

Eco-Systems in the Backyard
Preparing a diverse outdoor environment for primary (3-6) children
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'It is impossible for children to value ecological systems until they know that they exist'

Louise Chawla/Roger Hart (1995)

The yard surrounding Lincoln Montessori School is not a vast one. The school is built on two lots and an adjacent vacant lot was purchased shortly after the building was completed. This is not a large area to accommodate great eco-diversity yet within and without the Children's House and grounds, three distinctly different plant environments have been established, each in keeping with the size and experience of three to six year olds.

Nebraska is not an area of the country that lends itself to using the outdoors as an extension of the prepared environment. It is not feasible to expand the classroom to the patio or to take one's work outside during most of the school year but the climate is not so severe as to preclude outdoor play or activity throughout most of the year ... with the right clothing. Integrating the outdoors with the indoors is challenging but not insurmountable in such surroundings.

An outdoor environment, even for play, requires preparation but to concentrate solely on a playground is to ignore the vast potential and unaffected diversity that comprises the world of nature. It is infinitely more complex to plan an environment that is aesthetically pleasing yet offers opportunities for play and for experiential outdoor learning as well. Diversity 'provides increased play options for children - enabling playing and learning to be more closely linked'. (Moore, 1996) It also offers places where spontaneous exploration and observation of plants and nature in different habitats can occur. Arousing interest in the world of nature through providing outdoor spaces where a person can observe and engage in meaningful activity is sensorial and practical. It is the very first step in discovering nature and one which is entirely appropriate to children under six. The appeal of offering the children more than a mere playground prompted the creation of two outdoor and one indoor micro eco-systems that make available opportunities to the children at Lincoln Montessori (which is exclusively a primary program) for a wide variety of ecological experiences.

The three environments thus developed are a prairie, a forest and an indoor addition to the school building which is a sun room turned greenhouse where tropical plants, cacti and the children's own plants can be grown and nurtured, even in the coldest weather. Each space has its own character and its own function, and each nurtures some distinct plant life as well as particular plant growth patterns. The environments support an abundant insect life, not to mention birds and small animals. The three areas are relatively small making them manageable for those who use them and all are in close proximity allowing the children to experience and to examine one or the other in minute detail or to make comparisons between all three. This level of sensorial exploration is appropriate and practicable for three to six-year olds.

There are rich layers of reality just waiting to be discovered in nature if we take the time to observe all of them. There is order, structure and repetition in nature. There are plants and seeds, flowers and leaves, birds and insects, all waiting to be noticed if we provide places and spaces, not just for children, but for everyone to do so. What follows is a description of a plan of action implemented at one Montessori school to prepare a diverse outdoor environment.

The Prairie

The prairie was the first setting to be developed and was the brainchild of the school's director Larry Verschuur. Having grown up in a small town on the edge of the prairie, Larry had more opportunity than most to experience the emptiness of the plains and the lure of 'wild places'. The vacant lot at LMS was obviously an open space that lent itself to development and here the prairie environment evolved. Earth was moved in and was contoured to fashion several rolling hills separated by small valleys. Buffalo grass, which is a native prairie grass, was planted across the lot. The hills were left, for the most part, treeless- just as the prairie might have been long ago. The prairie grass is only occasionally mowed, so it remains soft and resilient when the children roll down the slopes or gather around 'camp fires' in the valleys.

A small grove of trees in one hollow was left to become what the children make of it from day to day, a house, a den or a place to hide and seek. A natural climbing tree on the south side of the lot remained to provide a climbing structure. These formed the nucleus of what then became a natural playground where creative play evolves.

It may sound a bit desolate, much like the virgin prairie must have been but anyone who has observed children will be well aware that the most common play props used by children are those items found on the ground. Foraging is a natural instinct and the sticks, twigs, nuts, leaves, flowers, rocks and even trash discovered lying about are often gathered and used in play. Additionally there is a frame set off in one corner and a number of loose boards with which the children can build or deconstruct a house. There are large stones which can be moved from place to place to create structure or a gathering place and there is always room for a ball game, the hills and valleys offering little resistance to an energetic four or five year old. Sliding mats can be brought out in winter and glide safely down the low hills and when an occasional tree falls over, as one did once, it remained in situ for several years serving as a ship, a balance beam and a seat for adults and children.

The wide-open space of the prairie invites plenty of creative play. Through their games, their treks across the grass, or up and down the hills, the children come into contact with many of the basic elements of the natural world. There are rabbits, squirrels and ground squirrels scampering about, digging and burying their treasures in holes they make in the ground. There are ants and a myriad of flying insects hovering above the warm grass. The full force of the un-shaded sun and the unusual feel of the prairie grass can be experienced by the children as can the shelter found in the valleys on windy days. In contrast, they can savor the strength of the wind standing atop one of the hills. All of these experiences offer a distinct contrast to the adjacent woodland forest where trees and wildflowers preclude running about, where shade and bushes cut the wind and foster a diverse plant life. The forest is a place to hide and to be alone, to watch birds and insects and possibly to meditate.

The Forest

The forest at Lincoln Montessori came into being largely through the effort and generosity of a family whose child attends the school. Richard Speidell credits his enthusiasm for trees, plants and the outdoors to his experience in the nursery. His nursery, however, was not his childhood bedroom and changing area, but rather it was his father's tree nursery! (Roger Hart, who has studied and written extensively about children and outdoor environments was also the son of a nurseryman!) (Hart, 1995)

Richard began to spend his summers at the tree farm as soon as he was old enough to ride out to work with his father. Although he had chores to do around the nursery the expectations were reasonable and he always had the time and the freedom to explore the places which comprised his private jungle. There were growing trees everywhere, some large ones and others just getting started. There were busy places where pruning and planting were in progress and there were quiet corners where he could get lost or could sit silently and observe the sunlight on the leaves and grasses or the birds and insects going about their work.

The forest at LMS, for which Richard donated many of the trees and shrubs, (not to mention labor) has become the second eco-environment at LMS. His goal was to create a natural environment where children might learn through observation, discover through exploration and where they might come to know some of the natural world, not by being told about it but by being active in it.

The forest encompasses many of the settings described by Robin Moore in his article in the NATA Journal. (Moore, 1996). It is separated from the prairie by a series of vertical tree forms that create a 'wall' through which a 'gate' or entrance marks the transition from playground to forest. There are primary and secondary pathways and changes in the topography occasioned by a variety of ground coverings.

The forest space has an inherent structure and order, similar to that of the indoor classroom. It invites observation and repetition of the activity as each child explores. Paths and plants define the structure, the cycles of nature the activity. Low branching trees and those which sprout from their stems are designed to attract the smallest children. Taller trees offer varieties of shade and shelter. Plants that look alike can be closely inspected for subtle differences. Wild flowers on the forest floor are not only aesthetic but they attract all kinds of bird and insect life.

The goal has been to provide a rich diversity of species within the plant life and to use plant regimes to create micro-climates in small areas. For example, a child might experience the different effects of shade by hiding under small bushes and then hiding under a large tall tree. Through this encounter, the child is offered the chance to discover the effects of shade and shelter by way of practical awareness.

Care of the environment is an important aspect of any Montessori classroom, and just as the children mop up spills or sweep up crumbs inside, the outdoor space requires its own kinds of care. Pruning dead heads off the wild flowers, pulling weeds, raking and clipping offer 'practical life' activities to the children. Lessons about the care and use of the tools which facilitate this work are presented just as are the broom and the mop in the classroom and all the tools have appropriate storage places to which they can be returned after use. The seeds, leaves and wildflowers

provide materials for flower arranging, leaf pressing and seed sorting/classification, allowing the children to gather and to bring their outdoor 'work' indoors.

The permanency of a year-round prairie and a forest close at hand and accessible to all ensures that the children have opportunities to experience the seasons and other cycles in nature which come only once a year. Because the Montessori philosophy espouses the ideal of children remaining in the same prepared environment over a three year period, the children can grow in their experience of the outdoors. The materials are there for them to use and to come back to as they mature. The sensorial encounters of the three year old amongst deciduous and coniferous trees can provide the practical experience upon which to build a botany lesson or one about climate for the six year old. The ant or ladybird crawling up a four year old's arm provides a living model for the study of the parts of an insect at a later stage. In using the spaces each child is allowed to choose, repeat and concentrate according to his/her own age, experience and interest. The principles of the indoor environment transfer fully to the outdoors.

The Solarium/Greenhouse

Although the sun room was not designed specifically as a greenhouse or even as an environment for the children's use, (it was to be an extension of the small office space), it quickly became a plant place of yet another sort. Full length windows on the north, east and south sides of this 12x12 addition to the school building made the room an attractive place for plants, especially when the weather got cold and these had to be brought inside lest they freeze. In addition a friend who raises exotic and tropical plants had some cacti that had grown too tall for his small greenhouse. "Wouldn't we love to put them in our sun room?"

The greenhouse simply evolved and is the most recent and unplanned of the plant environments. It is tropical and desert all rolled into one. It is heated by the sun all winter long and supports unusual plants which are of great interest to the children who come in to feel the prickly cactus needles or to admire and sometimes pick an exotic flower. The plants need relatively little tending other than watering and a certain amount of clean up when they shed blossoms or leaves but the older children have taken these chores into their stride.

There is less insect life in the sunroom than outdoors although spiders do seem to find their way in and have built some fascinating webs between the plants. What has become equally exciting to the children is the effect of the sun as it moves across the sky and changes its angle of direction in the course of a day and in the course of a season. Through observation the children are introduced to the rotation and tilt of the earth in a purely sensorial and experiential way. They also observe the effects of clouds passing before the sun and feel the climactic result of a day without sunshine.

On a more practical level, the greenhouse had allowed the children to engage in planting activities all year long. Seeds and cuttings flourish in the sun filled room and the tender plants are nurtured in a special place, off the beaten track, where there are fewer little hands fingering the seedlings. Flowers can be raised during the winter and early spring. Later these can be planted in the flowerbed outside. In fall the seeds are gathered from the dead flowers and the cycle is begun again for the next year. This is always something that we had tried to do in the classroom, but the

extra special environment of the greenhouse has provided a much less risky control of error.

Conclusion

Maria Montessori pioneered the concept of a prepared environment as an aid to development. She advocated that that environment match the child's needs so that the child's energies and interests become focussed. With motives and means for purposeful activity at hand the adult can step back and stop 'trying to be the source of knowledge, stop trying to give instruction', (Haines, 2001) thus allowing the child the freedom to discover by doing things for him/her self. The three botanically and biologically diverse micro settings which have been described here do just that. They extend the prepared environment of the classroom beyond its four walls and increase the range of practical and sensorial experiences available to the children while matching their physical and developmental needs. Each space offers a concrete representation of the natural world that can be touched, smelled, handled and cared for, or simply observed and noticed. The world of nature, the observation of its cycles and places and spaces in which to engage with the natural world present lessons about life to the children. In the forest a child can discover that all life forms grow, develop, reproduce and die. This is not appropriate information to 'teach' at this level, but by becoming familiar with the cycles in nature through observation and experience, a child will have a base upon which to build more theoretical speculations about the cycles of human life and endeavor in the future.

In a similar vein, by bringing nature into the lives of the children, they may become more sensitive to the pleasures of the natural world and more concerned for its care and nurturing. Again, I would stress that 'teaching' about ecological disaster is not appropriate here, but coming to appreciate and to value nature through observation and experience may give ecology and environmental concern greater meaning at a later stage of development.

Like Larry, Richard and Roger quoted above, Thomas Berry, one of today's most outspoken environmentalists attributes his concern for the planet and its resources to a youthful encounter with nature. His story of 'The Meadow Across the Creek' which he tells in his book *The Great Work* (Berry, 1999) illustrates yet again the impact of contact with the outdoors. Berry claims his coming upon a meadow of lilies growing amongst thick grass, framed by mountains in the distance and a blue but cloud studded sky above, shaped his basic life attitude and provided him with a sense of what was real and worthwhile in life. (Berry, 1999) He was not aware of the significance of the 'magic moment' at the time, he says. But what is clear is that it was not a lesson, a lecture, a rule to be memorized or an advertisement that shaped his thinking about life but an encounter with the beauty and expansiveness of the natural world.

The miniature eco-environments at Lincoln Montessori may strike chords in some of the children who spend time there. At the same time each offers yet another direction in which the adult can follow a child who chooses to discover and possibly learn from the natural world.

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