events' (Hovelynck, 2001, p. 56). Similar ideas are explored by Tucker (2003), who highlights the importance of outdoor instructors making 'sound judgements through negotiation and communication' (ibid., p. 284). Work by Tunnicliffe (2001) highlights the role that teachers and other adults can play in directing children's attention to less obvious features of plants during visits to botanical gardens.

Finally, research has highlighted the importance of **the structure and format of outdoor learning programmes being closely aligned with the goals they are seeking to achieve**. Using the notion of 'constructive alignment', research is currently underway into the extent to which the 'teaching method and assessment are aligned with learning activities stated in the course objectives' (Andrews *et al.*, forthcoming). A study of wilderness orientation programmes in 57 US colleges and universities raised questions about the balance between social and academic goals:

'if the intent of the orientation program is to develop a social network among students in order to limit the stress of beginning a college career, then this social goal is justified. However, if the goal of the particular program is to enhance a student's orientation to academic endeavour ... this social emphasis may need to be reviewed or altered'. (p. 83)

Similar issues arise in relation to the relative importance of social and environmental learning in outdoor adventure education programmes. Haluza-DeLay's (1999) ethnographic study of a 12-day wilderness adventure trip in Alberta for eight teenagers found that 'planned opportunities for self-reflection or environmental awareness were minimal' (p. 135) (see also Russell, 1999; Simpson; 1999).

Participant factors

There is growing recognition within the outdoor education research literature of the role that *learners themselves* play in shaping their outdoor learning. This emerges from studies of students' expectations and experiences of outdoor learning (for example, Ballantyne and Packer, 2002), the variation in learning outcomes between different groups of students (for example, Purdie *et al.*, 2002), and young people's perceptions of different kinds of learning activities and outdoor contexts (for example, Bixler *et al.*, 1994).

Such research indicates that outdoor learning can be affected by a wide range of factors associated with young people.

- **Age** – A recent Australian study of school students' perceptions of learning in natural environments found significant differences between the primary and secondary school age group (Ballantyne and Packer, 2002). Based on analysis of 580 student questionnaire responses, primary school students were found to be significantly more enthusiastic than their secondary counterparts both before and after the experience. The two groups were also looking forward to different aspects of the experience: 'Primary school students tended to focus on specific features of the programme ... Secondary school students gave a more varied range of responses, including getting out of school, experiencing nature ... and experiencing something new or different' (p. 221).

- **Prior knowledge and experience** – A recent US study of visitors' learning at Midway Geyser Basin in Yellowstone National Park highlights the crucial role that people's existing understandings, values and beliefs can play in shaping their outdoor informal learning (Brody and Tomkiewicz 2002). Along similar lines, Russell's (1999) research with ecotourists in Borneo and whalewatchers on the St Lawrence River draws attention to 'the stories [people] bring' to their nature experiences. In the context of school-level fieldwork, studies have shown that students' learning can be strongly influenced by their previous field and classroom-based experiences (Lai, 1999). A similar situation is reported in universities, where students can arrive with widely varying experiences of, and

feelings about, learning through fieldwork (Dalton, 2001). Openshaw and Whittle (1993) note that 'if students have been accustomed to a diet of "experiments" based on well tried recipes that "work", then real experimental practical ecology is likely to prove a difficult experience for them' (p. 64). Orion and Hofstein (1994) found that Israeli students' responses to a geological field trip were influenced by 'their previous experiences in field trips as social-adventurous events, rather than learning activities' (p. 1116).

- **Fears and phobias** – Several studies suggest that outdoor settings can be the source of genuine fear and concern for young people. Simmons (1994a and b) found children from the Chicago metropolitan area expressed concerns about a variety of nature scenes: possible natural hazards, threats from other people and inconveniences for their physical comfort. Similar worries about getting lost and encountering snakes or poisonous plants are reported by others (Wals, 1994; Bixler *et al.*, 1994). The important point is that such fears 'pose barriers to enjoying and learning [in and] about wildlands' (Bixler *et al.*, 1994, p. 31). This is seen in students with a high 'disgust sensitivity' who are found to prefer activities involving no handling of organic matter and fieldwork sites with clear water, no algae and easy lakeshore access (Bixler and Floyd, 1999).

- **Learning styles and preferences** – There is growing appreciation of the importance of students' learning styles and preferences in outdoor learning, especially fieldwork. Lai's (1999) in-depth study of Hong Kong secondary school students on a geography field trip found marked differences in individuals' responses to the two parts of the day. While some preferred the teacher-guided trip of local physical features in the morning, others were much happier with the student-led field investigation in the afternoon when they could 'work on their own and hence have more freedom' (Lai, 1999, p. 248). Recent research on university-level fieldwork in the UK is exploring in more depth 'the relationship between students' predominant learning styles and their experiences of fieldwork' (see, for example, Cottingham and Healey, 2003).

- **Physical disabilities and special educational needs** –

Recent work in the UK has highlighted the many barriers that disabled students can face to participating fully in fieldwork, and the ways in which institutions, departments and tutors can help to reduce them. Healey *et al.*'s (2001) online resource on the topic identifies a range of attitudinal (for example, staff and fellow students' views of disability), institutional (for example, the timetabling or scheduling of field visits) and physical (for example, steps, doors, steep gradients) barriers experienced by disabled university students. It underlines the need for accessibility to be placed 'at the heart of curriculum design' as opposed to simply offering disabled students surrogate or different field experiences. Similar kinds of arguments are made by Cooke *et al.* (1997) in their paper about creating accessible introductory geology field trips for students at Stanford University. This challenge is also pertinent to organisations conducting horticultural and gardening activities with school-age students (Marsden, 2003).

- **Gender** – Hattie *et al.* (1997) meta-analysis did not find evidence of gender differences for programme outcomes: 'From the available information, it appears that the effects on males and females are similarly positive' (p. 62). Other research studies suggest otherwise. Maguire's (1998) work with undergraduate physical geography students suggests gender differences in perceptions of fieldwork. In this study, 'the main gender differences shown by the students were in the perceptions of their own fitness level, and of the fitness level required for fieldwork tasks' (p. 213). An ethnographic study of teenage girls on a three week adventure programme in the US identified various aspects of 'adolescent female culture' that impacted upon their outdoor experiences (Hurtes, 2002). In particular, it was suggested that 'relatedness (social acceptance) is, by far, the most important of [these girls'] needs' and until this need is met 'it is unlikely that competence and self-determination, often goals of adventure programs, will be addressed' (*ibid.*, p. 117).

- **Ethnic and cultural identity** – Recent research in Australia suggests that young people's ethnic and cultural identities can be important factors in their outdoor learning. Purdie and Neill (1999) reported on difficulties experienced by Japanese students during an Australian-based outdoor education programme.

Examples of problematic activities included swimming in a river, and dressing and undressing near fellow students in a coeducational setting. In a further study of Australian high school students, Purdie *et al.* (2002) found that learning outcomes varied significantly with individuals' cultural identities: 'Most of the gains were made by students who rated themselves as totally Australian, and not by students who expressed somewhat of a lesser affiliation with an Australian identity' (p. 38). Drawing on the idea of 'stereotype threat', the authors suggest that 'if the goals and intended outcomes of the outdoor education program were inconsistent with a participant's salient identity or self-stereotype, the outcome would be less favourable' (p. 38). They recommend that outdoor educators 'need to devise strategies to counter the psychological discounting and disengagement processes that are typical of how individuals attempt to cope with stereotype threat' (p. 39).

Place factors

The importance of the setting is not a new theme in outdoor education research, especially on fieldwork (see, for example, Martin *et al.*, 1981). There are a number of recent studies that have further emphasised the importance of the location as a factor affecting students' outdoor learning. A recurring idea is that outdoor learning environments can place learning demands and emotional challenges on students, the impacts of which are not always sufficiently recognised by teachers and outdoor educators.

Orion and Hofstein (1994) research into school students' learning on geological field trips found that educational effectiveness was related to two factors: the quality of the field trip itself, and the extent to which students were prepared for the experience. This preparedness, they argued, needs to cover three main areas: the fieldwork setting (geographic novelty), along with the fieldwork concepts and skills (cognitive novelty) and the fieldwork tasks and activities (psychological novelty). A similar conceptual framework was used by Australian researchers in a study of high school science students during visits to a marine theme park (Burnett *et al.*, 1996). They argued that 'teachers need to ensure that students are not distracted by the novelty of the location' (*ibid.*, p. 63). This is supported by research

on young people's perceptions of the outdoors, which suggests a wide range of possible fears and concerns about learning in outdoor settings (Anderson and Moss, 1993; Bixler *et al.*, 1994; Simmons, 1994a and b; Wals, 1994; Bixler and Floyd, 1999).

There is, however, clearly a balance to be struck between novelty and familiarity. In their study of students' perceptions of nature-based excursions, Ballantyne and Packer (2002) found that 'students who had not visited the particular site before were looking forward to their visit more than those who had ($p < 0.001$)' (p. 221). Ellis (1993), writing in favour of humanistic geography, challenges the conventional wisdom that 'students should be prepared beforehand with the skills and techniques to be employed' (p. 131). On the basis of positive feedback from students nine months after a field trip to Norway, Ellis contends that less preparation might lead to more authentic responses to landscape from students. However, it is important to note that only eight out of twenty eight end-of-year evaluation forms were returned.

Emmons (1997) saw significance in the fact that the programme that she evaluated 'did not completely remove students from all that was familiar to them, as might a nature experience for inner-city children in the USA, for example' (p. 342). Instead, in her view, it was an environment that 'although certainly novel' was also one that the students could link with, due to 'their own experiences in rural Belize' and this contributed to its ability to challenge participants' environmental perceptions (p. 342).

These studies suggest a need for careful consideration of the complex inter-relationships between the novelty and familiarity of outdoor learning settings for individual learners.

7.3 Summary

This chapter highlights the wide range of factors that can influence the provision of outdoor education by schools, teachers and others. Research makes clear that there are a number of important **challenges** that can impede or prevent schools, teachers and others using outdoor settings for educational activities.

Notable barriers include:

- fear and concern about health and safety
- teachers' lack of confidence in teaching outdoors
- school and university curriculum requirements
- shortages of time, resources and support
- wider changes within and beyond the education sector.

Opportunities for outdoor learning provision, though, are also noted in the form of:

- new legislation and regulations
- recent curriculum developments and initiatives
- developments in UK higher education.

Overall, these various constraints and opportunities make clear the complexity of the challenge facing policy-makers, practitioners and others who are seeking to increase and improve young people's access to learning beyond the classroom and the school.

The challenge does not end, however, with simply getting students outside. The research that has been undertaken into students' experiences of outdoor learning activities suggests that there are several factors that can facilitate and/or impede learning in outdoor settings. These can be conceptualised in terms of:

- programme factors – including the structure, duration and pedagogy of outdoor education programmes
- participant factors – including the characteristics, interests and preferences of learners
- place factors – relating to the nature and novelty of the outdoor learning setting.

Taken together, these factors provide a framework for thinking about how efforts to improve the quality and depth of young people's outdoor learning might be directed. This brings us onto the question of implications for policy-makers, practitioners and researchers, which is the focus of the next chapter.

8. Key messages and implications

This chapter identifies key messages from the review for future practice, policy and research in outdoor learning. Against the backdrop of calls for educational practice and policy to become more evidence-based (for example, Oakley, 2002), we feel there is much in this review that is of relevance and use to practitioners and policy makers. We are aware from previous projects connecting research and practice (for example, Rickinson *et al.*, 2003b) of the challenges and opportunities associated with using research to inform educational practice and policy. We are mindful of the fact that research findings can be understood and used by users in many different ways depending upon individual interests, roles and contexts.

As a general point, though, the findings of this review should be considered not just in terms of how they might help to *prove the value* of outdoor learning, but also in terms of how they might help to *improve its quality*. In other words, there is a need for the research reported in this review to raise questions as well as provide answers, and to present challenges as well as give support. This chapter, therefore, attempts to outline both areas of support and areas of challenge that have emerged from this review for future practice, policy and research in outdoor learning.

8.1 Key messages for practice

This review highlights demonstrable benefits for several types of outdoor learning. The review findings provide a source of support and justification for practitioners seeking an evidence base for the area of work in which they operate. Research suggests that well planned, competently delivered and effectively followed-up fieldwork can result in learning that supplements and enhances students' experiences in the classroom. Similarly, meta-analyses of research on outdoor adventure programmes provide strong evidence of short and long-term benefits, and several

individual studies report positive impacts particularly in the affective and interpersonal/social domains. In the context of school grounds/community projects, there is a growing body of evidence that children and their schools and local communities can derive a range of benefits from effective learning experiences. **The review findings give a clear endorsement for certain kinds of outdoor learning provision.** In particular, research indicates the value of programmes which:

- provide longer, more sustained outdoor experiences than is often provided
- incorporate well-designed preparatory and follow-up work
- use a range of carefully-structured learning activities and assessments linked to the school curriculum
- recognise and emphasise the role of facilitation in the learning process
- develop close links between programme aims and programme practices.

These points could well be used to inform the strategic planning and development of organisations involved in providing outdoor learning opportunities for young people. They could also help to direct the ways in which school staff think about the structure, focus and timing of outdoor learning within and beyond the curriculum.

Turning to areas of challenge, there seem to be three key issues that need highlighting. The first is that **the aims of outdoor learning are not always realised in practice**. For example, it is common for people to espouse a link between participation in outdoor adventure activities and improved environmental awareness/values though in reality research suggests that this is unlikely *unless specific measures are taken within the outdoor learning experience to focus on such issues* (for example, Haluza-DeLay, 1999). This is an important qualifier as it raises the more general issue

of the extent to which outdoor learning aims are reflected in outdoor learning practices. Issues for consideration by teachers and outdoor educators therefore might include:

- how clear they are about what they are trying to achieve in outdoor learning settings
- how closely these goals are reflected in the structure, format and content of their programmes
- whether there are cases where certain goals are being overlooked or underplayed relative to others
- whether they take account of the needs of all their students
- how confident they are in the methods they use to assess students' outdoor learning, both in terms of its outcomes and its processes.

In the context of school grounds, often the aims of projects are more to do with improving the environment rather than improving opportunities to learn in the environment. The lack of appropriate aims may well lead to missed opportunities for student learning.

Issues of equity are fundamental in considering the provision of outdoor education. In studies of secondary school students on outdoor adventure programmes in Australia, researchers found strong evidence that positive outcomes were greater for those with particular cultural backgrounds (Purdie *et al.*, 2002). Inequities are also clearly demonstrated in studies of disabled students' access to fieldwork on university degree courses (for example, Healey *et al.*, 2001).

Another issue that points to the need to consider individual responses to outdoor learning, is research showing how outdoor settings can provoke fears and concerns in the minds of young people that 'can pose barriers to enjoying and learning' (Bixler *et al.*, 1994, p. 31). While these are findings from individual studies in specific locations, they serve to raise more general questions about individual learners' access to, and outcomes from, outdoor learning activities. In particular, outdoor educators might consider:

- how much they know about the emotional or physical barriers encountered by the learners with whom they work

- how skilled they are at tailoring teaching strategies and learning activities to help reduce or overcome such barriers
- how sure they are that the benefits of the experiences they provide are accessible and relevant to all their learners.

The second challenge relates to the as yet unresolved issue of **the relative benefits of novelty and/or familiarity with the outdoor learning setting**. On the one hand, studies have shown the importance of young people being prepared for learning out-of-doors in order to avoid being distracted by the novelty of the situation or held back by perceived fears and concerns (for example, Orion and Hofstein, 1994). On the other hand, other researchers have argued that novelty can be important either as a stimulus for curiosity or as a way of ensuring a more authentic response to the landscape (for example, Ellis, 1993; see also Trudgill, 2003). The underlying point is that much of where one stands on this issue will depend on what kind of outdoor learning one is trying to promote. This brings us back to the point made in Chapter 2 that outdoor learning can be seen as having a range of different foci, outcomes and locations. All of these need to be taken into account in relation to this question of the relative benefits of novelty and/or familiarity with the outdoor learning environment. While there are no easy answers, two points that merit consideration are that:

- it could well be as important to prepare students to see the unfamiliar in the familiar, as it is to familiarise them for the novel
- greater attention might be given to exploring ways of building progression within outdoor learning programmes based on transition from the familiar (and more local) to the novel (and more distant) and vice versa.

The use of school grounds to stimulate interest in learning outdoors and in appreciating the environment is something that might usefully be considered. Work in school grounds and the local environment also provides opportunities for staff development both in terms of sharing knowledge among staff as well as building confidence in their abilities to assess and manage risk.

The third challenge to policy makers and practitioners is that **in some cases the benefits of outdoor learning are not sustained over time**. This is not the finding of all studies; the two outdoor adventure education meta-analyses, for example, stress the idea of lasting impacts. However, there are some programmes where follow-up research showed that initial learning and attitudinal gains appeared to diminish over time (Pommier and Witt, 1995; Uzzell, 1999). While these again represent findings from specific individual studies, we would argue that they raise important questions about the relationships between outdoor learning and indoor learning. For example:

- to what extent is outdoor learning integrated into students' indoor learning and vice versa?
- to what extent is outdoor learning supporting or challenging the learning students undertake within the classroom?

Again, it may well be that school grounds and the local environment may offer opportunities for follow-up work that encourages reflection, enhances learning and maintains interest over sustained periods of time.

8.2 Key messages for policy

Those with a statutory and non-statutory responsibility for policy relating to outdoor learning should be in no doubt that **there is a considerable body of empirical research evidence to support and inform their work**. This speaks to a wide range of individuals and institutions including teachers, school governors, non-governmental organisations, local authorities, LEAs, teacher unions, subject associations and politicians at all levels, all of whom may be involved directly or indirectly in developing and evaluating policy relating to outdoor learning.

We believe that policy makers at all levels **need to be aware of the benefits that are associated with different types of outdoor learning**. In particular, they need to appreciate that:

- fieldwork and field studies, properly planned, delivered and followed up, provide powerful opportunities for cognitive and affective learning

- outdoor adventure education can provide unique opportunities for personal and social development with long-lasting impacts
- school grounds/community projects can enrich curricular and cross-curricular learning, and build stronger links between schools and communities.

In short, learners of all ages can benefit from effective outdoor learning.

However, policy makers **need to recognise that despite positive research evidence and the long tradition of outdoor learning in this country, there is growing evidence that opportunities for outdoor learning are in decline and under threat**. There is therefore a need for policy makers at all levels and in many sectors to consider their role in increasing access to outdoor education that is challenging, effective and that meets the needs of society while being sensitive to the needs, feelings and culture of the individual. It is crucial that policy makers consider ways to:

- tackle barriers that stand in the way of the provision of effective outdoor education for all students
- encourage good programmes and practices and capitalise on policy developments, for example, by linking initiatives in different sectors
- support research, development and training so that good practice can be understood, disseminated and supported.

This raises a number of questions for several different policy areas, including education, health, environment, and science.

In the **education sector**, policy makers need to address these questions.

- To what extent are there policies in place that promote high quality outdoor education as an entitlement for all students at both primary and secondary schools?
- To what extent do policies ensure that fieldwork at undergraduate level is actively encouraged and supported?
- To what extent do institutional policies support outdoor education through training?

- To what extent do such policies in schools, universities and LEAs result in adequate funding for safe and effective residentials in a range of relevant subjects?
- To what extent do curriculum and assessment policies fully support outdoor education?
- To what extent are there policies in place to ensure that the networks of new subject learning centres organise outdoor learning training courses for teachers?
- In what ways can the expertise and confidence of new and experienced teachers be improved through pre-service, in-service and leadership training?

For policy makers in the **health sector**, the following questions warrant consideration.

- To what extent do existing policies ensure that outdoor education is designed to enhance personal health while reducing any concomitant risk?
- In what ways can activities in school grounds promote healthy lifestyles?
- To what extent do existing institutional health and safety policies promote and enhance outdoor education for all students wherever relevant?
- To what extent are policies in place that result in adequate training in safety and teaching methods for all appropriate staff?

In the **environment sector**, policy makers need to address the following questions.

- To what extent do existing policies ensure that outdoor education results in positive experiences of the countryside and develops an understanding of rural/urban livelihoods?
- What policy changes might result in greater connections being made between schools and communities in urban and rural areas through outdoor education?

Science policy makers need to address the following kinds of questions.

- What policy initiatives might result in all students appreciating the role that fieldwork plays in the physical and the life sciences?

- To what extent is there a need for fieldwork to be a mandatory part of physical and life science courses wherever appropriate?
- To what extent is there a need for the Council for Science and Technology to consider the place of fieldwork in science education up to and including postgraduate level?

Underpinning all of these questions is a need for the benefits of outdoor learning to feature more prominently in debates about schools of the future (Bentley, 1998), social inclusion and 'personalised learning' (Miliband, 2004), healthy schools and communities, and education for sustainable development (DfES, 2002a).

8.3 Key messages for research

This review makes clear the substantial amount and range of research that has been carried out in outdoor learning in the 1990s and 2000s. Within this field, we see a number of encouraging signs relating to all three types of outdoor learning. In particular, there has been:

- a diversification of research into outdoor adventure education, and fieldwork/visits, with greater attention being given to questions of learning processes, learning styles and individual learners
- increased empirical enquiry into learning through fieldwork in higher education, often involving action research and theoretical development
- the emergence of school grounds research as a new dimension to the evidence on outdoor learning, with strong links to the value of outdoor play
- more sustained theoretical exploration of the history and philosophy of outdoor education, and more critical attention to issues of inclusion and access in outdoor learning
- a growing number of meta-analyses and reviews of research, with clear attempts to provide accessible summaries for practitioners involved in work in school grounds, field study centres and outdoor adventure activity centres.

As it stands, these various research developments have generated a substantial body of evidence that can be seen to provide support, raise challenges and deepen insights about many aspects of outdoor learning policy and practice. Notwithstanding this, **the evidence base is not without weaknesses or potential areas for improvement.** In order to improve the situation, it is helpful to draw upon Wagner's (1993) notion of 'blank spots' and 'blind spots'. Studying topics 'relevant to questions already posed can be seen as filling in *blank spots*' (p. 16, [original emphasis]), whereas research that challenges us to 'ask new questions illuminate[s] *blind spots*, areas in which existing theories, methods, and perceptions actually keep us from seeing phenomena as clearly as we might' (ibid. p. 16 [original emphasis]).

Blank Spots

From the perspective of outdoor learning in this country, it is crucial to recognise that a good proportion of the research in this review originates from beyond the UK. As noted by Hattie *et al.* (1997) in a report of a meta-analysis of 96 studies:

Though it was the place of origin of the Outward Bound movement, there were too few evaluations of programs in the United Kingdom to include them in this comparison. (p. 62)

While it is understandable that certain countries, such as the US, will generate more outdoor learning research than the UK, **there is a real need for more UK-based research into certain aspects of outdoor learning.** In particular, there is a need for deeper insights and stronger research evidence on:

- the extent of outdoor learning provision available to school and university learners in this country, and how this compares with other countries and earlier time periods
- the effectiveness of outdoor learning programmes that (i) take place in the school grounds and/or the local community; (ii) offer a combination of fieldwork and adventure activities in a more holistic process-orientated way; or (iii) seek to build progression from local environments to more distant learning contexts

- the sorts of fears and concerns that young people can bring to different kinds of learning situations beyond the classroom, and the ways in which these can impact upon their learning experiences and learning outcomes
- teachers' and outdoor educators' conceptions of 'the outdoor classroom', and the curricular aims and pedagogical strategies that they see as important for effective teaching therein
- the cost-effectiveness of different kinds of outdoor learning, both in terms of economic cost-benefit analysis and also in terms of schools', teachers' and parents' perceptions of 'value for money'.

In order for these gaps to be addressed, attention will need to be given to two important issues. The first is **how to improve the methodological rigour of outdoor learning research and evaluation.** There was a range of methodological weaknesses evident within certain parts of the literature in this review, including: poor conceptualisation and research design; broad generalisations being made from small samples; too much description without any critical analysis; and little or no follow-up in the medium to long term. These are by no means unique to the field of outdoor learning, but they are critical concerns that need addressing in future research and evaluation in the area.

The second issue is **how to improve and deepen the research-based understandings of the outdoor learning process.** To put it simply, there is still much to be learnt about how and why programmes work or not. In view of this, we would echo others in calling for: more comprehensive descriptions of programmes and interventions; clearer and more fine-grained descriptions of participants; greater investigation into the complexity of impacts, including the differences within (as opposed to between) groups of students; and the combined use of a range of quantitative and qualitative methods, particularly in the context of observational/ethnographic studies. It is worth noting that several of these strategies are already being used within current research into university-level fieldwork in the UK (see Cottingham *et al.*, 2001).

Blind Spots

By their nature, blind spots are less easy to identify. However, we believe that the field would benefit from greater attention being given to the following areas.

- **The nature of the 'learning' in outdoor education –**

There is currently little in-depth consideration of the 'learning' aspect of outdoor learning. Given developments in learning theory and research within education more generally, this seems to be an important blind spot. There is a strong case, therefore, for future studies of outdoor learning that take seriously different views of cognition and learning (see, for example, Greeno *et al.*, 1996), and draw on learning theory as a grounding for their methods and analyses (see, for example, Brody and Tomkigwicz, 2002).

- **The relationship between indoor learning and outdoor learning –**

With the exception of studies focusing on preparation and follow-up work, most research on outdoor learning looks exclusively at what happens out-of-doors. While this is understandable (particularly for programme evaluations), it leaves unexplored all questions about how out-of-classroom learning can support within-the-classroom learning and vice versa. With the boundaries between so-called formal learning and informal learning becoming less clear (for example, Bentley, 1998), there is an urgent need for outdoor learning research that takes a more integrated view of learning in different kinds of settings both within and beyond the school. On one level, this is about research projects that look at the before, the during and the after of outdoor learning programmes. On another level, this is about asking deep-seated questions about the extent to which learning needs to be understood in similar or different ways within varying contexts and settings.

- **The historical and political aspects of outdoor education policy and curricula –** It is clear that outdoor education has a rich and complex history, which varies across national, regional and local contexts. As contemporary interest grows in outdoor learning, it is crucial that current debates and developments are seen in relation to its historical and political dimensions. To support this, research is needed into the socio-historical development of outdoor education policy, discourse and practice. The theoretical perspectives offered by work in policy studies, curriculum studies and critical/post-structuralist research may provide interesting starting points for such work (see, for example, Brookes, 2002; Humberstone *et al.*, 2003).

As a final point, a crucial consideration for researchers in this field should be the extent to which they can help to facilitate closer connections between research and policy, and research and practice.

Appendix 1.

Search procedure details

The search strategy combined a number of sources to identify potentially relevant studies.

Parameters

Time scale: 1993 – 2003

Handsearches

Journals

Key journals in the field were handsearched to identify articles that had been missed in the database searches.

Alternatives Journal
American Nature Study Society Newsletter
Applied Environmental Education and Communication Association for Business Simulation and Experiential Learning Newsletter
Association for Outdoor Recreation Education Newsletter
Australian Journal of Outdoor Education
Backpacker Magazine
Bioregional Outdoor Education Project Newsletter
Bradford Papers Online
Camping Magazine
Canadian Journal of Environmental Education
Electronic Green Journal
Environmental Education Research
Exchanges: an Online Journal of Teaching and Learning
Funzione Gamma
Insight
International Journal of Environmental Education and Information
International Journal of Wilderness
Journal of Adventure Education and Outdoor Learning
Journal of Applied Recreation Research
Journal of Environmental Education
Journal of Experiential Education
Journal of Geography in Higher Education

Journal of Leisure Research
Journal of Park and Recreation Administration
Journal of Travel Research
Journeys
Kappa Delta Pi Journals
Leisure Sciences
Leisure/Loisir
National Society for Experiential Education Quarterly
Nature Study
North American Association for Environmental Education Monograph
Outdoor Education and Recreation Law Quarterly
Outdoor Ed. Com
Outside Magazine
Outward Bound International Newsletter
Parallel Lines
Parks and Recreation Magazine
Recreation Research Review
Research Connections
Taproot
The Outdoor Network
Therapeutic Recreation Journal
Thresholds in Education
Ziplines

Reviews and Bibliographies

Handsearches were also undertaken of several previously published reviews and bibliographies. These related to:

- geographical education/fieldwork (Higgitt, 1997; Foskett and Marsden, 1998, 2002; Cottingham et al., 2001)
- outdoor adventure education (Hattie et al., 1997; Reddrop, 1997)
- school grounds projects (Malone and Tranter, 2003b; Dymont, 2004)
- environmental learning (Hart and Nolan, 1999; Rickinson, 2001)

Internet web sites relating to outdoor learning

Online searches were carried out of the following websites relating to outdoor learning research and practice.

<http://www.wilderdom.com/research.html>

<http://www.reviewing.co.uk/outdoor/outindex.html>

<http://www.coe.uga.edu/sdpl/archives.html>

<http://www.ukoi.demon.co.uk/>

<http://www.strath.ac.uk/Departments/JHLibrary/outdoored.html>

<http://www.outdoored.com/>

<http://www.gees.ac.uk/mainconf/resconfabs.htm#pap1>

<http://www.glos.ac.uk/gdn/>

Database searches

A range of different educational, sociological and psychological databases were searched. Search strategies for all databases were developed by using terms from the relevant thesauri (where these were available), in combination with free text searching. The same search strategies were adhered to as far as possible for all the databases. The NFER Library's own internal databases were also searched, as well as CERUK (Current Educational Research in the United Kingdom).

The database searches were supplemented by scanning the reference lists of relevant articles, thus identifying further studies. The team also searched relevant websites and downloaded documents and publications lists.

The bibliographic details of all papers identified through database searches and the potentially relevant papers found by hand, website and bibliography searching and through personal contact were entered onto a ProCite bibliographic database.

The keywords used in the database searches, together with a brief description of each of the databases searched, are outlined below.

Australian Education Index (AEI)

AEI is produced by the Australian Council for Educational Research. It is an index to materials at all levels of education and related fields. Source documents include journal articles, monographs, research reports, theses, conference papers, legislation, parliamentary debates and newspaper articles.

- #1 Outdoor Education
- #2 Outdoor Learning (ft)
- #3 #1 **or** #2
- #4 Fieldwork (ft)
- #5 Field Trips
- #6 Field Studies
- #7 #4 **or** #5 **or** #6
- #8 #3 **and** #7
- #9 Adventure Education
- #10 Outward Bound
- #11 #8 **or** #9
- #12 #10 **not** #3
- #13 Forest School* (ft)
- #14 Forest Camp* (ft)
- #15 Heritage Centre* (ft)
- #16 Visitor Centre* (ft)
- #17 National Park* (ft)
- #18 Science Centre* (ft)
- #19 School Grounds (ft)
- #20 Community Gardens (ft)
- #21 Botanical Gardens (ft)
- #22 Countryside (ft)
- #23 Farm Visits (ft)
- #24 Nature Studies (ft)

British Education Index (BEI)

BEI provides bibliographic references to 350 British and selected European English-language periodicals in the field of education and training, plus developing coverage of national report and conference literature.

- #1 Outdoor Education
- #2 Outdoor Learning
- #3 #1 or #2
- #4 Fieldwork
- #5 Field Trips
- #6 Field Studies
- #7 #4 or #5 or #6
- #8 #3 and #7
- #9 Adventure Education
- #10 Adventure Learning
- #11 Outward Bound (ft)
- #12 #9 or #10 or #11
- #13 #12 not #8
- #14 Forest Schools\$ (ft)
- #15 Forest Camp\$ (ft)
- #16 Museums
- #17 Heritage Centre\$ (ft)
- #18 Visitor Centre\$ (ft)
- #19 National Park\$ (ft)
- #20 Science Centre\$ (ft)
- #21 Scouts (ft)
- #22 Girl Guides (ft)
- #23 YMCA (ft)
- #24 YWCA (ft)
- #25 School Grounds (ft)
- #26 Community Garden\$ (ft)
- #27 Botanical Garden\$ (ft)
- #28 Countryside (ft)
- #29 Farm Visits (ft)
- #30 Landscape (ft)
- #31 Nature Stud\$ (ft)

(ft) Denotes free-text searching

\$ Denotes truncation of search terms to account for plurals (eg head, heads)

British Education Internet Resource Catalogue

This is a database of information about professionally evaluated and described internet sites which support educational research, policy and practice.

- #1 Outdoor Education
- #2 Outdoor Learning
- #3 Fieldwork
- #4 Field Trips
- #5 Field Studies

Canadian Business and Current Affairs (CBCA)

CBCA provides indexing and fulltext access to the principal educational literature publications in Canada, covering all significant reports of government departments, faculties of education, teachers' associations, large school boards and educational organisations. Over 150 educational periodicals, plus educational articles in over 700 general journals and newspapers are indexed

- #1 Outdoor Education
- #2 Outdoor Learning (ft)
- #3 #1 or #2
- #4 Fieldwork (ft)
- #5 Field Trips
- #6 Field Studies
- #7 #4 or #5 or #6
- #8 #3 and #7
- #9 Adventure Education
- #10 Outward Bound (ft)
- #11 #9 or #10
- #12 #11 not #8
- #13 Forest School* (ft)
- #14 Forest Camp* (ft)
- #15 Heritage Center* (ft)
- #16 Visitor Center* (ft)
- #17 National Park* (ft)

(ft) Denotes free-text searching

ERIC

ERIC is sponsored by the United States Department of Education and is the largest education database in the world. It indexes over 725 periodicals and currently contains more than 7,000,000 records. Coverage includes research documents, journal articles, technical reports, program descriptions and evaluations and curricula material.

- #1 Outdoor Education
- #2 Fieldwork
- #3 Field Trips
- #4 Field Studies
- #5 #1 or #2 or #3 or #4
- #6 Adventure Education
- #7 Outward Bound (ft)
- #8 #6 or #7
- #9 #8 not #5
- #10 Forest Schools (ft)
- #11 Forest Camp\$ (ft)
- #12 Heritage Centers (ft)
- #13 National Park\$(ft)
- #14 Science Centers (ft)
- #15 School Grounds (ft)
- #16 Community Gardens (ft)
- #17 Botanical Gardens (ft)
- #18 Countryside (ft)
- #19 Farm Visits (ft)
- #20 Nature Studies (ft)

(ft) Denotes free-text searching

PSYCINFO

This is an international database containing citations and summaries of journal articles, book chapters, book and technical reports, as well as citations to dissertations in the field of psychology and psychological aspects of related disciplines, such as medicine, sociology and education.

- #1 Outdoor Education (ft)
- #2 Outdoor Learning(ft)
- #3 Educational Field Trips
- #4 Curricular Field Experience
- #5 Adventure Education (ft)
- #6 Wilderness Experience

(ft) Denotes free-text searching

System for Information on Grey Literature in Europe (SIGLE)

SIGLE is a bibliographic database covering European non-conventional (grey) literature in the fields of humanities, social sciences, pure and applied natural sciences and technology, and economics.

- #1 Outdoor Education
- #2 Outdoor Learning
- #3 Fieldwork
- #4 Field Trips
- #5 Field Studies

Appendix 2.

Framework for reviewing research publications

Reference:

Date of review:

Type of outdoor learning:

brief description of the type of outdoor learning

Country of Origin:

country(ies) where the work was undertaken

Age of learners:

Research aims	a summary of the aims of the research study as reported by the researcher in their paper
Project details	name and funding details of any broader research project (if mentioned)
Conceptual/theoretical approach	summary of the key conceptual and/or theoretical assumptions that underpin the work reported (but only in so far as these are explicated and acknowledged by the author)
Sample	details of sample sizes, sample characteristics, and selection procedures and rationale
Methodology	the broader epistemological and theoretical framework that surround and underpin the methods of the study (but again only in so far as these are explicated and acknowledged by the author)
Validity measures	any measures aimed at ensuring validity or reliability (howsoever conceived) that are reported by the author
Methods (data collection and analysis)	summarised details of the reported procedures of data collection, and of data analysis
Main findings	summary of the study's main findings as reported by the researcher
Key conclusions	summary of the main conclusions drawn from the study's findings by the researcher
Author's view of what findings tell us	summary of the key implications and lessons that the researcher draws from the study
Reviewer's view of what findings tell us	reviewer's view of the key implications and lessons emerging from the study
Strengths and weaknesses	aspects of the study that the reviewer perceives as particularly valuable or potentially problematic/limited
Links	brief notes about any points of commonality or divergence between this and other studies in the review for example, similar or very different findings on a similar topic, methodological links or conflicts etc.

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