

# Making a case for outdoor engagement in environmental studies at Indian schools

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## Abstract

Literature emphasizes relationships between time spent outdoors by children and their overall health, development and learning. We propose that outdoor engagement be a part of regular school curricula, through the subject environmental studies (EVS). In primary schooling, EVS encompasses an integrated approach to the natural and social sciences and can provide children opportunities to connect with the outdoors - nature and society. Our perspective draws on research literature, the Indian national curriculum framework, objectives of EVS and our preliminary experiences during simple outdoor activities with children. These indicated that outdoor engagement in EVS is practicable in school.

**Keywords:** child development; outdoors; environment; education; learning

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## Introduction

School-going children are spending alarmingly less time outdoors (Frost, 2007; Sutterby, 2009; Santharam, 2014). Irrespective of the reasons which may include academic performance pressures, preference for digital recreations and parents' concerns related to outdoor safety, reduced outdoor activity among children is a major concern. Several studies indicate positive relationships between time spent outdoors by children and their mental, physical and social wellbeing, health and development (Maller, 2009; Muñoz, 2009; Cooper, 2015). Spending time outdoors is also believed to impact learning and academic achievement (Muñoz, 2009; Rios and Brewer, 2014). However, current scenarios suggest that children can't find the time, motivation or necessary adult support to be outdoors. A possible solution could be to introduce the important but missing outdoor component to children's lives through their schools.

School is a major part of young children's lives. Primary school students in India spend approximately 24-36 hours per week, 200 weeks per year at school. Being outdoors in educational context, apart from play and organized sports, is suggested to stimulate development of a wide range of skills like observation, creativity, exploration, investigation, language development and social interaction in children (Muñoz, 2009). Yet, these young children in India go through years of primary education with barely any opportunity provided by their schools to consciously connect with the real world outside. In general, children may get an average outdoor time of 2-3 hours per week in organized sport or drills, in addition to recess. Unfortunately, the incongruous practice of sacrificing even this minimal outdoor time in

endeavours for improved academic performance is not an uncommon practice. In this work, we present our perspective on the need to facilitate children with opportunities to spend time outdoors, possibly through the regular school curricula, specifically, the subject environmental studies (EVS). The contention is based on research literature and our understanding about; the impact of outdoor time on children, aspects that contribute to good education, the Indian national curriculum framework (NCF, NCERT, 2005), aims and objectives of the school subject EVS and some preliminary experiences during simple outdoor activities with 8-10 year old children.

## Outdoor engagement

Outdoor engagement can be a way to employ methods of outdoor learning within the framework of conventional school education. We propose introduction of an outdoor component to complement the conventional indoor pedagogy of the school subject EVS (Figure 1). Spending time outdoors in educational context, is suggested to stimulate development of a wide range of skills like observation, creativity, exploration, investigation, language development and social interaction in children (Muñoz, 2009). In this work, the proposed outdoor component is considered synonymous to outdoor education with its potential benefits (Priest, 1986; Muñoz, 2009). As shown in Figure 1, the concept of outdoor engagement is based on the theories of outdoor education – 'learning outside the classroom' and student engagement.

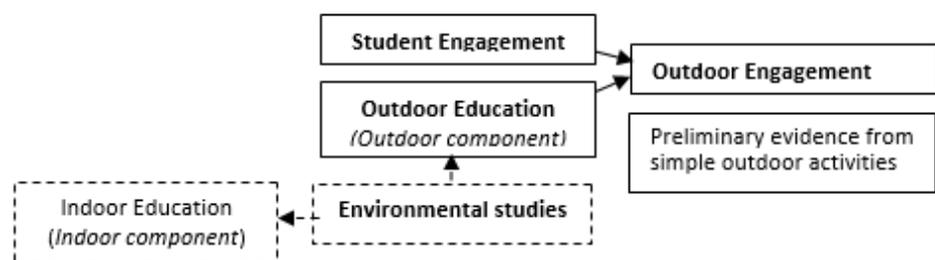


Fig 1: Concept of outdoor engagement through the subject EVS

## Outdoor education

For the purpose of this work, outdoor education is a means of (a) curriculum enrichment (Lappin, 2000), an experiential learning method of "... which can be learnt best outside the classroom" (Smith 1955, p.9), and (b) supporting enhancement of overall well-being of learners through the triad of "knowledge, skills, and attitudes" (Ford, 1981). Drawing inspiration from the doctrines of some

proponents of natural learning, namely, Froebel, Dewey, Steiner, Hahn, Comenius, Rousseau, Pestalozzi (Neill, 2007; Nutbrown and Clough, 2014) and Tagore (Guha, 2013), learners are to be treated as curious, conscious, thinking, perceiving individuals who appreciate a sense of freedom and enjoyment in learning. Learning in the outdoors will "appeal to the use of the senses for observation and perception" (Lewis, 1975). It will support physical activity, afford

first-hand experiences, encourage “learning by doing”, motivate creativity and promote acquisition of practical skills (Nutbrown and Clough, 2014). The proposed outdoor component in EVS could take place primarily through exposure to the surroundings; the natural world and the manufactured world - with its science-inspired artefacts, social structures (community, society, culture) and their manifestations.

### *Student engagement*

Student engagement can be defined as “the quality of effort students themselves devote to educationally purposeful activities that contribute directly to desired outcomes” (Hu and Kuh, 2002, p. 555). Taylor and Parsons (2011) in their review on improving student engagement distinguish between measures of levels of achievement (*e.g.* scores, attendance) and levels of engagement in learning (*e.g.* interest, time on task, enjoyment). In this work, we relate to qualitative descriptions of behavioural, emotional, cognitive and agentic dimensions of student engagement (Fredricks, Blumenfeld and Paris, 2004; Sinatra, Benjamin, Heddy and Lombardi, 2015).

### **Scope for outdoor component in environmental studies**

The study of environment is included in curricula at most levels of education in India, either as an independent subject or as part of an existing subject like social sciences. In our state, Maharashtra, the subject EVS is introduced in grade 3, to young students of about 8-9 years old. In general, at schools, EVS is conducted within walls of the classrooms. Our perspective on inclusion of an outdoor component in the subject draws support from the following.

### *Aims of schooling*

Among the aims of schooling and education is preparation of the young for living in society with due regard for nature. Thus it is desirable that schooling leads to an education that will enable a deep understanding, awareness and knowledge of the world; natural and human-made. This relates to cultivation of skills, attitudes and insights that will reflect in the “capacity to handle knowledge, to reason and make informed judgements” (Peters, 1965). Our case is for an education wherein students will not “passively accept all that is handed on without question or doubt” (Higginbotham, 1976). We believe that the educational process should lead to the development of a conscious and enquiring mind.

### *National curriculum framework*

The national focus group's position paper on ‘Teaching of science’, under the aegis of the NCF states, “Good science education is true to the child, true to life and true to science” (NCERT, 2006, p. 2).

It emphasizes placing science learning in the wider context of the learner’s environment, local and global. Enabling of blissful exploration and harmonization with the surroundings, by the child, is advocated. Recommendations include nurturing curiosity of the child and engaging her and him in exploratory hands-on activities. For primary levels of schooling, the position paper suggests integration of science and social studies; history, geography and citizenship education, as one subject called EVS.

### *Aims and objectives of environmental studies*

In primary education, the subject EVS introduces children “to their natural, social and cultural environment”. It presents topics in an interdisciplinary manner with the intention of helping children develop an integrated approach that will enable them to address several dimensions of an issue simultaneously (MSBTPCR textbook, 2014). EVS curricula recommends providing students with “space, time and freedom” to generate new knowledge (NCERT textbook, 2006). It aims to encourage creativity, student-centred active learning, participation and initiative through interesting and enjoyable educational processes (NCERT textbook, 2006; MSBTPCR textbook, 2014).

### **Experiences from some outdoor activities with children**

Outdoor activities were conducted with the objective of giving children the opportunity to be outside and observe nature and other surroundings. The activities were conducted in our institute’s garden. Participants were 8-10 year old, Marathi speaking children, from a neighbouring Marathi medium, urban municipal school. Data consisted of facilitators’ notes, observer’s report and children’s work (*e.g.* worksheets, drawings).

### *Freedom, enjoyment and confidence*

We found the children to be visibly happy and enjoying themselves when outdoors. However, initially during the first activity outdoors, children also seemed uncertain and hesitant. They had to be encouraged to move away from the facilitators’ side to explore and look at things around them. Giving them some simple instructions regarding what to do when outdoors seemed to help. For instance, children had been provided with worksheets (in the local language Marathi) that contained a list of things to look for/ observe in the surroundings (adapted from Thomson and Aridge, 2002). Initially, to get children started with the outdoor activities, facilitators found it necessary to prompt them to action *e.g.* “Can you find a rock?”, “...a dried leaf”, “... a red leaf” etc. Given directions, most children started to move around enthusiastically, looked for stated items and noted their findings on the worksheets. During that first activity itself, the children appeared to slowly relax. They started exploring by themselves. They moved around and pointed out things, randomly,

made comments or posed questions – ‘...see this flower!’, ‘... this leaf’, ‘what is that machine?’ (lawn mower) – to the facilitators. During subsequent outdoor activities, we noticed marked difference in the children’s confidence. They seemed aligned and focused to given tasks. They were quick to start exploring and noting their observations. Children were now spending time to examine things more closely and discuss their discoveries. Unlike in the initial stage, there was hardly any need for facilitators to remind the children of tasks at hand or issue any directions. Children did still look up to the facilitators for affirmation and approval of their observations but their increasing self-belief was evident from the manner in which they went about exploring, examining things, taking notes and communicating their comments and queries to the facilitators as well as peers.

### *Creativity*

We observed that children were interested in things they could handle, make something from or play with. For example, when we walked towards the “*Chafa*” (*Plumeria* sp.) tree in the garden, the children found some of flowers fallen below the tree. Some of them picked up the flowers and showed how they could make finger rings with it. Another child showed how to make a toy by fixing the flower stalk to one end of a dried twig. She also demonstrated how the flower twirled when the twig was rolled between the palms of her hand.

### *Documenting observations*

On completion of the first activity outdoors, we found that all children had indicated having found the entire set of 15 items listed on their worksheets. A majority indicated this by simply adding a tick against the items on the list. Some children reported having found 18-31 new items in addition to the 15 given in the worksheet. Exhaustion of available rows in the observation table did not seem to deter the children from adding their own entries. They simply continued the list outside the table. Examples include; brown and white coloured butterfly, dead fly, white leaf, roots of tree (exposed to surface), bus stop (visible from the garden), cement slab, etc. Other children provided additional information about the 15 objects listed in the worksheet. Examples include; mud- seen under the grass, mud is brown coloured, a rock- seen next to a tree, moss – seen on bricks, the moss is green in colour etc. We found that most of the written observations were similar amongst these children. It could be because they were moving together, sharing observations and noting down things they found and examined or shown by a facilitator. For the second outdoor activity, the children were not provided with worksheets. Instead they were advised to take notes on their writing pads. The children were informed that on returning indoors they would need to use the notes made by them as reference to report their observations. On completion of the outdoor part of

the activity and returning indoors, children were able to make drawings and write a couple of descriptive sentences about their observations.

### *Initiative*

While the given list of things (to find in the surroundings) mostly contained objects from the natural world, children on their own initiative also observed and noted things that were human-made. Examples included cement slabs, drains, iron grills etc. Work submitted by the children on completion of activities indicated that they had their own ways of fulfilling a given task. One of the outdoor activities required children to report any five sounds they heard when outdoors. Among the responses received, some children had simply listed names of the sources of sounds they had heard. Some children also added information related to location or description of the source of sound or the sound itself. One child made drawings in addition to writing names of the sources of sound heard. Some responses were intriguing. For instance one child listed ‘ladhi’ – cement slab (drain cover) as a sound source, perhaps referring to the sound of water flowing in the drain. Another child (10 yrs) presented information in a table format. During an earlier outdoor session, the children had been provided with a worksheet containing an observation table. It appears that this child had remembered the manner in which observations had been made during the previous activity and extended that (learning) to complete another task.

### *Agents of peer and own learning*

Children were found eager to share their observations with facilitators and peers in their groups. For instance, one child picked a leaf from the ground, felt its unsmooth surface and asked if it could be listed under ‘something rough’. This interaction got other children’s attention and they also came forward and felt the leaf. Once while walking through the garden, one child noticed a spider’s web. When other children were called to see it, she voluntarily gave an explanation of how “...if we place things on the web, it will shake and the spider will come and eat it’.

During one of the later activities (after a substantial time interval) we found children taking steps to promote their own learning. For instance, attending to a drawing task in the outdoors, a child asked to be shown a coconut tree because he wanted to draw it. While observing things in surroundings, children asked for clarifications when in doubt. For example, a child asked whether the drawing she was making resembled a tomato or brinjal (plant). She was trying to draw a brinjal plant with its fruits. On being told that her drawing of the fruit looked like a tomato, she went over to observe the plant more closely. She evaluated her own drawing by comparing it to the brinjal plant. She then stated; “The fruit (on the plant) is longer. And I got the leaves wrong. I made long leaves... but the leaves are like

this” and drew her illustration of the brinjal leaves. These very children, who were hesitating to step on grass during the early activities, for fear of insects, were now found observing and reacting to them with interest. When sitting on grass to complete a task, one boy declared that there was an insect in his pencil box. The other children at once gathered around to see it, giving all sorts of advice on how it must be set free from the box. When the boy added that he was scared to touch the insect, a girl gently picked up the insect and placed it on the grass from where the insect scuttled away unharmed.

**Insights to existing conceptions**

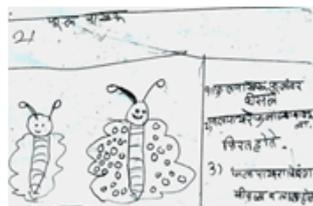
Children’s reactions and conversations when exploring and observing various things outdoors helped reveal some of their conceptions. Noticing a butterfly flying around nearby a child stated, “butterfly is a bird”. On being asked, “why?”, the child responded, “it flies hence it is a bird”. When the facilitator suggested, “isn’t it an insect?” the child replied – “no!”. On being further questioned by the facilitator, “mosquito flies – is it a bird too?”, the child seemed to think and appeared unsure.

In response to a task requiring the children to make drawings of a living thing and write a few sentences to describe it, most of them drew butterflies. There were butterflies in the garden, but there were also birds, squirrels, many plants etc. A possible reason for most of them drawing butterflies could be that they were familiar with making drawings of butterflies, possibly from the art (drawing) classes at their school. The descriptions accompanying children’s drawings may indicate their learning based on what they observed about the butterflies when outdoors (Figure 2).

In another task, children had to draw and write a few lines about a non-living thing. One child’s

drawing illustrated a potted plant (Figure 3). In the accompanying text, the child wrote two sentences about the drawing that could be considered indicative of the *tulsi* plant (holy basil, *Ocimum* sp) or the pot in which the holy basil was planted (in colloquial language the word *tulsi* is also used to refer to the pot in which holy basil is planted). In the former case, categorization of the plant as non-living is problematic. However, the drawing is labelled as ‘*Nirjiv vastu*’ which in Marathi means non-living thing. Whether this was a case of misconception related to plants (Chunawala, Natarajan and Ramadas, 1999) or that of remediable carelessness on part of the child, it has now come to notice and could be appropriately addressed. Another child’s work offered opportunities to discuss about making distinctions between non-living (stone), dead (dried leaf) and a complex systems like soil that has components of both living and non-living.

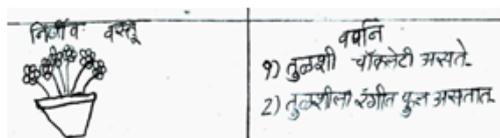
On another occasion, children made drawings to depict what they thought when they heard / read the word ‘*parisar*’ (surroundings or environment). Children made these drawings in two settings. Once when they were indoors, in the classroom, and again on the same day, when they were outdoors in the garden (Figure 4). Preliminary analysis of the drawings show that most of the children’s drawings made when indoors depicted their school. Drawings made while sitting in the garden depicted more of nature – trees, birds, bird-nests, flowers, butterflies etc. Interestingly the outdoor pictures rarely featured human beings. This could offer an interesting avenue to explore children’s view of nature. We also found that most of the drawings made when indoors or outdoors, showed mountains and sunrise –seemingly reproductions of typical landscape pictures seen in books.



2) Butterfly	
(drawings)	<ol style="list-style-type: none"> <li>1) Saw the butterflies on flowers</li> <li>2) Butterflies were roaming around the flowers</li> <li>3) Butterfly was yellow and red in colour</li> </ol>

Translation of the student’s written text.

Fig 2: A student’s response (left) to the question about living things seen in the garden.



Non-living thing	description
(drawing)	<ol style="list-style-type: none"> <li>1) Tulsi is brown coloured</li> <li>2) Tulsi has coloured flowers</li> </ol>

Translation of the student’s written text.

Fig 3: A student’s response (left) to the question about non- living things seen in the garden.

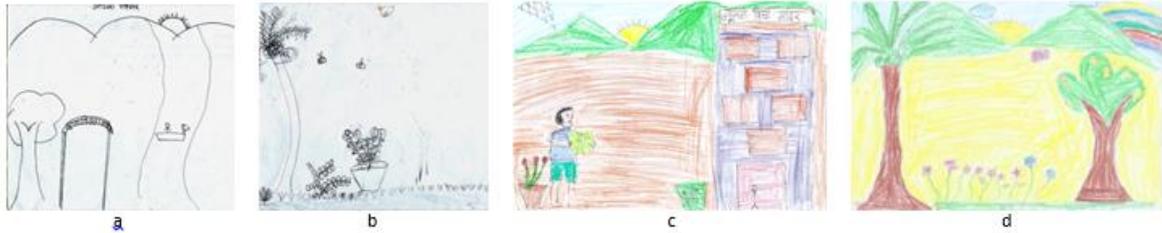


Fig 4: Children's drawings of 'parisar' i.e. surroundings made when (a, c) indoors in a classroom and (b, d) outdoors in the garden.

## Conclusion

This work explored the importance of outdoor time in child development and learning through published literature, relevant curriculum frameworks and children's engagement during outdoor activities. During primary education, children are expected to acquire foundational knowledge about facts and concepts that they will build on in the successive years (Cronin-Jones, 2000). Facilitation of outdoor experiences during these crucial years can help children build on their prior knowledge (Driessnack, 2009), discover, understand and value their natural surroundings (Arnold, Cohen and Warner, 2009). It can enrich indoor classroom lessons and help children make connections to subject content (Rivkin, 2002). Coherence with the tenets of outdoor education can provide children with crucial opportunities to contemplate, reflect, wonder and discuss aspects of the real world. Overall outdoor education in EVS can lead to the development of interpersonal, intrapersonal, ecosystemic and ekistic relationships in learners (Priest, 1986).

Our preliminary experiences with children during outdoor activities indicate that inclusion of outdoor engagement as part of the school subject, EVS, could be practicable. Children's conversations when outdoors, their responses to the written/drawing tasks provided us ample, simple and relatable contexts to introduce and discuss contents from EVS chapters of grade 3 (e.g. living and non-living, shelters etc) and grade 4 (e.g. interrelationships between living things). In addition to opportunities to connect with nature, there could be opportunities to connect with community, society and culture in the surroundings. Though not a part of this particular paper, the children also visited a local bank and grocery shop to understand the importance of these public utilities and develop social interaction skills. They were also taken on a tour to all parts of their own school. Students' comments post the tour indicated that the visit had helped them understand and appreciate the roles played by various people and their contribution to the children's education at school.

Student engagement is crucial for any learning. We found children interested, involved and enthusiastic during outdoor activities. Children's obvious happiness and enjoyment may be considered indicative of their emotional engagement in the

outdoor tasks. Their exploration of surroundings, asking of questions, participation in discussions, documentation of findings, seeking and sharing of information indicate agentic dimensions of student engagement. The children demonstrated creativity, persistence and independence in engagement and completion of their outdoor tasks. Rios and Brewer (2014, p.239) report the "powerful, positive impact that outdoor learning experiences played on developing a child's content knowledge, environmental attitudes, and overall sense of wonder".

Our contention for an outdoor component in EVS, as part of the regular school set-up, has the innate requirement of adult supervision. This is relevant since concerns related to safety of children may constitute a major factor in parents' opposition to children spending time outdoors (Carver, 2008). Additionally, being outdoors in the school context has potential for equitable access to the benefits of being out-of-doors. For instance, the physical activity intrinsic to outdoor education and known to benefit mental and physical health in children, will be accessible to all in school. There is also the aspect of possible broader and deeper learning from avenues that might just not arise during conventional indoor teaching of EVS. Infusion of outdoor experiences with background and knowledge relevant to the Indian context can be achieved through training and resources available with organizations working in the area like the Centre for environment education, Ahmedabad, India (<http://www.cceindia.org/cee/index.html>) and the Centre for science and environment, New Delhi, India (<http://www.cseindia.org/node/322>, <http://www.greenschoolsprogramme.org/>). This paper is based on theories of outdoor education and our experiences with a small group of children who came from a homogenous socio-economic background. Future work will include design and evaluation of outdoor activities that facilitate acquisition of subject content knowledge in addition to promotion of holistic development and education of young minds.

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