Designing for Children
- With focus on 'Play + Learn'

An Analysis of Children's Outdoor Activities and their Relationship to Play and Learning for Sustainability

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Abstract: This paper describes a small experiment conducted in collaboration with Scottish Outdoor Education Centres (SOEC) at one of their Centres to clarify the predisposition of children using the Centre for Outdoor or Indoor play environments. The experiment involved two different schools, A and B, using the Centre at the same time (June 2009). A total of 54 children, aged 11-12 years, were surveyed at the beginning and end of a 5 day residential course. The method of Discrete Choice Experiments (DCE) was used to establish the children's choice of Outdoor or Indoor environments. The method is described and the data analysed for individual schools and also aggregated. The following preliminary conclusions are drawn. Children already have a predisposition for outdoor play and this is enhanced slightly over a 5 day residential course. However, it would seem that the effect does not persist on return to their normal school environment. The paper concludes with a brief discussion for extending this work.

Key words: Play, Learning, Sustainability, Design, Nature, Outdoor Activities.

1. Introduction

Play embraces the educational, recreational and communicational rights of a child (Sobel, 2004, James *et al.* 1998, Nabhan and Trimble, 1994). Indeed, it has long been recognized as an important aspect of a child's learning and development (Wood *et al.* 2009). There is little doubt, however, that the objects and daily patterns of children's play are changing, often to the detriment of outdoor activities. While, to some extent, the indoor virtual world of computer gaming can help children in memory training, learning and problem-solving activities (Gee, 2007), Louv (2005) argues that children are becoming alienated from nature, referring to this as 'nature-deficit disorder.' Nabham and Trimble (1994) have suggested that this change in play patterns is possibly due to changing environments, drawing attention to the 'inner-city children [who] will never gain adequate access to

unpeopled places'. Even in rural locations children's play is moving inside in favour of these 'plugged-in' environments (Louv, 2005). This, however, may not always be the choice of the child. For instance, it has been suggested that an increase in media coverage which reports on child crime, directly relates to increased anxiety in parents (Palmer, 2006). Clearly, many parents are now 'hyper-parenting' (Honoré, 2008) and children are embracing their parent's fears. Worryingly, this occurs at a time when children need more understanding, more appreciation and more freedom in the natural world if they are to contribute to a future sustainable society.

In 2004, the Scottish Executive instigated an initiative in education aimed at developing children's capacities as successful learners, confident individuals, responsible citizens and effective contributors to society. A later review by the UK Ministry of Education (2004) confirmed that outdoor education can play an important role in satisfying this development of children's early learning, whilst also contributing significantly to children's involvement in the natural world.

2. Residential Outdoor Education

Residential Outdoor Education is one of several learning methods that involve both speed of learning (pace) and place of learning. Figure 1 suggests an arrangement for elucidating the association and positioning of outdoor education in relation to these two dimensions of learning experiences.
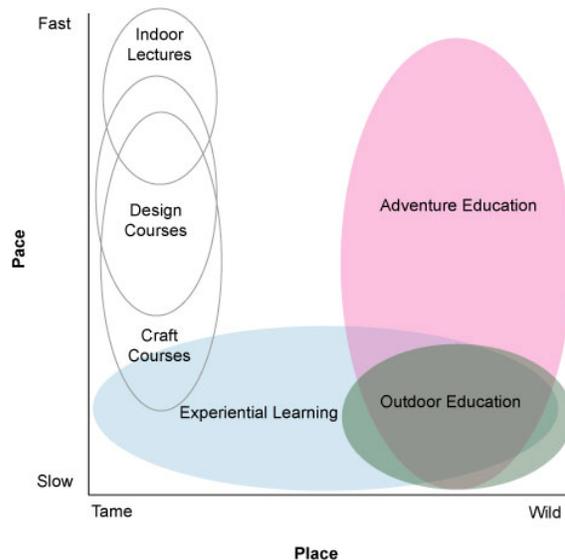

Figure.1 The association and positioning of outdoor education

Outdoor Learning is the oldest and most basic form of learning (Peterson, 1988). It is made up of several domains of learning which interface and overlap. The most important of these are 'experiential learning' and 'adventure education'.

Indeed, when compared with education conducted indoors, almost all of outdoor education is experiential. Furthermore, much of outdoor education is adventure education whereas very little indoor education is of the adventure type.

Experiential Learning depends upon an individual's immersion and analysis of their experience and their understanding of what they have encountered and learned (Merriam et al. 2007). This style of learning is a natural process and so needs little instruction or guidance. When experiential learning is taught, however, it becomes experiential education (Hattie et al. 1977).   So, outdoor education is usually experiential education.

Adventure Education increases our self-knowledge and resourcefulness (Hopkins and Putnam, 1993). This experience of 'adventure' is an intrinsic and unique part of our learning and development as individuals and societies. This experience of adventure exists in some forms of Outdoor Education through encountering the unknown.

Although the ultimate aim of these research projects is to understand how children play and learn about nature whilst experiencing it, and then to be able to design new activities which would enhance the learning experiences, this small experiment set out to find a baseline with respect to children attending SOEC residential courses. Its aim was to identify the importance of indoor or outdoor environments to children's preferred play activities.

3. Research Protocol

This exploratory research study was conducted at one of the four residential centres currently operated by SOEC – the largest provider of residential outdoor education in Scotland (see www.soec.org.uk). The method of Discrete Choice Experiments (DCE) was used to establish a child's preference for playing in indoor or outdoor environments. In addition, structured interviews and focus groups were conducted with children, SOEC staff and school teachers in order to provide a wider context to the information gathered from the children and to provide an adult perspective on these experiences. This paper only discusses the results from the Discrete Choice Experiments (DCE).

The research sample consisted of two groups of children, attending the Centre from two different schools. School A consisted of 25 pupils aged between 11 and 12 years (nine females and fifteen males). School B consisted of 29 pupils aged between 11 and 12 years (sixteen females and eleven males). This research was conducted during a week long stay in mid June 2009. The weather during this week was very wet. The experiments were

conducted at the beginning and the end of the children's 5 day residential stay at SOEC. The interview with each child lasted about 15 minutes. The first set of interviews was conducted for both schools on day 1 (Monday). The second interview for School B was conducted on day 4 (Thursday). For School A, however, the scheduling of the SOEC programmes and activities meant that the second interview was conducted at their school the following Monday (Day 8).

3.1 Research Method

DCE, more commonly known as Conjoint Analysis, has been used as a marketing research tool since the early 1970s (Quick MBA, 2009). This quantitative method is widely used to measure the values placed by consumers on specific product characteristics and primarily involves asking respondents to 'consider and select preferences for multiple solutions attributes at once' (Gantry Group, 2007). Through this, how people make choices between products, experiences and services can begin to be understood. To carry out the method of DCE successfully, it is important to firstly establish:

(1) The Alternatives - the preferences between which the respondent must choose.

(2) The Attributes - the definition of the differences between the *alternatives* (e.g. where, what, who).

(3) The Levels - the variables of the *Attributes* (e.g. 'where': woodlands, beach, garden, town and so on).

In this experiment, and shown in Figure.2, the Alternatives are shown in the columns and the Attributes/Levels are referred to in the rows. They were always chosen to depict where, what and who.
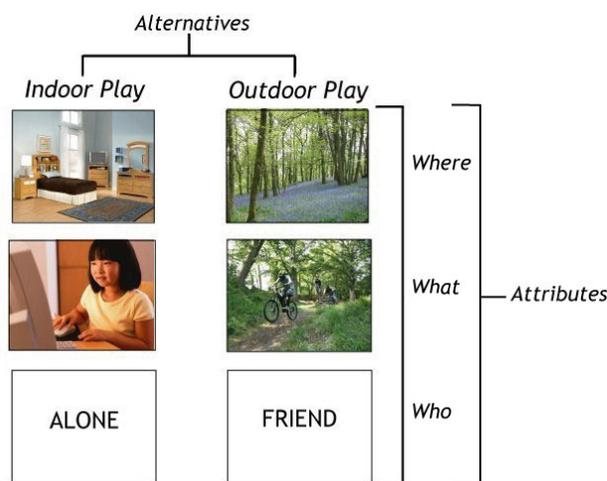

Figure.2 Sample of DCE Card Layout as presented to children

In the context of this study, DCE was used to identify children's preferences for indoor and outdoor play after a stay in residential outdoor education. During the first interview each child was presented with two rows of cards (see Figure.2).

In both Alternatives, the 'who' attribute always contained; mum, dad, sibling, friend, alone, family-friend or family-member. In all cases, column 1 always illustrated Indoor Play and column 2 illustrated Outdoor Play. The child was asked to choose which column represented the preferred play situation (The Alternatives). The choice made by each child was noted. This was repeated 8 times for each child. At no point were two children shown the same card combinations. After the interview, each card in the chosen column was given a point value of one. For example, if alternative Outdoor Play was chosen, then in Figure.2 '*woodlands*', '*biking*' and '*friend*' would all accrue 1 point each.

This process was repeated during the second interview. Each child was shown the same cards in the same sequence as in the first interview.

The data was then entered into an electronic spreadsheet for subsequent analyses.

4. Results and Discussions

These results are in the early stages of analyses and our suggestions are based on this. The significance of these results will not be ascertained until we have completed a full statistical analysis of the data. The results from School A and B were first reviewed collectively and then examined at the individual school level.

4.1 Schools Combined Results

The preliminary analysis suggests that, when the children from both participating schools are aggregated, their choices during the first interview suggest a preference for Outdoor Play, 33% greater than that for Indoor Play. After a short stay (5 days) in residential outdoor education this preference is increased further.

Indeed, an analysis of the collective points allocated for Outdoor Play by the schools after the second interview, highlight that while some attributes/levels show a decrease (e.g. street and park) the overall combined points suggest there is a further 8.6% increase in the choice of Outdoor Play (see Figure 3).

Analysis of the collective points allocated for Indoor Play after the second interview, however, suggest that while a number of the attributes/levels show an increase (e.g. bedroom, TV and so on) the overall combined points suggest an 11.5% decrease in the choice of Indoor Play (see Figure 4).
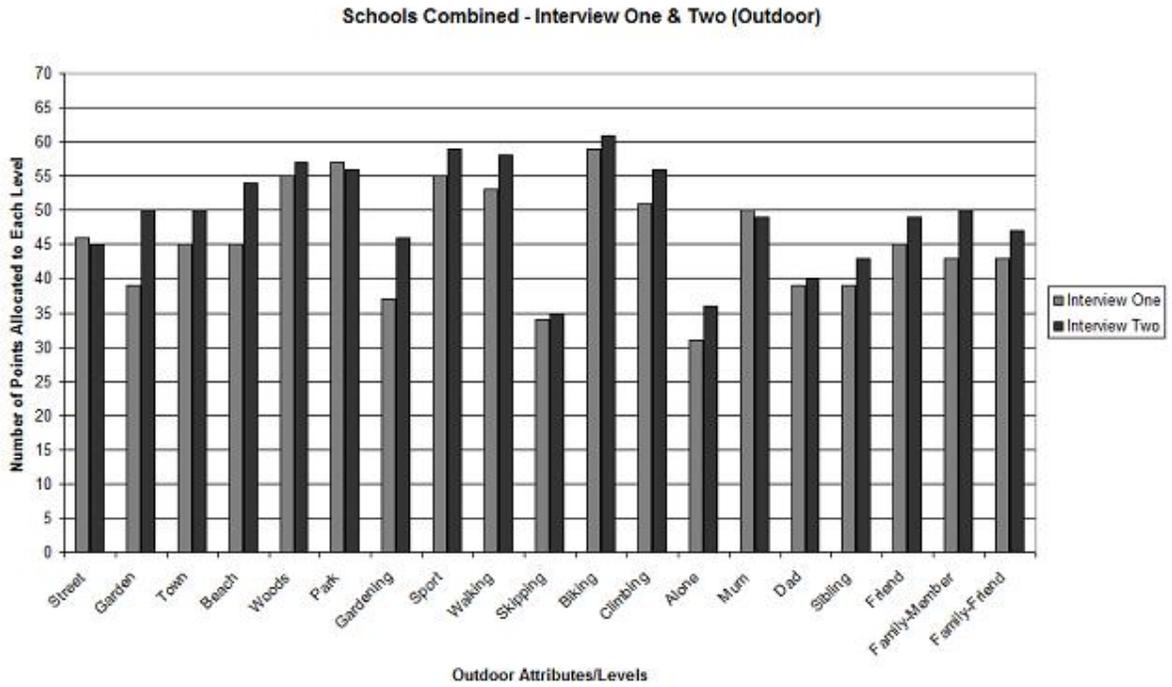
Schools Combined - Interview One & Two (Outdoor)

Figure.3 Schools Combined - Outdoor Results (n=54)

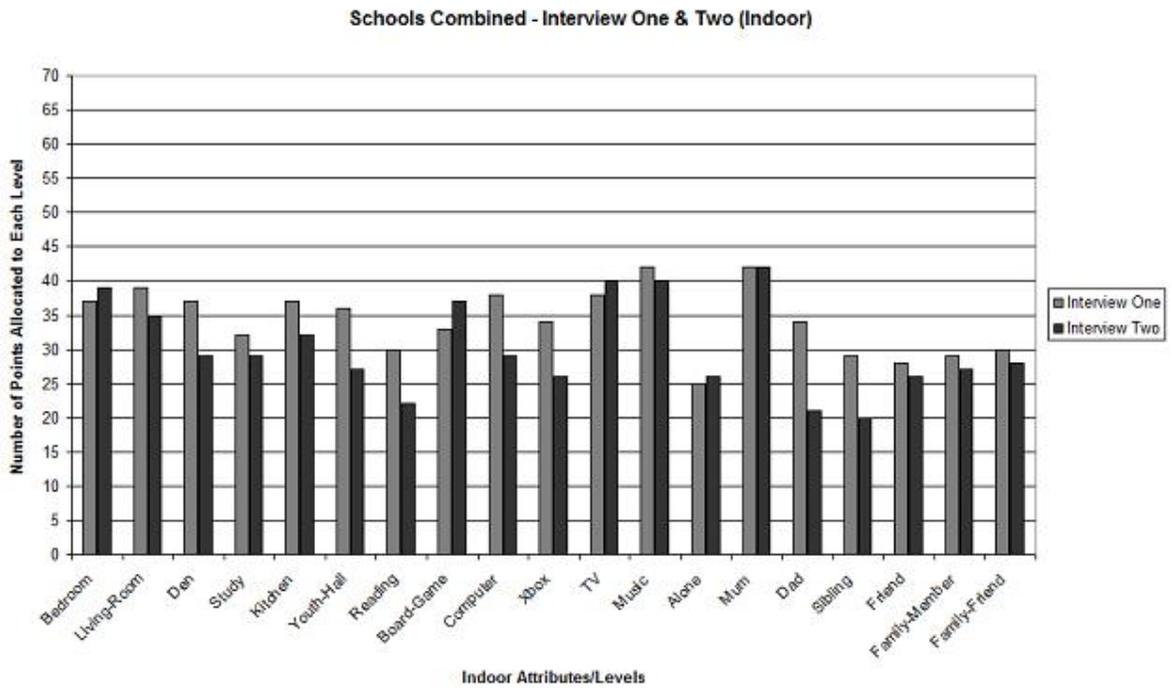**Schools Combined - Interview One & Two (Indoor)**

Figure.4 Schools Combined - Indoor Results (n=54)

4.2 Individual School Results

School A

Analysis of the results from School A, suggest that they arrived at SOEC with a preference for Outdoor Play already 14.5% greater than that of Indoor Play. After a short stay in residential outdoor education this preference is increased further.

Indeed, an analysis of the points allocated for Outdoor Play by School A after the second interview indicates that while some levels show a decrease (e.g. woods, park and so on) the overall points show a small 2.2% increase in preference for Outdoor Play (see Figure.5).

Analysis of the points allocated for Indoor Play after the second interview, show that while some of the levels show an increase (e.g. board-game and TV) the overall combined points show a small 3.4% decrease in preference for Indoor Play (see Figure.6).

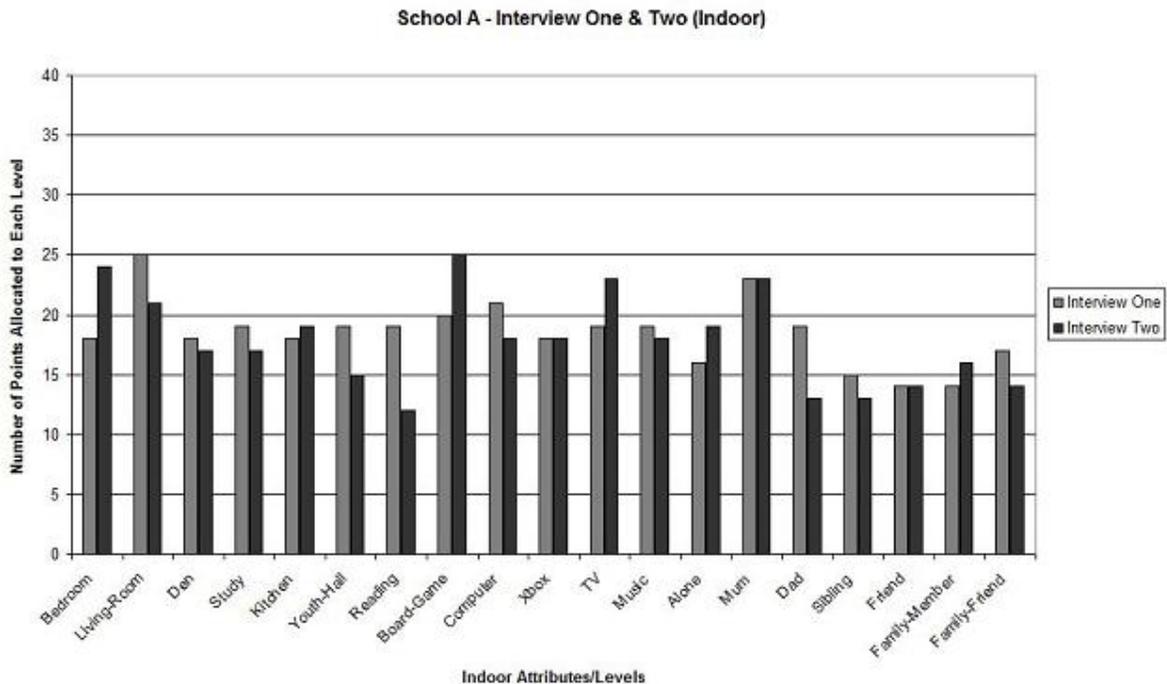Figure.5 School A - Outdoor Results (n=25)

Figure.6 School A - Indoor Results (n=25)

School B

When the results from School B are analysed, they suggest that the children arrived at SOEC with a preference for Outdoor Play already 55% higher than that for Indoor Play. After a short stay in residential outdoor education this preference is increased further.

Indeed, an analysis of the points allocated for Outdoor Play by School B after the second interview, indicates that while 'street' shows a decrease, the overall points show a 14.2% increase in preference for Outdoor Play (see Figure.7).

Analysis of the points allocated for Indoor Play by School B after the second interview, suggest that while family-friend shows an increase and some of the levels remain the same (e.g. living-room and mum) the overall combined points suggest a 21% decrease in preference for Indoor Play (see Figure.8).
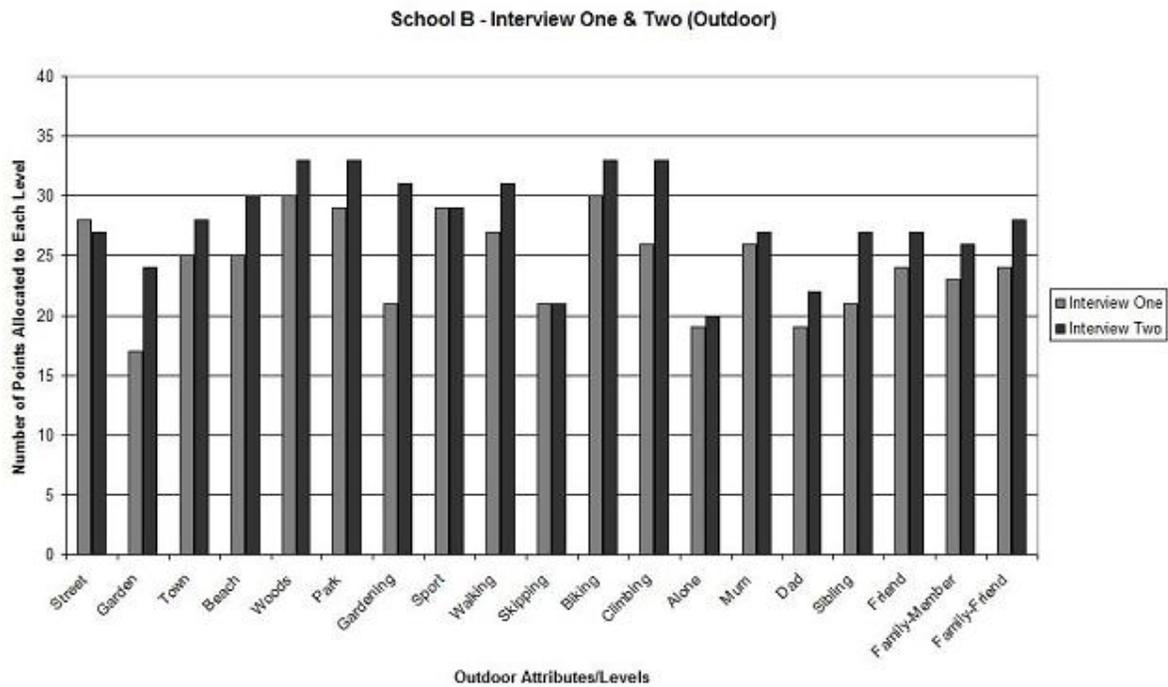

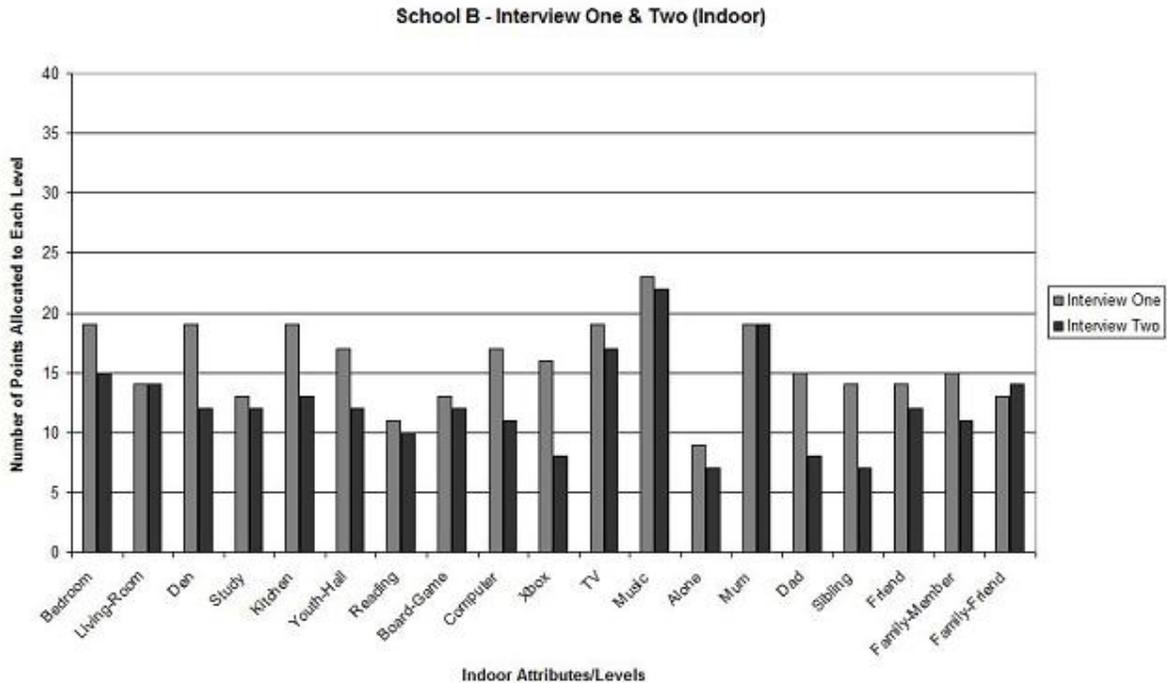Figure.7 School B - Outdoor Results (n=29)

Figure.8 School B - Indoor Results (n=29)

4.3 Discussion

The data suggests that, at the beginning of the experiment (first interview) School B showed a greater difference between their choices of outdoor play than indoor play (55%) than School A (14.5%).

School A also chose indoor play more often than School B in both sets of interviews. Furthermore, although both schools increased their preference for indoor play (A=2.2%; B=14.2%) after a 5 day residential course, the increase for School A was much less than for School B.

It would seem that the School B with the greatest preference for the outdoors at the beginning of the experiment went on to take further advantage of the facilities for outdoor learning during the residential course, thereby further reinforcing its preference for outdoor play.

However, there is a possible confounding methodological effect. School A, for a variety of reasons, had its second interview 3 days after leaving SOEC when it had returned to its normal school environment. It is therefore possible that by the second interview the excitement of the residency and its possible lasting effect may have declined. School B, might have shown a similar decline had its participants been similarly interviewed.

5. Recommendations

When compared to the general view expressed in the literature, it was a pleasant surprise to find that so many children in this experiment had a reasonable predisposition to outdoor play. It is, however, disappointing that after a short active stay in residential outdoor education, there appears to be no important increase in their choice of outdoor environments. Furthermore, in the case of School A, it would appear that this change in preference is short-lived. That is, once a child returns to their familiar environment, even after three days, they appear to revert to their original position. It is possible that although children may have developed increased familiarity and comfort with Outdoor Play whilst at SOEC they may not have developed the confidence or skills to facilitate their own play and learning in the outdoors once they return home. On the other hand, it is also possible that SOEC programs could be redesigned to encourage a greater enthusiasm and commitment to outdoor learning and that this could have a stronger lasting effect. This could be achieved through the development of an SOEC program which actively encourages the children to create and facilitate their own outdoor play wherever they are located. This would enhance continuous self-learning and involvement in a natural environment. Finally, this might help to promote the necessary skills to develop children as better citizens in a future sustainable society (Minister of Education, 2004) whilst also achieving many of the aims sought by The Curriculum for Excellence; confidence, self-directed learning and involvement in the natural environment. This small experiment, though helping us to understand the predisposition of a sample of children to outdoor/indoor environments for play, it tells us very little about how they play and what they learn, especially in the context of nature. An earlier paper, (Wood, Bruce, Baxter, 2009) commented on play at SOEC and future studies will look more closely at what is learned in the natural environment.

6. Future Research

This study has achieved three things. First, it has shown that a large proportion of children in this sample were already very interested in the outdoors when they arrived at SOEC. However, this interest in the outdoors did not appear to be enhanced greatly after a short stay in residential outdoor education. In the cases where it is, the benefits appear to be short lived.

Second, it has allowed a number of tentative recommendations to be made on how, in collaboration with SOEC, new activities and programs could be developed to help children facilitate and increase their own learning in the natural environment.

So, we believe more needs to be done to develop these children's preference for the outdoors and the design of new programs and activities may help to do so, especially with the participation of children.

Finally, while it has been shown that DCE can be a useful method in ascertaining simple choices by children, in the context of this study, it has limitations. Bearing in mind that this study is interested in designing new outdoor education programs and activities, then a technique that offers design data as an output would be more suitable. For this purpose, "Personal Construct Theory" (PCP) a method developed by Kelly (1955) and later refined by Aspinall and Ujam (1992) and Ward Thompson (1995) will be considered in future research with participating children at SOEC. PCP has been used for its design outputs in architectural design since the early 1970s. Since its introduction to this field of design, PCP has been applied, on occasion, with children acting as active participants in the design process (Aspinall and Ujam, 1992 and Ward Thompson, 1995). This suggests that PCP might create suitable data for analysis from a further research sample, whilst also assisting in the re-design of improved outdoor activities for SOEC. To support this, drawing sessions will be held with participating children, which will then be analysed with Eco-Analysis (Peled, 1990). This method exposes a child's underlying emotional responses to the features placed in their drawings (Ward Thompson, 1995). Again this will be supported by interviews with children, teachers and SOEC instructors.

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