

2009年度 第2回公開講演会

Outdoor Education - Authentic Learning in the Context of Urban and Rural Landscape - A Way of Connecting Environmental Education and Health to Sustainable Learning - Literary Education and Sensory Experience. Perspective of the Where, What ,Why and When of Learning.

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This paper describes the process of acquiring knowledge in outdoor environments. “Hands-on” and “minds-on” activities are related to the concept of Outdoor Education, the epistemology of which will be discussed in a pragmatic-hermeneutic perspective. The didactic issues will, thus, be interpreted in terms of human expressions, i.e., traces of human activity in the cultured landscape, as well as in terms of nature itself, i. e., phenomena independent of human beings, or traces of natural forces. This is a way to expose human understanding in meaningful situations, outside the written culture, with direct access to the phenomena. The epistemological and methodological views of Outdoor Education will be scrutinized and linked to an ideological/historical perspective, in which man’s relation to the physical environment is described.

Theoretical background

With a pedagogy based on *sensory experience*, learning would probably have a deeper approach. Direct physical contact with natural and cultural phenomena increases the authenticity in learning by providing a link to an approach that should reasonably be innate in human beings. We learn not only by seeing and hearing but also by smelling, feeling, tasting and touching; “to grip to grasp”, to use a metaphor for the distinctive character of outdoor education. We argue that in the authentic encounter with the outdoor environment there exists an important source of motivation for meaningful and creative learning processes (Dahlgren & Szczepanski, 1997, Szczepanski, 2008). The research group at the Centre for Environmental and Outdoor Education, Linköping University, has proposed the following definition in an attempt to describe the field of placed based outdoor education:

- * Outdoor education is an approach that aims to provide learning in interplay between experience and reflection based on concrete experience in authentic situations.
- * Outdoor learning is also an interdisciplinary research and education field, which involves, among other things:
 - * the learning space being moved out into life in society, the natural and cultural environment,
 - * the interplay between sensory experience and book-learning being emphasised,
 - * the importance of place being underlined.

(National Center for Environmental and Outdoor Education, 2004)

A characteristic of the distinctive nature of outdoor education is action-oriented learning, which emphasises *development of knowl-*

edge through activity. Further, the natural environment is regarded as both the *place* and the *object* of learning. We also see outdoor education as a *way* of learning. Learning in the cultural and natural environment is more than an opportunity for fresh air and exercise. Linguistic concepts are incorporated through firsthand experience and direct physical contact with the phenomenon out of doors. Outdoor education enables interaction between emotions, actions and thoughts to take place. In the institutionalised school, the classroom often limits this interaction. These assumptions are the main reason for including measurements of moods via the Mood Scale. Human mental function is usually divided into three basal categories: thinking, will and emotion (Parkinson, 1996). The term mood falls primarily into the category emotion, but influences and is influenced by thought together with the fact that mood can have a direct influence on motivation and will (Parkinson, 1996). It is reasonable to assume that changes in mood play an important role in the interplay in the learning environment and the propensity to complete an educational task.

Outdoor education has the prerequisites to become an integrative, complementary education form in a pragmatic and progressive pedagogy tradition by offering students and teachers opportunities to learn based on observations and experiences in authentic situations.

We should create the necessary conditions for learning in interaction between text (book-based learning) and non text-based practices (sensory experience) where physical activity and movement can support

learning. The identity of outdoor education can be found in both *edited*, arranged environments such as botanical gardens, zoos and natural and cultural history museums prepared for educational activities and purposes.

It can also be found in *unedited* environments such as our cities, cultivated, forested and water landscapes. Outdoor education is a theoretical perspective, one of the few – if not the only – example of how a pedagogy is defined with one expression, which specifies learning's location: its *where*. Outdoor education's *didactic identity* is determined by the fact that the physical natural and cultural environment furnishes the content of learning, i.e. the identity of the phenomenon outdoor education is characterised by actual physical presence also by its holistic nature. Outdoor education is, however, not automatically more holistic than traditional classroom teaching. In the hands of an unaware educator, reality itself can be exposed to fragmentation. The experience, in every sense of the word, is often specific and situated (Dahlgren & Szczepanski, 1997):

Reflection is required to be able to transform experience into knowledge.

We argue that the distinctive nature and identity of outdoor education has a potential, as if it is realised through educational awareness, that can benefit meaningful learning (Ibid, p. 40)

With outdoor education, a more movement-intensive form of learning is created in preschool and school, which is currently supported by several scientific studies focusing on our relations to the physical environment (e.g. Grahn et al., 1997).

Through the way we have built society, we

have eliminated people's natural need of movement and this is probably one of several reasons for the high ill-health figures in society. It is reasonable to assume that the desire to learn is dependent on the feeling of health and wellbeing. The curriculum supplements in these areas are a consequence of a growing number of reports pointing to changes in both health risks and life style. Children do not get enough exercise and gain weight. Since all pupils spend a large part of the day in school, the school's ways of arranging learning play an important role in the development of their health and ability to learn (The Swedish National Agency for School Improvement, Curriculum Supplement, 2003).

In view of the conditions in modern society, it is important that spaces for outdoor education are created in our urban environments. Biological and ecological diversity should be increased in parks, green refuges and schoolyards together with opportunities for greater contact with this diversity (Björklid, 2005, Dahlgren, & Szczepanski, 1997/2007, Lindholm, 1995, Szczepanski, 2008, Åkerblom, 2004). Today, the densification of our living environments often eliminates the green areas around the cities, which are replaced by shopping centres, residential accommodation, roads and multi-storey car parks. This trend does not promote the health factors in the relationship between humans and the physical environment. Today's society also creates school environments in preschool and school, which far too often lack green areas for playing and learning (Danielsson et al., 2001, Mårtensson, 2004, Sandberg, 2002).

When the protective fences increase, the individual is also separated from the surrounding world and access to more movement-intensive learning environments. Today, the principal movement arena for children and young people often consists of a triangle comprising the home, the shopping centre and school.

From a health promotion perspective, we must thus begin to think about how the whole education system can help to break this "triangular life form" and create other communicative environments for learning.

Defining Outdoor Education

Outdoor education is a cultural construct. This means that it can be thought about and applied in different ways throughout Europe's countries. Therefore in a European context we need to be careful that we do not define the concept so narrowly that we fail to recognise the cultural diversity that exists. With this in mind the following attempt at definition remains tentative and subject to national interpretation.

The European Institute for Outdoor Adventure Education and Experiential Learning define outdoor education as comprising outdoor activities, personal and social development and environmental education.

Outdoor education can also be thought of as both a process and a subject.

Process

As a process it is rooted in experiential approaches to education and draws on a range of European philosophers including Jan

Amos Comenius (Czech), Patrick Geddes (Scotland), Maria Montessori (Italy), Jean-Jacques Rousseau (Switzerland) Friedrich Froebel (Germany) Rudolph Steiner (Austria) Johann Pestalozzi (Switzerland) Ellen Kay (Sweden), Kurt Hahn (Germany). Although not of European descent it is worth noting the influence of John Dewy (USA) and Paulo Freire (Brazil). This list is far from inclusive and further work needs to be done to discover more of the European roots of experiential education. We invite our European colleagues to add to this list.

Subject

For outdoor education this process involves direct experience of the subjects that are taught. These subjects can be grouped within a three-circle model developed by Higgins and Loynes (1997) involving the 3 subject areas mentioned above (figure 1).



Figure 1. The conceptual model for outdoor education can be demonstrated by Higgins and Loynes(1997).

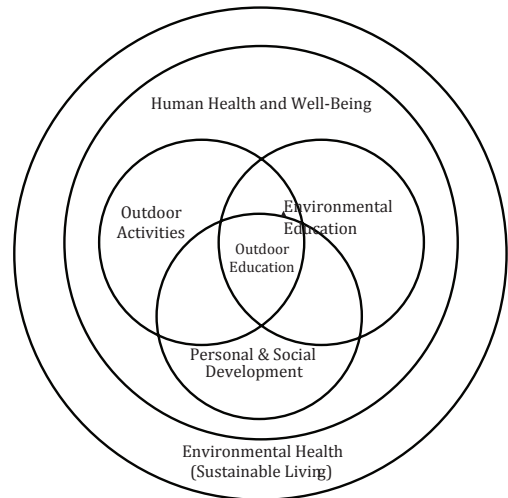


Figure 2. This model can be further developed to include human health and well-being and environmental health (sustainable living).

When viewed like this outdoor education can be seen to comprise the following 5 subject areas (Szczepanski 2008, s. 56)

This figure points out five perspectives that are important in the learning process and way of learning)

Environmental education

The subjects within this heading can be themed under the study of landscape often by scientific methods. These are commonly understood as curricular subjects including biology, chemistry, geography and geology. But also history and culture.

Outdoor activities

This subject area is based on physical education approaches involving skill acquisition relating to activities such as canoeing, kayaking, climbing, skiing, sailing and biking. One of the major processes involved here is the development of kinaesthetic awareness.

The use of games also fits into this category (as well as personal and social development below)

Personal and social development

Personal development uses outdoor activities as a way of promoting qualities such as self-esteem and self-awareness relating to people's personal lives. This is achieved when people feel good about themselves particularly when they succeed in learning new things (e.g. a new activity) or overcoming physical (e.g. getting to the top of a hill) and psychological barriers (e.g. doing something you thought you could not do such as overcoming fear of doing an outdoor activity). Social development is about interpersonal skills and is concerned with nurturing the processes involving group working. This is achieved by setting groups tasks that require individuals to co-operate and work together. Activities used for personal and social development are often used as the basis for reviews to establish what can be learnt from the experiences.

Human health

There is greater recognition today amongst politicians, medical science and policy makers that human health can be greatly improved through regular exercise and attention to dietary needs. Research indicates that walking and cycling are amongst the easiest activities to promote a healthy lifestyle and throughout Europe there is gathering political momentum to urge people to go outdoors to walk and cycle regularly. This is not about elite performance for young people only. It is about every person regardless of age or ability taking regular exercise to im-

prove their cardiovascular abilities. There is further research to indicate that exercising out-of-doors is also good for psychological well-being. Because of its orientation towards active physical activities outdoor education is well placed to take a major role in health education.

Sustainability (environmental health)

The 4 proceeding subject areas take place within a world where resources are exploited for human use. The concept of sustainability requires of people to consider the well-being of the world's population in relation to its limited resources. Outdoor education has a unique role to play in this because it is the direct experience of our surrounding environment that allows us to see that we are connected to it. If we see we are connected to it then we are more likely to see that if we cause irreparable harm (e.g. the climate, biodiversity, pollution) then it has consequences for our own health and well-being. This is a developing area of outdoor education and promises to be a fruitful one. By combining all five it is possible that outdoor education can use practical activities and direct experience (emotional and cognitive) of the environment to discuss and act on issues relating to sustainable living.

Formal and Informal Approaches

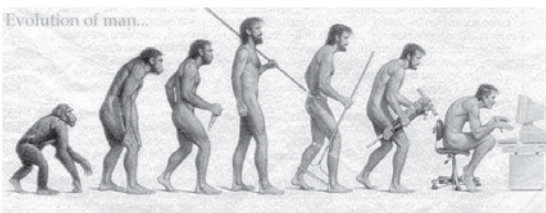
All of the above can be delivered as part of both formal and informal curricula. For the formal sector this means pre-schools, schools and universities. This also means that any curricular subject can be taught in the outdoors including mathematics (e.g. using equations to measure the height of trees) language (e.g. learning about landscape

through topolinguistics and place names)

For the informal sector this means industry, recreational courses, recreational clubs, non-governmental organisations, tourism activities, private facilities such as outdoor centres, ecological centres, field centres and after school clubs, home and work activities.

When we look at outdoor education in this way we can see that it is a way of learning (offering alternatives to indoor education) an object of learning (where the landscape and its people become the curriculum) a place of learning (offering unique opportunities when moving from place to place because of the differing landforms and habitats) and a process of learning (drawing on experiential approaches to learning).

Outdoor education also emphasize the importance of Place based learning (see also David Sobel 2005, David Hutchison, 2004). The Biophilia hypothesis with the stone age mans need fore movement toward a sedentary society with increased risk factors in brittleness of the bones (osteoporosis), obesity and stress illustated in following (figure 3) below:



(<http://boardsus.playstation.com/playstation/board/message?board.id=offtopic&message.id=1708215#1708215>)

Interaction with the local environment.

Almost 150 years ago, nineteenth century

psychologist Herbert Spencer published his book, *Principals of Psychology*, in which he espoused the “surplus energy theory,” explaining that the main reason for children’s play is to get rid of surplus energy. Although his theory has been rejected by researchers and developmental theorists, it has had a lasting and unfortunate influence on the design of children’s outdoor school environments (Malone 2003). As a result of Spencer’s theory, schoolyards are seen as areas for physical play during recess and for sport, where children ‘burn off steam’, and not for the other domains of development or for learning. In schools, playgrounds typically have manufactured climbing equipment and sports fields, and other than manicured grass, are void of nature and vegetation. The schoolyards for multitudes of children are not green, but gray (Moore & Wong 1997), many analogous to a parking lot (Worth 2003). It wasn’t until recent history that most people lived in cities. But even until very recent history, children still grew up with intimate contact with nature. For most of history, when children were free to play, their first choice was often to flee to the nearest wild place - whether it was big tree or brushy area in the yard or a watercourse or woodland nearby (Pyle 2002). Two hundred years ago, most children spent their days surrounded by fields, farms or in the wild nature at its edges. By the late twentieth century, many children’s environments had become urbanized (Chawla 1994). But even then, as recently as 1970, children had access to nature and the world at large. They spent the bulk of their recreation time outdoors, using the sidewalks, streets, playgrounds, parks, greenways, vacant lots and

other spaces “left over” during the urbanization process or the fields, forests, streams and yards of suburbia (Moore 2004, White & Stoecklin 1998). Children had the freedom to play, explore and interact with the natural world with little or no restriction or supervision. Children today have few opportunities for free play and regular contact with the natural world. Their physical boundaries have shrunk (Francis 1991, Kyttä 2004). One researcher has gone so far as to refer to this sudden shift in children’s lives and their loss of free play in the outdoors as a ‘childhood of imprisonment’ (Francis 1991). Childhood and regular play in the natural world is no longer synonymous. Pyle (1993) calls this the ‘extinction of experience’, which breeds apathy towards environmental concerns. Kellert (2002) says society today has become “so estranged from its natural origins, it has failed to recognize our species’ basic dependence on nature as a condition of growth and development.” Not only have children’s play environments dramatically changed in the last few decades, but also the time they have to play has decreased. Between 1981 and 1997, the amount of time children ages 6 to 8 in the U.S. played decreased 25%, by almost four hours per week, from 15 hours a week to 11 hours and 10 minutes. During the same period, the time they spent in school increased by almost 5 hours (Hofferth & Sandberg 2000). Today, with children’s lives disconnected from the natural world, their experiences are predominately mediated in media, written language and visual images (Chawla 1994). The virtual is replacing the real (Pyle 2002). TV, nature documentaries, National Geographic and other nature channels and environmental fund-

raising appeals are conditioning children to think that nature is exotic, awe-inspiring and in far, far away, places they will never experience (Chipeniuk 1995). Children are losing the understanding that nature exists in their own backyards and neighborhoods, which further disconnects them from knowledge and appreciation of the natural world.

Earlier research on the distinctive nature of outdoor education

Knowledge as activity

Umeå (Hartig, T. et al., 2003) have shown in a study how eye movements are linked to hand movements. When this link has been established, imagining the movement is sufficient to reinforce what has been learnt. The nerve circuits connecting the movements and the thoughts that go with them are thereby activated and become automated in the body (TIG 8/2003).

Both Dewey and G.H. Mead argue that learning must be seen as part of a social act and as processes in an intersubjective web. For Dewey, learning was a continuous construction of experience where the learning process’s creative elements could be the unforeseen encounter with the unstructured environment. In outdoor-based learning, this feature is more present than the structured encounter with the unforeseen in a classroom context, which can easily become a more reproduction oriented environment with learning separated from its authentic context where phenomena and processes really occur. Dewey also discusses the criticism of the narrow activity orientation to which the progressive education movement

has been exposed. Dewey's original wording was: "Learn to Do by Knowing and to Know by Doing". This was a central message in the book *Applied Psychology*, which he wrote together with J.A. McLellan in 1889.

According to Dewey, the activity "learning by doing" or "learning under the skin" is by itself insufficient to explain the learning process. It is the relationship between knowledge and act that is primary. This is clearly expressed in one of his later writings:

Learning by doing does not, of course, mean the substitution of manual occupation or handwork for textbook studying.

(Dewey 1915/1979, p. 255).

The school trip method

At the beginning of the 20th century, Johan Bager Sjögren, a senior lecturer of theoretical philosophy, was a strong advocate of the school trip method. The reasons behind the method included teaching and fostering, where the educational trip was already an established method for the acquisition of knowledge. A quotation (Bager Sjögren, 1985, p. 169), which was used by Rantatalo (2002) in her doctoral thesis (p. 87) illustrates this under the heading "In the open air – the new school order"

Despite all the progress made, it can also easily be seen that the word and the book, or as the old catchphrase goes, verbalism, which was the school's arch-enemy in the old days, is still far from being overcome. Consequently, we should give the young people no other textbook than reality itself – for only it [reality] corresponds to the demands of the objectification principle.

(Ibid, p. 87)

A health, environmental and movement perspective

Studies by Kaplan and Kaplan (1994) show that activities in nature give satisfaction. Visits to natural and cultural areas result in people being more satisfied with their leisure time and functioning better in the workplace. Nature relieves stress, concentration improves, spontaneous observation increases, we become more alert, calmer, less disposed to conflict and clearly healthier when we re-establish the connection with the physical environment. The influence of our evolutionary heritage, the so-called biophilia hypothesis, is perhaps one of the causes of these physical reactions (Kellert & Wilson, 1993). In another investigation, Hartig et al. (2002) showed that both systolic and diastolic blood pressure fell in persons who spent 40 minutes walking in a nature reserve but not when they spent the same amount of time in a busy city centre. When the physical environment stimulates emotions and experiences, we have a greater sense of well-being. This was interpreted as an expression of the influence of the outdoor environment. Plants and contact with nature creates harmony, an environment that can be taken in, environments with green refuges and Nature's design benefit our health.

Organic forms are preferable to straight lines. Sterile environments with straight lines, endless corridors and symmetrical facades have a negative effect on health. These types of environments do not reinforce a sense of context. When pupils make their own observations and gain their own experiences, which is typical of learning in outdoor environments, they acquire the status of subjects in the interaction with the teacher.

The classroom situation, rather, reduces the pupils to objects since their own observations play a very marginal role.

The subject role reinforces the feeling of control, which many teachers and pupils feel is lacking in today's classroom. In today's classroom, the educational goal is, rather, removed from its context and the reality in which the children's bodies exist – their bodies change and contain change/movement. The traditional classroom does not relate in a dynamic way to the life the child feels in its body. In this way, we are separated from the life world, the contact with objects and life itself, which can be seen in Merleau-Ponty (1977) and Duesund's (2003) description of the experiencing body, the personality's subject through which awareness takes form. The learning body in movement increases the status of the sensory experience's path to knowledge in the learning process. This makes visible the body's circularity, i.e. the learning body becomes at the same time subjectively lived but also physically objective. The life values are "too reflexive", we experience learning as being directed towards the intentional object before we reflect on it. The architect and researcher Alan Dilani, at the Department of Design and Health at KTH South in Haninge, conducted this study of organic forms and sterile environments in collaboration with Karolinska Institutet in Stockholm, Harvard University, International Academy for Design and Health and the University of Montreal, Kanada. The study was reviewed in the journal *Utblick Folkhälsa* (1/2003, p. 9-11).

There is no doubt that movement and physical activity are health factors and that

children with access to a green and varied outdoor environment are healthier, vary the games they play more and develop a better ability to concentrate than children in artificial and less stimulating outdoor environments. It has also been found that large preschool playgrounds with greater biological diversity stimulate the children to spend more time out of doors. The good place for small children is the "sandpit", but also space-forming green environments, which create personal space, challenges, excitement and fascination as well making it possible for the children to rest and reflect (Grahn, 1997). Other studies confirm these positive effects of spending time out of doors on our health, motor learning, ability to concentrate and learning (Fjørtoft, 2000, Ericsson, 2003, Nilsson, 2003).

In a doctoral thesis reporting on an intervention study, which is part of the Bunkeflo project in Skåne, Ericsson (2003) showed how motor activity, ability to concentrate and achievements in Swedish/writing ability and mathematics visibly improved when one hour a day was set aside for movement and physical activity. 251 pupils in nineyear compulsory school, grades 1-3, were studied. Outdoor activities indirectly increase movement and physical activity, which are of vital importance for the pupils' health. In her doctoral thesis *Landskap i leken* (2004), Fredrika Mårtensson describes how the natural environment forms games. The children release control and allow the environment to form their activities. One could say that "the environment plays with the children". Out of doors, the children interact more intensively with the physical environment. The teachers grant the children greater freedom of move-

ment out of doors and allow them to explore the environment on their own. Playing out of doors is very concrete and mobile, and the children communicate more with their bodies than with words. Nature's ambiguity means that the children can decide how to use the environment. The children move from one place to another. They make use of the situations that arise in their contact with the environment. Areas where they can run give them a sense of space and create incentives for movement (Mårtensson, 2004). Heurlin - Norlinder (2005) states in her doctoral thesis *Platser för lek, upplevelser och möten* that there is a lack of insight into the importance of the local environment and places for children's development. The local environment's importance as an informal learning environment is emphasised in this study. The thesis takes as its starting point children's own experiences and descriptions but it also has an adult perspective on what is regarded as being important for children's development. It is also noted that children's access to the local environment has decreased, which has resulted in a loss of freedom of movement (Heurlin - Norlinder, 2005).

Research to undertake a review of research on outdoor learning of 150 research papers published in England between 1993 and 2003 was undertaken by (Rickinson et al., 2004). It concludes that 'substantial evidence exists to indicate that fieldwork and visits, properly conceived, adequately planned, well taught and effectively followed up, offers learners opportunities to develop their knowledge and skills in ways that add value to their everyday experience in the class-

room' (Rickinson et al., 2004, p.5). Fieldwork can have a positive impact on long-term memory due to the memorable nature of fieldwork setting, and reinforcement can take place between the affective and cognitive domain, providing a bridge to higher - order learning. Two meta analyses of previous research (i.e. attitudes, self-perceptions, self-esteem, interpersonal and social skills) provide strong evidence of the positive benefit of short - as well as long-term outdoor adventure education (Cason & Gilis, 1994; Hattie, Marsh,;Nell, & Richards, 1997). In an intervention study conducted in Sweden, nature and potential of outdoor education was recently analysed from a pre-, primary teacher perspective. The teachers 'experience (mood)using the outdoors in rural school (intervention group) (Szczepanski, Malmer, Nelson, & Dahlgren, 2007). Measurements of the teachers' mood using a mood scale test showed a significantly less decrease over one year among the teachers in the intervention group (Szczepanski et al., 2007). It is suggested that the teachers in the rural school have better opportunity to use there more green variabel outdoor places then the urban school. The economic reduction over the recent years could also explain the decrease in the poor areas in the city school. The level of stress(measure as saliva concentration of cortisol = stresshormone) was also significant higher among the pupils in urban school. Boys in the intervention school present a significant lower level of cortisolhormone in the salivasampel then girls in the outdoor intervention school.

A growing body of literature shows that the natural environment has profound effects

on the well-being of adults, including better psychological well-being, superior cognitive functioning, fewer physical ailments and speedier recovery from illness (Wells 2003).

It is

widely accepted that the environment is likely to have a more profound effect on children due to their greater plasticity or vulnerability

(Wells 2003).

Research is providing convincing evidence of the significant benefits of experiences in nature to children. Findings include:

- Children with symptoms of Attention Deficit Hyperactivity Disorder (ADHD) are better able to concentrate after contact with nature (Taylor 2001).
- Children with views of and contact with nature score higher on tests of concentration and self-discipline. The greener, the better the scores (Wells 2000, Taylor 2002).
- Children who play regularly in natural environments show more advanced motor fitness, including coordination, balance and agility, and they are sick less often (Grahn, et al. 1997, Fjortoft 2001).
- When children play in natural environments, their play is more diverse with imaginative and creative play that fosters language and collaborative skills (Moore & Wong 1997, Taylor, et al. 1998, Fjortoft 2000).
- Exposure to natural environments improves children's cognitive development by improving their awareness, reasoning and observational skills (Pyle 2002).
- Nature buffers the impact of life stress

on children and helps them deal with adversity. The greater the amount of nature exposure, the greater the benefits (Wells 2003).

- Play in a diverse natural environment reduces or eliminates bullying (Malone & Tranter 2003).
- Nature helps children develop powers of observation and creativity and instills a sense of peace and being at one with the world (Crain 2001).
- Early experiences with the natural world have been positively linked with the development of imagination and the sense of wonder (Cobb 1977, Louv 1991). Wonder is an important motivator for life long learning (Wilson 1997).
- Children who play in nature have more positive feelings about each other (Moore 1996).
- Natural environments stimulate social interaction between children (Moore 1986, Bixler, Floyd & Hammutt 2002).
- Outdoor environments are important to children's development of independence and autonomy (Bartlett 1996).

These findings are consistent with the literature showing the benefits of nature to adults.

A study of ten schools and a statewide program by the National Environmental Education and Training Foundation (2000) found that when schools use the context of local areas and naturalized schoolyards in their instructional practices, academic performance improves in reading, math, science, social studies and writing. A study of 40 schools in California that used the nat-

ural environment as “an integrated context of learning” with hands-on, project-based learning found that student performance improved in standardized test scores, grade point average, willingness to stay on task, adaptability of different learning styles and problem solving (Leiberman & Hoody 1998). Studies also show a reduction in anti-social behavior such as violence, bullying, vandalism and littering a drop in absenteeism (Coffey 2001, Moore & Cosco 2000).

Conclusion

Children and society as a whole can benefit significantly by maximizing both the informal play and formal learning opportunities that natural schoolyards offer children. Nature schoolyards are places where children can reclaim the magic that is their birthright, the ability to learn in their unique experiential way through exploration and discovery in the natural world. When natural schoolyards are also integrated with the full curriculum, they enhance both children's academic and environmental education. But perhaps even more important, natural schoolyards offer the hope that future generations will develop the environmental values to become stewards of the Earth and the diversity of Nature.

References

- Bager - Sjögren, J. (1895): *"Om exkursioner som medel för undervisning och uppföstran"* Verdandi.
- Bartlett, Sheridan (1996): *Access to Outdoor Play and Its Implications for Healthy Attachments*. Unpublished article, Putney, VT
- Bell, J. (1993): *Introduktion till forskningsmetodik* Lund: Studentlitteratur.
- Bixler, Robert D., Floyd, Myron E. & Hammutt, William E. (2002): Environmental Socialization: Qualitative Tests of the Childhood Play Hypothesis, *Environment and Behavior*, 34(6), 795-818
- Bjurwill, C. (1993): *Fenomenologi* Lund: Studentlitteratur.
- Cason, D., & Gillis, H.L. (2004): A meta-analysis of outdoor adventure programming with adolescents. *Journal of Experiential Education*, 17(1), 40-47.
- Chawla, L. (1994): Editors' Note, *Children's Environments*, (11) 3
- Chipeniuk, R. (1995): Childhood foraging as a means of acquiring competent human cognition about biodiversity, *Environment and Behavior*, 27, 490-512
- Cobb, E. (1977): *The Ecology of Imagination in Childhood*, New York, Columbia University Press.
- Coffey, A. (2001): *Transforming School Grounds, in Greening School Grounds: Creating Habitats for Learning*, (eds) Grant, Tim and Littlejohn, Gail., Toronto: Green Teacher and Gabriola Island, BC: New Society Publishers
- Crain, W. (2001): Now Nature Helps Children Develop. *Montessori Life, Summer 2001*.
- Dahlgren, L.O. & Szczepanski, A. (2001): *Udendørspædagogik - boglig dannelse og sanselig erfaring* København: Forlaget Børn & Unge.
- Dahlgren, L.O. & Szczepanski, A. (2004): *Rum för lärande – några reflexioner om utomhuspedagogikens särart* (I) Lundegård, I., Wickman, P-O., Wohlin, A. (Red). *Utomhusdidaktik* Lund: Studentlitteratur.
- Danielsson, A. et al (2001): *Rörelseglada barn*

- *Ett kursmaterial för rörelseutveckling i förskolan* Västerås: Gothia förlag .
- Dewey, J. (1915): "*School of To-Morrow*" I Boydstone, J.A. (Ed. 1979): *John Dewey. The Middle Works, 1899 - 1924*, vol. 8: 1915, s. 205 - 404. Carbondale:Southern Illinois University Press.
- Duesund, L. (2003): *Kroppen i verden* Linköping: Skapande Vetande nr 40.
- Ekholm, M. & Fransson, A. (1992): *Praktisk intervjuteknik* Stockholm: Norstedts förlag.
- Ericsson, I. (2003): *Motorik, koncentrationsförmåga och skolprestationer - En interventionsstudie I skolår 1-3*, Malmö: Malmö Högskola, Lärarutbildningen, No.6
- Chaib, M. & Orfali, B., red. (1995): *Sociala representationer* Göteborg: Daidalos.
- Dahlgren, L.O., Diwan, W.K., Tomson, G., Wahlström, R. (1992): On the Variation in Conceptions among Primary Care Physicians Regarding Hypercholestromia: A Phenomenographic Analysis. *Scandinavian Journal of Primary Health Care*, 10, 316-320.
- Fjortoft, I. (2000): *Landscape as Playscape - Learning effects from playing in natural environment on motor development in child* Oslo: Norwegian university of Sports and Physical Education.
- Fjortoft, I. & J. Sageie (2000): The Natural Environment as a Playground for Children: Landscape Description and Analysis of a Natural Landscape. *Landscape and Urban Planning*, 48(1/2) 83-97
- Fjortoft, I. (2001): The Natural Environment as a Playground for Children: The Impact of Outdoor Play Activities in Pre-Primary School Children. *Early Childhood Education Journal*, 29(2): 111-117
- Francis, M. (interview) & Kathryn D. (1991): "Children of Nature", U. C. *Davis Magazine* , 9(2) University of California, Davis.
- Grahn, M. (2005): *Musernas viskningar förr och nu - En studie av det musiska och inriktningen musiskt lärande - En teoretisk analys samt ett empiriskt bidrag från lärarutbildningen* Linköping: Linköping Studies in Education and Psychology No.104
- Grahn, P., Mårtensson, F., Lindblad, B., Nilsson, P. & Ekman, A. (1997): "*Ute på dagis*" -Hur använder barn daghemsgården? *Utformningen av daghemsgården och dess betydelse for lek, motorik och koncentrationsförmåga* Alnarp: Movium förlag.
- Hartig, T. et al. (2003): "*Tracking restoration in natural and urban field setting*". *Journal of Environmental Psychology* 23,: s. 109-123
- Hattie, J., March, H.W., Neill, J. T. , & Richards, G. E. (1997). Adventure education and outward bound: Out-of – class experiences that makes a lasting difference. *Review of Educational Research*, 67 (1), 43-87.
- Heurlin - Norinder, M. (2005): *Plats för lek, upplevelser och möten - Om rörelsefrihet i fyra bostadsområden*. Stockholm: HLS-förlag.
- Hofferth, S. L. & Sandberg, John F. (2000): *Changes in American Children's Time, 1981-1997*, Center for the Ethnography of Everyday Life. Accessed June 1, 2004 from ceel.psc.isr.umich.edu/pubs/
- Hutchison, D. (2004): *A Natural History of Place in Education* Columbia: Teachers College, Columbia University US.
- Louv, R. (1991): *Childhood's Future*, New York, Doubleday.
- Loynes, C and Higgins P (Eds) (1997): *A Guide for Outdoor Educators in Scotland; Adventure Education* (pp 6-9); Penrith Scottish

- Natural Heritage.
- Kaplan, R. & Kaplan, S. (1994): *The Experience of Nature - A Psychological Perspective* Boston: Cambridge University Press.
- Kellert, R.K. & Wilson, E.O. (1993): *The Biophilia Hypothesis* Washington: Shearwater Books.
- Kellert, Stephen R. (2002): *Experiencing Nature: Affective, Cognitive, and Evaluative Development, in Children and Nature: Psychological, Sociocultural, and Evolutionary Investigations*. Cambridge, MA: The MIT Press.
- Kvale, S. (1997): *Den kvalitativa forskningsintervjun*. Lund: Studentlitteratur.
- Kyttä, M. (2004): The extent of children's independent mobility and the number of actualized affordances as criteria for child-friendly environments, *Journal of Environmental Psychology*, 24(2), 179-198
- Leiberman, G. & Hoody, L. (1998): *Closing the Achievement Gap: Using the Environment as an Integrated Context for Learning* (San Diego, California: State Education and Environmental Roundtable)
- Lindholm, G. (1995): *Skolgården - vuxnas bilder barnens miljö* Alnarp: Movium SLU.
- Malone, K. & Tranter, P. (2003): Children's Environmental Learning and the Use, Design and Management of Schoolgrounds, *Children, Youth and Environments*, 13(2), Accessed June 9, 2004 from cye.colorado.edu
- Marton, F. & Svensson, L. (1978): *Att studera omvärldsuppfattning - Två bidrag till metodologin* Göteborg: Rapporter från Pedagogiska institutionen, nr 158.
- Merleau-Ponty, M. (1977): *Kroppens fenomenologi*, Uddevalla: Bokförlaget Daidalos AB.
- Moore, R. C. (1986): The Power of Nature Orientations of Girls and Boys Toward Biotic and Abiotic Play Settings on a Reconstructed Schoolyard. *Children's Environments Quarterly*, 3(3)
- Moore, R. (1996): Compact Nature: The Role of Playing and Learning Gardens on Children's Lives, *Journal of Therapeutic Horticulture*, 8, 72-82
- Moore, R. & Wong, H. (1997): *Natural Learning: Rediscovering Nature's Way of Teaching*. Berkeley, CA: MIG Communications.
- Moore, R. & Cosco, N. (2000): *Developing an Earth-Bound Culture Through Design of Childhood Habitats*, Natural Learning Initiative. paper presented at Conference on People, Land, and Sustainability: A Global View of Community Gardening, University of Nottingham, UK, September 2000). Accessed June 12, 2004 from www.naturalearning.org/earthboundpaper.html
- Moore, R. (2004): Countering children's sedentary lifestyles by design. *Natural Learning Initiative*. Accessed June 12, 2004 from www.naturalearning.org
- Mårtensson, F. (2004): *Landskapet i leken - En studie av utomhuslek på förskolegården* Alnarp: Agraria, 464.
- Mörelius, E. Theodorsson, E. Nelson, N. (2005). *Salivary cortisol, mood and pain profiles during skin-to-skin care for an unselected group of mothers and babies in neonatal intensive care*. *Pediatrics* 2005;116:1105-1113.
- National Environmental Education & Training Foundation (2000): *Environment-based Education*, The National Environmental Education & Training Foundation, Washington:DC
- Nilson, L. (2003): *Hälsoarbete möte med skolan i teori och praktik* Örebro: Örebro Studies in Education No.7.

- Nowlis, H.H. Nowlis, V. (1956): *The description and analysis of mood* Ann N Y Acad Sci. 65(4):345-55.
- psychology of mood & mood regulation*. Harlow, Essex: Addison Wesley.
- Pyle, R. (1993): *The thunder trees: Lessons from an urban wildland*. Boston: Houghton Mifflin.
- Pyle, R. (2002): *Eden in a Vacant Lot: Special Places, Species and Kids in Community of Life*. In: *Children and Nature: Psychological, Sociocultural and Evolutionary Investigations*. Kahn, P.H. and Kellert, S.R. (eds) Cambridge: MIT Press
- Rantatalo, P. (2002): *Den resande eleven - Folkskolans skolreserörelse 1890 - 1940* Umeå: Institutionen för historiska studier.
- Rickinson, M., Dillon, J., Teamey, K., Morris, M., Choi, M.Y., Sanders, D., & Benefield, P. (2004): *A review of research on outdoor learning*. London: Field Studies Council.
- Sandberg, A. (2002): *Vuxnas lekvärld - En studie om vuxnas erfarenheter av lek* Göteborg: Göteborg Studies in Educational Sciences, 189.
- Sandberg, M., Wijma, K., Wyon, Y., Nedstrand, E., Hammar, M. (2002): Effects of electro-acupuncture on psychological distress in postmenopausal women *Complementary Therapies in Medicine*, 2002;10:161-169
- Sjöberg, L. Svensson, E. Persson, L-O. *The measurement of mood*. (1979): *Scand. J. Psychol.* 20:1-18
- Sobel, D. (2005): *Place-Based Education – Connecting Classroom & Communities* MA: The Orion Society US.
- Svensson, E. *Response format and factor structure in mood adjective check lists*(1977): *Scand. J. Psychol.*, 18:71-78
- Svensson, E. Persson., L-O. Sjöberg, L. (1980): *Mood effects of diazepam and caffeine* *Psychopharmacology*, 67:73-80
- Szczepanski, A. (red) (2007): *Outdoor Education as a source of information – the local environment as a source of knowledge*, Lund: Studentlitteratur.
- Szczepanski, A. (2008) *Knowledge Through Action - Teachers'perceptions of the landscape as a learning environment*. Linköping: Linköping University Department of Culture and Communication.
- Szczepanski, A., Malmer, K., Nelson, N., & Dahlgren, L. O. (2007): [The distinctive nature and potential of outdoor education from a teachers'perspective: An intervention study of teachers in school].*Didaktisk tidskrift*, 16, 89-106.
- Taylor, S.J., & Bogdan, R. (1984): *Introduction to Qualitative Research Methods - The search för meanings* New York: Wiley.
- Taylor, A.F., Wiley, A., Kuo, F.E., & Sullivan, W.C. (1998): Growing up in the inner city: Green spaces as places to grow. *Environment and Behavior*, 30(1), 3-27
- Taylor, A.F., Kuo, F.E. & Sullivan, W.C. (2001): Coping with ADD: The surprising connection to green play settings. *Environment & Behavior*, 33(1), 54-77
- Taylor, A.F., Kuo, F.E. & Sullivan, W.C. (2002): Views of Nature and Self-Discipline: Evidence from Inner City Children, *Journal of Environmental Psychology*, 22, 49-63
- TIG, Tidskrift i Gymnastik och Idrott, 8/2003 Svenska Gymnastikläraresällskapet.
- Uljens, M. (1989): *Fenomenografi - forskning om uppfattningar* Lund: Studentlitteratur.
- Utblick Folkhälsa, Tidskrift nr 1 2003
- Wells, Nancy M. (2000): At Home with Na-

ture, Effects of "Greenness" on Children's Cognitive Functioning, *Environment and Behavior*, 32(6), 775-795

Wells, Nancy M. & Evans, Gary W. (2003): Nearby Nature: A Buffer of Life Stress Among Rural Children. *Environment and Behavior*, 35(3), 311-330.

White, R. & V. Stoecklin (1998): *Children's Outdoor Play & Learning Environments: Returning to Nature*. Accessed June 11, 2004 from www.whitehutchinson.com/children/articles/outdoor.shtml

Worth, J. (2003): Book review of Greening School Grounds: Creating Habitats for Learning, Children, *Youth and Environments*, 13(2). Accessed June 9, 2004 from cye.colorado.edu

Åkerblom, P. (2005): *Lära av trädgård - Pedagogiska, historiska och kommunikativa förutsättningar för skolträdgårdsverksamhet* Uppsala: SLU/Alnarp.

Electronic sources

Myndigheten för Skolutveckling, läroplanstillägg, 2003

(<http://www.skolutveckling.se/utvecklingsteman/halsa/fysiskaktivitet/index.shtml>)

Evolution of man, figure 3. Taken from <http://boardsus.playstation.com/playstation/board/message?board.id=offtopic&message.id=1708215#1708215>