



# **A Review of Research Literature Relating to Outdoor Education**

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## **Background to the study**

This is a working document in which the authors set out to address a range of issues associated with the national (UK) and international research evidence on the effectiveness of outdoor education programmes. In particular we attempt to address the following questions:

- who does it work for?
- what sort of things work?
- how long does it work for?
- does it work better for different ages?
- does it work better over longer time periods?

The study was based on published literature (original studies and meta-analyses) and both published and unpublished work from within the Outdoor Education Section of Edinburgh University.

## **Review of research literature relating to outdoor education**

The existence of empirical research in outdoor education is a relatively new phenomenon. In the 1980s Cheesmond (1981: 24) noted 'a paucity of research work generally in this field'. More recently Barret and Greenaway (1995: 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: 40) and 'impressionistic' (Neill and Richards, 1998: 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: 46).

It is interesting to note that 'adventure programming was *not* shown to be significantly more effective with adjudicated adolescents than it was with other adolescent populations; it was equally effective' (Cason and Gillis, 1994: 46). The authors 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: 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: 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: 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: 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: 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 this research has taken place in North America and Australasia.

In their own study Cason and Gillis (1994: 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: 74) made 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: 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: 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'.

Rickinson *et al* (2004: 25) 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 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'. These are:

- 1) achievement motivation,
- 2) active initiative,
- 3) emotional control,
- 4) intellectual flexibility,
- 5) self-confidence,
- 6) social competence,
- 7) task leadership and,
- 8) time management.

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, 2000). 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' (Christie, 2004: 216). In the recommendations for further study Christie (2004: 217) suggests that 'this study would have benefited from the inclusion of evidence from 'significant others' in their student lives ... for example family members or teachers... '.

A very recent study has been conducted by Her Majesty's Inspectors (HMI) on behalf of the Department for Education and Skills (OfSTED, 2004). This study is different from the main body of literature to do with outdoor education because it does not look at learning outcomes. Instead it focuses on:

- the quality of teaching,
- curriculum provision,
- 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).

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).

### **Concluding Comments**

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 be only 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 which are incorporated into the following grid.

	Aims	Assumptions	Content	Method	Evaluation	Claims
Self Esteem						
Self Awareness						
Interpersonal Relationships						

It is clear from this review that any evaluation of outdoor adventure education needs to take account of the diverse terms used to describe the sector (e.g. outdoor education, adventure education, development training, etc.) and the outcome terms (e.g. self-concept, locus of control, leadership, etc).

Claims are often expressed in terms of personal, and social education/development and Higgins and Nicol (2002a) have used the terms self-esteem, self-awareness and interpersonal relationships in the construction of this table. Self-esteem has been defined as the value which a person puts upon himself or herself (Nicol and Higgins, 2002a). There is a strong connection between self-esteem and self-awareness since they both relate to the personal. To distinguish between the two it is illustrative to consider for example someone who may enjoy breaking into and stealing cars. Success in this pursuit may well raise self-esteem but may lack self-awareness or consideration of impact on others. As Higgins and Nicol (2002a: 26) point out 'the important question therefore is not whether self-esteem is being raised but the values context in which actions attributed to self-esteem are considered. Where the hedonistic aspect of self-esteem is allowed to dominate without taking note of this context the situation arises where young people are not confronted with selfish desire, nor are they required to consider the consequences of their actions'. When defined in this way self-awareness is a higher order aim than self-esteem because if self-esteem were the sole indicator then the theft of cars would be seen as contributing to this aim.

Interpersonal relations are to do with the skills, attitudes and values that people need to interact effectively in groups which leads Higgins and Nicol (2002a) to conclude that interpersonal relationships are an extension of both self-esteem and self-awareness.

The value of this table and its accompanying definitions is that it provides researchers and practitioners with a clear basis to discuss, research, operationalise and practice the personal and social development aspects of outdoor education. For future evaluations it is important that researchers are clear about the terms they use and what they mean by the terms.

For further discussion of how this table is used in terms of aims, assumptions, content, method, evaluation and claims see Higgins and Nicol (2002a). This booklet was written

in specific response to the inadequacies pointed out in the recommendations of the meta-analyses discussed above.

There are a number of significant recent reports arising out of the UK government funded "Pilot Summer Activities Programme for 16 Year Olds" (Hutchinson, et. al., 2000; SQW, 2001 and 2004; Thom, 2002). These have not yet been included in this review.

## References

Barrett, J. and Greenaway, R. (1995). *Why adventure? The role of outdoor adventure in young people's personal and social development*. Coventry: Foundation for Outdoor Adventure.

Cason, D. and Gillis, H. L. (1994). A meta-analysis of outdoor adventure programming with adolescents. *Journal of Experiential Education*, 17 (1): 40-47.

Clay, G. (1999). Outdoor and adventurous activities: An OFSTED Survey. *Horizons*, 5: 17-18.

Department of Education and Science (1983). *Learning out of doors: An HMI survey of outdoor education and short stay residential experience*. Department of Education and Science.

Guardian Newspaper 28 September 2004.

Hattie, J., Marsh, H. W., Neill, J. and Edwards, G. E. (1997). Adventure education and outward bound: out-of-class experiences that make a lasting difference. *Review of Educational Research*, 67 (1): 43-87.

Higgins, P and Nicol, R. (2002a). *Learning as adventure: theory for practice. The summer activities for 16 year-olds*. DfES and Connexions Service.

Higgins, P. and Nicol, R. (eds) (2002b). *Outdoor education: authentic learning through landscapes volume 2*. An international collaboration project supported by the European Union Comenius Action 2. European In-Service Training Courses.

Hutchinson, J., Henderson, D. and Francis, S. (2000). *Evaluation of pilot summer activities for 16 year olds*. (DfEE Research Report RR260). London: DfEE.

Learning and Teaching Scotland (2000). *Curriculum Design for the Secondary Stages: Guidelines for Schools*. Glasgow: Scottish Consultative Council on the Curriculum.

Neill, J. (2002) *Life effectiveness questionnaire*. Retrieved 10<sup>th</sup> September 2002 from <http://www.unh.edu/outdoor-education/leq.html>

Neill, J. and Richards, G. (1998). Does outdoor education really work? A summary of recent meta-analyses. *Australian Journal of Outdoor Education*, 3 (1): 2-9.

Nicol, R. (2001). *Outdoor education for sustainable living?: an investigation into the potential of Scottish local authority residential outdoor education centres to deliver programmes relating to sustainable living*. Unpublished PhD thesis. University of Edinburgh.

Nichols, G. (1994). Major issues in the evaluation of the impact of outdoor based experiences. *Journal of Adventure Education and Outdoor Leadership*, 11 (1): 11-14.

Office for standards in education (2004). *Outdoor education: Aspects of good practice (HMI 2151)*. London: Ofsted. Available at:  
[<http://www.ofsted.gov.uk/publications/index.cfm?fuseaction=pubs.summary&id=3719>]

Rickinson, M., Dillon, J., Teamey, K., Morris, M., Choi, M., Sanders, D. and Benefield, P. (2004). *A review of research on outdoor learning*. London: National Foundation for Educational Research.

SQW (2001). *Evaluation of pilot summer activities for 16 year olds. A final report to DfES*. London: DfES.

SQW (2004). *Evaluation of the activities for young people programme in England. Second year interim report*. London: DfES.

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