Ecosystems in the Backyard: Preparing a Diverse Outdoor Environment for Primary (Ages Three to Six) Children

by Mary B. Verschuur

Mary Verschuur chronicles the outdoor work of Lincoln Montessori School in prairie, forest, and indoor greenhouse environments, pointing out the application of the prepared environment principles to the natural world. Implicit to the design are opportunities for caring, including various practical life exercises with outdoor tools blended into each habitat. The repeating cycles of nature and its seasons are part of the yearly cycle of children in multi-age groups, adding to sensory richness and hands-on tasks. Lincoln Montessori School demonstrates how schools can model simple and well-thought-out solutions with minimum expense and maximum engagement.

It is impossible for children to value ecological systems until they know that they exist.
—Louise Chawla and Roger Hart

The yard surrounding Lincoln Montessori School (LMS) 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 98). 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 that is entirely appropriate for children under six. The appeal of offering the children more than a mere playground prompted the creation of two outdoor and one indoor micro-ecosystems that make available to the children at LMS (exclusively a Primary program) opportunities 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 that is a sunroom 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 among 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 contoured to fashion several rolling hills separated by small valleys. Buffalo grass, 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 "campfires" 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 that can be moved from place to place to create a 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 can remain 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 and 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 unshaded 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 by 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 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.

Courtesy of Lincoln Montessori School, Lincoln, Nebraska

The Forest

The forest at LMS 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 his father's tree nursery! (Roger Hart, who has studied and written extensively about children and outdoor environments, reports that he was also the son of a nurseryman [Hart 64].) 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 that 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 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.

Courtesy of Lincoln Montessori School, Lincoln, Nebraska

Richard's goal was to create a natural environment where children might learn through observation, discover through exploration, and 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 1996 article in *The NAMTA Journal*. 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. The paths and plants define the structure, the cycles of nature the activity. Low branching trees and those that 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. Wildflowers on the forest floor are not only aesthetic but 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 wildflowers, pulling weeds, raking, and clipping offer practical life activities to the children. Lessons about the care and use of the tools that 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 and 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 that 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 among 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 or 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 twelve-by-twelve addition to the school building made the room an attractive place for plants, especially when the weather got cold and they 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 tropic and desert all rolled into one. It is heated by the sun all winter long and supports unusual plants that 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 cleanup when they shed blossoms or leaves, and 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 climatic result of a day without sunshine.

On a more practical level, the greenhouse has 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 flower bed outside. In fall, the seeds are gathered from the dead flowers and the cycle is begun again for the next year. This is something that we had always 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 focused. With motives and means for purposeful activity at hand, the adult can step back and allow the child the freedom to discover by doing things for him or herself.

The three botanically and biologically diverse micro-settings that 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

Courtesy of Lincoln Montessori School, Lincoln, Nebraska

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 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,* illustrates yet again the impact of contact with the outdoors. Berry claims his coming upon a meadow of lilies growing among 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. 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 LMS 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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