SCOTTISH NATURAL HERITAGE

COMMISSIONED REPORT

Commissioned Report No. 161

Teachers' approaches and attitudes to engaging with the natural heritage through the curriculum

(ROAME No. F04AB04)

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Summary

Teachers' approaches and attitudes to engaging with the natural heritage through the curriculum

Commissioned Report No. 161 (ROAME No. F04AB04)
Contractor: Outdoor and Environmental Education Section, University of Edinburgh
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Background

There is increasing recognition of the potential value attached to learning in and about the natural heritage through first-hand experience. There is a perception, however, that many schools and teachers do not take up the existing opportunities in curriculum-based work to engage pupils with the natural heritage. This research used a mixed method research design in two Scottish Local Authorities in order to explore three aspects of this issue, identifying:

- the educational drivers which encourage teaching about the natural heritage out-of-doors;
- the factors to which teachers have responded when they made a decision to use the outdoors and the natural heritage as a teaching aid;
- the barriers which prevented teachers from deciding to use the outdoors and the natural heritage as a teaching aid, or from thinking about it in the first place.

Main findings

- Despite the lack of curricular imperative, teachers made a remarkable effort to get their pupils outdoors, often citing curricular justification as a major reason for doing so.
- The significant barriers to outdoor study (i.e. those that were mentioned most in questionnaires), in ranked order, include: cost (87 instances), time (85), ratios (68), safety (55), weather (31), transport (29), disruption to classes (21) and qualifications (4). Crucially, these issues combine in complex ways in different teachers' contexts.
- In weighing up whether to organise outdoor study, all teachers are presented with situations that represent effort-cost. However teachers may differ in how they understand the benefits of outdoor study.
- For those teachers whose attitudes and situations are less consistent with outdoor study, there may be little point in only providing extra resources when the root cause includes something else. For this group increased capacity for outdoor study may also depend on some form of staff training or the development of an appreciation or legitimisation of the wider benefits of outdoor study. On the other hand those whose personal and institutional attitudes and dispositions are consistent with outdoor study would benefit from increased resources.

- Appropriate training would include Initial Teacher Education (ITE) and Continuing Professional Development (CPD) and Scottish Natural Heritage (SNH) may wish to pursue this through advocacy and engagement.
- Outdoor study depends very much on the immediate locality of each school which tends to suggest that any training intervention (other than ITE) should involve trainers going to schools and working *in situ*, as opposed to teachers gathering at an area not representative of their own locality. The use of rangers and other experts was a strong feature of schools with a good track record of going outdoors and schools would welcome SNH taking a role in facilitating this support or providing their own school education officers.
- The current curricular reform programme (*A Curriculum for Excellence*) represents an opportunity for SNH to pursue greater use of the outdoor natural heritage for study. There may be a role for HMIe to include outdoor study in their inspection schedules and for ITE institutions to provide compulsory elements in their own programmes.

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Foreword

This report explores "teachers' approaches and attitudes to engaging with the natural heritage".

We undertook substantial desk studies of the research literature in the field, the national political and educational climate, and the curricular opportunities and limitations for education outdoors. We conducted the empirical aspects of the study in two Local Authorities, one urban and one rural (City of Edinburgh and Highland Council's sub-region of Inverness, Nairn, Badenoch and Strathspey). In total 211 questionnaires were sent out to schools in these areas. From the responses to the (46%) questionnaires returned we interviewed 10 respondents in each Local Authority area. The questionnaire responses and interviews were analysed to provide the review presented in the report.

Our findings have been used to make a number of recommendations and these are drawn from the analysis of empirical study and the findings of the desk studies.

The authors would like to thank all those who took part in this research.

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Abbreviations

AALA	Adventurous Activity Licensing Authority
CPD	Continuing Professional Development
DfES	Department for Education and Skills
DMR	Devolved Management Responsibilities
DSM	Devolved School Management
FSC	Field Studies Council
HMIe	Her Majesty's Inspectorate of Education
ICT	Information and Communications Technology
ITE	Initial Teacher Education
LEQ	Life Effectiveness Questionnaire
LTS	Learning and Teaching Scotland
NASUWT	National Association of Schoolmasters and Union of Women Teachers
NQ	National Qualifications
Ofsted	Office for Standards in Education
PE	Physical Education
PSD	Personal and Social Development
PSHE	Personal, Social and Health Education
Px	Primary school year group x (eg P7) (Range: P1–P7)
QI	Quality Indicator
SCCC	Scottish Consultative Council on the Curriculum
SHEFC	Scottish Higher Education Funding Council
SNQF	Scottish National Qualifications Framework
SOED	Scottish Office Education Department
SQA	Scottish Qualifications Authority
SVQ	Scottish Vocational Qualifications
Sx	Secondary school year group x (eg S2) (Range: S1–S6)
TCRG	The Curriculum Review Group

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1 DESK STUDY

An initial review of the national context was requested as part of the study and submitted to SNH in March 2005. This is provided as Appendix 1. The following review is more specific to the current educational and political climate with specific emphasis on the limitations and curricular possibilities in Scotland for engaging with the natural heritage.

The purposes of the following sections are as follows.

1) Section 1.1 provides a brief overview of the current climate concerning taking pupils out-of-doors and some of the relevant literature. The literature reviewed concerns learning *related* to the natural heritage but it often combines multiple perspectives: learning *about* the natural heritage (eg natural sciences); learning *in/through* the natural heritage (eg physical, personal and social development); and learning *for* the natural heritage (eg sustainability, conservation, preservation of biodiversity). Overall, this project focuses on learning *about* the natural heritage but for any given learning experience these different outcomes are often combined, and the combination is often explicitly anticipated. Similarly, the literature tends to combine both school-based provision and that of residential centres. This is relevant to this project because some schools may have the location, staffing and other resources to be able to provide a wide range of local opportunities in the outdoors, whilst others may see such experiences as best provided through a residential field or outdoor centre, whilst others may take a mixed approach.

2) Section 1.2 examines the extent to which the written curriculum promotes opportunities for learning about the natural heritage out-of-doors. Scotland has five national priorities for education. For the purposes of this project, the most important of these is "Framework for Learning", a priority that considers the future curriculum and qualifications framework for 3–18 year olds in Scotland. The other national priorities are potentially relevant for education out-of-doors but are less relevant for the natural heritage context. Greatest detail is offered here for the areas of the curriculum that offer greatest "opportunity" in the context of this project. The discriminating factor tends to be whether study is about the natural heritage, rather than simply *in* the natural heritage (or outdoors in general). Aspects of *5–14 Environmental Studies* and National Qualifications in *Biology* and *Geography* are therefore dealt with in more detail. However, these are part of a more general survey of the curriculum that includes areas where outdoor learning might be involved. This is because (a) it offers a broader understanding of the curriculum as a whole, and because (b) the relationship between studying *about* the natural heritage and other outdoor learning outcomes, as discussed above, can be, and sometimes is, exploited by schools in a cross curricular way, so that these "other" outcomes can represent part of the curricular opportunity to study the natural heritage.

3) The relationship between the written curriculum and what happens in schools is mediated by many factors. Her Majesty's Inspector of Education (HMIe) is the only factor discussed (Section 1.3) in the desk study, but other factors are examined by the rest of the report.

4) The written curriculum is currently subject to change and the possible consequences of such change, in as much as they can be predicted, are discussed in Section 1.4.

1.1 The climate for outdoor education and field studies

Many of those who administer and organise educational opportunities for school pupils are not familiar with the learning potential of outdoor experiences, are not required to undertake them, and are not required to be trained to develop this aspect of provision. There is little statutory requirement for outdoor education, in any of its forms. Whilst the 1944 Education Act and the 1945 Education (Scotland) Act did note the educational value of the outdoors (Cook, 1999), its provisions *encourage* rather than *oblige* Local Education Authorities. Furthermore, a 1945 Act of Parliament cannot be expected to have significant contemporary influence, especially in the face of the curricular expansion and budgetary constraints since the 1980s. And as similar processes have, and continue to be, applied to Higher Education there have been reduced opportunities for trainee teachers to engage with the natural heritage through fieldwork and outdoor activities.

There is much empirical research concerning outdoor education outcomes (Cheesmond, 1981; Barrett and Greenaway, 1995; Hopkins and Putnam, 1993; Cason and Gillis, 1994; Hattie *et al.*, 1997; Neill and Richards, 1998; Kaplan and Talbot, 1983; Palmer and Suggate, 1996; Hungerford and Volk, 1990) but its conclusions are difficult to evaluate. Several recent reports bearing on the climate for outdoor education are discussed as follows.

Rickinson *et al.* (2004) is an important document as it is the most up-to-date review of literature to do with outdoor education. The review categorised research under the headings of 1) 'cognitive impacts', 2) 'affective impacts', 3) 'social/interpersonal impacts' and, 4) 'physical and/behavioural impacts'. These headings provide a way of categorising the practice of outdoor education. The authors suggest that the aims of outdoor programmes can emphasise the therapeutic, the educational and/or the recreational value to different degrees.

The summary suggests that fieldwork provides "added value" to work in the classroom and "can have a positive impact on long-term memory due to the memorable nature of he fieldwork setting". It reports that fieldwork that takes place in the UK is "severely restricted, particularly in science". The review concludes that "poor fieldwork is likely to lead to poor learning" and that it is "naïve to think that short excursions to 'the environment' will become significant life experiences" (Rickinson *et al.* 2004, p. 24).

A degree of care is required before fully accepting these findings. For example they include studies from overseas yet do not consider the extent to which the study of the natural heritage is culturally specific. This has clear implications for Scottish Natural Heritage who operate within a political domain where education is a devolved issue. This idea that studying the natural heritage is culturally specific is also seen in the difference between, for example, the study of a Brazilian rainforest and the study of a Scottish Caledonian pinewood. It may seem trite to point out that it is unlikely that schools will conduct field visits to the Brazilian rainforest but are more likely to visit a Scottish pinewood. However the important point here is the relevance of what is included in the curriculum in relation to what can be studied outdoors and what cannot.

Rickinson *et al.* (2004, p. 41) also acknowledge the capacity for linking school grounds with most curriculum areas (specifically "science process skills") and there is further recognition that "social development and greater community involvement can result from engagement in school grounds projects".

Finally, Rickinson *et al.* (2004, p. 42) report on a number of well-published accidents involving school children such as the Lyme Bay incident and a child contracting *E. Coli* during a farm visit. They further note the National Association of Schoolmasters and Union of Women Teachers (NASUWT) has advised its members against taking school trips for fear of accident and litigation.

The NASUWT have been asked to review their statement by a House of Commons Education and Skills Committee (2005a). Accepting that education is a devolved issue there remain social consequences, such as advice from unions, which affect the whole of the UK. The report says that the views expressed by this union are "entirely out of proportion to the real risks" (p. 6) and considers the NASWUT position to be "a needlessly obstructive attitude" (p. 7).

The House of Commons report does not present empirical findings, but it summarises evidence from a wide range of experienced professionals. The enquiry takes a broad view of outdoor education including field studies, personal and social development and physical activities. The report considered the value and the decline of education outside the classroom and the barriers (real and perceived) to maintaining or developing provision.

In summary the Committee concluded that they had "become convinced of the value of education outside the classroom in its broadest sense", that "outdoor learning supports academic achievement" and that neither the Department for Education and Skills (DfES) nor Local Authorities have provided strategic leadership (House of Commons, 2005a, p. 3). Whilst some schools do provide significant integrated outdoor learning experiences this is the exception rather than the norm (House of Commons Education and Skills Committee, 2005a; Kandemiri, unpublished) with provision being "extremely patchy" (House of Commons Education and Skills Committee, 2005a, p. 10; Higgins, 2002). The poor provision of outdoor learning opportunities in schools means that most young people are restricted to, at best, a one-week course at an outdoor centre or field-studies centre. And in the view of the Committee (2005a, p. 10) it is clear "that outdoor education is a sector suffering from considerable unexploited potential".

This report makes a number of further relevant points. The Committee recommends (and the Government agrees (House of Commons Education and Skills Committee, 2005b, p. 5)) that the DfES make it clear to schools that it is unacceptable to settle frivolous and unfounded claims against schools and education Authorities out of court simply to get rid of the problems (House of Commons Education and Skills Committee, 2005a, p. 7). This suggests that the UK government is prepared to tackle the issue head on (and this may provide a lead for the Scottish Executive). Indeed the UK Government has recently published a Compensation Bill which is intended to reduce the likelihood of such claims and also to require a court to "consider the wider social value of the activity in the context of which the injury or damage occurred" Department for Constitutional Affairs, 2005. The Committee also agrees

> "with the Association of British Insurers, who are confident that insurance cover for schools is not a significant barrier to activity by schools. To make sure, we are including public liability insurance in our current pilot to help LEAs manage insurance better even though it is much less significant than their largest insurance cost, which is premises (eg fire)" (p8).

It may be that this model of explicitly raising the profile of public liability insurance can reassure teachers. Finally, and of direct relevance to the Scottish context, the report recommends that Initial Teacher Education (ITE) provision needs to be reviewed to demonstrate to new teachers the potential of education outside the classroom.

In England and Wales the groundswell of opinion in favour of substantial outdoor learning opportunities for young people seems to have resonated with Government sympathies and has led to the recent publication

(November 2005) of a "Manifesto for Education Outside the Classroom". It sets out its intentions (Department for Education and Skills, 2005) with a vision that:

> "every child and young person should experience the world outside the classroom as an integral part of their learning and development, complementing learning in the classroom. High quality education outside the classroom can stimulate and inspire; foster independence; aid personal and social development; and can often motivate reluctant learners. These experiences should be stimulating, safely managed and enjoyable, and contribute to meeting the needs of every child."

The degree to which such initiatives will have impact in Scotland remains to be seen but there are clearly a number of positive developments. The climate for outdoor education in Scotland is increasingly favourable, with the current Education Minister (Peter Peacock MSP) being very supportive. For example at the opening of an extension to an outdoor centre in October 2004 he stated:

> "Outdoor education can have tremendous benefits in the physical, personal and social development of children of all ages, providing an important setting for young people to discover more about themselves and the world around them. I want more young people to experience the far-reaching benefits of outdoor education. Not only can it enrich their school life, it can help pupils develop skills and interests that will stay with them for the rest of their lives." (*http://www.scotland.gov.uk/News/Releases/2004/10/08131557*)

He has also recently announced a development programme being run by Learning and Teaching Scotland (LTS) which is the organisation responsible for developing school-based learning in Scotland. This is significant as it is a clear signal that education outdoors is being seen as a corollary to education in the classroom. The Minister's view is that this programme should raise the profile of outdoor education and "promote better opportunities for young people to engage with Scotland's outdoors at an early stage and develop lifelong interest". (*http://www.scottish.parliament.uk/business/pqa/wa-05/wa0817.htm*)

A Development Officer has recently (October 2005) been appointed by LTS and his priorities will include an audit of current provision, identification of barriers to participation, and proposals for development. An "Outdoor Connections" steering group (on which we sit) has been appointed to advise and assist on this programme. In another significant development Her Majesty's Inspectors of Education in Scotland are currently preparing a report on outdoor education in Scotland.

The significance of allaying public concerns about safety on out-of-school activities was not underestimated by the Scottish Executive and consequently the above announcements and developments were preceded by publication of guidance on "Health and Safety on Educational Excursions" (Scottish Executive, 2005). These booklets and the associated website are designed to give comprehensive advice to those organising any kind of educational visit away from the school.

Although there is a "tide" of advocacy for outdoor learning building from the health, education and environmental education sectors, Scotland does not at present have a teaching qualification in outdoor education and in this regard lags significantly behind the rest of the UK. There is an argument, therefore, that if education outside the classroom is to flourish in Scotland, both general Initial Teacher Education and the training of specialist outdoor education teachers needs to be reviewed to address education outside the classroom.

The Field Studies Council (FSC) commissioned a study which offered schools from London the opportunity to take a group of Key Stage 3 students (secondary school students in England and Wales of equivalent age to P7–S2 Scottish students) away on a fully funded residential course at a designated rural field study centre in the UK and Eire (Amos and Reiss, 2004). The study included 13 courses with 428 students from 10 London schools. The findings included the teachers' observations that students' learned about ecology and Geography more effectively than at school and that this was due to experiential approaches. Furthermore, students learnt new skills in Geography and science and there "was good evidence that a group of Year 9 Geographers learnt more technical and accurate Geographical information as well as techniques for collecting/analysing data during their curriculum-focused course" (p. 16). They also stated that "teachers and students reported that levels of motivation and participation were very high, particularly where activities were adventure-based rather than purely academic" (p. 16).

Christie's (2004) PhD study used both qualitative and quantitative methods to evaluate an Outward Bound centre's role in an initiative to raise school achievement (personal and academic qualities) of over 800 school students aged 14–16. The study included a Life Effectiveness Questionnaire (LEQ) (Neill, 2002) which comprises a range of personal, social and other skills such as "intellectual flexibility". Although this proved inconclusive, observation and interview showed that the course provided good opportunities for personal and social development. Some students felt that they were better at working with others, more tolerant of others "and better able to communicate with other students and teachers" and that their orientation to academic work may be improved as a result of outdoor experiences (Christie, 2004, p. 216).

The Office for Standards in Education (Ofsted) were recently commissioned by the Department for Education and Skills (DfES) to evaluate aspects of outdoor education in England (Ofsted, 2004), focusing on the quality of teaching, curriculum provision and management. The main findings state that the quality of outdoor education teaching in school based settings and centres is "good" (Ofsted, 2004, p. 2), however "despite the very positive picture of students involved in residential courses, the majority of students are unable to take part. Often, the extra-curricular nature of the activity, its costs or limits on the numbers that can be taken, lead to a "first come, first served" basis for selection. This means that even in those schools that do want to promote outdoor education, many students who would like to take part are not able to participate (Ofsted, 2004, p. 14).

Higgins (2002) examines the Scottish context. Local Authority provision and financial support for outdoor learning experiences has declined in the last 20 years. The model of teachers in schools providing out-of-classroom experiences as part of their teaching of subjects has also declined (Higgins, 2002; Rickinson *et al.* (2004)). Most schools have no outdoor education specialist or indeed a member of staff who can be considered knowledgeable about outdoor educational experiences. Where it still exists, school-based provision is theoretically part of the educational endeavours of the school or Local Education Authority and is essentially free at the point of delivery. But many Local Authorities now seek to defray residential outdoor education costs to young people (ie their parents or guardians) for travel and food, and more recently for accommodation and staffing the courses (Higgins, 2002). Whilst some close links remain, this policy has in some cases led to a disassociation between outdoor/field centres and their Local Authorities, or to completely separate status and funding arrangements. A high proportion of the latter centres have sought and successfully gained charitable trust status, placing them in a position not dissimilar to fee-paying schools (ie participants pay fees to a charitable educational business). In addition, responsibility for the management of budgets and much spending has been devolved from education Authorities to heads of

schools. This has allowed schools, on an individual basis, to decide whether or not, and when, they want to use centres, as well as whether or not they wanted to subsidise residential visits for their own pupils. This extension of the range of financial decisions made at school level means that decisions about outdoor study are made at school level. Teachers' attitudes therefore probably have a greater bearing on such decisions, and these attitudes are examined in this report.

There is little published work on teachers' attitudes to out-of-classroom education, though there are relevant UK research theses and some international studies. For example a major study conducted of schools and centre provision within the Lothian Region of Scotland around 25 years ago (Cheesmond, 1979) found that in schools where outdoor education was seen as an important focus of the school's efforts, staff were generally highly motivated to support such provision. Anecdotal evidence suggests that this remains the case.

In one study of provision of out-of-classroom education in Oxfordshire Primary schools (Wheatley-Price, 2002) teachers and policy makers cited lack of staff expertise, the demands of the literacy and numeracy strategies, and the need for staff who initiate such programmes to be supported, as factors mitigating against further development. An unpublished Ofsted survey of "outdoor and adventurous activities" (as an option in the Physical Education National Curriculum at Key Stages 3 and 4 (secondary school pupils in England of equivalent at to P7–S4 in Scotland) in 33 schools and centres in 1999 supported the view that leadership and vision on the part of senior school staff were crucial in fostering such experiences, and that appropriate in-service training often provided the means of giving responsible staff both the skills and reassurance to provide them.

In an American study (in Chicago) Simmons (1998) investigated teachers' perceptions of the barriers and benefits of using four different outdoor settings when teaching environmental education. The teachers believed in the educational worth of such programmes and their significance for students. Whilst they did express some confidence in their own knowledge they were apprehensive about whether they would be appropriately trained and prepared for such work. They also believed class-sizes were too big to be practical for such activities and were concerned about student safety. In another relevant study of the use of school grounds Skamp and Bergamann (2001) considered teachers' views of their value for teaching and learning. In their two-year study of two Australian schools they found that teachers valued the grounds and other environmental learning facilities (eg worm farms and recycling areas) and they used them selectively and somewhat irregularly. They attributed this to teachers' perceptions of limited applicability of the environment/facilities for particular subjects and educational content.

1.2 Opportunities for learning about the natural heritage out-of-doors in the formal curriculum

In keeping with the overall picture for Scotland presented above, the formal curriculum (5–14 Guidelines and Scottish National Qualifications Framework (SNQF)) certainly provides opportunities to study the natural heritage out-of-doors but it rarely, if ever, *prescribes* such study.

1.2.1 Guidelines for 3–5 year olds

The Scottish Consultative Council on the Curriculum (SCCC) guidelines for this group (SCCC, 1999) apply to a variety of learning contexts, including the home and community. They offer opportunities for both the

study of natural heritage and the use of the outdoors, though not necessarily in combination. Encouraging children to "explore, appreciate and respect their environment" (SCCC, 1999, p. 2) is one of the broad aims, and one of several "key aspects" is "knowledge and understanding of the world" (SCCC, 1999, p. 5). Such aspects are intended to articulate with the curriculum for 5–14 year olds, and also to overlap with other aspects such as emotional, personal and social development. Likely learning experiences, such as planting bulbs, are not necessarily expected to extend beyond the school grounds, although they might involve visits to the local park (SCCC, 1999, p. 25). Outdoor contexts for physical development and movement are thought to "provide a scale and freedom for a type of play that is difficult to replicate indoors, for example opportunities to dig a garden, explore woodland, run on the grass, roll down a grassy slope or pedal a car across a hard surface." (SCCC, 1999, p. 36).

1.2.2 Guidelines for 5–14 year olds

The formal written curriculum for 5–14 year olds (National Guidelines) is not legally prescriptive but nearly all Local Authorities and schools base their programmes of learning upon it and HMIe assesses schools with respect to it. The 5–14 age range covers two institutional contexts: primary school (years P1–P7) and secondary school (years S1–S2). Secondary schools tend to teach within subject disciplines corresponding to the Guidelines' "attainment outcomes", whereas primary schools often re-organise the outcomes into cross-curricular topics to suit their own needs. Other relevant differences between the primary and secondary contexts are discussed elsewhere in this report.

In overview, the Learning and Teaching Scotland (LTS) 5–14 Guidelines (LTS, 2000a) make general entreaties that the curriculum should offer "breadth of experience", students should learn to treat "others and the world around them with care and respect" (LTS 2000a, p. 4) and that a "commitment to the environment will be engendered" (LTS 2000a, p. 5). But there is no specific declaration that outdoor study must be undertaken.

The **Environmental Studies** section of the Guidelines provides the greatest curricular opportunity of relevance here (combining Science, Geography, History, Modern Studies and Technology, in broad terms). The minimum time allocation for Environmental Studies is 15% in Primary schools – an equal share with all other areas except Languages (20%). Environmental Studies has a greater allocation in Secondary schools (S1 and S2) of 30% – the highest of all the areas. Both primary and secondary schools also have 20% time beyond minimum allocations to use at their discretion. A variety of uses of this time are anticipated, including "whole-school activities such as educational visits, residential experiences or activity weeks" (LTS, 2000a, p. 31).

The Environmental Studies Guidelines do not prescribe teaching methodologies, only the expected outcomes of students' overall curricular experience (LTS, 2000b, p. iv). These outcomes concern knowledge and understanding about the environment, skills needed to investigate the environment, and informed values and attitudes towards the environment (including ideas such as "responsible citizenship", "sustainable development and interdependence" and "environmental responsibility" (LTS, 2000b, p. 9)).

There is recognition that "[t]he environment provides a powerful learning medium…" (LTS, 2000b, p. 4) and pupils are expected to learn in a variety of school and out-of-school settings: "…for example through fieldwork and local visits" (LTS, 2000b, p. 17) within the bounds of health and safety (LTS, 2000b, p. 25). The spatial context of "the environment" is expected to widen with age, with younger students learning about and within their immediate surrounds, while older students are expected to learn of more wide-ranging

places (LTS, 2000b, p. 14), but this pattern is not followed by all schools. The "environment" is not equated with the natural heritage, but the natural heritage is part of it (LTS, 2000b, p. 10).

Table 1 summarises the strands (groups of specific learning targets) of Environmental Studies knowledge/ understanding, and gives the percentages of targets in each strand which are both *inevitably about* the natural heritage and *could be studied* in the natural heritage. This data should be treated with care. Low or zero scoring strands *could* refer to the natural heritage and high scoring strands need not be studied out-of-doors. The point is to highlight *greatest opportunity*, not school reality.

Table 1 Percentages of environmental studies 5–14 "Opportunities"
(Percentage of attainment targets by strand that *must* be about the natural heritage and *could* be studied in the natural heritage ("% opportunity"))

Attainment outcome	**Strand**	**% "opportunity"**	**Examples of "opportunity" targets**
People in the Past	People, events and societies of significance in the past	11	• describe the diversity of lifestyles of people in the past, eg the life of a peasant as opposed to a landowner
	Change and continuity, cause and effect	0	
	Time and historical sequence	0	
	The nature of historical evidence	0	
People and Place	Using maps	40	• develop the mental map of familiar places by identifying on a simple map main local features, eg school, road, hill
	The physical environment	59	• identify and describe the main types of physical features of the Scottish landscape, eg those found in the Highlands or Central Lowlands • explain the processes, including the theory of plate tectonics, involved in the formation of major types of physical features found across the world • describe some main types of weather and climate in the world and ways in which people adapt to them eg style of house, working outdoors
	The human environment	33	• describe how, and give some reasons why, settlements differ in character, size, number of people and function
	Human-physical interactions	85	• describe some methods used and reasons for conserving major resources eg fish, energy, forests • describe how people use land for work and leisure in the local area
People in society	People and needs in society	0	
	Rules, rights and responsibilities in society	0	
	Conflict and decision making in society	0	

Table 1 *(continued)*

(Percentage of attainment targets by strand that *must* be about the natural heritage and *could* be studied in the natural heritage ("% opportunity"))

Attainment outcome	Strand	% "opportunity"	Examples of "opportunity" targets
Earth and Space	Earth in space	9	• associate the seasons with differences observe in temperature
	Materials from Earth	36	• describe the processes that lead to the formation of the three main types of rock • describe how soils are formed
	Changing materials	5	• give examples of common causes of water pollution
Energy and Forces	Properties and uses of Energy	0	
	Conversion and transfer of energy	9	• name some natural energy resources
	Forces and their effects	0	
Living Things and the Processes of Life	Variety and characteristic features	64	• give the main distinguishing features of the major groups of flowering and non-flowering plants
	The processes of life	30	• give the conditions needed by animals and plants in order to remain healthy
	Interaction of living things with their environment	100	• give examples of physical factors that affect the distribution of living things • give examples of how to care for living things and the environment
Technology	Needs and how they are met	13	• suggest ways in which people can meet the needs of other living things and the environment
	Resources and how they are managed	4	• classify materials and make distinctions between what is natural and what is 'made'
	Processes and how they are applied	0	

For the purposes of this report these figures emphasise the importance of "Living Things and the Processes of Life" and of "People and Place". These attainment outcomes are taught as Biology and Geography in many Secondary schools. The 5–14 Environmental Studies skills strands include those of enquiry and investigation, which potentially articulate strongly with "People and Place" and "Living Things and the Processes of Life" through fieldwork, but field study is not specified.

"Developing Informed Attitudes" in Environmental Studies includes notions of "sustainable development and interdependence" and "environmental responsibility" (LTS, 2000b, p. 42; 62; 76). Learning experiences concerning such attitudes could be out-of-doors, and *in* the natural heritage, without necessarily being *about* the natural heritage.

Other than Environmental Studies, the following may also bear upon 5–14 year olds' curricular opportunity to study the natural heritage out-of-doors. The methodology of **Personal and Social Development** (PSD)

places a particular emphasis on experiential learning, so according to the Scottish Office Education Department (SOED) "[o]utdoor education and residential experience, for example, provide excellent contexts for elements of personal and social development" (SOED, 1991a 3, 24–25). The natural heritage is most clearly relevant to the PSD theme of "Independence and Inter-dependence" where there are ideas such as: "Choices; Ourselves; Natural World; Life Cycles; Conservation; Community". Personal and Social Development does not have a minimum time allocation and is expected to be developed in whole school and cross-curricular ways (SOED, 1991a, p. 2–3), through **Religious and Moral Education**, and in the unallocated 20% of time available to both Primary and Secondary schools (SOED, 1991a, p. 4). For **Health Education**, the central idea of the "health promoting school" (LTS, 2000c, p. 3) limits the relevance of the outdoor natural heritage, although the relevance of non-school agencies, and the wider community and environment, is acknowledged. The Expressive Arts guidelines (SOED, 1991b) cover the areas of Art and Design, Drama, Music and Physical Education. Although these do not directly relate to learning about the natural environment, there is recognition that the **Expressive Arts** provide alternative insights and views upon society and environment. Outdoor Education is identified as a "specific issue" in the Expressive Arts, alongside the use of the local community and environment (SOED, 1991b, p. 79, 81). There is also an emphasis on *learning through* the expressive arts across the curriculum, such as using drawing skills in Biology fieldwork (SOED, 1991b, p. 10). Aims specific to Physical Education include meeting the challenges presented by a "variety of physical settings." (SOED, 1991b, p. 3) and Outdoor Education is explicitly recognised as being part of **Physical Education** but it is given a more conditional status than other parts (SOED, 1991b, p. 55) and tends to apply at Level D & E (which is suggestive of an anticipated secondary school provision) (SOED, 1991b, p. 56, 59, 67). Moreover, although Outdoor Education for Physical Education might take place alongside education about the natural environment, the physical education outcomes are not of direct interest to this study. **Mathematics** can be applied in a variety of contexts and work on mathematics is expected to take place in other areas of the curriculum, including Environmental Studies 5–14 (SOED, 1991c, p. 7), or in thematic cross-curricular studies (SOED, 1991c, p. 10). In developing programmes of study, the guidelines suggest that contexts for learning should include "studying aspects of the environment" and "investigating in science" (SOED, 1991c, p. 44). The "Information Handling" outcome is especially relevant, implying that students should be collecting information in their environment (SOED, 1991c, p. 21, 34–35). However the term "environment" is not restricted to the natural heritage here (SOED, 1991c, p. 42–58).

For the purposes of this study, therefore, Environmental Studies offers the greatest curricular opportunity in the 5–14 Guidelines, but outdoor learning about the natural heritage can readily be combined with other curricular areas. In the primary school especially, but also in S1 and S2, outdoor excursion can tackle a range of curricular areas simultaneously.

1.2.3 Qualifications for 14–18 year olds

Students of this age range (and above) study within the Scottish National Qualifications Framework (SNQF). Since "age-stage" restrictions have been removed, some younger children will also take SNQF qualifications from the Scottish Qualifications Authority (SQA, 2004a, p. 6). Currently available in this framework are Standard Grades, Higher Still and Scottish Vocational Qualifications. Standard Grades are the main qualifications for 14–16 year olds but may eventually give way to equivalent Higher Still courses (particularly Intermediate 2) or other courses. Higher Still is a series of qualifications of increasing attainment, from Access 1, 2 and 3, to Intermediate 1 and 2, to Higher and Advanced Higher. Scottish Vocational Qualifications

(SVQs) are undertaken in the workplace (or in workplace conditions at a training centre or college). Students aged 14–18 are most likely to have access only to SVQ Levels 1–3. Levels 4 and 5 are broadly equivalent to Higher National Diploma and Masters level courses (SQA, 2004b, p. 7).

Secondary school students have some choice about what they can study after (and increasingly before) the age of 14 and are likely to study a number of Standard Grades, Access or Intermediate subjects before school leaving age (16). Those who stay on might then study a range of Intermediate 1 and 2 courses as preparation for Higher or Advanced Higher study, or go directly on to Higher courses, or both. Courses are made up of units, and some courses offer a choice of optional units. There are over 150 National Qualification subjects (SQA, 2004a) and more than 700 Scottish Vocational Qualifications (SQA, 2004b) that might concern secondary school age students. The combinations of courses that might have been studied by a student between the ages of 14 (or younger) and 18 are therefore potentially very complex (SQA, 2004c). Data concerning numbers of candidates for different qualifications, especially by age, are not routinely published.

Scottish Vocational Qualifications (SVQs)

SVQs are not discussed in detail in this study. There were over 900 SVQs available in November 2004 (SQA, 2004b, p. 20 & 23). Two of the 11 categories of courses are particularly relevant: "001 – Tending Animals, Plants and Land"; and "002 – Extracting and Providing Natural Resources". Out of the available SVQs, none of the 10 most popular courses (measured either by numbers of students registering or completing in 2003) are from these two categories, and none of the 10 most popular are likely to involve outdoor education about the natural heritage (SQA, 2004b, p. 21). However, SVQs may be relevant to SNH's interest in outdoor education about the natural heritage. Some vocational qualifications, based in real or simulated working environments, will involve understanding aspects of the natural heritage through outdoor learning experiences. In such vocational qualifications, it is likely that this experience is integral to the course or even the employment of the students. In terms of developing partnerships with this sector, it is worth noting that courses come and go much more fluidly than National Qualifications, being dependent on employer partnerships and the demand for, and supply of, students in vocational areas.

National Qualifications

National Qualifications (NQ) in secondary schools drive curricular division into timetabled disciplines. While the set of NQ courses offered by a secondary school cannot be seen as the totality of the school's intended curriculum, in the way the more comprehensive 5–14 National Guidelines might be, there is less opportunity to re-arrange outcomes for cross-curricular activity than in the 5–14 Guidelines.

Whilst this study examines Geography and Biology in more detail we also offer consideration of some other qualifications. Most courses do not claim any direct connection to outdoor learning or the natural heritage. Those that claim explicit concern with one or other of these are discussed briefly.

"**Geography** teachers have long recognised the stimulus to learning provided by practical activities, including fieldwork investigations and out-of-classroom activities." (SQA, 2000a, p. 7 – emphasis added). This combination of field technique skills and related content represents the greatest curricular opportunity for studying the natural heritage out-of-doors. Here we look at skills and techniques then at content, but it is the blend that matters.

Standard Grade Geographical skills are as important as knowledge and understanding. As with Biology (below), the notion of the "collection" and "gathering" of data receives consideration in Standard Grade (SQA, 2000a, p. 10–11). Indeed, field sketching and measuring (rivers, weather) are specified techniques (SQA, 2000a, p. 23). From **Intermediate 1 to Higher** level (SQA, 2004d, p. 4; 2004e, p. 4; 2004f, p. 4) the skills of Geography do not explicitly include the notions of collecting or gathering data as in Standard Grade (although there is a notion of collecting "Geographical phenomena" (eg SQA 2004f, p. 11)). "The techniques may be taught through actual fieldwork, or simulated fieldwork in the classroom" (SQA, 2004d, p. 6; 2004l, p. 6) and the assessment criteria do not imply experience of field activity (SQA, 2004d, p. 12; 2004e, p. 12; 2004f, p. 21–22) although, at Higher level, the kinds of presentation and interpretation techniques involved (such as presenting river data) could be based on field-collected data. Overall, fieldwork is not as clearly implied as it appears to be in Standard Grade. It is encouraged neutrally at Intermediate 1 and 2 (SQA, 2004d, p. 14; 2004e, p. 14; 2004f, p. 19) and more strongly at Higher and **Advanced Higher** level:

> "It is not mandatory, but highly desirable, that candidates undertake fieldwork, collectively or independently, to apply the selected methods and techniques identified in the Unit content. Where centres undertake this, teachers or lecturers in charge should ensure that any fieldwork undertaken is carried out under conditions which comply with health and safety, field studies and risk assessment policies required by their employers." (SQA, 2004f, p. 29; 2004g, p. 17).

There is no prescription in this statement that the study concern the natural heritage but the Advanced Higher candidate's folio must show evidence concerning both physical and human Geography field techniques and it is "very likely" that direct fieldwork activity will be involved (SQA, 2004g, p. 25–26). Advanced Higher Geography has mandatory units in "Geographical Methods and Techniques" and "Geographical Study" (SQA, 2004g). The school may choose which "Methods and Techniques" are to be studied (SQA, 2004g, p. 5) but candidates are expected to have undertaken at least two of the following (SQA, 2004g, p. 29): morphological mapping; vegetation sampling; slope analysis; stream analysis; soil profiles and characteristics; pebble analysis – size, shape and rock type. In the "Geographical Study" candidates must collect data from fieldwork or primary sources. The study need not concern the natural heritage but examples of such studies include (but are not limited to) (SQA, 2004g, p. 18): river studies; extreme rainfall and flooding/soil erosion; soil properties, vegetation and slope; rainfall recorded at a range of weather stations.

In terms of **Geographical content** beyond skills, one of the (three) study themes in **Standard Grade** Geography is "The Physical Environment", and one of the (three) areal contexts in which key ideas should be studied is "Scotland" (Table 2 and SQA, 2000a, p. 15–16). The scope for studying the natural heritage is therefore great, especially (but not exclusively) in the context of fluvial and glacial environments, weather, and rural land use. Other key ideas, such as "Farming systems…" in the UK as part of "The Human Environment" theme, may also offer opportunities (SQA, 2000a, p. 19).

Table 2 Key ideas and areal contexts
("The Physical Environment" theme of Standard Grade Geography – (SQA, 2000a, p. 17–18))

Key Idea	**Areal/Thematic Context for External Assessment**
Physical landscapes are the product of natural processes and are always changing.	UK/Western Europe In external papers, examples will be drawn from rivers and their valleys, and glaciated areas.
The elements of weather can be identified, observed, measured, recorded and classified. As a result, dynamic patterns can be identified and used for forecasting.	UK/Western Europe
The world can be divided into major climatic zones.	Global
The physical environment offers a range of possibilities for, and limitations on, human activities.	Global
There are many competing demands for the use of rural landscapes.	Scotland
The physical environment is a resource which has to be used with care and its management is a global issue.	Global

There is a recommendation that "advantage should be taken" of the local environment as a teaching context (SQA, 2000a, p. 37) and use of the outdoors is implied and indirectly encouraged. But Geographers can also study urban and cultural environments and field techniques can be simulated, or practiced within the school grounds.

The "Physical Environments" unit in both **Intermediate 1 and 2** Geography has an explicitly British Isles context and is described as in Table 3. The only other opportunity for the study of the Scottish natural heritage may be the optional Key Topic of rural land degradation (eg SQA, 2004e, p. 10). Geographical processes at "local" level should be studied (SQA, 2004d, p. 9) at Intermediate 1 and 2 Levels.

Table 3 Key Topics and areal contexts
("The Physical Environment" unit of Intermediate 1 and 2 Geography
(from SQA, 2004d, p. 7; 2004e, p. 7))

Areal context and landscape types	**Key topics**
British Isles Landscape types: • glaciated upland • upland limestone • coastlines of erosion and deposition • rivers and their valleys	1. Location of landscape type 2. Key landscape features 3. Land uses 4. Show a knowledge and understanding of: • impact of these activities • the conflicts which can arise • the management strategies and solutions • the role of public and voluntary bodies

At **Higher**, there is also a "Physical Environment" unit, some of which could be taught with reference to Scotland, but areal contexts are only specified for the "Environmental Interactions" unit (where only the optional "Rural land resources" is likely to be of relevance to the natural heritage of Scotland (SQA, 2004f, p. 13) and this may or may not be taught (SQA, 2004f, p. 14)). The kinds of data collection

activity that might be anticipated in support of other content units can be anticipated by considering the data *analysis* skills that are likely to be sampled in examination (SQA, 2004f, p. 32): interpreting climatic maps, diagrams and graphs; constructing and analysing climate graphs; constructing and analysing hydrographs; presenting and interpreting river flow data; identifying and labelling main landscape features on maps, aerial photographs and sketches; constructing and interpreting cross-sections and transects; analysing soil profiles and data from soil surveys; interpreting and explaining data from vegetation surveys and distributions with reference to the succession list.

Biology is available at Standard Grade and Access 3 upwards in the Higher Still framework. There are field skills involved in Biology but these are not as pervasive as in Geography (above) because a smaller part of the content of Biology implies field study. Content and skills are not separated in the following discussion. Moreover, more recent syllabuses (the Higher Still framework) appear to include less field-related content. Therefore Standard Grade offers the greatest curricular opportunity at present.

There is an apparent presumption of field activity in **Standard Grade** Biology, although it is not explicitly required. Two of the seven topics at Standard Grade (SQA, 2000b, p. 7) lend themselves to field study: "The Biosphere"; and "The World of Plants". Only in the Biosphere topic is outdoor investigation directly encouraged. It is intended that its sub-topic on "Investigating an Ecosystem" "should take the form of a practical investigation of an ecosystem" and the sub-topic "How it Works" is designed to draw on this experience (SQA, 2000b, p. 17–18). While there are obvious relationships to the "The World of Plants", in "Animal Survival" (and other) topics, which might be exploited by teachers in field situations, the emphasis in the documentation is on laboratory investigation (SQA, 2000b, p. 21–30). In terms of assessment, the ability to use techniques, including in fieldwork (such as "using sampling techniques applicable to ecosystems"), is essential (SQA, 2000b, p. 58). However, these can be simulated, or need not extend beyond the school grounds, and conducting a complete field investigation for assessment purposes is not required.

In **Access 3 and Intermediate 1** Biology (SQA, 2002a, 2002b) the units amount to a vocational and applied approach (SQA, 2002b, p. 4). The natural heritage is considered in terms of the potential impact of biotechnological industries on the environment, specifically river systems (SQA, 2002a, p. 12–14; 2002b, p. 14, 16–17). There is little need for field study of natural heritage and the documentation neither encourages nor discourages it.

The units at **Intermediate 2** (SQA, 2002c, p. 2) (Living Cells; Environmental Biology and Genetics; Animal Physiology) and **Higher** (SQA, 2002d, p. 2) (Cell Biology; Genetics and Adaptation; Control and Regulation) tell their own story with respect to field study. Although "Environmental Biology and Genetics", for example, includes the study of ecosystems (SQA, 2002c, p. 14–15) and candidates might "use a case study of a local or topical ecosystem…" (SQA, 2002c, p. 49), there are no "learning activities" that involve field study in either Intermediate 2 or Higher. "Fieldwork can also provide an opportunity for practical work, using first-hand experience of an ecosystem to develop knowledge and understanding and problem solving" (SQA, 2002c, p. 32; 2002d, p. 39) but this advice is not mandatory. There are examination questions concerning simulations of field-based work. However, whatever teachers and centres might choose to do in the interests of their students, the idea of fieldwork is neither encouraged nor discouraged by these syllabuses. This is in contrast to Standard Grade (SQA, 2000b) and Advanced Higher (SQA, 2004h).

Advanced Higher Biology (SQA, 2004h) has three mandatory units (Cell and Molecular Biology; Environmental Biology; Biology Investigation) and a choice of one of three optional units (Biotechnology; Animal Behaviour; Physiology, Health and Exercise). Advanced Higher Biology documentation mentions the possibility of fieldwork (SQA, 2004h, p. 57) but the "Biology Investigation" need not be field-based. However, the mandatory "Environmental Biology" unit has an emphasis on ecosystems and "… it is recommended that local ecosystems should be studied to provide fieldwork experience…" (SQA, 2004h, p. 20). Suggested learning activities include investigations of leaf or seaweed strand litter samples, species diversity on different swards, invertebrate life in field and hedgerow, making BOD and indicator species measurements (SQA, 2004h, p. 22, 24, 28 & 29). The optional "Animal Behaviour" unit also includes possibly field-based activities (eg SQA, 2004h, p. 42), although there is a greater emphasis on watching filmed material. These emphases are not prescribed, but they are intended to be indicative.

Geology is unambiguously the study of the natural heritage. Geology (SQA, 2004a, p. 197) is offered at Access 3 (SQA, 1999a), Intermediate 1 (SQA, 2004i), Intermediate 2 (SQA, 2004j) and Higher levels (SQA, 2004k). Fieldwork is encouraged at Access 3 and Intermediate 1 (perhaps more so in the latter) but is not mandatory (SQA, 2004i, p. 18; 1999a, p. 15). Fieldwork is a compulsory part of the Higher course, where two out of the four units ("Minerals and Rocks" and "Earth Physics, Structural Geology and Plate Tectonics") explicitly demand field study, a fieldwork report is part of the external assessment of the course, and some advice on the conduct of field studies is given (SQA, 2004k, p. 4, 31, 34). Field reporting is also essential for Intermediate 2, however the use of fieldwork simulation is allowed here (SQA, 2004j, p. 17).

Land and Environment courses include mostly Intermediate 2 level courses on industry-related areas of horticulture, husbandry and practice. However there are investigative and interpretive units concerning "the Natural Environment" at Intermediate 2 and Higher level. All of these involve practical assignments and project-based work. Many will pertain to the natural heritage and be studied in and around it. **Managing Environmental Resources** is available at Access 2 and 3, Intermediate 1 and 2, Higher and Advanced Higher levels. Access 2 and 3 levels (SQA, 2002e 4; SQA, 1999b, p. 3) revolve around practical approaches to the planning, developing, monitoring and maintaining an "environmental area". The suggested contexts imply a greater likelihood of indoor options (eg bottle gardens or greenhouses) for the planning and developing units, and more likelihood of outdoor options (eg centre grounds, community garden, tree nurseries or wildlife areas) for monitoring and maintenance (SQA 2002e, p. 23–25; 1999b, p. 3), but there are no prescriptions. The emphasis on planning, seeding/planting, propagating and managing and monitoring of "environmental areas" in these courses suggests not only the possible study of the natural heritage by way of preparation, but the subsequent non-involvement with it or, alternatively, intervention in it. The intended focuses at Intermediate 1 and 2 are on practical interaction with local environmental contexts, fieldwork and investigation (SQA, 2002f, g, p. 4). At Higher Level and Advanced Higher levels (SQA, 2002h, l, p. 4) there is an additional shift of emphasis to wider (eg national/international) contexts and more abstract concepts such as "sustainable development". The suggested learning activities include a lot of "visits" and practical engagement with local environments (SQA, 2002f, g, p. 5–11; 2002h, p. 5–12; 2002i, p. 6–13). While these are not mandatory, it is suggested that practical investigative activity is a way of developing the knowledge of practical and theoretical matters that will be tested by written examination (SQA, 2002f, p. 13) which may include simulated field activity (SQA, 2002g, p. 12).

There are **General Science** courses available (as alternatives to the individual study of Chemistry, Physics and Biology) at Standard Grade and Access 2 Levels (SQA, 2000c, 2003). The Biology unit of the Access course strongly implies outdoor study of the natural heritage, with suggested activities such as testing the acidity of soils in different environments, carrying out plant surveys, investigating seed wind-dispersal, analysing water from polluted and non-polluted environments, and testing acidity in different parts of a stream (SQA, 2003, p. 12, 13). The Chemistry unit mentions the "water cycle in nature" (SQA, 2003, p. 27) but this does not imply outdoor study. The Standard Grade Science topic, "A Study of Environments" is the most pertinent (of four) and includes ideas of energy from the sun being used by plants, food webs and chains, interdependence, habitats and species populations, pollution, adapting the environment to human needs, and conservation (SQA, 2000c, p. 32–34). The techniques prescribed give some encouragement to go outdoors. For example, "Preferably the technique should be carried out on samples the candidates have collected." (SQA, 2000c, p. 41).

The Access, Standard Grade and Intermediate **Chemistry** courses consider the biodegradability of litter, ores in the earth's crust, the effect of acid rain on rocks and lake water, water levels and amounts of organic material in soils, the effects of the use of pesticides and fertilizers and natural predators, the effects of nitrates in water and the nitrogen cycle, oil pollution, photosynthesis and animal energy use (SQA, 2000d, p. 51, 68, 82, 84, 88–89, 93; 2002j, p. 17, 25 & 30, 39 &41; 2004l, p. 14–16, 25 & 26, 28–30; 2004m, p. 24, 31 & 32, 35). However the suggested activities for all these contexts tend to involve databases, reading or designing public information material, audio-visual resources (video/CD-Rom), and laboratory experiment/demonstration. Approaches to learning and teaching (eg SQA 2000d; 8–11; 2004l, p. 39; 2004m, p. 37–39; 2002j, p. 31) recognise the importance of the relevance of Chemistry, for example to the natural heritage, but do not advocate outdoor study of it. At Intermediate 2, Higher and Advanced Higher levels (SQA 2004m, 2002j, 2002l) there is proportionately less emphasis on the kinds of natural heritage links identified above, and therefore even less opportunity for its outdoor study.

Higher Still **Personal, Social and Health Education** (PSE) is available from Access 2 to Higher levels. It is recognised that activities taking place outside the normal educational context are important (eg SQA, 1999c, p. 4). At Access 3 and above (SQA, 1999d, 1999c, 1999e, 1999f) the "Social Awareness and Development" unit of PSE suggests an optional residential experience or work in a local/distant community but this need not involve outdoor experience of the natural heritage.

From Access 2 **Physical Education** upwards (SQA, 1999g; 2004n, p. 18), there is an emphasis on variety of activity and practical-experiential learning and it is anticipated that some of the time available for the course might be used for "special events/visits" (eg SQA, 1999g, p. 5). "Outdoor pursuits" is in the range of activities that candidates might participate in during the PE courses (eg SQA, 1999g, p. 8; 2004a, p. 341) and in the Standard Grade arrangements "[o]utdoor pursuits comprise those activities which take place in the natural environment", but they do not involve *learning about* the natural heritage. Such activities may include hill-walking, orienteering, climbing or skiing, for example (SQA, 2004o, p. 11 & 12), but the use of outdoor pursuits is not mandatory and depends on teacher/lecturer and candidates' interests and expertise (SQA, 1999g, p. 10; 2000e, p. 12; 2004p, p. 23; 2004n, p. 24).

All available **Art and Design** courses ask that there is content pertaining to the themes of the "human, manufactured and natural environment" of pupils' lives (SQA, 1987, p. 7, 1999h, p. 3, 1999i, p. 4, 1999j, p. 5, 1999k, p. 5, 1999l, p. 5, 2001a, p. 5, 2001b, p. 5). Paper II of both Intermediate 2 and Higher include optional questions relating to the natural environment (SQA, 1999k, p. 8, 1999l, p. 8),

and Expressive Activity at Intermediate, Higher and optional Advanced Higher levels might include a study of landscape (eg SQA, 1999l, p. 15, 2001a, p. 23, 2001b, p. 14). Design Activity at various levels expects candidates to take account of "environmental factors" (eg SQA, 1987, 12, p. 1999j, p. 22, 2001a, p. 16). None of this amounts to mandatory outdoor study of the natural heritage or even strong encouragement of it.

1.3 Accountability and the curriculum: HM Inspectorate of Education (HMIe)

The school implementation of the Guidelines and qualifications discussed above is in part affected by processes of accountability that HMIe manage. The self-evaluation guide produced by HMIe (referred to as the "How Good Is Our School?" series) is discussed here. As we have come to expect from all the foregoing, there is no prescription for outdoor study.

The Quality Assurance framework (HMIe, 2001) has seven "key areas", each with Quality Indicators (QIs) and themes. Most QIs will be relevant to this project in some way (for example Key Area "Resources" includes QI 6.4 "Staffing" which includes the theme "experience, qualifications and expertise of staff"). However Table 4 lists those QIs that are of relevance concerning the formal curriculum.

Table 4 HMIe quality assurance framework
(areas that concern the written curriculum and studying the natural heritage out-of-doors. (Selected from HMIe, 2001))

Key Area	QI#	QI	Themes
Curriculum	1.2	Structure of the Curriculum	Integration and permeation
	1.2	Courses and programmes	Integration, continuity and progression
Learning and teaching	3.3	Pupils' learning experiences	Extent to which the learning environment stimulates and motivates pupils Interaction with others
Support for pupils	4.2	Personal and social development	Planned approaches to promoting personal and social development Pupils' progress in developing positive attitudes and personal and social skills Contribution of extra-curricular and other activities
	4.8	Links with Local authority or other managing body, other schools, agencies and employers	Links with other educational establishments Links with voluntary organisations, the wider community and employers
Ethos	5.1	Climate and relationships	Pupils/staff relationships
	5.4	Partnership with parents, the School Board* and the community	Encouragement to parents to be involved in their child's learning and the life of the school The school's role in the local community

* at the time of writing, the nature of School Boards and school governance is under review

However, the "How Good Is Our School" framework document makes no direct mention of educating out-of-doors or even the school grounds, except in view of parental contribution to out-of-school visits (HMIe, 2001, p. 55).

1.4 The future of the curriculum

Reform of the curriculum for 3–18 year olds is currently underway following the recommendations of The Curriculum Review Group (TCRG). It is driven by the principles of *A Curriculum for Excellence* (TCRG, 2004). This high level material does not specifically mention education out-of-doors. How these general aims are articulated within the school environment will be determined by the subsequent process of interpretation, which is now underway and will last several years. Curriculum development progress can be monitored at:

http://www.acurriculumforexcellencescotland.gov.uk/

The current intention is to move to a more flexible and less prescriptive curriculum model with more choice for teachers and pupils (TCRG, 2004, p. 10), including less prescribed material, increasing deregulation of when students may sit National Qualifications, the possible demise of Standard Grade in favour of the Higher Still framework (which would have specific implications for Biology, above) or some alternative, and much stronger emphases on pedagogical process and social and personal outcomes. All this *could* mean greater scope for teachers to develop opportunities for outdoor study. But such study is less likely to be prescribed, so it could also allow teachers to reduce their commitment to outdoor study. The likelihood of outdoor study of the natural heritage therefore, will become more dependent on the attitudes of teachers and the factors that influence them. In short, although the sections above can identify opportunities in the current curriculum, the future rests even more on the kinds of issues discussed in the rest of the study.

1.5 Summary

The literature concerning the climate for outdoor education experience, and the written curriculum itself, should not be analysed in isolation from the institutional contexts that deliver it, and the rest of this study discusses those. The following points can be made however:

- The use of outdoor learning experiences in formal education is in tension. National government is increasingly keen, but rarely insisting, that it be part of pupils' education. However a range of current and historical factors may deter schools and Local Authorities from responding, perhaps including the difficulty of formally evaluating its benefits.
- No part of the written curriculum is prescriptive about study out-of-doors in general (Geology may be a minor exception), let alone about studying the natural heritage in such contexts. No part of the curriculum is interpreted by HMIe as being prescriptive on this point either.
- A wide range of curriculum outcomes can be met through outdoor study of or in the natural heritage. The Guidelines for 3–14 year olds flexibly allow for such outcomes to be combined (such as Science and Personal and Social Education, for example) in the same learning experiences. Of these, the 5–14 Guidelines contain the more explicit concern with studying the natural heritage. The National Qualifications framework (*currently* broadly relating to 14 year olds upwards, but also influencing the discipline structures of S1 and S2) is less flexible in this sense. Therefore, the greatest (curricular) opportunity for outdoor study of the natural heritage is in the primary school sector, followed by S1 and S2, and then older students but only in certain subject disciplines that students may or may not choose to study.

- In the National Qualifications framework, Geography is the major subject containing the greatest curricular opportunity, followed by Biology. Examinable field data analysis, occasionally prescribed field techniques, and subject content, combined, drive curricular opportunity for outdoor study of the natural heritage. Recent developments in the content of Biology (such as Biotechnology) are changing the balance of the subject away from field experience. Depth of outdoor study in Geography increases at higher levels, partly due to the personal investigations at Advanced Higher, (however Advanced Higher is taken by fewer candidates).
- Curricular reform is likely to make outdoor study of the natural heritage even more dependent on teachers' attitudes and institutional contexts.

2 METHODS

2.1 The sample

We chose a rural and urban setting in the contexts of two Local Authorities (*City of Edinburgh Council* and *Highland Council's* sub-region of *Inverness, Nairn, Badenoch and Strathspey*). By restricting the study in this way, we were able to research within consistent policy contexts. This is not to say that the study will have meaning only for the two sampled Authorities, or that the Authority's policy context is the most significant factor.

Questionnaires were sent to all primary schools and to all Principal Teachers of Biology and Geography in all secondary schools in the areas. We selected Geography and Biology because of their important curriculum links to the natural heritage (see Section 1.2.3). These secondary school disciplines correspond with the *Living Things and the Processes of Life* and the *People and Place* attainment outcomes in the *5–14 Environmental Studies Guidelines*.

The numbers of questionnaires sent and returned are shown in Table 5.

Table 5 Return rates for questionnaires sent to schools

	Out	**In**	**%**
Highland Council (Inverness, Nairn, Badenoch and Strathspey)	**68**	**38**	**56**
Primary	48	23	48
Secondary	20	15	75
Geography	10	8	80
Biology	10	7	70
City of Edinburgh Council	**143**	**60**	**42**
Primary	97	33	34
Secondary	46	27	59
Geography	23	15	65
Biology	23	12	52
Grand Total	**211**	**98**	**46**

The questionnaire responses helped to create a sub-sample of 20 interviewees for further participation in the study. The overall aim of the sub-sample stratification was to ensure input from each group that we would expect to experience a different policy and pedagogical context concerning studying the natural heritage out-of-doors. The numbers of participants we intended to interview in each of these explicit groups is shown in Table 6. This approach attempts to ensure fair representation across the sector and allows us to explore any patterns of difference between the groups.

Table 6 Numbers of interviewees by category

Policy Context / **Pedagogy context**	**City of Edinburgh Council**	**Highland Council (Inverness, Nairn, Badenoch and Strathspey)**	**Total**
Secondary Geography	3	3	6
Secondary Biology	3	3	6
Primary/Pre-school	4	4	8
Total	**10**	**10**	**20**

To reduce the risk of systematic bias *within* each of the groups in Table 6, we selected:

- a range of secondary departments in terms of the number of days out they offer their students (from Question 1 in the questionnaire);
- a range of primary schools according to the learning contexts they use (school grounds, local area, day excursion, residential outdoor or field centre (from Question 6 in the questionnaire);
- a range of school sizes according to the published roll of the school.

In questionnaire data, none of these criteria were significantly different between schools which did or did not agree to participate further. All the Primary schools involved in the sub-sample also had pre-school provision, allowing our interviewer to discuss this context as well.

2.2 Questionnaire

The same questionnaire (Appendix 2) was used for all six categories in Table 6 with the only exceptions being minor changes of reference for primary and secondary schools (eg S1 or P1) depending on the secondary (S) or primary (P) context of the recipient. The questionnaire was piloted with both primary and secondary teachers and the questions were refined accordingly. Recipients were *not* asked to respond to a "natural heritage" context. We wanted to get a broad picture of school outdoor activity in general at this stage, and to avoid leading respondents to consider their situations only in the context of studying the natural heritage. (In interview we asked whether "studying the natural heritage" made any difference to teachers' attitudes to going out-of-doors).

Analysis of Question 1 (*"How many days in the last 12 months have any of your classes gone outdoors for educational purposes?"*) was restricted. In order for respondents to provide simple numbers by class, they took various views about what "out-of-doors" and "days" meant. Composite classes and ambiguous responses had to be interpolated into year-group categories (P1–S6) for analysis. Trips for S5/S6 are often combined in secondary schools, and the days were recorded against both S5 and S6 where this was the case. All of this makes direct *between-school* comparisons (and therefore between-Authority comparisons) impossible to undertake for the primary schools. There was merit in looking at the pattern across year-groups *within* a primary school, because within a primary school we can assume that the same understandings were used to record the data.

Questions 2–5 offered free text response. In order to systematically analyse these we generated a coding frame. Coding frames are categories into which all instances of free text response can be allocated. In this case the codes are known in advance of the questionnaire being devised (Millward (1995)). The codes were developed specifically to focus on the themes set out in the tender document. The codes, which were used consistently throughout the analysis of questionnaire and interview data, are summarised under the following headings:

- Topics (Appendix 3)
- Approaches (Appendix 4)
- Attitudes (Appendix 5)
- Motivations (Appendix 6)
- Opportunities (Appendix 7)
- Opportunities – latent (Appendix 8)
- Barriers (Appendix 9)
- Outliers (Appendix 10)

The meaning of these will become clear below and they are used as the basis for the analysis section below. Several require additional discussion here:

- "Opportunities – latent" (Appendix 8) emerged during analysis as a separate code. In coding Question 4 (*"Are there some topics which you would like to go outdoors for, and don't at present? Please list as many as you can think of."*) it became clear that, while the responses represented opportunities because teachers were expressing what they would like to do but could not or did not, they were not opportunities in the sense that they were being taken advantage of, which was a characteristic of the data already in the "opportunities" code. Thus a new code "opportunities latent" emerged to indicate opportunities yet to be realised.
- The "Topics" code (Appendix 3) was based on Question 2 (*"Please can you list the curricular topics that [P1–7/S1–S6] studied when they went out-of-doors in the last 12 months?"*). It was further subdivided, as follows (B = Biology, G = Geography and P = Primary), and further as follows (H = Highland or E = Edinburgh). The final subdivision refers to the nature of the topic (eg minibeasts). So an entry in question 2 of the questionnaire from an Edinburgh primary school saying "minibeasts" would read "TOPS-EP-minibeasts".
- The codes for "approaches", "attitudes", "motivations", "opportunities" and "barriers" (Appendices 4, 5, 6, 7 and 9) were used throughout all the responses to questions 3–5 (*"Q3. Why do the classes go out for the topics listed in Q2 and not for other topics?" "Q4. Are there some topics which you would like to go outdoors for, and don't at present? Please list as many as you can think of." "Q5. What factors influence your decisions to plan outdoor study? List as many as you can think of."*) Subdivisions of these codes followed the same logic described above: for example the code OPS-BH means "opportunities" (OPS) Biology (B) and Highland (H).

- Question 6 (*"In the last 12 months have your classes used any of the following learning contexts (please tick any boxes that apply)?"*) did not require coding as it allowed tick box responses only for:
    - "School grounds"
    - "Local area within walking distance of school (woods, park, green space)"
    - "Day long excursion for an event (project, field study visit)"
    - "Residential outdoor education or field study centre involving at least 1 overnight stay"

2.3 Interview

The interview schedule (Appendix 11) was drawn up following analysis of the questionnaire response. The interviews are designed to probe the issues emerging from the questionnaire analysis in greater detail. The interview was piloted with both primary and secondary teachers and the questions were refined accordingly. Interviews were conducted in schools with the relevant teacher (in nearly all cases, the same teacher that filled in the questionnaire). For primary schools this meant head-teachers in all but one case where the depute had filled in the questionnaire and was then interviewed. The shortest interview time was 35 minutes and all interviews were tape-recorded and transcribed before analysis.

Linking the interview schedule with the questionnaire data provided an interesting dilemma because the interview questions could be used to ask each respondent about their own particular school or the questions could be based on the analysis of the data set as a whole. The latter course was chosen for a number of reasons.

- First, the study was never designed as a case study and so there was no methodological reason to treat each case as separate.
- Second, when considering both approaches the research team considered that the first approach could easily lead to repeat data (ie the same as the questionnaires). This would not have benefited the study in any way because the data from the questionnaire was descriptive and the purpose of the interviews was to add depth.
- The third reason was that the research team believed that the latter approach would allow respondents to answer hypothetically. So for example a respondent in interview could argue that for their school the weather was a barrier to going outdoors. In this situation the respondent could be told about data from other schools that suggested that weather was not a barrier for them. In this way the respondent was faced with questions that probed beyond the superficial. The specific task here was to produce data on values and attitudes relating to outdoor study.
- The fourth reason was that codes developed for the questionnaire analysis provided a robust link between the questionnaire and interview data. This robustness also provided a structure for the report which consistently linked the data collection, data display and data analysis with the questions posed in the research tender.

Throughout the research process respondents were assured of anonymity. No individual or school will be recognised from the data and analysis. However, because the two Local Authorities are not anonymous then any issues arising that are specific to one or the other are clearly identified.

3 ANALYSIS

3.1 Patterns of activity

3.1.1 The quantity and pattern of outdoor study in schools

Our questionnaire asked about numbers of days out, though not specifically to study the natural heritage. We experienced difficulty with this data (see Section 2.2). We do not have useful data to discuss quantities of "days out" for **primary schools** in particular. However, in both Highland and Edinburgh, there was considerable variation in how "days out" were distributed from P1–P7, ranging from schools in which such days were evenly spread across the year groups, to schools in which the days out were very unevenly spread across the years. There was no great difference between the two Authorities, but this inter-school variation is worth noting.

Secondary Biology departments, over a twelve month period, and summing all year groups, organise an average total of 6 days outdoors. These days out were less evenly spread across the year groups than primary school days out, with S2 and S4 (the latter an exam year) having especially few. *Secondary Geography* departments organise an average of seven days out, not significantly higher than Biology. Geography departments' days out are slightly more evenly spread across the year groups than Biology departments. However the spread is still not as even as that reported by primary schools and, as with Biology, there are lows in S2 and S4. The days out are, however, more evenly spread across the year groups in Highland Geography departments than Edinburgh Geography departments.

3.1.2 The contexts of outdoor study in schools

In the questionnaire we asked respondents to tick any or all of four contexts that they used:

- "School grounds"
- "Local area within walking distance of school (woods, park, green space)"
- "Day long excursion for an event (project, field study visit)"
- "Residential outdoor education or field study centre involving at least one overnight stay"

Again, the responses do not refer exclusively to studying the natural heritage. Nearly all responding primary schools used the school grounds and nearly all used the local area (3/56 said they didn't). All the Highland primaries used day long excursions, as did 28/33 Edinburgh primaries. The only notable variation in the data is that residential excursions were used less by Highland primaries (13/23) than by Edinburgh primaries (30/33).

All but one **Secondary Biology** departments used the school grounds and about half used the local area. In Highland, 6/7 used day excursions but only 1/7 ran a residential excursion. However, in Edinburgh both day excursions and residential trips were used by around half of Biology departments. This pattern of somewhat fewer residential excursions in Highland also applies to primary schools (above) and Geography departments (below). **Secondary Geography** departments were less likely to use the school grounds than Biology departments but were more likely to use the local area with 11/15 in Edinburgh and 7/8 doing so in Highland. All the Highland Geography departments undertook day-long excursions but only 1/8 ran a residential excursion. Two-thirds of Edinburgh Geography departments ran day-long excursions.

There does appear to be some hint of a difference between the two Local Authorities in terms of the excursions, with Highland schools using relatively fewer residential excursions and relatively more day-long excursions. Also, Biologists seem rather more likely to use the school grounds than Geographers.

3.1.3 Curricular topics use for outdoor study

The questionnaire question (*Please can you list the curricular topics that P1–7 studied when they went outdoors in the last 12 months?*) generated a significant amount of data shown in Appendix 3.

"Physical Education" has the highest number of instances in **Primary Schools** (in Highland and Edinburgh). Whilst this has no direct bearing on the study of the natural heritage it is an indication that the pupils are going outdoors. We asked this question in a deliberately open-ended way. This open-endedness adds confidence to the strong showing of those subjects associated with the study of the natural heritage (science subjects) where there are a high number of reported instances of schools using the outdoors during the study period. However it is worth noting that there are many areas, such as history, for which pupils are also going "outdoors".

For **secondary school Biology**, combining Highland and Edinburgh, the highest recorded "topics" are for the items "biosphere" and "world of plants", which are Standard Grade topics (Appendix 3). The remainder are an indication of the variety of topics and themes that can be studied outdoors and there are no major curricular omissions in terms of likely topics to be studied. For **secondary school Geography** "glaciation" is the most cited outdoor topic in Highland, and "urban Geography" in Edinburgh (the corollary is that for the Highlands "urban Geography" was third equal and for Edinburgh "glaciation" was fourth). We are not attributing statistical significance to these but the difference may obviously reflect the availability of different local environments for the predominantly rural (Highland) and urban (Edinburgh) schools surveyed.

More generally, the questionnaire data suggests that when schools go outdoors there is a tendency to study what is around them, and this is supported by the data concerning contexts they use (see Section 3.1.2). Amongst primary schools, for example, there is a greater tendency for Highland schools to study the topic "Jacobites" outdoors than Edinburgh primary schools, which may reflect convenient proximity to Culloden battlefield. The reverse pattern is true for visits to zoos, museums and for the purposes of learning "road safety".

Whilst studying local surroundings may seem obvious there is an important implication. These data begin to indicate that it is not the lack of curricular opportunities that prevent teachers from going outdoors (although the influence of *too much* specified content is discussed later). We can suggest this because teachers are clearly finding ways to go outdoors and can express their reasons for doing so in curricular terms. The diversity of curricular opportunities that exist is at least as great as the diversity of local environments of schools we surveyed.

In interview many of the primary and secondary teachers we spoke to thought that the availability of school grounds and local environments greatly facilitated (for various reasons) the outdoor opportunities they could offer. The curriculum is seen as non-constraining in this respect by primary teachers. One Edinburgh school currently visits the Botanic Gardens, conducts seashore studies on the Cramond foreshore and studies trees and foliage along the River Almond walkway. This teacher felt that there was no specific topic they would like to study more of, but instead suggested that the point was "just getting the children out and looking and getting that natural wonderment of seeing the things that nature does at different times of year".

Highland teachers suggest that "we are very fortunate here because we are right in the heart of opportunities to go out", and "we've studied bird life, we've studied flora and fauna, we have studied geology…we've done river studies, we've done salmon rearing, we've looked at archaeological graves, which are quite close". Further testimony suggested that:

> "within the local environment we have the woodlands and so on around about here because that ties in with your local studies and the aspects of environmental studies on the locality…we try and tie in all of our visits to 5–14 guidelines because we're so restricted in time so we have to ensure there's balance across the areas."

In either case, these teachers don't appear to be prevented from going outdoors by a lack of curriculum topics.

The curriculum was also non-constraining for the Biology teachers we interviewed, some of whom noted that the curriculum does not specify *which* ecosystems, for example, needed to be studied, but tended to specify that certain techniques should be studied, allowing huge scope for using whatever local ecosystem resource was available, even in the school grounds. Geography teachers' situations were more complex, for this study, because access to *physical* Geography (natural heritage), for even semi-urban schools, is harder than access to *urban* and *human* Geography, because physical Geography involves topics that are less prevalent than "ecosystem", such as "rivers" and "glaciers". The absence of either human or physical Geography contexts within the school grounds may explain why Geographers use day excursions more (and the school grounds less) than Biologists (see Section 3.1.2).

In sum, the curriculum is perceived by teachers as providing more opportunities to study topics outdoors than they are able to realise, even if they feel able to offer lots of outdoor learning, and lack of curriculum topics is not what constrains those who feel less able to do so.

3.1.4 Unrealised topics or visits for outdoor study of the natural heritage

That there is unrealised ambition for teaching the curriculum outdoors is supported by data on topics that teachers say they would like to go outdoors for, or visits they would like to undertake, but for some reason do not. These are coded as "Opportunities – latent (Opp-lat)" in Appendix 8.

In questionnaire data there is a difference between Primary and Secondary schools in this respect. For Primary Schools there were very few unrealised topics/visits that were brought up more than once across all the schools surveyed (Appendix 8). Whereas for Secondary Schools there are (proportionally) more repeated instances of the same topic/visit that teachers would like to develop but hadn't. This is probably because secondary teachers are dealing with narrower curriculum areas than primary teachers. (Note that the questionnaire survey did not specify that we were concerned with the natural heritage, so there are a wide range of unrealised opportunities for primary schools and Geography teachers).

There are also differences between Biology and Geography. The total number of instances of unrealised topics/visits reported was as follows:

- Highland Biology: 8
- Highland Geography: 17

- Edinburgh Biology: 15
- Edinburgh Geography: 71

While there is no significant difference in the average numbers of days out between Geography and Biology departments (Section 3.1.1), the figures above do show a difference in the number of unrealised opportunities perceived by these teachers. This may be because almost every Geography topic (human or physical) *could* be well taught with an outdoor component, whereas this is less likely for Biology topics (One questionnaire response stated that "ecological topics need experience of ecosystem – biochemistry, physiology don't" (*sic*)). Many but not all of the latent opportunities reported by Geography respondents relate to natural heritage topics and therefore offer scope in terms of SNH interest. For example in Edinburgh the bigger entries are "farm study", "river study", "coastal studies", "industrial change", "environmental conflict issues", "urban study", "glaciation studies" and "weather".

In the case of Biology, the difference between the number of unrealised opportunities to go outdoors between Edinburgh and Highland is simply proportional to the number of returns. But there is a disproportionate difference in the number of reported instances of unrealised visits/topics between Edinburgh and Highland Geography teachers. This difference is worth noting but we do not propose to speculate on its cause.

Interview discussions concerning latent opportunities with secondary teachers included thoughts about using the school grounds more, using the local area more, exploiting the curricular value of extra-curricular schemes (such as school grounds or environmental programmes), and the possibilities offered by school- and nation-wide in terms of curricular developments. However, all these depended individually on the school's existing situation and there were no clear patterns.

Primary and secondary interviewees made suggestions about how SNH or similar organisations might help them to realise these latent opportunities, and these ideas are reported in Section 4.

3.2 Explanations

The sections above describe the pattern of outdoor study of interest to this study. The subsequent sections attempt to further explore what lies behind these patterns. It is split into three sections. The first looks at which kinds of motivations drive outdoor study for teacher, and how their approaches to study legimise these opportunities. The second section looks at the organisational context that teachers believe either promote or hinder their ability to undertake outdoor study. The final section considers teachers attitudes towards outdoor study.

We must emphasise, however, that these sections are strongly interrelated. They are separated here partly for ease of discussion and partly to maintain a close association with the study data. But a teacher does not approach the world of outdoor study in the way s/he approaches a questionnaire or an interview discussion. To understand the school or teacher's decision-making requires us to attempt to think about the teachers' milieu. It is important to try to understand: (a) the complexity of any teacher's situation and thinking; (b) the complex differences in emphases between different teachers' situations and thinking; (c) how those complexities are over-simplified by the process of asking them to articulate them for this study.

3.2.1 Motivations and approaches for outdoor study of the natural heritage

The following analysis combines interview data and data from three categories of codes which emerged from the questionnaire data: Opportunities (OPP – Appendix 7), Approaches (APP – Appendix 4) and Motivations (MOT – Appendix 6). Together they relate to the range of opportunities that teachers take

advantage of in order to study outdoors, why they engage with them, and how they legitimise them. These three categories were used to break down the questionnaire data. In this section we will be reconstructing the underlying trends.

3.2.1.1 Curricular relevance

It is important to realise that, in explaining teachers' decision-making, the role of the curriculum documents are subtle. For example, the strongest patterns in interviews with secondary Biology and Geography teachers were that:

- they all declared that outdoor study was in some way integral to their discipline;
- they all declared that, nonetheless, they were in no way compelled to undertake outdoor study by curricular guidelines or syllabuses;
- and most declared that, nonetheless again, curriculum relevance improved the status of proposed outdoor opportunities in the decision-making process and improved their likelihood of being realised.

We shall also see that other aspects of the curriculum (especially its size) militate against outdoor study (Section 3.2.2.1).

Questionnaire data suggested that the curriculum can serve a number of functions. It can be used either implicitly or explicitly as a rationale for going outdoors, and there appear to be good curricular reasons why teachers should go outdoors. Certainly all primary school interviewees looked first to the curricular documents to see how outdoor study can enhance topics. One respondent states "(we) start from the curriculum because that's obviously what we are bound by and if we can use the outdoors then all to the good…". Others referred to outdoor study as "enhancing indoor learning" and "reinforcing what the children are learning". One school is planning to introduce a set of experiences they want the children to have such as "a hill environment, a weather environment, a forest environment", and so on, all of which can be related to the curriculum.

No primary interviewees volunteered that outdoor study was of itself inherently worthwhile. In all cases there were conscious attempts to link outdoor study with the curriculum. When probed about this a typical statement was:

> "we always try and link what we were doing in the classroom and extend it to what we were doing outside and then it might be collecting and recording and taking photographs and videos and so on."

So while these data appear to promote the concept of outdoor study it is important to recognise that there is an unspoken assumption in the primary school data which separates outdoor and indoor study. Outdoor study is being portrayed in terms of curricular *enhancement*. Perhaps the "superior" form of education is what takes place indoors and outdoor study is being used to support this. Interviews suggested a more complex picture when it comes to the role of the pre-school curriculum as opposed to the 5–14 Guidelines. In one Highland school the children go out every day. The respondent states,

> "its built in, just because it's part of their learning experience. I mean obviously the pre-school curriculum is based on play and play in the outdoors … there is a curriculum… and as I say it's structured, it is quite clearly defined but the difference is that it's delivered through the medium of play."

The alternative view was that "there isn't anything in the curriculum after 5 or before 5 that gives you any more advantage".

We can summarise that curricular justification is endemic in decision-making about outdoor study. But despite this, in the absence of curricular *prescription* there must be more to teachers' reasoning. We will see (Section 3.2.2) that organising outdoor study is not straightforward, and so to make the effort teachers must perceive that there is something about studying the curriculum outdoors, as opposed to studying it indoors, that is worth the effort. And this must be regardless of whether they feel the need, which they certainly do, to invoke curricular relevance. So while curricular relevance is always part of the public justification, there are other reasons for choosing outdoor study that may or may not be publicly declared.

Put simply, curricular relevance is necessary, but not sufficient, to cause outdoor study of the natural heritage. Two, closely related, additional factors follow.

3.2.1.2 Some topics lend themselves especially to outdoors study

In questionnaire data there were 35 instances of this idea (including "the nature of the topic lends itself to outdoors study" (n=25)) and many more such as "science and environmental studies particularly require visits outside to relate to class discussions", "measuring abiotic factors is far easier outdoors", "glaciation is educationally rewarding when taught outdoors", "visits fit well with themes", "some activities are not suitable indoors", and "surveying, practical work and field trips have to take place outdoors". In interview with secondary teachers, pedagogical advantages of outdoor study for relevant topics were raised (ie outdoor study simply represented better or more varied learning experiences) and one even linked this to improved examination results. These comments are drifting away from the relevance of the topic, towards the idea that better learning, in general, might take place in the outdoors.

3.2.1.3 Firsthand experience is valuable in other ways

This is a subtly related idea that firsthand experience of the environment is worthwhile in its own right. Interview data tended to more clearly separate these aspects of explanation.

In questionnaire data there were 35 instances concerning the advantage of "first hand experience", including "first hand experience" itself, "outdoors can enhance curricular learning", "quality of learning experience", "enhanced learning" and "good for all the senses". In interview, talking about the lack of opportunities for children to be outdoors one primary school teacher states "it is very sad they're not out more and getting to see things". The same teacher (newly installed as Head Teacher) was so convinced of the benefits of direct experience of the local environment she was prepared to set aside one morning per week to cover a class teacher so that they could go outside. Another interviewee stated,

> "I do believe that…all children need to get out more and to see the curriculum in action out in the environment…"

For another respondent the idea was to "get hands on experience first and then…follow it up in the classroom". The reason provided for this was that "the learning obviously goes deeper more in depth (and) more meaningful".

When asked if there was anything they wanted to say at the end of the interview, some secondary teachers made impassioned statements concerning outdoor learning:

> "I think in this day when many youngsters are getting less and less exposure to the outdoors, more and more exposure to the likes of television, computer games etc, it's vital we restore the balance otherwise we face a bleak future in terms of knowledge about the outdoors, knowledge of how the world ticks. I mean every day I get examples. I was dissecting chick wings just yesterday with my fourth year class as an example of limb structure and it was quite clear they were not interfacing with the real world very well. There was a repugnance to touch the flesh… The idea of children getting their hands dirty is anathema to many, we're in a very sterilised, hygiene conscious society … one of them even said to me 'ugh, soak in a bath, that's unhygienic'."

> "I think that you shouldn't underestimate the impact of putting children – these are teenagers that you see outside – 15, 16 year olds, you shouldn't underestimate the impact that putting them in an environment they're not used to has on them and how long-lasting that kind of experience is because it becomes a particular place, a particular event and a particular series of interactions which is a specific memory that you can draw back things out of."

At least three primary teacher interviewees believed that the pupils did not go outdoors very much with their families and so they felt some responsibility to rectify this. Another interviewee believed that being outdoors "encourages (pupils) to be more aware of their own area and the need to protect it and also how they can be active outdoors and enjoy that". Also in interview, secondary teachers variously referred to the importance of pupils simply enjoying the experience, of some pupils' expectations that going outdoors will be part of their study, of the need to counter the urban-frame of many children and overcome their feelings of intimidation in the face of the natural heritage, of the development of novel and improved relationships between students and teachers, and of the particular potential of this with "difficult" children.

The last paragraph presents an opportunity to make explicit a recurring theme in this study. That is that teachers are not a uniform category but a group of individuals who happen to share some characteristics but are in other respects different personalities working in different situations. The thoughts declared in the paragraph came from different teachers' perspectives and not all of the teachers involved would subscribe to all of the points made. Concerning relationships with difficult children, for example, one teacher clearly decided, experimentally, to try and work on improving the teaching and learning relationship with these children by taking them to an outdoor context. On the other hand, more than one other teacher suggested that their relationships with "difficult" children were increasingly likely to put them off organising outdoor excursions at all. The differences between these teachers' approaches emerge from a complex mass of interacting factors which we will discuss in later sections. For the time being, the point is that our claim to explain the decision-making of one teacher is not a claim to explain the decision-making of all, or even any, of the rest. However, we suggest below that sharing these different perspectives and understandings of justification for outdoor study between different teachers could be a positive development.

3.2.1.4 Summary of motivations and approaches

In the sections above we show that teachers' are expressing their beliefs in two related ways. The first is the belief that some topics/subject areas lend themselves well to learning in the outdoors. There are also those who distinguish between topics/subjects, some of which are better taught outdoors and others better taught indoors. The second belief is that direct experiences of the natural heritage are valuable, and in some cases

essential, for learning, and for personal and social development (and these two things are not necessarily separable). This tends to suggest that teachers are linking conceptual learning with other outcomes through direct experience of the natural heritage. The conceptual learning often relates to the study techniques that are required for direct observation of the natural heritage. But there are also cases being made for experiential approaches to learning – that the act of observation, and the act of working together to achieve observation, is significant.

At this stage, this leads to two points. The first is to reiterate that we are now quite a long way from the idea that curricular relevance is the sole determinant of teachers' motivation, even though it is often the most explicit justification offered. And the second is that, as we suggested in the desk study (Section 1), teachers are combining a range of curricular themes when organising outdoor study – not always explicitly, but no less surely for that.

Some of the suggestions made by teachers (Section 4) include sharing ideas about how any given, usually local, area can be used in curricular context. However, as we will argue below it may also be useful to make explicit and share the less public, pedagogical and developmental outcomes that different teachers believe to be achieved through outdoor study.

3.2.2 Organisational contexts concerning outdoor study of the natural heritage

This section makes use of questionnaire data that was categorised into "Opportunities for Outdoor Study" (OPP – Appendix 7) and "Barriers to Outdoor Study" (BAR – Appendix 9), and associated interview data.

The interview schedule (Appendix 11) included a series of specific probes on barriers to outdoor study, and we could simply have reported responses to these. However we have decided not to do that because the picture is much more complex than can be conveyed by that means.

The complexity is that one person's reported barrier is another's opportunity: what makes something hard for one person to organise makes it easy for another person to organise. For example "relevancy and needs of the…curriculum" is seen as making outdoor study easier to organise for those subjects for which outdoor study is relevant to the curriculum, but is seen as a barrier by those whose curriculum does not validate the taking of pupils outdoors. "Familiarity with the area" is an opportunity for teachers who know the area well but a barrier for those who don't. "Enthusiasm of other staff" is both barrier and opportunity depending on whether other staff are, or are not, enthusiastic.

Moreover, while the above dichotomies are presented as simple situational facts, there may be more than this involved. It is certainly true that different teachers in different schools are simply experiencing different contexts. But it is also possible that different teachers' responses to such situational facts represent different attitudes and dispositions towards taking students outdoors. It is not easy to pin down or understand such dispositions, let alone tackle them through intervention. We will return to this question in the final section of the analysis (Section 3.2.3).

3.2.2.1 Time

"Time" in one way or another was a very significant factor for most teachers and includes the time needed to plan, organise, deal with paperwork and execute outdoor study. Also noted was a "lack of time" in the curriculum. Some teachers said that a barrier is if they have to "travel too far", which may be time-related.

Many of the secondary teachers in interview identified "time" as the most obvious hindrance to going out-of-doors and nearly all commented on the time-cost of preparatory visits, developing the required expertise to conduct field study in a new area, filling in forms, collecting pupil payments, setting cover work for classes and recovering the programme of study of those classes upon return. Some noted that some of these costs were worse for, but by no means restricted to, new excursions. This comment has important explanatory power when considering schools that have little current outdoor study activity. One or two suggested that teachers' non-contact time (in which trip organisation could take place) had decreased a great deal, others that teachers had other commitments beyond the school week, and one that this is partly related to where teachers are in their life-cycle, suggesting that teachers with young families, for example, are less available out of school hours or at weekends for running excursions. It is worth noting, in passing, that the teaching profession currently has a strong age-skew towards those over the age of 40 years.

3.2.2.2 Disruption

There was a strong pattern of needing to "justify time" in relation to other objectives. Two secondary school interviewees commented that they were under considerable pressure to deliver examination results and that, therefore, thinking about their own and their pupils' activities, time for outdoor study and its organisation tended to slip down the priority list. When specifically asked about time as a barrier one primary school interview stated,

> "I would like to think that I could at least justify that the experiences the children are having meet so many aspects of the curriculum that I wouldn't have a problem doing that (going outdoors) in HMI terms".

The same respondent stated,

> "we could deliver the whole curriculum in the outdoors, obviously it's such good practice it could be extended because obviously for most children it provides a much better learning environment than in a classroom."

The following dialogue from the transcript follows on from this statement and helps to put this in context.

> "So there's pressures on teachers to perform?"
>
> "Well I mean we're all being judged now by attainment targets and they don't really recognise what's going on in the outdoor sense. They don't come out with a level B in outdoor experience."
>
> "Would that help (Level B in the outdoor study of the natural heritage)?"
>
> "Well it would certainly give a lot of credibility."

There was general consensus that the effort in taking pupils outdoors had to be time efficient. One primary interviewee stated "if it's going to take you an hour-and-a-half to get somewhere …you've got to make it worth your while being there". When asked what was meant by "worthwhile" this respondent stated,

> "because there's so many subjects squashed into the curriculum that if you are taking a whole day out you've got to get a lot of valuable work out of it to justify taking them out in the first place and where we are wherever we go we've got to travel (and this is) expensive."

These comments summarise the views of all primary school interviewees where there was caution based around the travel time involved in getting somewhere, in relation to the time spent there for learning and whether the quality of learning could be achieved as effectively in school without the travel involved.

Of the interviewed secondary school teachers, Biology teachers especially mentioned that taking students outdoors reduced their ability to "cover the syllabus", with special reference to Higher Biology. It is worth noting that this was not mentioned particularly by Geography teachers.

Many of the interviewed secondary school teachers also appreciated school-ground and local environments for outdoor study, for a variety of ease-of-organisation reasons, including the balance of travel time and working time that primary school interviewees mentioned. This has extra significance for secondary schools because secondary teachers taking a class out-of-doors are not taking "their" class, except during their timetabled period (of Geography, for example). Beyond that time, they are taking the same students out of other classes (such as Maths). So shorter trips which cause no or minimal disruption to other timetable subjects are seen as good opportunities.

This institutional difference between primary and secondary schools is more generally one of the most significant for this part of the study. In questionnaire data there were 21 instances of "disruption to classes" being a barrier to outdoor study, including "other teachers complain" and "exam class contact". All of these instances are from secondary schools, for the above reason. Many secondary school interviewees mentioned a kind of underlying tension between subject departments, especially but not exclusively concerning senior pupils and those studying Higher courses in a single year. These tensions were generally resolved through personal relationships between subject Principal Teachers or, increasingly, by a decision-making process involving the Head Teacher or school management or Board of Studies. Curricular relevance is one argument used in the resolution of such tension. In many schools, however, other subject departments can withold permission for particular students to go on excursions for a variety of reasons.

The possible solution to such tensions presented by suspending the timetable – "activities week" – is not generally realised for curricular field study. Several of the interviewed teachers worked at schools that did not have activities weeks, and those that did said that there was a great deal of demand for both students and staff during such weeks and they tended to be for less curricular and/or more optional student activity.

We will discuss the influence of weather in Section 3.2.2.8 below, however the timing of secondary school excursions for field study in the year tends to be a coincidence of reasonable weather and the equally pressing need to choose a time that reduces the tension of disruption to other classes. Examinations weeks are not available and the period running up to prelim. exams is considered not ideal in some secondary schools and banned in at least one. The possibility of using the end of the academic year (in June for example) is less available to the increasing number of schools who start the new academic year at this time. September, also is used by some schools but one interview noted that this was irritating because teachers are trying to inspire their classes with the freshness of a new course and yet various students keep disappearing off on trips so it is difficult to get the course going.

In contrast to all this, primary school interviews suggested that teachers are consistent in their view that outdoor study is not a disruption to other school activity (so long as the assessment is based on current activity). However, the degree to which schools would want to increase the level of outdoor study would appear to be very variable. This is probably best seen in the following divergence of views:

> "I think anything to enhance the curriculum is important for the children. We all know the benefits of using the local environment or the wider environment to enhance what's going on in the classroom and it's not seen as a hindrance or it doesn't get in the way (but this) creates a tension for teachers who would like to do more outside."

> "…it (outdoor study) has restrictions on the curriculum… we have 13 subjects to teach in P1–7 and the environmental issues and aspects although very important …are time limited as well, because we've got to have a balance with the other areas."

In both primary and secondary schools, there is very little evidence of teachers deciding to go outdoors spontaneously, other than to their own school grounds, or within timetabled subject time to a very local area in the case of some secondary teachers. Such exceptions are also more likely with smaller classes. Generally outdoor excursions are planned, often a long way in advance. The fact that outdoor study is planned in this way re-emphasises the relevance of the curriculum as a motivating factor (see Section 3.1.3). However, it is worth bearing in mind that this level of planning does not favour spontaneous activity. Indeed one Highland primary teacher stated "it's got to be planned first otherwise it wouldn't work". This is an area that begs further study because the assumption that all outdoor study should be planned, normally a year in advance, is not consistent with all kinds of experiential approaches to education.

As things stand, the institutional constructions of schools necessitate planning to minimize disruption, and all disruption needs to be justified.

3.2.2.3 Cost

In questionnaire data there were 87 instances of "cost" (including "transport" (29 instances)) as a barrier to going outdoors. This is a significant part of the questionnaire return. Interviews with both primary and secondary teachers looked into these questions of cost.

All interviewed secondary school teachers mentioned staff and cover costs as being big issues. This relates closely to the time section above for secondary schools. When a teacher takes a class out for more than their timetable period, not only are the outdoor pupils away from *their* other classes (as discussed above), but the supervising teachers are away from their other classes too. One trip may require that several teachers are away from all their classes (see section on Ratios, below). All these classes need to be "covered" by other teachers. The school may attempt to cover the classes from the non-contact time of other teachers in the school (reducing that non-contact time further) or they may hire supply teachers to cover those classes. At any rate, it is seen as either a significant time-cost for the school's staffing or a significant cash cost for the school's budget. Most secondary school interviewees thought that this calculus was the most important factor taken into account by school management when deciding whether a trip should be allowed to be arranged. For short trips, a non-specialist-subject teacher could cover classes, but for longer residential excursions subject-specialists would have to be found. Whether or not the school can afford it, finding even non-subject-specialist teachers in rural parts of Highland can be extremely difficult. This may or may not partly explain the apparent pattern of fewer residential excursions in Highland secondary respondents compared to Edinburgh ones (see Section 3.1.2).

Many thought that secondary school management were having to be increasingly "tight" on this front, in some cases because school performance was partly judged not just by *effectiveness* (in terms of examination results), but by *cost*-effectiveness. One interviewee suggested that the experiential learning aspects of

outdoor study, which he greatly supported, were not seen by school management as contributing towards results, and *were* seen as costly to offer. Finally, on this subject, it is worth noting that at least one teacher in one school had once appraised the culture of the school in terms of how tightly staff budgets were managed and had self-censored any thoughts of applying to run an excursion.

On the other hand, several secondary teachers also reported that "supportive school management" was of great help in organising trips. What is clear from this data is that any attempts to increase the level of outdoor study will require a supportive management regime. This has implications for the type of cost effective culture mentioned above where budget managers may be faced with choosing between cutting costs and the provision of quality education. Of course the two need not be mutually exclusive but any attempts to promote out door study needs to be cognizant of this potential dilemma.

Primary schools also have concerns over acquiring sufficient staffing but where one teacher tends to have responsibility for one class, the greater part of this issue is in achieving safe ratios (see Section 3.2.2.4) rather than covering the absent teacher. One school stated "we will definitely have every single class out every single term at least once on a major curriculum thing…" (A secondary subject teacher would treat this as a barely conceivable dream unless it referred only to the school grounds). However another primary school stated "we haven't timetabled our classes to be outside and I can't imagine it". There are potential future complexities here that may mirror those of secondary schools. One Highland school has been involved in a pilot programme arising out of the McCrone Report's guidance to reduce primary school teachers' class contact time. The pilot released teachers from class time and they were replaced by specialists in, for example, Physical Education (PE), music, drama, Information and Communications Technology (ICT), Health and Technology. It would appear that this system works against outdoor study because the classes are not necessarily grouped by year group but attainment level. In this way pupils from different year groups are taken by the specialist making it difficult for a class teacher to plan to take their own pupils outside because they exist as a class at some times but as an attainment group at others.

Staff cover aside, both primary and secondary schools need to deal with other cost issues, such as transport costs, entrance or partner staff fees. For this reason, and others, both primary and secondary schools organised excursions to local areas within walking distance because there were fewer cost or other organisational implications. School budgets typically have access to capitation funds from the Local Authority, for running the school, and their own pots of money generated by, for example fundraising or other sources. The interview data showed that cash funding for outdoor excursions came from six main sources.

School budget: All eight primary schools used some of their Local Authority school budget to pay for outdoor trips. One school in each of the two Local Authority areas reported that the Local Authority had a discretionary budget and applications were based on a project by project basis. One Edinburgh school also reported that "if children receive income support the council sometimes has some money". It is not clear if all respondents in both areas knew of these budgets. Some secondary school interviewees noted that the school budget might be used to cover some costs of some trips. Several mentioned the provision of subsidy for families on low income but some mentioned that many families might rather not apply and some that such funds were not available centrally in the school and would have to come out of the subject department's funds. Funds for access to trips sometimes included those fund-raised (below) and some secondary interviewees suggested that such funds were declining.

Payment from pupils/families: For primary pupils, where school funds were insufficient families would sometimes be asked to pay for trips but there were generally two concerns associated with this. The first being that families should not be asked very often and that when they were the sum should be nominal. Head teachers employed certain methods to minimise family contributions and these included asking for half of the total sum per pupil or £1 per pupil. One school alerts families at the beginning of every year to the number of outings their children will be engaged in. The warning is intended to help families spread the costs over the year. Another school warned that in some cases "parents don't have the cash or willingness to pay".

By comparison, secondary schools are much more likely to recover the cost of excursions from families, nearly all saying this was the procedure and only one suggesting that pupils could not be charged for curricular study of any kind. There were few examples where costs were split between families and the school, except where there was transport subsidy of, for example, the school minibus. For some schools, then, the general ability of catchment families to afford to pay for such trips means that teachers see trips as being easier to organise, except in as much as collecting contributions from pupils is a significant administrative task. In other schools, or for more expensive excursions, families do decline to pay and/or are unwilling to ask for support, and teachers may feel uneasy about asking for sums of money for school trips that are comparable in cost with more "fun" kinds of excursions. In all these cases it is therefore more difficult to run outdoor study that is part of curricular entitlement. It remains possible to conduct outdoor study for those who can afford to participate but such excursions often include other, non-curricular activity. Some pupils may, anyway, not be able to participate for reasons other than cost (see Section 3.2.2.2). *Entitlement* is therefore a grey area in terms of some kinds of outdoor study and its greyness in practice might be related to its greyness in theory – the absence of prescribed field study in syllabuses and guidelines. Among both primary and secondary schools that we chose for interview, it seems likely that there is some correlation between the quantity of outdoor study reported and socio-economic character of the school catchment areas. There may or may not be a direct causal link but this is worthy of further investigation. Some such catchments (in one case, one postcode within the catchment) receive additional support from various sources to provide for opportunities for youth in general. Applying for such funds is itself a time commitment and not one which any secondary teachers that we interviewed had recently undertaken to support field study.

Fundraising within the school community: All eight primary schools reported that they were active in supporting the school funds through fundraising events such as sales, 10K runs, concerts and Game Fairs. School associations, school councils and school boards were mentioned as being active in fundraising. A similar pattern applies, perhaps less consistently, for the secondary schools we talked to. None of this fundraising activity is specifically for going outdoors to study the natural heritage. Instead this form of fund raising appears to be a regular feature of school life and the proceeds are banked for general use at the Head Teacher's discretion.

Enterprise projects: Some schools are using the concept of "enterprise education" as a way of fundraising. For example one school reported a "healthy fund" of £500 raised through pupils efforts. Another school suggests that because of the growth of the concept of enterprise education that this represented a novel way of studying the natural heritage. For example areas of countryside subject to development could be visited and the idea of campaigning used to link what was studied outside to what was studied in the classroom. This in turn could be related to letter writing and poster displays. Significantly, "enterprise education" is a current agenda in Scotland and funds are available to support it. The use of such "agenda/initiative" funds

to match school needs is something that a number of schools do well. For example, one of the secondary school teachers we interviewed had acquired Education for Enterprise funding to help pay for a farm study excursion, essentially on the grounds that the farm is a business. More tenuous applications have been made for such "agenda/initiative" funds and they can be successful.

Corporate funding: Some Head Teachers demonstrated a degree of entrepreneurialism in their approach to fundraising. Successful approaches have been made to a variety of local businesses, a distillery and airport authority. The defining characteristic of success appears to be the proximity of the school to the business. Again none of this funding was specifically raised for studying the natural heritage but one respondent did say that corporate funders liked to donate on a project basis. There is no evidence available to say how successful schools might be if they tried to obtain ring-fenced funds from corporate bodies specifically for the study of the natural heritage.

Grants: The final source of cash funding is in the form of grants from organisations including Scottish Natural Heritage, The Forestry Commission and a local Trust Fund. One school reported receiving a top figure sum of £1500 as a lottery grant. However, this was not specifically for the study of the natural heritage. The same school was awarded £7,000 from the Royal Bank of Scotland's Superground Competition. This has been used to develop garden areas in the school grounds, including bush and tree planting where children can go outside and work. The school also received £1600 from a local business.

Whilst all primary schools were involved in fundraising one of the eight reported that they did not have time to seek funding from external sources (ie Corporate and Grant funding) and few of the secondary school teachers we interviewed felt they had time to apply for external funding.

All of the above refers to cash funding but it is worth noting other resources that schools used. For example all primary schools and several secondary teachers acknowledged that they used or had used the services of rangers to study the natural heritage. Such resources may be free and are also seen to have various other advantages such as providing another adult helper or expert. The same sort of resource can sometimes be seen in the use of minibuses (even though in some cases Local Authorities levied some charge it would not be the full running costs) and other resources such as educational packages developed by Non-Governmental Organisations.

3.2.2.4 Adult/Pupil Ratios

In questionnaire data there were 68 instances involving "ratios". Primary schools reported that the "lack of adult helpers is an issue" and secondary schools refer to "staffing issues", though as we have seen in Section 3.2.2.3, interview data suggest that this refers as much to covering the secondary school classes that staff have left behind as it does to having sufficient staff on the excursion.

"Adult helpers" in primary schools tend to be a combination of parent helpers and auxiliary support, who work alongside teaching staff. Although auxiliary support staff numbers are increasing in secondary schools, their availability to participate in outdoor study is reported in interview as being variable. Parents were rarely used in secondary schools where we interviewed staff, some interviewees simply saying they have never really considered using parents and one suggesting that teenagers are intimidating for parents and parents are humiliating for teenagers. As far as convincing other members of staff to join the excursion in secondary schools, this perhaps varied with the general enthusiasm and age profile of the staff and the amount of

staffing flexibility and non-contact time available within the school. With some exceptions, secondary school interviewees thought these variables were trending towards increasing difficulties in attracting staff onto trips. At another level, however, the whole issue of ratios varies with the size and age-structure of the *student* population of the school. In more rural schools with smaller groups of pupils throughout (and where one need not have to travel far to study the natural heritage), or with schools teaching smaller groups of senior pupils, or where the school grounds include natural heritage to study, issues of ratios were less pressing for our interviewees.

In some ways it is more difficult for pre-schools in the sense that more helpers are needed because the ratios are often 1:2. This requires a lot of adult helpers and this help depends on the willingness of parents which appears to vary from school to school. However it would appear that there are distinct advantages. For example compared to those studying the 5–14 curriculum the pre-school children tend to use the local environment regularly whereas further up the school there is greater demands on their time, because of the curriculum so that the older children tend not to be able to go out as much. Also pre school children will often have their own garden area so this sense of ownership encourages them to go out more. In all cases they tend not to travel very far although smaller schools find it easy to fit them all in a minibus.

The interview data shows that there is common agreement throughout both council areas regarding ratios for primary schools. For senior primary classes the ratio is 1 teacher to 10 pupils. In pre-school the ratios are 1:2. For classes between pre-school and senior the ratios are 1:8. Within this common framework teachers exercise discretion when including other variables such as adult helpers, children with special needs, composite classes and specific locations, such as near roads, where more adult attention is required. All respondents said that these ratios came from Local Authorities but it is not clear whether these are rules or guidelines. There are also other considerations where, for example in the case of drop-offs on the way home, pupils have to be met by an adult before they are allowed off the bus.

Secondary school teacher understanding of ratios is more variable both between and within Local Authorities. Unlike outdoor adventurous activities, ratios for "field study" was perceived to be a "grey area" by some of the teachers interviewed, with understood ratios varying between 1:8 and 1:15 for field study, and with different teachers thinking that this was variable by age group, or environment, or type of activity. Although all declared that Local Authorities were involved in the development of rules concerning ratios (and some teachers possessed the relevant documentation) the teacher organising day excursions was primarily affected by school arrangements for ratios. Uncertainty concerning these ratio rules was higher among secondary teachers interviewed in departments where relatively little outdoor study beyond the school grounds was conducted. Here again we should highlight the extra investment of time and energy required from staff to initiate outdoor excursion activity where there is currently relatively little.

We have seen that there are increasing staff and budget issues being faced by secondary schools and it is noteworthy that some teachers consider the official ratios for field excursions to involve too few adults for either safety or pedagogical reasons, and that senior management were concerned not to assign too many staff to an excursion as well as ensuring that sufficient were assigned. The implications, for outdoor study, of advocating more clearly prescribed official ratios are therefore complex.

Ratios are not perceived by primary teachers as a problem with outdoor study. Because primary schools are used to the extraction of pupils, normally for cultural events and swimming, ratios appear to be part of

everyday school life. They are more of an issue for secondary schools, or for excursions with more junior pupils, where covering the absent members of staffs' classes creates a staffing demand double-count for each member of staff on the excursion. Several teachers nonetheless essentially see ratio requirements as a positive thing in secondary school outdoor study, not only from the point of view of safety but also because, just as in the classroom, improved student-teacher ratios make for easier management of groups and more attention for individual children. One primary respondent also commented that ratios were to do with the quality of teaching and learning.

> "We try to have a high ratio because I do believe that if you're out you want to get the most from them and particularly with our kids when they don't have a lot of experience of looking and being aware and they will ask questions. If you're out with a higher ratio than that I think it becomes too unmanageable whereas if you've got a good ratio you can enjoy it, you can talk, you can point things out, answer their questions."

3.2.2.5 Transport

There were 29 instances of "transport" as a possible barrier to outdoor activity in questionnaire responses (Appendix 9). It may be the cost of transport is prohibitive or the lack of it prevents mobility and access. One secondary interviewee noted that coach transport limited access to some natural heritage sites that minibuses could access.

Questionnaire data also referred to the lack of "minibus driving licences" as a reason for not going outdoors, and teachers in both Authorities were clear that an Authority minibus driving licence was required. It would appear from questionnaire data that transport is more of a barrier for primary schools than secondary schools. This may be because secondary schools tend to perceive other barriers to be more significant in their context.

The interview data shows that the barriers of cost and transport are closely related. For example, one Highland primary school stated that they had to pay £600 for four local bus trips. And the ability to get someone to pay for coach hire was cited as a big advantage by at least one secondary teacher, who was referring to the Royal Highland Educational Trust's practice of offering funding to pay for farm visits.

Not all schools have minibuses on site and four secondary interviewees suggested that access to minibuses was becoming harder. One Edinburgh primary school stated that "it used to be just about every High School had one or two minibuses that they would hire out to other schools, that now is on the decrease". Although this seems to indicate a decline in provision the same person noted that within the Authority the minibuses will often come with a driver which was seen as a positive development as it takes the pressure off teachers having to drive.

Those schools that do not have a minibus on site, in most cases, need to travel from their own school to pick up the bus and then return it. Because of heavy demand bookings need to be made well in advance and this precludes spontaneous activity for primary schools. Heavy demand can preclude *any* use of minibuses by some secondary teachers since they may also be trying to take a trip in a particular timetabled slot in the week and slots are often semi-permanently booked out for sporting or other activity. One of the primary school teachers interviewed happened to be responsible for the bookings of both busses available to Highland schools and reported that it was a distinct advantage having the busses on site. Conversely it can be seen how this would be a disadvantage for other schools who would have to collect and return minibuses

to this school. However this is not the case for one Edinburgh school where a system is in place so that a minibus can be dropped off and collected and the cost is "only" £27 per day.

Where there is limited minibus capacity schools hire in coaches from private companies. The disadvantage of this is that schools have difficulty affording to pay. The advantage is that whole classes can be taken which is not the case when a minibus is used (unless classes are very small).

There is a significant difference between rural and urban areas regarding transport. Whereas urban schools reported using public transport to travel to sites rural schools did not. This is significant because of the cost implications regarding the use of public and private transport. One Edinburgh secondary school reported taking a small number of senior pupils by public bus for cost reasons. Small groups of middle or senior pupils in both Authorities sometimes travel in a variety of teachers' cars and three primary schools also stated that they used the minibus in combination with teachers' cars when necessary. In at least one case, the car or minibus would make more than one trip if the numbers of secondary pupils just exceeded the capacity of this kind of transport and the distance was not too great. Other transport opportunities included one Edinburgh primary school that has access to a community minibus and had to pay petrol only and one Highland primary school that had access to a sports council minibus.

When we attempted to assess schools' "distance boundaries" concerning the natural heritage, we discovered that a major theme for all primaries and many secondary schools was "What is on the doorstep?" Why use transport at all?

All of the schools use their grounds to a greater or lesser extent for study of the natural heritage. This is understandable because there are no costs involved, no need for parental consent, ratios can be maximised, time can be used efficiently (in the case of secondary schools, subject-timetabled classes can go outdoors) and there are no complicated logistics. The pattern of school ground usage is described in Section 3.1.2, but of the eight primary schools all have been involved in *developing* their grounds. One statement typical of these efforts was:

> "there's lots of schools I know in Edinburgh, and lots of schools elsewhere have fantastic school grounds and High schools and Primary schools have really worked hard on that. Ours are great but could be so much better but schools struggle, we've had to manage that and had to develop our own school grounds, we had to include the bio-diversity in our own school grounds and make it worthwhile to work with kids. Some schools are just concrete and asphalt and they've still done great things with that so we're on a journey to make our school grounds a lot better. So we go out to our own school grounds quite a lot."

"On the doorstep" then extends from the school grounds to places where schools can walk to. So for primary schools in Edinburgh this variously would mean Cammo Park, Corstorphine Hill and Holyrood Park, the Botanic Gardens, the Cramond foreshore and the river Almond walkway. One primary interviewee felt that there was no specific topic they would like to study more of but instead expressed something more general and philosophical stating "for us just getting the children out and looking and getting that natural wonderment of seeing the things that nature does at different times of year". The same respondent actually liked the idea of children walking to sites because of the associated benefits relating to fitness and health stating:

> "I think it's about building up that stamina and sadly at the moment the children don't like to walk, (but) I think we have to build that up because you want it to be a really nice experience."

The idea of opportunities on the doorstep is found in one Highland primary school interviewee's statement that "we are very fortunate here because we are right in the heart of opportunities to go out". Another states "we've studied bird life, we've studied flora and fauna, we have studied geology…we've done river studies, we've done salmon rearing, we've looked at archaeological graves, which are quite close".

Secondary schools in both Edinburgh and Highland walk to local study sites that are very close to the school grounds, ranging from municipal parks to forests and from urban streams and canal sides to the banks of significant rivers. In our discussion of the pattern of activity (Section 3.1.2) it is clear that Geographers in particular sometimes feel the need to go further afield. Interview data rather suggested that these curricular needs expressed themselves for more senior pupils who are also less numerous.

3.2.2.6 Safety

In questionnaire data there were 55 instances of "safety". This included terms such as "risk assessment", "health and safety", "the pressure of accountability", "scare stories in the press", "liability" and "insurance". We must be careful when trying to understand these data. One questionnaire said "risk assessment is the main reason we have completed so few outdoor visits – or rather the risk of something going wrong and being held liable". So, on the surface, risk assessment is being reported as a barrier to outdoor study, whereas the underlying barrier is the fear of litigation.

Risk assessment: For off-site visits, primary schools feel responsible for carrying out risk assessments. For activities inside the school grounds either no risk assessment is done or one has been done in the past and is deemed sufficient for continued use. For both Local Authority areas there is no standard risk assessment form and primary schools make up their own (one respondent said that in previous employment the Local Authority had a standard form). The procedures appear to be that a site is risk assessed first and then parental consent for the trip is sought. There is some evidence that Local Authority guidance is variable on risk assessments and this seems to have the effect that primary schools take a "belt and braces" approach to risk assessment. Moreover the secondary school subject teachers we interviewed held more diverse perceptions of the requirement for formal risk assessment. Notably, those interviewees in Edinburgh were generally certain that risk assessments were required for off-site trips whereas those working in Highland were less certain about this, or even sure that they did not need to complete formal risk assessment. In both cases, those whose understanding that formal risk assessment was required usually reported that the Local Authority had some hand in the demand for formal risk assessment, but nearly all stated that for field excursions it was school management that would decide whether it was safe to proceed with the excursion. Some interviewees thought that the Local Authority might make this decision for overseas or adventurous activities.

There is evidence that external providers, such as field centres and rangers are providing schools with risk assessments for their own sites which saves schools having to do their own. This is a welcome development for the respondents with some interviewees reporting that one of the major benefits of such partners was that they took some responsibility for safety in general. When prompted, one primary interviewee said (of risk assessment):

> "I don't like doing them I've got to say…they're quite difficult things to do properly I think, risk assessments but they have to be done and I think sometimes we are over protective maybe …"

This sentiment was expressed by two other primary respondents and these were unsolicited responses. Three secondary teacher interviewees felt that risk assessment and other safety documentation resulted in an off-putting focus on safety and several considered safety to be a matter of common sense, experience and mental checklists. One secondary interviewee suggested that formal risk assessments were limited to thinking about the future and could not possibly take account of all potential circumstances encountered on the ground and on the day.

There is a possibility that primary schools may be doing too much risk assessing and this warrants further study.

Insurance: Two primary school interviewees reported that they used Local Authority liability insurance for all residential trips and trips lasting longer than half a day.

> "you have to take out insurance for each child (and) you have to inform the parents, you give them a copy of the insurance and you say 'this is the insurance we have taken out as a school but if you feel that's not sufficient would you please take out your own policy.'"

Interviewees from both Edinburgh and Highland schools, and primary and secondary schools, noted that families had to be so informed of the liability insurance that their children enjoyed on excursions. When pressed on whether this also applied to the use of a Local Authority residential outdoor education centres the response was "I'm sure they have their own policies etc but as a school we have to insure each child to go away on camp". There is a question over whether there is duplication of insurance in such instances.

Parental consent: There are different ways in which this is done. Some primary schools send out an annual consent form at the beginning of each year (or each term). Where this is the case the only sites included are ones that are tried and trusted and used on a regular basis. Annual consents would not include, for example, residential visits or visits that involved a bus trip. Such visits need individual consent forms. Consent forms appear to include such information as departure and arrival times, transport arrangements, who is accompanying the class, use of children's photographs in the local press, use of sticking plasters and family contact details. One primary interviewee did not like the idea of annual permissions preferring instead to "err on the side of caution" and do individual permissions. The interviewee did recognise that this might be "first year paranoia" being a newly installed Head Teacher.

Two Edinburgh schools report they have to have an EE2 form completed for each visit. This is a medical form where the parent/guardian agrees to medical operations such as blood transfusion and marrow transplants for their children should the need arise in their absence. The schools report that teachers and parents find this paperwork overly complicated and are trying to get round his by not having an EE2 for every visit but asking the parents to notify the school of any changes. However an added complication occurs when a parent does not return the form in which case the school does not have permission to take pupils out. One Head Teacher's way of dealing with this is to "capture the parents as they are coming up the road in the morning".

Secondary teachers had very little to volunteer about parental consent, beyond acknowledging that forms were generally sent out on a trip by trip basis. We do not propose to speculate on this difference between primary and secondary interviewees.

Liability and public perception of risk: Respondents acknowledge that taking pupils outdoors involves risk and that accidents do happen. Several secondary teachers that we interviewed said that safety concerns were on the increase and several others admitted that they were wary of excursions, that they were somewhat nerve-wracking and and in some cases this was due to the legal position being uncertain or the prospect of being sued. One Edinburgh primary school teacher stated that:

> "we are all wary, as all staff must be now, about regulations and risk assessing…I think if we can do it (go outdoors) we will try within our limits."

Another Edinburgh primary school interviewee stated:

> "it is a big responsibility taking other people's children out and I think sometimes the way things are shown in the press (is unhelpful)…"
>
> "…you do hear of trips where people have gone out where they've been very well experienced, preparation, right clothing, everything, but something has gone wrong but it's been an accident."

And another that:

> "…because in this society of suing anybody for everything, there is a lot of Head Teachers will say now "I used to go but I'm not going now".

These statements appear to suggest that there are two issues here. One is about following procedures correctly in order to act safely and the other is less to do with safety itself but the fear of what will happen if something goes wrong. A single secondary interviewee thought that parents were increasingly fearful but one primary interviewee thought the issue is over inflated when they state "parents here are very supportive".

Strategies employed by primary schools to improve safety on outdoor trips are the use of fluorescent vests as a way of way of being able to identify their pupils in a public setting and ensuring senior members of the staff team go on residential outings. For secondary school teachers, two interviewees explicitly stated that they would not run excursions that were any riskier than the ones they currently run. This rather intuitive reflection on their limitations may well be implicit in most secondary teachers' approach to field study.

Pupils: The behaviour of pupils and resultant safety concerns were raised by several secondary interviewees, some of whom saw this as a growing concern. Others were only concerned about this on excursions where pupils had free time or were out of sight, including residential excursions, and one interviewee said he would not get involved in such an excursion. Others were less concerned, but acknowledged that in planning trips it was necessary to realise that pupils behave differently in different environments, and sometimes essentially behaved as if they were younger than they were. Two interviewees mentioned that inclusion issues were going to impinge on their thinking about safety, but these comments related both to concerns about behaviour and to the management of disabled pupils. One interviewee estimated that the Disability Scotland Act was likely to have an impact on field excursions.

Pupil behaviour was also tackled in a more positive light by some interviewees. Some secondary interviewees suggested that changing behaviour is simply something that must be planned for, one that behaviour and relations between teacher and student were ultimately improved by outdoor study, and one

had experimentally targeted "difficult" pupils for an outdoor excursion as a means of tackling the difficulties, to good effect. Finally, one respondent argued that part of building confidence in taking excursions involved "knowing the students", so that if a teacher had just started at a new school it would be harder to launch an excursion early in their post, but that over time confidence in taking pupils outdoors would improve.

Attitudes to safety issues are further discussed in Section 3.2.3 below.

3.2.2.7 Qualifications and expertise

There were four instances of "qualifications" suggested in questionnaire data as an issue with taking students outdoors (Appendix 9). They were all from primary schools but interviews discovered that there are issues here for secondary school teachers as well. Primary and secondary school interviews suggested that the sorts of training staff might require range from instrumental technicalities such as minibus tests and first aid courses to matters such as "something to do with taking a science course or looking at an environmental studies course that might be offered in our staff development calendar".

There were differing views on this because one Edinburgh respondent felt that primary school teachers often undersold their own abilities and they were more qualified to do things than they actually gave themselves credit for. This seems to suggest that there are two issues here. One is to do with a lack of conceptual knowledge expressed by some respondents and the other is about the confidence to use existing training and abilities. It is beyond the scope of this study to provide more information on this.

It is interesting to note that when asked about qualifications, primary and secondary teachers tended not to focus on national governing body qualifications such as the Scottish Mountain Leader Award unless probed. Several took the question as an opportunity to express concern about their lack of expertise to handle field study as "non-specialists" or as "textbook Geographers" or as a "micro-Biologist". As is often the case, this was sometimes expressed as not being able to answer questions that students might raise about the outdoor environment they were in. Both primary and secondary teachers cited the value of rangers or other partners in making field study easier by being both natural heritage experts in general and also possessing local, context-specific knowledge. All primary schools and several secondary schools recognised that the work of rangers and other "experts" was central to the development of outdoor study relating to the natural heritage, though two secondary interviewees described a process of gradual withdrawal from reliance on the ranger once the school staff had learned the material over previous excursions and were able to adapt it more precisely to their needs. Primary interviewees commented more often upon, and attributed greater importance to, external expertise:

> "if someone has that level of expertise and has the answers off the top of their head when the children ask the different questions as to how can they tell how old rocks and so on, rock formations are, and what kind of tree that is, without having to rifle through the information guide."

One Highland school keeps a list of experts to draw on and these are consulted at the beginning of the year to see how they can be used. The list was created by sending a mailshot to parents asking about their own skills.

It would appear that primary teachers are happy to work with science-based concepts in the outdoors only to a certain level but recognise the added value that specialists can provide. Training and continuing professional development are also potential routes for building expertise. For example in Highland there is a scheme called the "Highland Science Project". One Highland school reports that "every member of staff has been trained in (it)". This shows that at the Local Authority level programmes can de developed and promoted throughout all schools. It is possible therefore to implement a programme of study to help teachers develop their skills in teaching outdoors about the natural heritage. There is a possibility that different Authorities will duplicate similar provision. However national strategies in other areas of education have been successfully rolled out across Local Authorities. It is beyond the scope of this study to discuss national models of facilitating professional development for teachers.

When secondary teachers were probed on more technical qualifications, the need for first aid on trips was acknowledged but more advanced outdoor qualifications were understood to relate to more extreme environments (such as higher altitude) and interviewees were mostly not inclined to run field study in such environments.

More discussion of teachers' attitudes to qualifications is offered in Section 3.2.3.

3.2.2.8 Weather

There are 31 instances of "weather" in questionnaire data as a barrier to outdoor study. This is an indication that teachers do not take pupils outdoors in certain weather conditions. The weather was most frequently cited for Primary Highland (highest ranking issue) and Biology Highland (3rd ranking issue). In general Geographers seemed less concerned about the weather.

The interviews allowed the research team to probe further on weather related issues. Of the eight primary interviewees only two said that the weather had been an issue for them. One of these cited a visit to the Botanic Gardens which had to be cancelled due to high winds. The other wanted pupils to be active outdoors but believed that weather conditions could be particularly problematic for younger pupils and their learning. It could be that these examples are readily expressed because there are so few visits that when one instance of wind comes along it is exaggerated. Indeed probing other respondents revealed more than a little scorn that weather should be used as an excuse not to go outdoors. One such statement from Highland was,

> "I mean it's Scotland for goodness sake, just don't even think about weather. I mean if you're going to go, go. You could start off on a day like this and have hail within five minutes. Just get a couple of jumpers under your coat."

Most of the secondary school teachers interviewed suggested that so much effort and expense went into such advanced planning that they essentially had to carry on regardless. Perhaps secondary school students are hardier and there were differences of opinion over whether morale was a genuine problem in poor weather or whether complaining was in some way a memorable part of the experience. However adjusting the schedule on the day, shortening the day, or cancelling the trip, were all possible for a variety of reasons. In extreme weather, recording data is extremely difficult and therefore the manifest point of the excursion is undermined, and there are safety implications if some students are under-equipped in terms of clothing. In some rural parts of Highland many pupils had their own waterproof clothing. In some parts of Edinburgh, pupils would not turn up for an excursion if the weather was poor, or might possess inadequate clothing.

Although the predictability of weather is accounted for in planning the timing of excursions, we have seen that tension with other aspects of secondary schools is just as relevant and weather issues appear to be a long way down the list of hurdles faced by the secondary school teacher who is hoping to plan field study. It only gets to the top of the list on the day of the excursion. None of the interviewees spontaneously raised the issue, and one suggested that midges were considerably more relevant.

The strategies that primary schools employ to make sure that pupils are kept warm and dry include keeping waterproofs and wellies and also the use of a tumble drier. One school in Highland reported that they had access to equipment including waterproofs from a central store. As the store was over thirty miles away this meant two return journeys. Secondary school access to suitable clothing often related to the extent of their provision for outdoor adventurous activities or Duke of Edinburgh Award and whether they had stores of kit for these purposes which could be borrowed for field study.

3.2.2.9 Conclusion of organisational contexts

Sections above have dealt with issues in organisational contexts for planning outdoor field study. Sections included: time, disruption, cost, adult/pupil ratios, transport, safety, qualifications and expertise, and weather. Some combination of time, cost and disruption seemed to be the most significant, with safety appearing to be less significant than might be expected from public discourse. It is worth reiterating, however, that all these combine in the view of the teacher planning for outdoor study. A number of secondary school interviewees explicitly stated that there were numerous such issues and that they acted in combination.

It is also worth recalling that they were not all discussed in a negative light in interview, even though we were probing them as part of discussion about barriers or hindrances to outdoor study. Many primary and some secondary interviewees, for example, found the additional expertise of partner organisations and rangers added great value to their planned outdoor activity, or that school grounds and local areas were fruitful places for outdoor activity that avoided many potential problems, or that official adult/pupil ratios were welcome.

Others expressed a sense of having been weighed down by some of these issues. Most secondary teachers referred to outdoor studies of the past and some, though not all, suggested that such studies were no longer possible.

It is a slightly false dichotomy, but it is productive to ask what, then, are the differences between such teachers? The title of this study makes reference to the notion of "teacher attitudes". What does this mean? From where does attitude derive? How has it been recorded in this study, and how might we respond to it? These questions are the subject of the next and final section of our analysis.

3.2.3 Teachers' attitudes to outdoor study of the natural heritage

In the previous section we showed that a range of situational factors were influential in the decision-making of teachers and schools concerning the planning and realisation of outdoor study.

In particular we noted that many of the issues seemed to be treated differently by different teachers. We can speculate that these differences depend on either: the particular combination of situational factors; or some rather vague notion of teacher *disposition* or *attitude*. Further evidence of such dispositions or attitudes is presented here, followed by a discussion of how to interpret these and respond to them.

The questionnaire did not set out specifically to assess "attitudes" (Appendix 5) but some teachers made some very clear and unsolicited statements of value. In other words the responses are not merely descriptive as previous data have been but give some indication of attitudes and so are included for this reason. The very limited attitude data from questionnaires (there were six responses) were all conditionally supportive of pupils going outdoors. One was a general critique of other teachers who don't go out because they "lack imagination and/or always been done that way (implying indoors is the norm)". One of the issues that came up during interviews with primary school teachers was the feeling that the curriculum was overcrowded and irrelevant:

> "we're currently looking at the…overcrowded curriculum and what is meaningful (and) what is it that kids today really need to know for their adult life and it's not necessarily doing long division. I mean seriously these things are not that appropriate any more."

However one primary school respondent from a large Edinburgh school challenges the view that the primary curriculum is crowded at all.

> "I think we pride ourselves in our school on having a flexible approach to curriculum planning and we found that the results, our term results are fantastic…I think there's a feeling in Scottish education about the curriculum is awfully crowded and I don't think teachers ever felt like that in our school and that's a lot to do with (the management) in our school and the way that we prioritise certain things. So we do allow a lot of flexibility and creativity amongst our teachers so if they feel they need something that will motivate the kids and the outside is always something to motivate the kids and they can handle that, then they will use the outside for…lessons. A couple of years ago we did all that angles with P3 class and we were outside every lesson…going outside is a really good thing to do to measure rocks all sorts of things. We use the outside as a resource."

Notwithstanding the issue that there may very well be an overcrowded curriculum these data suggest that there are ways of managing this at a strategic level without undermining outdoor study. This issue therefore is not just about workload but the management of attitudes and perceptions. There were also statements of hope for the future concerning the curriculum:

> "we're looking towards… *A Curriculum for Excellence* in 2007 and my hope would be that quite a lot of things we do would not be included in that and there would be more emphasis on some core subjects in say Maths and language and science, environmental and expressive arts and we could maybe have less emphasis on some of the other things."

Several Edinburgh secondary teachers also expressed hope that new teachers would take on the mantle of pushing outdoor study.

Many teachers referred to "finding ways" of getting outdoors. Three secondary teachers said of a variety of barriers (but not "time") that if you really wanted to go outdoors you would find a way to get over issues (eg of transport and cost). One primary teacher even took on the "time" problem:

> "we are at times restricted with the curriculum and the timetable because we have to balance through the year, we've got our 25 hours and it's trying to fit everything into that. So you are bound by time in a lot of cases but there are ways of, you know, that your classroom can be outside."

Several secondary teachers reported that they had simply been put off by past efforts to organise trips (particularly the time involved), but only one was put off by past safety issues. Others noted that other staff had become less keen and several discussed former excursions that were no longer run. It is important to recognise in our analysis that there is a history to each school. Some of the secondary teachers who had been put off discussed issues of age or their own life cycle and the fact that, in the past, the new teachers would gradually take on the role of organising trips but that this didn't happen as much.

However, at least half of the secondary teachers interviewed were essentially keen-but-frustrated. The frustrations included the absence of time, prioritisation or funding, and the related decline in adventurous outdoor activities for young people. A number thought that safety procedures were not, in themselves, time-consuming as much as simply misdirected. They felt that teachers learn organically from more experienced teachers, are cautious and build their experience, generally stay well within their limits and have common sense approaches to safety.

We did interview teachers who were proud of the fact that their department's provision for outdoor study was probably more comprehensive than most, and a number of other teachers were interested to know how much activity other schools were managing. We also interviewed younger or newly-in-post teachers who were keen to do more outdoor work. The notion of building confidence and experience is also an important one in understanding a school's outdoor activity as an historical product. Several teachers expressed their intention to build on their department's outdoor activity over a period of time. One was frustrated by joining a department in which there was no existing activity, another was running a department where there had been a lot of staff changes that were taking priority to deal with, but both volunteered that they were intending to build provision.

Risk assessments, first aid requirements and ratios were seen as good things by several teachers, but concerns of legal liability weighed heavily on some. For many, though, there is a sense of just having to get on with it in the face of this uncertainty. Even these teachers noted that as time pressures mount, excursion is the easiest thing to drop: everyone's life is made easier.

Subjectively, teachers' attitudes seemed to vary from keen, to frustrated, to resigned. The latter category is difficult to show with data where we were asking teachers about outdoor activity. Perhaps there is still greater resignation or even indifference among those who never responded to the questionnaire.

One thoughtful analyses of disposition or attitude came from an Edinburgh primary teacher where the respondent noted that disruption to classes was not a barrier at all suggesting instead it was more about attitude. Certainly there was the odd teacher who might complain because they personally didn't like going outdoors and they would use disruption to classes as an excuse. However, the view of this respondent was that teachers should be encouraged to think about the most appropriate place to conduct an educational activity and if it was outdoors then there was encouragement to go outdoors for curricular study. In this way the idea of disruption to classes was seen more as a *management of attitudes*.

How do we manage dispositions and attitudes, which appear to have some influence in teacher decision-making? The dangerous route is to simply accept that different people have different *personalities* that importantly affect their attitudes, and that the problem is intractable. It is true that personality is involved, and that changing personalities is an absurd objective. However, we are doubtful that personality is crucial, and instead propose a deeper analysis of disposition. The answer is partly embedded in the example above.

Let us try and characterise a teacher's decision process as being a complex cost/benefit analysis, in which if the benefits outweigh the costs then the teacher will be tempted to take students to study outdoors. The cost side of the analysis is a summed range of situational factors (Section 3.2.2) such as whether or not other staff are keen and whether the teacher has the time and whether or not most pupils' families can afford the costs of excursions in the school's catchment area. The benefit side of the analysis relates strongly to the prior section on motivations and approaches (Section 3.2.1), and we suggest here that this benefit side may have crucial explanatory power in comparing teachers who appear disposed or otherwise to taking students outdoors.

We concluded in Section 3.2.1 (the benefit side of motivations and approaches) that the perceived benefits are not fully articulated by teachers who take children outdoors, and are often presented strongly, or even solely, as a matter of curricular topic relevance, when in fact their motivations are typically more complex.

We can reframe this conclusion as an answer to the following paradox:

- If teachers who go outdoors cite the outdoors' curricular relevance, why do those who stay indoors not cite its curricular irrelevance?

The likely answer is that, as we have said before, curricular relevance is only the public or legitimising factor, not the determining one. We suggested that other, necessary, motivations tend to be less publicly shared or are seen as less legitimate. Attitudes representing indisposition, therefore, may not be *characterised by* talking about the costs or barriers (*all* teachers talk about them); they may instead be characterised by a low assessment of the legitimate benefits. In assessing benefits, these teachers are perhaps only looking at the more public or apparently legitimate discourse of curricular relevance. As we have seen, this is insufficient even for those who *do* take students outdoors.

4 CONCLUSIONS AND RECOMMENDATIONS

On the basis of the previous analysis there are two important ways forward, both of which are discussed here. The first is to publicise, share and legitimise the benefits of outdoor study that are more than "curricular topic justification". The second is to work on the situational factors that "put a brake" on outdoor activity. The following two sections, then, are conclusions with recommendations that include teacher responses to questions about how Scottish Natural Heritage might contribute to the situation. We go onto consider the wider climate.

4.1 Legitimising all the benefits in schools

In weighing up whether to organise outdoor study, all teachers are presented with situations that represent effort-cost. However teachers may differ in how they understand the benefits. In particular, essential non-curricular/topic justifications tend to be de-legitimised or hidden in the discourse. There are two ways to address this:

- Advocate the legitimacy of these benefits in the face of the existing curriculum. It is worth noting here current agendas such as *Assessment is for Learning*, which are pushing successfully for the legitimisation and installation of just such linked pedagogical, personal and social benefits, rather than curricular-content relevance, in the face of the existing curriculum.
- Advocate a curriculum in which these benefits are built in. Significantly, *A Curriculum for Excellence*, the current curricular reform programme, is strongly focused on both processes (as opposed to merely content) in education and on the development of young people more holistically. Participation in this long-term process is strongly advocated. The articulation of those pedagogical processes and developmental outcomes that can only be achieved through outdoor study would be a sensible approach.

4.2 Tackling the situational context in schools

Regardless of whether the benefits are clear and legitimate for a teacher, all teachers perceive problems on the cost side of the analysis.

- There are data to suggest that a lobbying or advocacy role with school management would be a worthwhile activity. This would again focus a re-prioritisation of benefits and relates to what is the most significant issue for many school-teachers – the availability of staffing to cover excursions, and indeed the availability of non-contact time for the organisation of such excursions. This lobbying might be undertaken at Local Authority level, but the nexus of decision-making concerning outdoor study of the natural heritage is not at this level. As a minimum, SNH might highlight wider benefits on their website. More significantly, they might engage in this advocacy.
- Other data suggest that, for other areas of education, the existence of a full-time, in-school co-ordinator to develop an area (such as health-promotion, for example) has been very successful. Similar resources for field study, or perhaps excursions in general, might make a big difference.

- Also at the school level, *easily accessible* cash to cover costs would remove one problem. Primary schools also mentioned the provision of a minibus and field equipment. One school reported that help with special needs was a particular issue for them – for example the minibus does not have wheelchair access and visits had to have wheelchair friendly paths.

- Several thought that the delivery of curriculum-relevant expertise into local natural heritage contexts would be a great leap forward. Primary teachers in particular valued the experts themselves:

  "I don't know if there's such a thing as a central resource that you could say, just do a helpline thing. I was thinking of taking the kids up the Pentland Hills can you give me four people to help me that are experienced in trees, on such and such a date at such and such a time." (NB this teacher knew that there was a ranger service there)

- Both primary secondary teachers thought that pre-prepared packs or local trails, and perhaps some initial ranger input would be valuable. These are seen as both time-saving and value-enhancing, but it would be a large exercise to provide for local contexts. One primary teacher suggested:

  "booklets or any information leaflet…we'd be delighted to have them because what we do is if we have our science boxes or our topic boxes we can slot these things in so that if somebody's looking for something, say it's water filtration, which they do in P5, where they make their own water filters…anything like that is a help to them, the children can look at them, see them, work to them, worksheets. Anything at all, any information is super."

However, many teachers are more discriminating and would not subscribe to "any information is super", preferring something much more tailored to their needs. Talking of materials on the SNH website, one respondent asked for information packages that are topic specific and relevant to the curriculum.

- Another way of doing this, according to secondary teachers, would be to develop a database of opportunities, through which the practice and resources of teachers in different sites could be shared. The primary school variant again focused on the people as well, asking for a resource network of local people that the schools could contact. When the respondent was asked how often she would use this network she could not say but suggested a pilot might be necessary to see what the uptake was from schools. There was also a concern about awareness of resource material:

  "I think having more information and knowing what would be available for us would be better because I don't think we do really know how much information is out there and what is available to us."

- Both primary and secondary teachers suggested the provision of expertise to teachers could also be arranged at training events, with experts giving talks and seminars for local teachers on local natural heritage sites and the wider picture.

- Some teachers were thinking more strategically about the role of SNH:

  "I mean I don't know how many areas would be involved. Maybe if you had three or four within Scotland even, there's a means then of pulling together all the aspects and what SNH would see as the agenda for development as well and then looking at how that could be developed for schools."

These clearly indicate a practical developmental role for SNH which would require staff deployment to these and related tasks. If such efforts are to be locally relevant, and this seems to be a feature of the responses, this in turn suggests a national initiative with local delivery.

4.3 Using the current political-educational climate

Although teachers were given an "open" opportunity to comment on any factors which might influence their plans to study outdoors, and in the interviews a question specifically asked about curricular change or other educational agendas, there were almost no responses referring to the general "political educational" climate or agendas. This is somewhat surprising, especially in light of the fact that these are prominent features of Section 1.1 where we report a striking range of contemporary changes and developments in the field. Foremost amongst these is the UK Parliamentary House of Commons Education and Skills Committee (2005a) on "Education Outside the Classroom", and the follow-up developments. But there have been other developments of significance such as the Ofsted (2004) report and other publications emphasising the value of outdoor educational experiences Also notably the Ministerial appointment in Scotland of an Outdoor Education Development Officer and the recent decision by HMIe to prepare a report on Outdoor Education. However it should be noted that not all of these focus on the natural heritage but are more general in their locus, and also that education is a devolved issue.

The fact that the teachers made so little mention of these issues has significance for any future developments. They may be unaware of, or uninterested in, these issues, implying that if they do have significance for the development of opportunities for education out-of-doors, the teachers are not likely to be "lobbying" their managers in the school/Local Authority or politicians and policy makers in support. On the other hand the respondents may be aware of the political educational climate but do not see it as relevant to their work. It is possible, as we have tentatively suggested above, that the public discourse (or "headline reporting") of such issues in fact bears only partial relation to the issues that teachers find most significant.

It is our view that the "political educational" indications are very positive for education out-of-doors and that provided SNH deems it appropriate to do so, advocacy of the educational benefits of *engaging with the natural heritage* (rather than just the general benefits) may well be a fruitful endeavour. It is clear that politicians in various parts of the UK are not just supportive of this notion but have been pro-active. However this is a long way short of ensuring that all children profit from curricular or other opportunities to engage with the natural heritage and SNH could play a significant role in promoting this idea. It is plain from the questionnaire and interview data that not all schools take pupils out and that those who do may not be intent upon engagement with the natural heritage. So if SNH wishes to increase pupil engagement with the natural heritage it must assist more teachers to go out with their pupils and encourage those who already do so to adopt, at least in part, this focus on the natural heritage.

The conclusions above recognise the importance of advocacy involving two agents. That conducted by teachers and which focuses on what it is possible for schools to achieve by themselves within their own Local Authority, and that which is requires external agents (such as SNH) and builds on the views of the respondents who called for improved resources. For example the call for better resources could be accompanied by a range of strategic initiatives which could include the following.

4.3.1 Training

One way to deal with the lack of training that many respondents felt they needed is for teacher training institutions to ensure that greater importance is attached to outdoor study than is currently the case. At present there is no requirement for any Teacher Education Institute in Scotland to provide any out-of-doors experiences for trainee teachers. Those who train to become teachers are therefore provided with the implicit

message that the outdoors has no significance in their programme. This will also have an impact on those who might consider becoming teachers as they may well decide solely indoor teaching is not for them. In our view this selection and training environment has considerable "cultural significance" in that it sends out a consistent negative message. There is therefore a role for SNH to liaise with these institutions and in particular their funding bodies such as the Scottish Higher Education Funding Council (SHEFC) to promote the concept of outdoor study.

The possibility for teachers to pursue Continuing Professional Development (CPD) courses in outdoor study would also help existing teachers to feel more confident. The finding that outdoor study depends very much on the immediate locality suggests any attempts at arranging CPD courses should involve trainers going to schools and work *in situ* as opposed to teachers gathering at an area not representative of their own locality.

4.3.2 HMIe

There were also data to suggest that there was a role for the Inspectorate. If for example there was some inclusion of outdoor study of the natural heritage included in an inspection schedule then schools which already have a good track record of going outdoors felt that those which did not would respond "positively". This leaves SNH to decide whether they have a role in working with HMIe to develop inspection guidelines.

4.4 Why outdoors?

Although there were many issues on which we were able to provide generalisable data there is a subtlety underpinning these issues that needs to be highlighted. Whilst all schools note issues such as barriers, motivations, opportunities etc., what became clear was these general issues affected each school in different ways. Indeed issues that we have now called "situational" are not the only factors in deciding whether teachers take pupils outdoors or not. It became clear from the data that responses from teachers depended in part on personal dispositions. So for example those who were predisposed to taking pupils outdoors would find a way of doing so and those who were not were far less likely to. In other words teachers' attitudes to outdoor study are important.

We were struck by the fact that despite the lack of a curricular imperative, Local Authority requirement, school ethos, or indeed personal skills, training, and qualification, teachers still made remarkable efforts to get their students out of the classroom. Indeed it was quite clear that in some cases this was done "against all the odds", begging the question "*why outdoors?*" What became plain is that a number of teachers believed enthusiastically in the significance of outdoor learning experiences and saw it as a professional responsibility to provide them. This commitment should not be taken for granted as many will have done their training on programmes which, for one reason or another, may well now have less practical components. The fragility of this commitment may be an important consideration in any SNH decisions about the best means of promoting outdoor learning.

One modifying factor to this personal disposition was the school culture in which teachers worked. Where the school had a good track record of taking pupils outdoors, there was a relatively fertile culture, in terms of management and staff interest. The consequence of this finding appears to be that schools which have a good track record of going outdoors will continue to do so, all other things being equal. For those who work in schools/departments that use outdoor study less, there is a less fertile culture for development. This means

that staff that want to promote outdoor study can face greater barriers than they would in schools/departments that have stronger outdoor provision. However, common to both cases is that in terms of provision they are relatively static. In other words there is little evidence of growth activity from schools with or without a good track record of going outdoors.

When all these issues are combined we can identify two clear areas for development.

- First there are those teachers whose attitudes and situations are less consistent with outdoor study. Where this is the case there is little point in only providing extra resources when the root cause includes something else. While resources are necessary, increased capacity for outdoor study may depend on some form of staff training or the development of a wider appreciation or legitimisation of the benefits of outdoor study.
- Second there are those whose attitudes and situations are more consistent with outdoor study. Such positive personal and institutional disposition to going outdoors will benefit from increased resources.

In either case, it is important that SNH develop of subtle understanding of what is required. By tackling both issues simultaneously and through the recommendations made in this section, SNH should be able to increase the capacity of schools' to engage their staff and students with the natural heritage.

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Appendix 1 Approaches and attitudes to engaging with the natural heritage: an initial review of the national context submitted to SNH in March 2005

1 History and context

An important point should be made at the outset of the present 'desk study' which follows. Whilst all of the literature reviewed is broadly within the domain of learning related to the natural heritage, it is often unclear as to the purpose of this endeavour. Namely is learning *about* (eg earth and life sciences), *in* (eg physical skill development), *through* (eg personal and social development) or *for* (eg sustainability, conservation, preservation of biodiversity) the natural heritage? Much of the literature is unspecific or seems to have more than one of these intentions. Also whilst terms such as 'field studies' are fairly specific, other general terms such as 'outdoor education' or 'outdoor learning' may well be applied to mean the same as the term 'field studies'. Indeed, historically these educational endeavours were closely related although some divergent evolution has certainly occurred in recent years. Consequently in this review the terms specified by the original authors are maintained but wherever possible the degree of emphasis on 'engaging with the natural heritage' has been identified.

Similar considerations apply to the distinction between school-based provision and that of residential centres. Some schools may have the location, staffing and other resources to be able to provide a wide range of local opportunities in the outdoors whilst others may see such experiences as best provided through a residential field or outdoor centre, whilst others may take a mixed approach. Consequently, although the study itself is specifically focussed on school teachers, the desk study requires consideration of literature relating to both school and residential provision.

Whilst a number of factors may have influenced current partial, patchy and inconsistent provision of learning experiences outside the classroom in the UK a central feature must be the lack of a statutory requirement for this form of education to take place. Whilst the 1944 Education Act and the 1945 Education (Scotland) Act did note the educational value of the outdoors and indeed had some influence in the post-war years leading to the 1970s, its provisions can best be described as *encouragement* rather than *obligation* on Local Education Authorities. Furthermore an Act of Parliament of 60 years ago which provided encouragement for particular actions cannot be expected to have significant contemporary influence without supporting subsequent legislation, and in the face of curricular and budgetary constraints stemming from the 1980s.

Similar constraints existed for the Higher Education establishments which provided degree courses (in relevant specialist subject areas such as Geography, science and in teacher education) in which both classroom and outdoor centre staff were trained. Furthermore the growing funding council emphasis on research output from universities has led to a reduction in contact time between academic staff and students, with teaching mainly having a lower priority than in the past. Consequently, from the 1980s to the present day there have been reduced opportunities for trainee teachers and other university students to engage with the natural heritage through fieldwork and outdoor activities. This in turn means that many of those who administer and organise educational opportunities for school pupils are neither familiar with the learning potential of such experiences, nor are they required to do so undertake the training to develop this aspect of provision.

Throughout the period since the 1944 Education Act the 'outdoor learning sector' has remained internally disorganised and unable to present a consistent and coherent view of their subject area. Whilst this remains the situation today it is certainly easily understandable when one considers the breadth of provision which would come under the umbrella of 'outdoor learning' (for example subject teachers in schools, outdoor education teachers in schools, Local Authority outdoor centres, commercial centres and those with charitable trust status, environmental educators, countryside rangers, charitable bodies with environmental education remits etc). The two main consequences of this have been that it has been very difficult for policy makers to ascertain who to speak to in pursuit of an insight into the subject area, and a sector lacking an effective approach to putting its case forward. Add to this the concerns, both public and political, surrounding the safety of young people on outdoor excursions and the increase in prosecutions where accidents have taken place in the outdoors, and it is little wonder then that many policy makers, Local Authorities and schools are not wholeheartedly supportive of outdoor educational experiences. The response of the outdoor education sector on issues of safety has been, certainly since the Lyme Bay incident in 1993, to focus almost exclusively on safety-related issues in their professional practice. Whilst such a response is entirely understandable, it has meant that curricular change has gone largely unnoticed and the resulting opportunities unexploited. This has led to a situation where although many experiences outside the classroom can be deemed to be 'safe' they may have little or no locus in a curriculum.

2 Research on the effectiveness of outdoor learning

Whilst we do not intend to present a major review of literature it is important to outline the general findings of relevant studies. As indicated at the outset of this desk study separating research findings relating to learning concerning the natural heritage from other forms of outdoor learning is difficult (especially as many in the field argue that the integration of such experiences is central to maximising the benefits) and so we have taken a general overview of the literature, focussing on several significant studies, other major reviews and meta-analyses. Furthermore there is something to be said for this in that many of the personal development claims made for outdoor education (raising self-awareness, self-esteem etc) have a relationship with a more general approach to learning which has as much relevance outdoors as indoors.

Historically there has been limited interest in research and evaluation in the field. So for example, whilst a number of providers of outdoor education experiences attempt to evaluate the influence of their programmes, the majority simply conduct one-off end-of-course evaluations. The philosophical and practical issues associated with learning outdoors have been very poorly informed by research findings. Since the 1944 Education Act there have been few PhD theses or empirically based academic papers written on the subject area and no major grants awarded in the UK. Furthermore, research findings on the benefits or otherwise of outdoor experiences from overseas have also been of limited value. This is perhaps because in some countries the value of outdoor learning experiences is taken for granted whilst in others countries there is limited interest in providing such experiences.

The existence of empirical research in outdoor education is a relatively new phenomenon. In the 1980s Cheesmond (1981, p. 24) noted 'a paucity of research work generally in this field'. More recently Barret and Greenaway (1995, p. 53) were commissioned to review empirical work within the United Kingdom. This was the first systematic attempt to review literature relating to outdoor education and the authors found research to be 'isolated, inconclusive, over-ambitious, uncritical, difficult to locate'.

This view is supported by the frank admission from Hopkins and Putnam (1993) that the effectiveness of outdoor education is unclear. However, attempts in the last 10 years have been made to address these shortcomings with the publication of several meta-analyses to establish the link between programme characteristics and specific outcomes (Cason and Gillis, 1994; Hattie *et al.*, 1997; Neill and Richards, 1998).

This has been in response to researchers who noticed that 'although generally positive, results on adventure programming have been contradictory '(Cason and Gillis, 1994, p. 40) and 'impressionistic' (Neill and Richards, 1998, p. 2). The use of meta-analyses therefore represents an attempt to statistically integrate the findings of a range of separate adventure education programmes.

Cason and Gillis (1994) undertook a meta-analysis of 43 studies of adolescent adventure education programmes and noted 147 effect sizes. These effect sizes were coded into seven broad themes including:

1. self-concept;
2. behavioural assessments;
3. attitude surveys;
4. locus of control scales;
5. clinical scales;
6. grades; and
7. school attendance.

They found an average effect size of 0.31 and state that 'this finding represents a 12.2% improvement for the average adolescent participating in an adventure program. Adolescents who participate in adventure programming are better off than 62 % who do not participate' (Cason and Gillis, 1994, p. 46).

Cason and Gillis suggest that although an effect was noticeable 'outcomes resulted in an overall effect that could be considered small by some accounts' (Cason and Gillis, 1994: 40). They conclude that 'the wide variance in findings raises questions about the validity of quantitative research for this field, the reliability of instruments used for assessment of pre- and post-program changes, and the host of unknown variables that may be influencing both positive and negative effects of adventure programming' (Cason and Gillis, 1994, p. 46).

Another meta-analysis by Hattie *et al.* (1997) concluded that '(i)t seems that adventure programmes have a major impact on the lives of participants, and this is lasting' (Hattie, *et al.*, 1997, p. 70). In their study they set out to measure the effects of adventure programmes on outcomes such as self-concept, locus of control and leadership. The programmes, involving 12,057 participants, lasted between one and 120 days with a mean of 24 days. Seventy-two per cent of the programmes were between 20 and 26 days in length. The meta-analysis drew on 96 studies with 1,728 effect sizes and found the overall immediate effect size from these adventure programmes to be 0.34 equivalent to a 15 % improvement in the rate of learning. There is some contradiction in the conclusions where it is suggested that this improvement is not dissimilar to

the effects of classroom innovations. Elsewhere it is stated 'in a remarkable contrast to most educational research, these short-term or immediate gains were followed up by substantial additional gains between the end of the program and follow-up assessments (Effect Size = 0.17)' (Hattie, *et al.* 1997, p. 43). It would appear therefore that the data are not conclusive when considering the relationship between learning in the classroom versus the cases studied (outdoor learning).

However, Hattie *et al.* (1997, p. 67) noted 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'. One of the major findings was that 'longer rather than shorter programs had the greatest effects, programmes with adults were more effective than those of non-adults' (Hattie, *et al.* 1997, p. 70). Longer is presented as being more than 20 days. It is also worth noting that there may be a cultural variable unaccounted for as Outward Bound Australia was presented as an important variable in relation to the outcomes. This may be an important consideration for researchers in the UK as much of the research cited has taken place in North America and Australasia.

In their own study Cason and Gillis (1994, p. 43) conclude 'more attention needs to be paid to such variables as:

1. the type of activities utilized;
2. the size of the groups (and whether the researcher is studying the group as a unit or studying separate individuals within a group);
3. the qualifications and characteristics of group leaders, as well as;
4. qualitative data that can help predict who is more likely to be successful in adventure programming'.

Hattie, *et al.* (1997, p. 74) came to similar conclusions stating '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 programs that investigate theoretical concerns and processes that lead to positive changes'.

In summarising these meta-analyses Neill and Richards, (1998, p. 7) state that 'on average, outdoor education programs appear to have small to moderate effects on participants' perceptions of their own qualities and capabilities. This is roughly equivalent to the average outcomes for other types of self-concept change programs'. They have a warning for other researchers suggesting that by averaging effect sizes it is then difficult to identify which programmes are more effective and which are less effective.

One assumption built into outcome-based research is that by increasingly refining the research tool the researcher will become better at identifying outcomes and making predictions. These meta-analyses may be seen in this light where researchers are using research to demonstrate the effectiveness of *what is already done*. The focus on outcome-based research has been at the expense of a broader research agenda. One of the consequences of this is the failure to locate empirical work within bodies of theory (Nicol, 2001).

Rickinson, *et al.* (2004, p. 16) conducted a review of research on outdoor learning and categorised research under the headings of:

1. 'cognitive impacts';
2. 'affective impacts';
3. 'social/interpersonal impacts'; and
4. 'physical and/behavioural impacts'.

In doing so they provide a way of categorising the practice of outdoor education by suggesting 'it is important to recognise…that the aims of such programmes can emphasise the therapeutic, the educational and/or the recreational to different degrees'. This is an important document as it is the most up-to-date review of literature to do with outdoor education. However, it should be noted that the authors' specialisms lie more in field studies than outdoor education and this emphasis has led to significant omissions of important studies and texts.

In a PhD study comprising both qualitative and quantitative methods Christie (2004) evaluated an Outward Bound centre's role in an initiative to raise school achievement (personal and academic qualities) of over 800 school students aged 14–16. It should be emphasised that the 5-day residential which each student completed at the centre was part of a broader educational initiative (called 'Raising Achievement') within the Education Department of the Local Authority. In Christie's (2004) study a Life Effectiveness Questionnaire (LEQ) (Neill, 2002) was administered to all students on three occasions (one month before, one month after and three months after conclusion of the programme. Interviews and observations were also conducted with a sample (n=53).

The LEQ comprises eight components of 'life effectiveness' which comprise a range of personal, social and other skills such as 'intellectual flexibility'. In concluding the LEQ part of the thesis Christie (2004: 148) states 'there are some individually significant results however, they do not represent any pattern or demonstrate any consistency throughout the study. Therefore the first and perhaps the most obvious conclusion to be drawn is that there is no consistent statistically significant effect'. Furthermore 'the results suggested that there was no difference between those students who went to Outward Bound and those students who did not, irrespective of their school' (Christie, 2004:214).

Although this quantitative approach showed no statistical significance the study was triangulated using observations and interviews. The purpose of this was to evaluate the data within the context of the Scottish 5–14 Curriculum Guidelines concept of 'dispositions' (Learning and Teaching Scotland, 2000d). There are five 'dispositions' noted in the guidelines, namely:

1. a commitment to learning;
2. a respect and care for self;
3. a respect and care for others;
4. a sense of social responsibility; and
5. a sense of belonging.

Referring to residential experience Christie (2004: 209) reports that 'following the observations of the students during the programme it became apparent that the course provided ample and adequate opportunity for personal and social development and that these opportunities were inherent in both the course design and delivery'. The interviews suggested that some students felt that they were better at working with others, more tolerant of others 'and better able to communicate with other students and teachers' and that their orientation to academic work may be improved as a result of outdoor experiences (Christie, 2004: 216).

Of some relevance to this overview is that in 2004–5 several significant reports and enquiries have taken place in the UK. In England the Office for Standards in Education (Ofsted) were recently commissioned by the Department for Education and Skills (DfES) to evaluate aspects of outdoor education (Ofsted, 2004). This study is different from the main body of literature to do with outdoor education because Her Majesty's Inspectors (HMI) did not focus on learning outcomes Instead it focused on the quality of teaching, curriculum provision and management.

The report is based on the inspection of 10 primary and secondary schools and 15 outdoor education centres. Interviews were conducted with heads of centres, staff from centres and schools and students. Additionally 62 preparatory and follow-up lessons were observed and associated documentation (plans and evaluations) scrutinised. The main findings state that the quality of outdoor education teaching in school based settings and centres is 'good' and in some centres 'good or better in 80% of the sessions' (Ofsted, 2004: 2).

The report states that 'despite the very positive picture of students involved in residential courses, the majority of students are unable to take part. Often, the extra-curricular nature of the activity, its costs or limits on the numbers that can be taken, lead to a "first come, first served" basis for selection. This means that even in those schools that do want to promote outdoor education, many students who would like to take part are not able to participate' (Ofsted, 2004: 14).

It also provides some very useful action points relating to the provision of outdoor education stating that '*schools* and *centres* should:

- develop the systems for evaluating the impact of provision on improving students' attitudes and achievements;
- make better use of assessment data, including students' self-assessments, to seek evidence of students' learning, and the formation of attitudes and values over the longer term;
- improve the quality of teaching still further by ensuring all teaching takes sufficient account of students' responses and teachers' intervention guides their learning;
- ensure all teachers accompanying groups on courses can develop their skills and knowledge when working with specialist teachers;
- improve programme planning to ensure that students' residential experiences support their future work in the school curriculum;
- ensure the benefits of outdoor education can be experienced by all students.

(Ofsted, 2004:3)

HMI chief inspector David Bell reiterates many of these claims in the Guardian newspaper (28/9/04). It should be emphasised that whilst these findings are significant in that they relate to an educational context, they primarily focus on personal development. Nonetheless the pupils are necessarily exposed to the natural heritage, the centres do promote the experiences as relevant in this context, and as noted above personal development has a relevance to learning about the environment.

Although these comments are very positive they should be considered with a note of caution, as they were essentially observations of the outdoor education *process* and this over a relatively short time-scale. Whilst the positive comments from this report may offer no surprises to the outdoor education community it is worth highlighting that they come from a source outwith its normal reference. In reviewing the literature relating to outdoor education it is evident that this form of *external* scrutiny has been rare and consequently the findings and recommendations are worth careful consideration (see also Clay, 1999 for another Ofsted report).

In the autumn of 2004 the House of Commons Education and Skills Committee took evidence on 'Education Outside the Classroom' and published their report in January 2005 (House of Commons, 2005). Whilst this report cannot be considered as presenting empirical findings, the fact that it summarised evidence from a wide range of experienced professionals does give it considerable significance. The enquiry took a broad view of outdoor education including field studies, personal and social development and physical activities. The report considered the value and the decline of education outside the classroom and the barriers (real and perceived) to maintaining or developing provision. In summary the Committee concluded that they had 'become convinced of the value of education outside the classroom in its broadest sense', that 'outdoor learning supports academic achievement' and that neither the DfES nor Local Authorities have provided strategic leadership (House of Commons, 2005, p. 3).

Whilst acknowledging that 'risk' was 'often cited as the major factor deterring schools from organising school trips' the Committee concluded that such trips were 'not inherently risky' though teachers were concerned about litigation. They contrasted this with the major problem of excessive bureaucracy (House of Commons, 2005, p. 3). The most significant development issue was their insistence that 'in order to reach its full potential, outdoor education must be carried out properly, with sessions being carried out by well-trained teachers and in accordance with good curriculum guidance as well as health and safety regulations' (House of Commons, 2005, p. 3). They made further recommendations on the long-term viability of outdoor centres and the design and funding of developments in school grounds in order to enhance their potential for outdoor learning. One important caveat to this study is that whilst it relates primarily to the UK it did not seek evidence from Scotland as education is devolved to the Scottish Parliament. Nonetheless, many of its findings are applicable.

Whilst some schools do provide significant integrated outdoor learning experiences this is the exception rather than the norm (House of Commons, 2005; Kandemiri, unpublished) with provision being 'extremely patchy' (House of Commons, 2005, p. 10; Higgins, 2002). The poor provision of outdoor learning opportunities in schools means that most young people are restricted to at best, a one-week course at an outdoor centre or field-studies centre. In light of this the research evidence presented in the present review of generally positive but modest improvements for some pupils in personal and social qualities, academic orientation and interest in physical activities seem to be an excellent return on scant educational investment. In the view of the House of Commons Education Committee (2005, p. 10) it is clear 'that outdoor education is a sector suffering from considerable unexploited potential'.

One of the striking issues that appears with regularity in the conclusions of empirical studies is the observation that there were more variables omitted than included. Whilst this may in some ways be understandable given the complexity of the area this has meant that much research has been reductionist in nature. Consequently, the methodology of the empirical studies which make up this body of literature often takes little account of the complexity that it claims to recognise until the authors discuss their findings in their conclusions.

Nicol (2001:51) has attempted to address this in putting forward a conceptual framework which views programmes in a more holistic manner. It is intended to show that evaluation should not simply be outcome-based but process-based as well, including the planning, teaching and evaluation of outdoor education programmes. It is intended to provide a basis for developing clear educational objectives in advance of programmes taking place. This is an attempt to avoid the situation where programmes are delivered and then evaluated on the basis of *post hoc* rationalism. The purpose is to critically analyse objectives by looking at them in relation to aims, assumptions, content, method, evaluation and claims.

The research climate in the UK has been changing over the past five to ten years, and somewhat paradoxically at the same time as formal out-of-classroom opportunities seem to have been in decline, academic interest has been increasing. Whilst we can therefore expect to see more empirical studies, the diversity of conceptual approaches and the lack of an established research base may mitigate against clarity of purpose.

However, there is good reason for optimism. Smyth (1995: 9) states 'affective learning in early childhood may be the necessary basis on which to build more complex ideas'. Palmer (1998) suggests that early experience in the outdoors is a necessary pre-condition to formulating environmental attitudes and behaviour. These views are supported by a number of researchers whose empirical work is contributing to the growing body of literature known as 'Significant Life Experiences'. Their principal quest is to discover those formative experiences in peoples' lives which may, or may not, lead to certain forms of behaviour. For an overview of these papers see *Environmental Education Research*, 1999, **5**(4).

3 Cost and funding of outdoor activities

For some of the reasons noted above (lack of a statutory requirement, funding issues, curricular issues etc) Local Authority provision and financial support for outdoor learning experiences has declined in the last twenty years or so. The model of teachers in schools providing out-of-classroom experiences as part of their teaching of subjects has also declined (Higgins, 2002; Rickinson *et al.* (2004). Most schools have no outdoor education specialist or indeed a member of staff who can be considered as knowledgeable about outdoor educational experiences. Where it still exists school-based provision is deemed to be part of the educational endeavours of the school or Local Education Authority and is essentially free at point of delivery. The degree to which this occurs seems largely a function of the enthusiasm of individual staff and the school management to exploit curricular opportunities (Kandemiri, unpublished data).

Residential outdoor centres have been, and continue to be used to provide such experiences across the range of outdoor learning experiences and the traditional model was one of Local Authority financial subsidy for such excursions. In most cases such centres were established by the Local Authority and staffed primarily by qualified teachers together with some specialists in outdoor activities (Higgins, 2002; Nicol, 2001).

Their salaries and the provision and maintenance of the centre would have been funded by the Education Department of the Local Authority. Whilst this was not the universal model it was the common and preferred approach.

In the past 20 years or so there has been a major change with the number of Local Authorities initially seeking to defray residential outdoor education costs to young people (ie their parents or guardians) for travel and food, then making more substantial charges for accommodation and finally and crucially for staffing the courses (Higgins, 2002). The final stage in this process has been the closure or sale of many centres, and for a number of others application for charitable status. Whilst some close links remain this policy has in some cases led to a disassociation between centres and their Local Authorities and in others completely separate status and funding arrangements. A high proportion of these have sought and successfully gained charitable trust status, placing them in a position not dissimilar to fee-paying schools (ie those attending paying fees to a charitable educational business). These changes have in essence *deregulated* an aspect of educational provision in the UK. The centres have become susceptible to competition and consequently financial and other exigencies. In such a context it is unsurprising that any link between the outdoor experiences offered and the school curriculum may be somewhat serendipitous.

The lack of consistent Local Authority support and funding for such experiences, not to mention the 'market place' within which outdoor educational providers now operate leads to some variation in costs. However, the standard cost for a one-week residential (Monday–Friday) is likely to be in the range £200–280 and clearly not all can afford to pay for such experiences. The lack of direct Local Authority control over provision means that many disadvantaged pupils will lack the financial support to attend, and many of those from modest family backgrounds will also struggle to find the fee.

Local Authority funding of residential outdoor education took on a new dimension with the introduction in 1991 and 1992 of Devolved Management of Resources (DMR) also known as Devolved School Management (DSM). This system devolved responsibility for the management of budgets and spending from education departments to heads of schools and heads of residential outdoor centres, though some issues such as building capital, maintenance and employee costs remain at departmental level. This allowed centres greater autonomy in the spending of individual budgets; and allowed schools, on an individual basis, to decide whether or not they wanted to use the centre and then, whether or not they wanted to subsidise residential visits for their own pupils.

Whilst many decisions on allocation of funding have always been made at school level the introduction of DMR has greatly extended the range of financial decisions made at school level. This allows a school to provide more or less outdoor educational opportunities according to its commitment to do so rather than this being decided externally. Whilst the personal orientation of the staff will have some bearing on such decisions, the school's approach will necessarily be closely linked to the requirements of the curriculum.

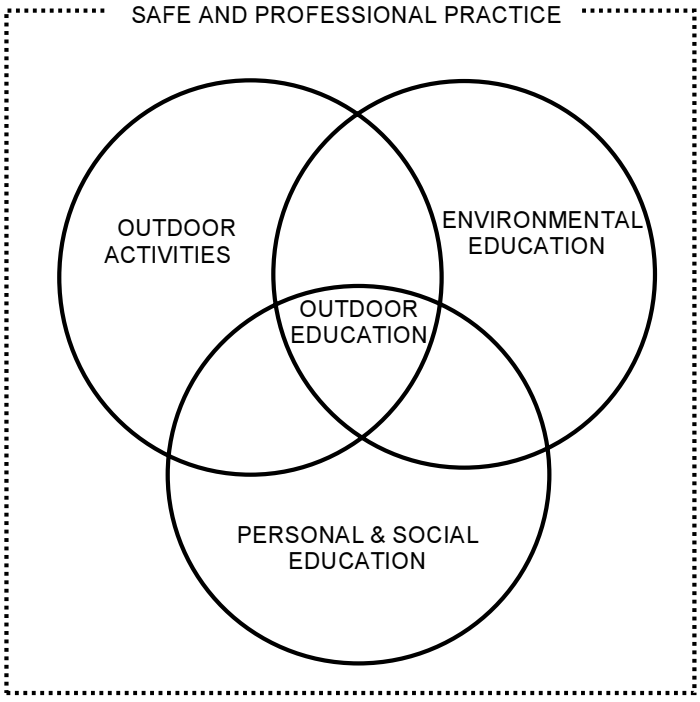
4 The place of outdoor learning within the curriculum

The upshot of this mixed model is that the relationship between the activities provided by the centre and a curriculum is essentially one for the school to negotiate. This in turn becomes a matter of interest in and commitment to the provision of curricular opportunities on the part of the school, the teachers and any outdoor provider rather than one of educational policy. As the sector does not regulate itself and it is not

regulated externally (other than through the Adventure Activity Licensing Authority (AALA) – which deals exclusively with safety issues) there is no form of consistent reassurance as to the educational quality of such provision. Indeed the distinction between an outdoor educational experience which is properly and fully located in a curriculum (both academic and personal and social) and what might best be described as 'a fun day out' from school or an 'activity holiday' provided by a centre, may not be apparent to the parent/guardian of young people attending such courses, or indeed the school or even the outdoor centre staff. It is also worth bearing in mind that whilst the classroom may be suitable, or even desirable, for some study, it is not useful for integrated study of the natural environment (Orr, 1992) nor should such study be confined to formal institutions (Smyth, 1995).

There are, broadly speaking three obvious ways in which outdoor learning relates to the national curriculum and these match the three circles of Figure 1. Outdoor adventurous activities can be included in the physical education (PE) curriculum and often associated with these, appropriately structured and reviewed outdoor educational experiences can contribute to personal and social education and citizenship. In the context of the present study subjects such as art, Geography, science and history fieldwork can provide practical experiences and a context for school-based theoretical study and are considered to be 'environmental education'.

Figure 1 The range and scope of outdoor education (Higgins,1995; Higgins and Loynes,1997)



That out-of-classroom experiences should be included in subjects which have an environmental dimension seems obvious. Although curricular opportunities exist, there is no requirement to follow them and so provision is often as the result of enthusiastic teachers rather than consistent approaches. Perhaps for the variety of reasons explored in the present study such provision is not widespread.

Personal and social educational experiences are now often associated with citizenship and both are frequently linked to outdoor education. The argument is that encounters with challenging situations on the

outdoors, which are then properly reviewed to help students make meaning from them, provide realistic metaphors for personal issues and relationships with others in society. Perhaps because this has been a common rationale particularly for outdoor centres, this issue has received some research attention and support. In light of this a more widespread use of out-of-classroom experiences would be expected. The factors mitigating against may well be similar to those noted above for environmental field-work.

As noted earlier the common model for many schools is to arrange short-term primarily residential experiences. However whilst these are to be welcomed they may be less effective than they might be. As Ofsted (2004) point out in their recommendations, whilst evidence points to the valuable experiences that people have during these programmes it is essential to link these experiences with curricular work and/or wider issues of citizenship.

5 Organisation and integration within existing school structures

As with other aspects of provision there is no consistent model for the organisation and integration of out-of-classroom experiences. This may well be for the reasons noted earlier, namely the absence of staff designated to take this responsibility, classroom teachers who may have no particular interest in taking children outdoors or others who have anxieties about the consequences of accidents. Perhaps above all though, the lack of specific places within the curriculum for out-of-classroom experiences provides little encouragement or requirement to do so.

Whilst a few schools do employ a specialist outdoor education teacher, outdoor educational experiences are usually provided by a teacher who is interested in fieldwork. In either case the teacher taking children out of the classroom has to deal with an associated organisational and administrative load; obtaining consent forms, providing risk assessments, organising transport etc.

There are other structural problems too. The ratio at which both outdoor activities and field studies are conducted (for obvious health and safety reasons) is often one teacher working with eight to twelve students and this may present difficulties for schools. Consequently the only realistic model for schools to adopt is one of extraction of groups of this size from a year group. This clearly has implications for timetable management and for other staff.

It is perhaps unsurprising then that schools which do offer out-of-classroom experiences often find that organising a residential excursion to a field studies or outdoor education centre provides a convenient alternative. In doing so the responsibility for provision is devolved to the contracted provider and the task of the school is primarily to ensure that the young people arrive safely at the centre and return home at the end of the residential. This often means that the school loses one or more teachers for the duration of the residential, and that before leaving with the group teachers have to prepare lessons to allow a colleague or supply teacher to cover their classes. Upon return the classroom teacher is then usually faced with a catching-up period. This can therefore be costly for the school and demanding of the teachers involved. The other major consequence of such a form of delivery is as noted earlier that the content and conduct of the programme is essentially devolved to the staff of the centre. The best arrangements are clearly where school staff make a concerted effort to ensure the delivery is of valuable educational experiences which are then followed up upon return to the school. This point is noted in the 2004 Ofsted Report on outdoor education.

6 Qualification and motivation of teachers

There is no clear or agreed structure for the training of teachers in providing outdoor learning experiences. For those teachers whose interest is primarily in fieldwork the academic discipline and their teacher training should provide a basis for their work. Although much depends on whether they themselves have had experiences of fieldwork within their own training, it is essentially a matter of getting the young people out of school and into the environments they wish to study. Beyond this the main requirement is an understanding of health and safety related issues associated with the main fieldwork locations in the countryside and associated water bodies, seashore etc. For those who take groups into mountainous country the normal expectation is that they would hold an appropriate National Governing Body (NGB) qualification such as the Mountain Leadership Award. Whilst this is not a 'legal' requirement, it would be the expected standard of training and qualification for someone conducting fieldwork in mountainous terrain.

In terms of workload it is, in our experience, uncommon to hear teachers who take young people on out-of-classroom educational excursions and residentials complaining about the increase in their teaching load. Where they exist such complaints often relate to administrative issues. Whilst some school staff who do not teach outdoors may perceive an increase in their workload they may well still be supportive. For example a major study conducted of schools and centre provision within the Lothian Region of Scotland around twenty-five years ago (Cheesmond, 1979) found that in schools where outdoor education was seen as an important focus of the school's efforts, staff were generally highly motivated to support such provision. Anecdotal evidence suggests that this remains the case.

In one study of provision of out-of classroom education in Oxfordshire Primary schools (Wheatley-Price, 2002) teachers and policy makers cited lack of staff expertise, the demands of the literacy and numeracy strategies, and the need for staff who initiate such programmes to be supported as factors mitigating against further development. An unpublished Ofsted survey of 'outdoor and adventurous activities' (as an option in the PE National Curriculum at Key Stages 3 and 4) in 33 schools and centres in 1999 supported the view that leadership and vision on the part of senior school staff were crucial in fostering such experiences, and that appropriate in-service training often provided the means of giving responsible staff both the skills and reassurance to do so.

In an American study (in Chicago) Simmons (1998) investigated teachers' perceptions of the barriers and benefits of using four different outdoor settings when teaching environmental education. Whilst teachers believed in the educational worth of such programmes and their significance for students. Whilst they did express some confidence in their own knowledge they were apprehensive about whether they would be appropriately trained and prepared for such work. They also believed class-sizes were too big to be practical for such activities and were concerned about student safety. In another relevant study of the use of school grounds Skamp and Bergamann (2001) considered teachers' views of their value for teaching and learning. In their two-year study of two Australian schools they found that teachers valued the grounds and other environmental learning facilities (eg worm farm, recycling area etc) they used them selectively and somewhat irregularly. They attributed this to teachers' perceptions of limited applicability of the environment/facilities for particular subjects and educational content.

7 Issues associated with risks, accidents and litigation

It is clear that there is a genuine fear of outdoor accidents amongst many school staff. This is perfectly understandable in light of the media interest in each high-profile case. What is also clear is that such coverage is often misleading in that it gives an impression of unsafe practice not substantiated by the accident figures (Bailie, 1996) (see also Adventure Activities Licensing Authority, http://www.aala.org). At least one teaching union has also advised members not to take groups on outdoor excursions and it takes considerable self-confidence and not a little specialist knowledge (of exposure adjusted comparative accident rates) to ignore such pressures.

When accidents are due to negligence it seems perfectly appropriate that the law is pursued and prosecutions follow. This has been the situation in several recent cases. Where we believe teachers and others face additional pressures is the fear that litigation will follow an out-of-classroom excursion. It does not seem clear why there are particular fears about such possibilities when there seems to be no comparable concern about in-school accidents.

One additional point worth consideration is the implications of *not* going out of the classroom. The recent Ofsted report (2004) suggests that young people are often not skilled in assessing risks. One obvious way to do this is to train them to do so, and this means at least some experience of situations where risks are apparent.

That there are long-term health implications associated with physical activity patterns is well known. Whilst team sports seem to give way to more individual forms of physical recreation in later life little is known of the motivation for doing so and the role of physical outdoor activities and exposure to the natural heritage in stimulating such activity.

In summary much of this aspect of the contemporary debate concerning out-of-classroom experiences relates to the discussion of short- and long-term health risks and lifestyle issues rather than the implications for relationships with the natural heritage.

Appendix 2 Questionnaire

Q1 How many days in the last 12 months have any of your classes gone outdoors for educational purposes?

For 'Class' please enter all [primary] classes including composites (add more columns if you need to)

Class	**eg [P1]**						
Number of Days Out							

Q2 Please can you list the curricular topics that [P1–7] studied when they went out of doors in the last 12 months?

Q3 Why do the classes go out for the topics listed in Q2 and not for other topics?

Q4 Are there some topics which you would like to go outdoors for, and don't at present? Please list as many as you can think of.

Q5 What factors influence your decisions to plan outdoor study? List as many as you can think of.

Q6 In the last 12 months have your classes used any of the following learning contexts (please tick any boxes that apply)?

- School grounds ☐
- Local area within walking distance of school (woods, park, green space) ☐
- Day long excursion for an event (project, field study visit) ☐
- Residential outdoor education or field study centre involving at least 1 overnight stay ☐

Would you be willing to participate in a limited further discussion of these issues? Please tick box.

Yes	No

Thank you for your cooperation.

Appendix 3 Responses to questionnaire (Question 2) – Topics

Frequency of topics/subjects mentioned in the questionnaire

Question 2
Please can you list the curricular topics that P1–7 studied when they went outdoors in the last 12 months?

Since this question generated a significant amount of data some abbreviation system was required to manage this. There are two keys for question two that help to clarify the system used to code data. Key 1 shows the abbreviations used to signify topics or subjects. Key 2, called "data sets", indicates the abbreviations used first; when distinguishing between primary and secondary schools; and second, when distinguishing between secondary school subjects (Biology or Geography). An example helps to show how the keys are used. The first item in the data set Primary Edinburgh (below) is TOPS-PE-pe 21. This means that the data item refers to the category "Topics" (TOPS) from a primary school (P) in Edinburgh Council (E) where the specific topic is pe (Physical Education) and the number of times that this specific topic was found in all of the questionnaire responses was 21.

Key 1 (for abbreviated topics/subjects)

TOPS – Topics

es – Environmental Studies

pe – Physical Education

psd – Personal and Social Development

rme – Religious and Moral Education

jma – John Muir Awards

Key 2 (data sets)

PH – Primary Highland

PE – Primary Edinburgh

BH – Biology Highland

BE – Biology Edinburgh

GH – Geography Highland

GE – Geography Edinburgh

There now follow data sets for the six cases indicated in Key 2 above. Each individual item has been ordered to show the highest number of instances first. The first two of these data sets provide data from Primary Schools in Edinburgh (Primary Edinburgh) and Primary Schools in Highland (Primary Highland).

The reason for some of the items being *italicised* is that these are science-related data items.

NB Do not confuse PE {Primary Edinburgh} with pe {Physical Education}

Primary Edinburgh	**Primary Highland**
TOPS-PE-pe 21	TOPS-PH-pe 16
TOPS-PE-science 13	*TOPS-PH-es 10*
TOPS-PE-minibeasts 14	TOPS-PH-maths 8
TOPS-PE-es 10	TOPS-PH-language 6
TOPS-PE-history 10	TOPS-PH-history 6
TOPS-PE-road safety 10	TOPS-PH-psd 5
TOPS-PE-music 7	TOPS-PH-art 5
TOPS-PE-outdoor activities 8	*TOPS-PH-science 5*
TOPS-PE-rme 6	*TOPS-PH-Jacobites 5*
TOPS-PE-maths 6	*TOPS-PH-garden studies 4*
TOPS-PE-living things 7	TOPS-PH-social subjects 4
TOPS-PE-seasons 5	TOPS-PH-rme 4
TOPS-PE-weather 6	TOPS-PH-health 4
TOPS-PE-expressive arts 5	*TOPS-PH-Geography 3*
TOPS-PE-museum 5	*TOPS-PH-minibeasts 3*
TOPS-PE-art 6	*TOPS-PH-water studies 3*
TOPS-PE-health 6	TOPS-PH-technology 2
TOPS-PE-residential education 5	TOPS-PH-my village 2
TOPS-PE-transport 5	TOPS-PH-citizenship 2
TOPS-PE-personal and social development (psd) 5	TOPS-PH-houses and homes 2
TOPS-PE-seashore studies 5	*TOPS-PH-woodland studies 2*
TOPS-PE-plants 5	*TOPS-PH-farm studies 2*
TOPS-PE-woodlands 5	*TOPS-PH-living things 2*
TOPS-PE-houses and homes 4	TOPS-PH-music 1
TOPS-PE-rainforests 4	*TOPS-PH-bird studies 1*
TOPS-PE-farm studies 4	*TOPS-PH-pollution 1*
TOPS-PE-zoo 4	*TOPS-PH-conservation 1*
TOPS-PE-senses 4	TOPS-PH-health and safety 1
TOPS-PE-river studies 3	TOPS-PH-French 1
TOPS-PE-drama 3	*TOPS-PH-beach studies 1*
TOPS-PE-birds 2	*TOPS-PH-wildlife studies 1*
TOPS-PE-citizenship 2	*TOPS-PH-pond studies 1*
TOPS-PE-Geography 2	*TOPS-PH-tree planting 1*
TOPS-PE-plants and animals 2	TOPS-PH-the clearances 1
TOPS-PE-hot and cold lands 2	TOPS-PH-Victorians 1
TOPS-PE-social studies 2	TOPS-PH-enterprise 1
TOPS-PE-habitats 2	*TOPS-PH-jma 1*
TOPS-PE-jacobites 2	TOPS-PH-castles 1
TOPS-PE-language 2	*TOPS-PH-field centre 1*
TOPS-PE-people who help us 2	TOPS-PH-drama 1
TOPS-PE-animals and pets 2	TOPS-PH-light and sound 1
TOPS-PE-insects 2	*TOPS-PH-plant studies 1*
TOPS-PE-theatre 2	TOPS-PH-cultural studies 1

Primary Edinburgh	**Primary Highland**
TOPS-PE-astronomy 3	TOPS-PH-expressive arts 1
TOPS-PE-Victorians 3	*TOPS-PH-seashore studies 1*
TOPS-PE-Vikings 2	TOPS-PH-our community 1
TOPS-PE-Egyptians 1	TOPS-PH-transport 1
TOPS-PE-owls 1	*TOPS-PH-nature study 1*
TOPS-PE-garden studies 2	TOPS-PH-mapwork 1
TOPS-PE-reptiles 1	n=131
TOPS-PE-day and night 1	
TOPS-PE-crafts 1	
TOPS-PE-eco study 1	
TOPS-PE-eco schools 1	
TOPS-PE-problem solving 1	
TOPS-PE-energy and forces 1	
TOPS-PE-polar lands 1	
TOPS-PE-solar system 1	
TOPS-PE-nutrition 1	
TOPS-PE-tree studies 1	
TOPS-PE-country code 1	
TOPS-PE-nature appreciation 1	
TOPS-PE-nature studies 2	
TOPS-PE-our bodies 1	
TOPS-PE-stars 1	
TOPS-PE-my school 1	
TOPS-PE-wars of independence 1	
TOPS-PE-light 1	
TOPS-PE-conservation 2	
TOPS-PE-technology 1	
TOPS-PE-mapping 2	
TOPS-PE-water 1	
TOPS-PE-nature appreciation 1	
TOPS-PE-storytelling 1	
TOPS-PE-community 1	
TOPS-PE-physics 1	
TOPS-PE-cycle of life 2	
TOPS-PE-Easter 1	
TOPS-PE-ants 1	
TOPS-PE-ballet 1	
TOPS-PE-golf tournament 1	
TOPS-PE-botanics 1	
TOPS-PE-life cycle 1	
TOPS-PE-lifestyle 1	
TOPS-PE-health and safety 1	
TOPS-PE-forces and magnetism 1	

Primary Edinburgh	**Primary Highland**
TOPS-PE-water safety 1	
TOPS-PE-dance 1	
TOPS-PE-environment 2	
TOPS-PE-enterprise 1	
TOPS-PE-local area study 1	
TOPS-PE-pollution 1	
TOPS-PE-mammals 1	
TOPS-PE-rocks and fossils 1	
TOPS-PE-settlement studies 1	
n=290	

Biology Edinburgh	**Biology Highland**
TOPS-BE-biosphere 11	TOPS-BH-biosphere 4
TOPS-BE-world of plants *5*	TOPS-BH-world of plants 3
TOPS-BE-classification 3	TOPS-BH-animal behaviour 2
TOPS-BE-ecology 3	TOPS-BH-field study techniques 2
TOPS-BE-succession 3	TOPS-BH-food-chains 1
TOPS-BE-residential education 3	TOPS-BH-fieldwork 1
TOPS-BE-adaptions 2	TOPS-BH-lifestyles 1
TOPS-BE-evolution 2	TOPS-BH-environmental Biology 1
TOPS-BE-environments 2	TOPS-BH-brewing 1
TOPS-BE-abiotic 2	TOPS-BH-environment 1
TOPS-BE-es (5-14) 2	n=18
TOPS-BE-fieldwork 2	
TOPS-BE-woodland ecology 1	
TOPS-BE-seashore ecology 1	
TOPS-BE-outdoor activities 1	
TOPS-BE-science festival 1	
TOPS-BE-Hadrian's Wall 1	
TOPS-BE-practical techniques 1	
TOPS-BE-environmental Biology 1	
TOPS-BE-zoo 1	
TOPS-BE-animal behaviour 1	
TOPS-BE-populations 1	
TOPS-BE-photosynthesis 1	
TOPS-BE-pitfall traps 1	
TOPS-BE-botanic gardens 1	
TOPS-BE-river ecosystem 1	
TOPS-BE-ecosystems 1	
TOPS-BE-thinking science 1	
n=56	

Geography Edinburgh	Geography Highland
TOPS-GE-urban Geography 15	TOPS-GH-glaciation 6
TOPS-GE-river study 11	TOPS-GH-landuse conflicts 5
TOPS-GE-fieldwork 10	TOPS-GH-urban Geography 3
TOPS-GE-glaciation 8	TOPS-GH-tourism 3
TOPS-GE-weather 7	TOPS-GH-river study 4
TOPS-GE-physical Geography 6	TOPS-GH-settlement studies 3
TOPS-GE-land use management 5	TOPS-GH-residential 1 (abroad) 1
TOPS-GE-mapping 4	TOPS-GH-fieldwork 1
TOPS-GE-coastal studies 4	TOPS-GH-traffic 1
TOPS-GE-settlement studies 4	TOPS-GH-service studies 1
TOPS-GE-soil study 3	TOPS-GH-geomorphology 1
TOPS-GE-environmental quality 3	TOPS-GH-forestry 1
TOPS-GE-geology 3	TOPS-GH-mapwork 1
TOPS-GE-traffic 3	TOPS-GH-water cycle 1
TOPS-GE-slope analysis 2	TOPS-GH-sustainability 1
TOPS-GE-residential 1 (abroad) 2	TOPS-GH-dunes 1
TOPS-GE-farming 2	TOPS-GH-farm 1
TOPS-GE-green belt studies 2	TOPS-GH-human Geography 1
TOPS-GE-service study 2	TOPS-GH-physical Geography 1
TOPS-GE-pollution 1	TOPS-GH-hill forts 1
TOPS-GE-ecosystems 1	n=38
TOPS-GE-plant succession 1	
TOPS-GE-conservation 1	
TOPS-GE-seashore studies 1	
TOPS-GE-industry 1	
TOPS-GE-shopping survey 1	
TOPS-GE-sphere of influence 1	
TOPS-GE-tourism 1	
TOPS-GE-Highland Show 1	
TOPS-GE-higher geology 1	
TOPS-GE-forests 1	
TOPS-GE-visits to Lake District & Yorkshire Dales 1	
TOPS-GE-Dynamic Earth 1	
TOPS-GE-landscape designations 1	
TOPS-GE-tectonics 1	
TOPS-GE-waste management 1	
n=117	

Appendix 4 Responses to questionnaire (Questions 3–5) – Approaches

Frequency of topics/subjects mentioned in the questionnaire

The codes for "approaches", "attitudes", "motivations", "opportunities", "opportunities latent", "barriers" and "outliers" were used throughout all the responses to questions 3–5.

Question 3
Why do the classes go out for the topics listed in Question 2 and not for other topics?

Question 4
Are there some topics you would like to go outdoors for, and don't at present? Please list as many as you can think of.

Question 5
What factors influence your decisions to plan outdoor study? List as many as you can think of.

For an explanation of the approach taken to analysis of the responses to these questions and the derivation of the coding frame see Methods chapter.

The data display begins with a coded item and then a number of instances. At the end of each data set there are a total number of instances where n=number of instances.

The response with the highest number of instances is analysed first followed by the instance with the next highest and so on.

Primary Edinburgh	**Primary Highland**
APP-PE-nature of the topic lends itself to outdoors study 9	APP-PH-other topics are not relevant outdoors 3
APP-PE-first hand experience 5	APP-PH-enhanced learning 3
APP-PE-outdoors can enhance curricular areas, additional stimulus/teaching opportunities 4	APP-PH-first hand experience 2
APP-PE-quality of learning experience 3	APP-PH-go out for all topic themes 2
APP-PE-some topics lend themselves more to outdoor activities 2	APP-PH-outdoors can enhance curricular areas, additional stimulus/teaching opportunities 1
APP-PE-appropriate opportunities 1	APP-PH-enjoyment and motivation for children 1
APP-PE-visits fit well with themes 1	APP-PH-benefits to children 1
APP-PE-opportunities for real life experiences 1	APP-PH-the nature of the topic lends itself to outdoors study 1
APP-PE-our classes might go out for any topic 1	APP-PH-usually for practical work 1
APP-PE-enthusiasm of children 1	APP-PH-use facilities relevant to topic work 1
APP-PE-different learning experiences 1	APP-PH-collect evidence 1
APP-PE-additional benefits (eg writing reports, letters etc) 1	APP-PH-go out for PE 1
APP-PE-science and es particularly require visits outside to relate to class discussions 1	APP-PH-go out for field trips 1
n=31	APP-PH-maths related work 1
	APP-PH-most topics benefit from an element of outdoor education 1
	APP-PH-good for all the senses 1
	APP-PH-some activities are not suitable indoors 1
	n=23

Biology Edinburgh	**Biology Highland**
APP-BE-nature of the topic lends itself to outdoors study 8	APP-BH-first hand experience 2
APP-BE-first hand experience 4	n=2
APP-BE-it is a way of getting to know pupils' capabilities 1	
APP-BE-measuring abiotic factors is far easier outdoors 1	
APP-BE-enthusiasm of children 1	
APP-BE-ecological topics need experience of ecosystem-biochemistry, physiology don't 1	
n=16	

Geography Edinburgh	**Geography Highland**
APP-GE-nature of the topic lends itself to outdoors study 7	APP-GH-first hand experience 1
APP-GE-first hand experience 5	APP-GH-glaciation is educationally rewarding when taught outdoors 1
APP-GE-reinforces class room learning 2	APP-GE-not all topics lend themselves to outdoor work 1
APP-GE-all year groups should go out once a year 1	n=3
APP-GE-surveying has to take place outdoors 1	
APP-GE-going outdoors increases pupil motivation 1	
APP-GE-fun 1	
APP-GE- not all topics lend themselves to outdoor work 1	
n=19	

Appendix 5 Responses to questionnaire (Question 3–5) – Attitudes

Frequency of topics/subjects mentioned in the questionnaire.

The codes for "approaches", "attitudes", "motivations", "opportunities", "opportunities latent", "barriers" and "outliers" were used throughout all the responses to questions 3–5.

Question 3
Why do the classes go out for the topics listed in Question 2 and not for other topics?

Question 4
Are there some topics you would like to go outdoors for, and don't at present? Please list as many as you can think of.

Question 5
What factors influence your decisions to plan outdoor study? List as many as you can think of.

For an explanation of the approach taken to analysis of the responses to these questions and the derivation of the coding frame see Methods chapter.

The data display begins with a coded item and then a number of instances. At the end of each data set there are a total number of instances where n=number of instances.

The response with the highest number of instances is analysed first followed by the instance with the next highest and so on.

Primary Edinburgh	**Primary Highland**
There are no recorded data under this code.	ATT-PH-it is important for children's health to spend time outdoors each day if possible 1
n=0	ATT-PH-(teachers don't go out because) lack of imagination – always been done that way 1
	n=2

Biology Edinburgh	**Biology Highland**
There are no recorded data under this code.	ATT-BH-kids should be outdoors in good weather 1
n=0	n=1

Geography Edinburgh	**Geography Highland**
ATT-GE-fieldwork is fundamental but has to integrate into curriculum and manageable 1	There are no recorded data under this code.
ATT-GE-go out for activities that are not dangerous 1	n=0
ATT-GE-go out for activities that need low level risk assessment 1	
n=3	

Appendix 6 Responses to questionnaire (Question 3–5) – Motivations

Frequency of topics/subjects mentioned in the questionnaire.

The codes for "approaches", "attitudes", "motivations", "opportunities", "opportunities latent", "barriers" and "outliers" were used throughout all the responses to questions 3–5.

Question 3
Why do the classes go out for the topics listed in Question 2 and not for other topics?

Question 4
Are there some topics you would like to go outdoors for, and don't at present? Please list as many as you can think of.

Question 5
What factors influence your decisions to plan outdoor study? List as many as you can think of.

For an explanation of the approach taken to analysis of the responses to these questions and the derivation of the coding frame see Methods chapter.

The data display begins with a coded item and then a number of instances. At the end of each data set there are a total number of instances where n=number of instances.

The response with the highest number of instances is analysed first followed by the instance with the next highest and so on.

Primary Edinburgh	**Primary Highland**
There are no recorded data under this code.	There are no recorded data under this code.
n=0	n=0

Biology Edinburgh	**Biology Highland**
There are no recorded data under this code.	MOT-BH-places to go, areas to investigate 1
n=0	n=1

Geography Edinburgh	**Geography Highland**
There are no recorded data under this code.	There are no recorded data under this code.
n=0	n=0

Appendix 7 Responses to questionnaire (Questions 3–5) – Opportunities

Frequency of topics/subjects mentioned in the questionnaire.

The codes for "approaches", "attitudes", "motivations", "opportunities", "opportunities latent", "barriers" and "outliers" were used throughout all the responses to questions 3-5.

Question 3
Why do the classes go out for the topics listed in Question 2 and not for other topics?

Question 4
Are there some topics you would like to go outdoors for, and don't at present? Please list as many as you can think of.

Question 5
What factors influence your decisions to plan outdoor study? List as many as you can think of.

For an explanation of the approach taken to analysis of the responses to these questions and the derivation of the coding frame see Methods chapter.

The data display begins with a coded item and then a number of instances. At the end of each data set there are a total number of instances where n=number of instances.

The response with the highest number of instances is analysed first followed by the instance with the next highest and so on.

Primary Edinburgh	**Primary Highland**
OPP-PE-curriculum links 5	OPP-PH-relevance-does it support learning? 2
OPP-PE- relevance-does it support learning? 3	OPP-PH-relevance to topic work-within travelling distance 1
OPP-PE-multi-sensory experience 1	OPP-PH-curricular priorities 1
OPP-PE-stimulation 1	OPP-PH-'3–5 curriculum' encourages outdoor activities in all areas 1
OPP-PE-yearly trips 1	OPP-PH-there are vast benefits and opportunities not available in the classroom 1
OPP-PE-'psd' at residential sites 1	OPP-PH-the opportunity to combine topics 1
OPP-PE-some historical topics lend themselves to visiting particular places 1	OPP-PH-benefits to pupils/staff health and well-being 1
n=13	n=8

Biology Edinburgh	**Biology Highland**
OPP-BE-relevance to topic work/curriculum 2	OPP-BH-easy to organise 3
OPP-BE-within travelling distance 2	OPP-BH-using local resources (Highland Wildlife Park) 1
OPP-BE-needs to be timetabled in 2	OPP-BH-curriculum links 1
OPP-BE-curriculum links 2	OPP-BH-the possibilities for work experience 1
OPP-BE-the possibilities for work experience 1	n=6
OPP-BE-skiing abroad 1	
OPP-BE-outdoors provides variety 1	
OPP-BE-outdoors provides real data 1	
OPP-BE-outdoors provides opportunities for bonding 1	
OPP-BE-outdoors provides opportunities for accuracy of measurements 1	
OPP-BE-works when flexibility regarding the weather is considered 1	
OPP-BE-we have extensive and accessible grounds 1	
n=16	

Geography Edinburgh	**Geography Highland**
OPP-GE-relevance to topic work/curriculum 6	OPP-GH-it needs to be local and easy to arrange 5
OPP-GE-it needs to be local and easy to arrange 5	OPP-GH-relevance to topic work/curriculum 3
OPP-GE-things that we have done before are easy to repeat (river and hill studies) 1	OPP-GH-if it is regional policy 1
OPP-GE-improved teacher/pupil relationship 1	OPP-GH-first hand fieldwork 1
OPP-GE-teacher enjoyment/motivation 1	OPP-GH-good opportunity for educational and social mix 1
OPP-GE-equal opportunities for pupils 1	OPP-GH-curriculum enrichment 1
OPP-GE-good for cross-curricular opportunities 1	n=12
n=16	

Appendix 8 Responses to questionnaire (Question 3–5) – Opportunities (latent)

Frequency of topics/subjects mentioned in the questionnaire.

The codes for "approaches", "attitudes", "motivations", "opportunities", "opportunities latent", "barriers" and "outliers" were used throughout all the responses to questions 3-5.

Question 3
Why do the classes go out for the topics listed in Question 2 and not for other topics?

Question 4
Are there some topics you would like to go outdoors for, and don't at present? Please list as many as you can think of.

Question 5
What factors influence your decisions to plan outdoor study? List as many as you can think of.

For an explanation of the approach taken to analysis of the responses to these questions and the derivation of the coding frame see Methods chapter.

The data display begins with a coded item and then a number of instances. At the end of each data set there are a total number of instances where n=number of instances.

The response with the highest number of instances is analysed first followed by the instance with the next highest and so on.

Primary Edinburgh	**Primary Highland**
OPP-LAT-PE-would like to go out for art 2	There are no recorded data under this code.
OPP-LAT-PE-would like to visit theatre (shows it is possible to get outside) 2	n=0
OPP-LAT-PE-would like to make use of Pentland Hills rangers 2	
OPP-LAT-PE-brief teachers to aim to get out 1 time per term 1	
OPP-LAT-PE-museum of childhood (shows it is possible to get outside) 1	
OPP-LAT-PE-Deep Sea World (shows it is possible to get outside) 1	
OPP-LAT-PE-Botanics (shows it is possible to get outside) 1	
OPP-LAT-PE-Vikings (shows it is possible to get outside) 1	
OPP-LAT-PE-religious buildings (shows it is possible to get outside) 1	
OPP-LAT-PE-farming (shows it is possible to get outside) 1	
OPP-LAT-PE-communication (shows it is possible to get outside) 1	
OPP-LAT-PE-houses and homes (shows it is possible to get outside) 1	
OPP-LAT-PE-Romans (shows it is possible to get outside) 1	
OPP-LAT-PE-art gallery (shows it is possible to get outside) 1	

Primary Edinburgh	**Primary Highland**
OPP-LAT-PE-history/social study (shows it is possible to get outside) 1	
OPP-LAT-PE-would like to do art appreciation 1	
OPP-LAT-PE-would like to go out to study weather 1	
OPP-LAT-PE-would like to go out to study transport 1	
OPP-LAT-PE-would like to go out to study towns 1	
OPP-LAT-PE-would like to do a river study 1	
OPP-LAT-PE-would like to do Geography outdoors 1	
OPP-LAT-PE-would like to do services study 1	
OPP-LAT-PE-would like to do creative writing 1	
OPP-LAT-PE-would like to do maths – counting steps etc 1	
OPP-LAT-PE-would like to do outdoor education 1	
OPP-LAT-PE-would like to do hill walking and orienteering 1	
OPP-LAT-PE-would like to go to school camp 1	
OPP-LAT-PE-would like to study WW2 1	
OPP-LAT-PE-would like to go to zoo for 'cycle of life' 1	
n=34	

Biology Edinburgh	**Biology Highland**
OPP-LAT-BE- there are topics I'd like to go out for but don't at present 2	OPP-LAT-BH-would like to do more practical work 2
OPP-LAT-BE-would like to do river work 2	OPP-LAT-BH-would like to do standard grade Biology 2
OPP-LAT-BE-would like to do all Biology 2	OPP-LAT-BH-would like to go out for more outdoors specific topics 2
OPP-LAT-BE-for the '3 to18' review get the outdoors written into the syllabus 1	OPP-LAT-BH-pupils have to do sampling techniques (other courses do not require this) 1
OPP-LAT-BE-we are hoping to extend the range of practical and field work offered 1	OPP-LAT-BH-the nature of the subject 1
OPP-LAT-BE-would like to do plants 1	n=8
OPP-LAT-BE-would like to do evolution work at the museum 1	
OPP-LAT-BE-would like to do animal behaviour at the zoo 1	
OPP-LAT-BE-would like to do plant work at the Botanic gardens 1	
OPP-LAT-BE-would like to do brewery visit 1	
OPP-LAT-BE-would like to do sewerage works visit 1	
OPP-LAT-BE-would like to do biotechnological industries visit 1	
n=15	

Geography Edinburgh	Geography Highland
OPP-LAT-GE-would like to go out to do farm study 10	OPP-LAT-GH-would like to go out to study industrial area 3
OPP-LAT-GE-would like to go out to do river study 9	OPP-LAT-GH-would like to go out to do farm study 2
OPP-LAT-GE-would like to go out for coastal studies 8	OPP-LAT-GH-would like to go out to do river study 2
OPP-LAT-GE-would like to go out to study industrial change 7	OPP-LAT-GH-would like to go out for coastal studies 2
OPP-LAT-GE-would like to go out for environmental conflict issues 5	OPP-LAT-GH-would like to go out for urban industry 2
OPP-LAT-GE-would like to go out to do urban study 4	OPP-LAT-GH-would like to go out to do sand dune study 1
OPP-LAT-GE-would like to go out for glaciation studies 3	OPP-LAT-GH-all topics would benefit from going outdoors 1
OPP-LAT-GE-would like to go out for weather 3	OPP-LAT-GH-would like to go out for glacial depositions 1
OPP-LAT-GE-would like to go out to do sand dune study 2	OPP-LAT-GH-would like to go out for soil profiles 1
OPP-LAT-GE-would like to go out for mapping studies 2	OPP-LAT-GH-would like to go out for Dynamic Earth 1
OPP-LAT-GE-would like to go out for settlement studies 2	OPP-LAT-GH-would like to go out for limestone study 1
OPP-LAT-GE-would like to go out to study physical landscapes 2	n=17
OPP-LAT-GE-would like to go out to study agriculture change and development 1	
OPP-LAT-GE-would like to go out to study LEDC vs MEDC 1	
OPP-LAT-GE-would like to go out to study biosphere 1	
OPP-LAT-GE-would like to go on city centre visit 1	
OPP-LAT-GE-would like to go out for limestone study 1	
OPP-LAT-GE-would like to go out for tourism studies 1	
OPP-LAT-GE-would like to go out for edge of town studies 1	
OPP-LAT-GE-would like to go out for rural studies 1	
OPP-LAT-GE-would like to go out to visit country park 1	
OPP-LAT-GE-would like to go out for soil study 1	
OPP-LAT-GE-would like to go out for 'Higher' lithosphere, biosphere, urban, hydrosphere 1	
OPP-LAT-GE- would like to go out for 'SG' urban studies, landscapes, farming, settlement 1	
OPP-LAT-GE-would like to go out to do volcanoes 1	
OPP-LAT-GE-would like to go out to do earthquakes 1	
n=71	

Appendix 9 Responses to questionnaire (Questions 3–5) – Barriers

Frequency of topics/subjects mentioned in the questionnaire.

The codes for "approaches", "attitudes", "motivations", "opportunities", "opportunities latent", "barriers" and "outliers" were used throughout all the responses to questions 3–5.

Question 3
Why do the classes go out for the topics listed in Question 2 and not for other topics?

Question 4
Are there some topics you would like to go outdoors for, and don't at present? Please list as many as you can think of.

Question 5
What factors influence your decisions to plan outdoor study? List as many as you can think of.

For an explanation of the approach taken to analysis of the responses to these questions and the derivation of the coding frame see Methods chapter.

The data display begins with a coded item and then a number of instances (the first below being BAR-PH-weather 10. This means that under for the code 'Barriers' Primary Highland teachers mentioned weather 10 times. At the end of each data set there are a total number of instances where n=number of instances (eg for Barriers, Primary Highland n= 60).

The analysis of each code follows directly after each data display. The response with the highest number of instances is analysed first followed by the instance with the next highest and so on.

Primary Edinburgh	**Primary Highland**
BAR-PE-cost 21	BAR-PH-weather 10
BAR-PE-safety 20	BAR-PH-transport 9
BAR-PE-adult helpers 15	BAR-PH-adult helpers 7
BAR-PE-not enough time (balance of the curriculum) 14	BAR-PH-closeness to school 5
BAR-PE-weather 13	BAR-PH-cost 5
BAR-PE-access to suitable sites 8	BAR-PH-safety 5
BAR-PE-transport 8	BAR-PH-not enough time (balance of the curriculum) 3
BAR-PE-closeness to school 3	BAR-PH-time
BAR-PE-suitably qualified people 3	BAR-PH-appropriate venues 2
BAR-PE-time of year 3	BAR-PH-not so relevant for all topics 2
BAR-PE-equipment 2	BAR-PH-time of year 2
BAR-PE-class size 2	BAR-PH-staff numbers 1
BAR-PE-mood of children 2	BAR-PH-appropriateness of age 1
BAR-PE-logistics 2	BAR-PH-limited to school grounds 1
BAR-PE-time to plan 1	BAR-PH-access to suitable sites 1
BAR-PE-availability of school staff 1	BAR-PH-worries about behaviour 1

Primary Edinburgh	**Primary Highland**
BAR-PE-permissions 1	BAR-PH-parental objections 1
BAR-PE-liability 1	BAR-PH-suitably qualified people 1
BAR-PE-don't plan outdoor studies 1	BAR-PH-disclosure checked 1
BAR-PE-appropriateness of age 1	n=60
BAR-PE-medication to take along 1	
BAR-PE-enormous amount of paperwork (2/3 sheets per child) 1	
n=124	

Biology Edinburgh	**Biology Highland**
BAR-BE-not enough time (balance of the curriculum) 9	BAR-BH-not enough time (balance of the curriculum) 3
BAR-BE-safety 9	BAR-BH-time 3
BAR-BE-disruption to other classes 8	BAR-BH-weather 2
BAR-BE-cost 8	BAR-BH-transport 2
BAR-BE-staffing issues 4	BAR-BH-staffing issues 2
BAR-BE-amount of paperwork 3	BAR-BH-cost 2
BAR-BE-weather 3	BAR-BH-not relevant 1
BAR-BE-transport 2	BAR-BH-ratios 1
BAR-BE-lack of equipment 1	BAR-BH-safety 1
BAR-BE-organisation 1	BAR-BH-don't know why some classes go out and others don't 1
BAR-BE-accommodation 1	BAR-BH-organising 1
n=49	n=19

Geography Edinburgh	**Geography Highland**
BAR-GE-cost 17	BAR-GH-staffing issues 7
BAR-GE-not enough time (balance of the curriculum) 16	BAR-GH-not enough time (balance of the curriculum) 6
BAR-GE-staffing issues 14	BAR-GH-cost 5
BAR-GE-safety 14	BAR-GH-transport 3
BAR-GE-class sizes too big 7	BAR-GH-distance of travel 3
BAR-GE-amount of paperwork 7	BAR-GH-safety 3
BAR-GE-transport 5	BAR-GH-disruption to other classes 2
BAR-GE-other subjects complain 4	BAR-GH-insurance 2
BAR-GE-distance of travel 4	BAR-GH-need small numbers 2
BAR-GE-exam class commitments 4	BAR-GH-safety 1
BAR-GE-single member staff 3	BAR-GH-weather 1
BAR-GE-lack of staff enthusiasm 2	BAR-GH-school year 1
BAR-GE-lack of minbus drive license 2	BAR-GH-resistance from other departments 1
BAR-GE-weather 2	BAR-GH-pupil medical health 1
BAR-GE-not enough time to plan trips 2	BAR-GH-available location 1
BAR-GE-misbehaviour 2	BAR-GH-one off events are easier to attend 1
BAR-GE-can use video instead – much easier to manage 1	BAR-GH-amount of paperwork 1
BAR-GE-more work completed in class per unit time 1	n=40
BAR-GE-LA procedures 1	
BAR-GE-not enough equipment 1	
BAR-GE-scare stories in the press 1	
n=110	

Appendix 10 Responses to questionnaire (Question 3–5) – Outliers

Frequency of topics/subjects mentioned in the questionnaire.

The codes for "approaches", "attitudes", "motivations", "opportunities", "opportunities latent", "barriers" and "outliers" were used throughout all the responses to questions 3-5.

Question 3
Why do the classes go out for the topics listed in Question 2 and not for other topics?

Question 4
Are there some topics you would like to go outdoors for, and don't at present? Please list as many as you can think of.

Question 5
What factors influence your decisions to plan outdoor study? List as many as you can think of.

For an explanation of the approach taken to analysis of the responses to these questions and the derivation of the coding frame see Methods chapter.

The data display begins with a coded item and then a number of instances. At the end of each data set there are a total number of instances where n=number of instances.

The response with the highest number of instances is analysed first followed by the instance with the next highest and so on.

Primary Edinburgh	**Primary Highland**
There are no recorded data under this code.	There are no recorded data under this code.
n=0	n=0

Biology Edinburgh	**Biology Highland**
OUT-BE-pupil behaviour 3	OUT-BH-enthusiasm of other staff 1
n=3	OUT-BH-pupil behaviour 1
	n=2

Geography Edinburgh	**Geography Highland**
There are no recorded data under this code.	OUT-GH-pupil behaviour 1
n=0	OUT-GH-need prior knowledge of the area 1
	n=2

Appendix 11 Interview schedule

- Scottish Natural Heritage is aware of anecdotal evidence concerning teachers' attitudes to studying the natural heritage out of doors.
- They want to develop evidence about this, and also to look into the situation in a deeper way.
- So the questions I want to ask concern **your own personal perspective and experiences** concerning "taking students to study the natural heritage out of doors".
- By this I mean taking students "beyond the school grounds for a mostly outdoor experience, focused in part on studying nature" (eg not trips to the swimming pool, or for mostly indoor centre experiences, or for PE).

0 What is your role/post in the school?

1 Can you outline when *you* (/your teachers) take classes to "*study the natural heritage out-of-doors*"? [Repeat definition above if necessary]

- What does the learning involve in these situations (examples)?

2 Do you first choose to go outdoors, *then* decide on relevant natural heritage topics, or do you start with National Guidelines/syllabuses and *then* choose to go outdoors?

- Why?

3 **Assuming there was nothing stopping you**, would you like to take your classes to "study the natural heritage out-of-doors" more than at present?

- [If no]: Why not?
- [If yes]:
  - Why?
  - Would you prefer this to be *instead* of other outdoor activities, or as additional outdoor activity?
  - What else would you want to study about the natural heritage?

4 In what ways do you feel limited in taking students outdoors in general?

- [Use probes on barriers– below – for spontaneous answers]
- [Repeat Q4 until respondent 'searching' to come up with others]
- [It is not necessary to fill in the middle column, other than to keep track of barriers already explored, but it might be useful later on]

5 I'd like to ask about some barriers that you haven't already mentioned, but which featured in our survey.

- [Use probes on barriers (below) that are prompted]
- [Repeat Q5 until barriers below all covered]
- [It is not necessary to fill in the middle column, other than to keep track of barriers already explored, but it might be useful later on]

6 **Assuming all these barriers were removed**, what kinds of support would help you develop and deliver outdoor study of the natural heritage?

7 Have you paid much attention to curricular change or other educational agendas?

- [If yes]: do you think any of these will influence the issue of going outdoors at all?

8 Are there any other points relating to teaching in and about the natural heritage outdoors that you would like to make?

Child/Adult Ratios	Prmpt [ ] Spont.[ ] Order [ ]	• Is this a barrier that you feel influenced by? • What ratios do you employ when going outdoors? • Are there guidelines and where do these come from? [Care] • Are these ratios a problem? How do you overcome them? • If this isn't a barrier influences you, why not? • Is this barrier particularly relevant to "studying the natural heritage out-of-doors" rather than other school excursions? Why/Why not?
Cost	Prmpt [ ] Spont.[ ] Order [ ]	• Is this a barrier that you feel influenced by? • What costs? (Replacement teachers? Transport?) • Which of these is the most significant? • Who currently (or would have to) bear the cost: ❍ Pupils? ❍ School? ❍ Local Authority? • Personally, who do you think *should* pay these costs? • Have you tried to request funds from the school/elsewhere? • What justifications do you use for paying these costs? • If this isn't a barrier influences you, why not? • Is this barrier particularly relevant to "studying the natural heritage out-of-doors" rather than other school excursions? Why/Why not?

Disruption to Classes	Prmpt [ ] Spont.[ ] Order [ ]	• Is this a barrier that you feel influenced by? • What kind of disruption is caused to classes by outdoor study? • Who complains and what do they complain about? • Who would complain if you did more outdoor study, and how do you know? • Who resolves tensions of this kind? • If this isn't a barrier influences you, why not? • Is this barrier particularly relevant to "studying the natural heritage out-of-doors" rather than other school excursions? Why/Why not?
Qualftns/Training	Prmpt [ ] Spont.[ ] Order [ ]	• Is this a barrier that you feel influenced by? • Have you ever been concerned about your own training/qualifications? • Are you still concerned, or would you be? • What kind of qualification did you feel you needed, or would need? • If this isn't a barrier influences you, why not? • Is this barrier particularly relevant to "studying the natural heritage out-of-doors" rather than other school excursions? Why/Why not?
Safety	Prmpt [ ] Spont.[ ] Order [ ]	• How do you personally feel about safety outdoors? • Are there rules that you are expected to follow? Whose rules? • If this isn't a barrier influences you, why not? • Is this barrier particularly relevant to "studying the natural heritage out-of-doors" rather than other school excursions? Why/Why not?
Time	Prmpt [ ] Spont.[ ] Order [ ]	• Is this a barrier that you feel influenced by? • Is there structured time for teachers to go outdoors (examples) • Does this create other time pressures in the curriculum? • What paperwork needs to be done and who has to do it? • What justifications do you use for using this time to go outdoors? • If this isn't a barrier influences you, why not? • Is this barrier particularly relevant to "studying the natural heritage out-of-doors" rather than other school excursions? Why/Why not?
Transport	Prmpt [ ] Spont.[ ] Order [ ]	• Is this a barrier that you feel influenced by? • What kinds of transport do you use for outdoor study? • Who pays for the transport? • What is the furthest site you travel to – for what and why? • Are there places you could go locally rather than travelling? • Are there places you go locally anyway? • If this isn't a barrier influences you, why not? • Is this barrier particularly relevant to "studying the natural heritage out-of-doors" rather than other school excursions? Why/Why not?

Weather	Prmpt [ ] Spont.[ ] Order [ ]	• Is this a barrier that you feel influenced by? • Does the predictability of weather affect your decision making? • Do the seasons affect your outdoor study of the natural heritage? • Do specific types of weather cause you to change planned outdoor activity? In what ways? • If this isn't a barrier influences you, why not? • Is this barrier particularly relevant to "studying the natural heritage out-of-doors" rather than other school excursions? Why/Why not?
Other [ ]	Order [ ]	• Is this barrier particularly relevant to "studying the natural heritage out-of-doors" rather than other school excursions? Why/Why not?
Other [ ]	Order [ ]	• Is this barrier particularly relevant to "studying the natural heritage out-of-doors" rather than other school excursions? Why/Why not?
Other [ ]	Order [ ]	• Is this barrier particularly relevant to "studying the natural heritage out-of-doors" rather than other school excursions? Why/Why not?