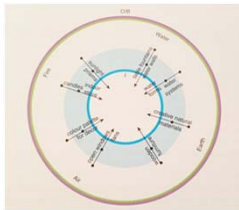


Learning *In* Nature

Learning in the outdoors, or *in* nature, benefits students by giving them a platform by which to form physical and emotional connections through personal experience within the natural world (Warden, 2015). For young students, the advantage of green, outdoor spaces in which to play and interact includes an increase in cognitive functioning, well-being, and social connectedness (Wells & Evans, 2003). In the case where access to the outdoors is limited or inaccessible, Claire Warden, author of *Learning With Nature*, discusses how to recreate and reinforce outside concepts indoors by focusing on 4 elements:

- Fire: using candles, a stove, sunlight, or prisms.
- Water: invoking use of table fountains, water walls, and water systems.
- Earth: providing natural materials and wooden furniture.
- Air: opening windows, using fans, and specifying color palette.



Warden's graph recreating an "outside" space indoors.

Warden also presents the concept of outdoor spaces as varying between small hard-surfaced areas and large nature play areas with trees and grass. She later alludes to 3 main aspects of space:

1. Connection in learning between spaces
2. Consideration of use of traditional spaces
3. Use of spaces beyond the fenced outdoor area

Outdoor space works most effectively when it has materials in it that are designed to be outside, with use of natural loose materials like sand, stone, rock, sticks, and leaves. Other examples of outdoors stated in *Learning With Nature* include kitchen gardens, the physical community of schools, and community spaces.



Example of Warden's concept of outdoor space at the Orfalea Family Children's Center

Reading and Literacy

Each of the three lessons in this garden curriculum included a reading component. Reading books out loud together and using questions that stimulate active participation relies on a relationship between listener and teller, which emphasizes the social element of language and discourse (Dugan, 1997). Immersing students in outdoor/"within" activities highlights their ability to tangibly shape their learning process, but books related to the subject matter at hand (in this case, soil and gardening) can also be used as a tool that creates personal links that students can use. By letting students interpret text presented in front of them, they are able to create dialogue that transforms the passivity of reading into engagement and inquiry (Wink, 2011) that catalyzes real world application.

Outside Lesson: Digging for Decomposers

Lesson plan modified from: Central Vermont Solid Waste Management Department: Do the Rot Thing: A Teacher's Guide to Compost Activities, 2007)

Learning Objectives:

- Gain knowledge about decomposition and the importance of life in the soil
- Discover the names of common decomposers

Preschool Learning Foundations fulfilled:

- Socio-emotional development
- Language and literacy
- Mathematics domain
- English-language development domain

Method:

Step 1: Volunteers prepared a bin of fertile soil filled with worms and other decomposers, as well as empty egg cartons for each student before the activity.

Step 2: Before stepping out into the garden, students were read *Up in the Garden and Down in the Dirt*, under a large tree and actively participated in talking about the creatures that lived in and around soil.

Step 3: After gathering the students around in a circle, volunteers explained the concept of a closed-loop ecosystem using interactive motions. Students were encouraged to follow along as the volunteers pretended to go through a cycle of planting seeds, growing plants, eating food, and composting with worms (vermicompost).

Step 4: The students then got into groups of three or four. Newspaper was laid out for each group, and soil (from step 1) spread out on top. Students were instructed to look for worms, pill bugs, and other decomposers. Meanwhile, volunteers worked with individual groups to relay interesting facts about decomposer insects and the jobs they do.

Step 5: Students transported creatures they saw into individual slots in their egg cartons. They talked about each creature in each slot with the volunteers, commenting on their appearance and movements.

Step 6. When each student's egg carton was filled, volunteers instructed the students to return the creatures back to the bin gently.

Reflections

Students were provided tools and encouraged to become investigators and explore on their own. This lesson sought to teach children vocabulary related to gardening and composting, such as "fertile," "decompose," and "decomposer." Students were introduced to the cycle of a closed-loop ecosystem for the first time by the use of a movement sequence that implemented pretend play, which simplified the concept appropriately. By replicating the same play-based approach utilized in the "inside" lesson, we created an environment in which children were at the forefront of open-ended generative learning, guiding themselves and their peers through questioning and experimentation.

When introduced to worms and soil, students were able to use tools like hand lenses to go in-depth and ask questions pertaining to their observations. Some students took on the role of the observer by noting the segmented bodies of worms, while others preferred to interact through touch by caressing the worms. The supplementation of interesting facts about worms and their role in decomposing material aided students in digesting novel information in a fun way. In contrast to the "inside" soil lesson, this "outside" lesson was able to incorporate what students had learned with concrete examples in front of them.

Infant/Toddler Yard at Orfalea Family Children's Center

In the Infant/Toddler yard at Orfalea Family Children's Center, there are currently four plots in the central courtyard, a butterfly garden, and one plot in the larger garden. The goal of the volunteers has been to support play time while promoting "outside" concepts and observing the space available for future projects.

Imaginative play has been an activity the children frequently initiate with volunteers. A game the students have been playing recently is pretending to serve food, like ice cream. This pretend play could be steered in a different fashion to focus on the garden, of which an example could be "what type of fairy are you and what type of plant do you live under?"



Butterfly Garden in Infant/Toddler yard



Bunny in Infant/Toddler Yard

The children also frequently sit with teachers in the little reading circle outside under the tree. There is a book about animals that the children often pick out to read. The volunteers have been actively relating the readings to the children's surroundings. One creature featured in the book is the stick bug. On one occasion when reading this book, the teachers discussed how the insect was camouflaged to look like a stick. The children then collected sticks to compare to the picture of the insect. Looking for birds in the trees and talking about the horses near the center are also topics discussed after reading the animal book and seeing these creatures on the pages. There is a bunny that a teacher brings to the yard as well, and the children frequently run up to the bunny to pet its ears and watch it hop.

There are garden plots on wheels that are by the entrance gates to the Infant/Toddler yard. These could be repurposed with plants that promote interaction of the five senses. Fragrant plants, brightly colored plants, plants that capture the wind or move, or plants that feel fuzzy or bumpy are all ways to incorporate the senses. Edible plants are not an option currently for this yard (due to pests), but perhaps could be planted later on in the plot in the larger garden.

Plans for the Future

- Develop the gardening plots with various non-toxic plants to stimulate the five senses
- Utilize the plot and greenhouse in main garden to expand beyond the Infant/Toddler yard
- Implement the use of books revolving around gardening to further promote food literacy and engagement
- Incorporate more nature-based indoor activities as well as field trips to complete the indoor, outdoor, beyond loop.
- Use tactile boxes filled with natural material, like soil, seeds, and rocks to support the play-based learning concept that is utilized at the Orfalea Family Children's Center



The Infant/Toddler Plot in the large garden



Plots available in the Infant/Toddler yard