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## Experiences in Nature: Pathways to Standards

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# Experiences in Nature

## A Pathway to Standards

On a warm fall day in October as leaves start to fall off trees, Sofia, 20 months old, explores the flower garden. She discovers a leaf on the ground and picks it up with her fingers to investigate. Sofia lifts the leaf up to her face as if wondering about the texture. She puts it in her hands and begins squeezing them together. Then, she searches about for her friend, calling insistently, “Kya, where Kya?”

**EXPERIENCES IN NATURE** are one of many tools for meeting early learning standards, and they provide opportunities for powerful learning moments to occur. We all know the time it takes to become

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Photos courtesy of the authors.



**Jennifer Benson and Jennifer Leeper Miller**

familiar with early learning standards, to find suitable evidence that children are meeting standards, and to understand the innate complexity of standards. In this article we show how teachers can use nature explorations as a personal guide to implementing early learning standards. In the end, our hope is to help you begin to see both nature and standards in a new light.

### Our early learning program

The educational mission at the Ruth Staples Child Development Lab at the University of Nebraska at Lincoln is “to create a community of learning” in which children, families, students, and faculty all learn from each other. The lab’s physical setting includes

three classrooms—two indoors, each its own unique space for 21 children in full-day and half-day programs, and one outdoors as a shared space for all of the children. These environments are designed to give children experiences that contribute to development of a positive self-regard, support holistic development, foster a value for all living things, and facilitate a connection to the natural world.

Richard Louv (2005) suggests that it takes loose, unstructured time for children to experience nature in a meaningful way. Equipping children with the power to use tools, observe with intent, and make theories about their observations

encourages their openness to the wonder and joy of nature. Louv believes nature fosters a sense of attachment that leads to a sense of belonging and gives meaning to their environments, both indoors and out. At the lab school our hope is that the children will form attachments with their environments through ongoing structured and unstructured

**Experiences in nature provide opportunities for powerful learning moments to occur.**

experiences. These experiences are inspired by teachers' documentation of children's engagement with the environment. The inquiry-based curriculum is inspired by the child's interests. Teachers' careful observations capture these moments of interest, which are then used to create extensions of learning in the environment.

We use an inquiry-based curriculum guided by Goldhaber's Cycle of Inquiry (Gandini & Edwards 2001). The curriculum emerges over time, using documentation as a tool to capture children's moments of interest and inquiry. The process engages children through ongoing project work (Helm & Katz 2001), which includes the concepts of *scaffolding* (Vygotsky [1934] 1986; Bodrova & Leong 2007) and *the spiral curriculum* (Dewey [1938] 1997; Jones-Branch in press).

Scaffolding is a teacher-child collaborative process in which teachers build on children's prior knowledge to facilitate new knowledge and theories and create connections between the child's previous and current experiences. These connections form an ongoing spiral from one encounter to the next. Through observation and documentation, we identify children's interests, record their learning, plan our next steps, and develop strategies for bridging school and home. Documentation also provides a link between the emerging curriculum and existing state and national learning standards.

Guidance from Loris Malaguzzi (Edwards, Gandini, & Forman 1998) gives us an active view of the environment and its role. Malaguzzi believes in a space that is valued because of its power to organize experiences, support relationships, and promote choices. Places clearly labeled with each child's name and picture, spaces intentionally created by the teacher to challenge children's thinking and facilitate social relationships, and spaces organized to encourage children to build respect for materials—these can spark all kinds of social and cognitive learning. Having these elements in the environment can support and build a sense of place and belonging for children.

At our lab school our environments are considered the "third teacher" (Edwards, Gandini, & Forman 1998). We intentionally set up our spaces to challenge children to think about concepts they have been interested in by providing provocations to challenge their prior knowledge about the concept. In this way, provocations in the environment provide immediate opportunities for engagement, and they support the work of the classroom teachers. Provocations can be as simple as introducing a new material and seeing how children use it. Four provocations follow that demonstrate children's experiences at various ages and illustrate how we use this theoretical basis to promote relationships with nature and meet early learning standards (see "Experiences in Nature Meet Multiple Standards," p. 24).

## Toddlers, age 20 months, connect in nature

Remember Sofia, in the opening vignette? The investigation continues in a shared moment between two toddlers. Sofia finds her friend Kya and wants to show her the discovery she made. Through their brief but careful communication and interaction with a plant and leaves, Kya and Sofia build a bond with nature and each other.

**Sofia walks over to Kya with the leaf she discovered.**

**"Look, Kya," she says as she pushes the leaf toward Kya's face. Kya reaches toward the plant and touches another leaf. Then they look at each other and smile.**

**"Look, Kya!" Sofia instructs Kya as she explores a new plant part.**

**"Fia, here!" Kya responds, and she hands Sofia a new part of the plant. Kya continues exploring and reaches up high to touch and grab another leaf. She pulls it down to her face and tries to lick the plant.**

**"No, Kya!" directs Sofia. She wants her friend to explore, but not by tasting.**



## Experiences in Nature Meet Multiple Standards

	<b>Toddlers Connect in Nature</b>  Age 20 Months	<b>Sequoiah Conducts a Careful Investigation</b>  Age 3 Years	<b>Derek Compares and Classifies Plants</b>  Age 4 Years	<b>Children Discuss How Roots Work</b>  Age 5 Years
<i>Social-emotional</i>				
<b>Nebraska Early Learning Guidelines</b>	<b>Sense of Self</b> Child develops independence, confidence, and competence.	<b>Self-concept</b> Child develops independence, confidence, and competence.	<b>Cooperation</b> Child increases ability to sustain relationships.	<b>Cooperation</b> Child increases ability to sustain relationships.
<b><i>The Creative Curriculum Developmental Continuum Goals</i></b>	<b>Manages Own Feelings (1-3:1)</b> Expresses a variety of emotions and needs, using facial expressions, body movements, and vocalizations.	<b>Sense of Self (1: III)</b> Shows ability to adjust to new situations: Functions with increasing independence in school.	<b>Responsibility for Self and Others (5:III)</b> Demonstrates self-direction and independence: Carves out and completes own task without adult assistance.	<b>Prosocial Behavior (13:III)</b> Uses thinking skills to resolve conflicts: Engages in a process of negotiation to reach compromise.
<i>Physical</i>				
<b>Nebraska Early Learning Guidelines</b>	<b>Fine Motor</b> Child actively explores the environment and manipulates objects.	<b>Gross Motor</b> Child develops coordination, balance, spatial awareness, and strength through gross motor activities.	<b>Gross Motor</b> Child develops coordination, balance, spatial awareness, and strength through gross motor activities.	<b>Fine Motor</b> Child explores drawing and painting materials.
<b><i>The Creative Curriculum Developmental Continuum Goals</i></b>	<b>Demonstrates Basic Gross Motor Skills (2-8:1)</b> Begins moving purposefully.	<b>Gross Motor (16:III)</b> Climbs up and down: Climbs in place easily on ramps, stairs, ladders, or sliding boards.	<b>Fine Motor 20:III</b> Coordinates eye and movement: Manipulates materials in a purposeful way, planning and attending to detail.	<b>Fine Motor (21:III)</b> Uses tools for writing and drawing: Copies and draws shapes, letters and words, including name.
<i>Language</i>				
<b>Nebraska Early Learning Guidelines</b>	<b>Speaking and Communicating</b> Child communicates for a variety of purposes.	<b>Speaking and Communicating</b> Child uses English or native language to share feelings and express ideas.	<b>Speaking and Communicating</b> Child communicates needs, wants, or thoughts through words, gestures, actions, or expressions.	<b>Listening and Understanding</b> Child listens to others and responds to feelings and expressed ideas
<b><i>The Creative Curriculum Developmental Continuum Goals</i></b>	<b>Develops Expressive Language (4-17:1)</b> Uses facial expressions, body positions and movements, and distinct cries or other vocalizations to communicate.	<b>Listening and Speaking (39:I)</b> Expresses self using words and expanded sentences: Uses simple sentences (3–4 words) to express wants and needs.	<b>Listening and Speaking (42:III)</b> Asks questions: Asks increasingly complex questions to further own understanding.	<b>Listening and Speaking (43:II)</b> Actively participates in conversations: Responds to others' comments in a series of exchanges.
<i>Cognitive</i>				
<b>Nebraska Early Learning Guidelines</b>	<b>Scientific Knowledge</b> Child develops scientific knowledge through active exploration of the environment.	<b>Scientific Skills and Methods</b> Child uses senses, materials, events in nature, and the environment to investigate and expand knowledge.	<b>Scientific Knowledge</b> Child develops increased ability to observe and discuss things that are common and things that are different.	<b>Reasoning and Problem Solving</b> Child reflects on experiences and information, and interprets or draws conclusions based on the information
<b><i>The Creative Curriculum Developmental Continuum</i></b>	<b>Understands How Objects Can Be Used (3-11:2)</b> Learns how objects work by handling them and watching others use them.	<b>Learning and Problem Solving (22:III)</b> Observes objects and events with curiosity: Observes attentively and seeks relevant information.	<b>Learning and Problem Solving (24:II)</b> Shows persistence in approaching tasks: Continues to work on task even when encountering difficulties.	<b>Representation and Symbolic Thinking (37: II)</b> Makes and interprets representations: Draws or builds a construction that represents something specific.

Sources: Nebraska Early Learning Guidelines (Lincoln: Nebraska Department of Education and Health and Human Services System, 2005), [www.nde.state.ne.us/ech/ELGuidelines/ELG\\_IT.pdf](http://www.nde.state.ne.us/ech/ELGuidelines/ELG_IT.pdf); *The Creative Curriculum Developmental Continuum for Infants, Toddlers, & Twos* (Washington, DC: Teaching Strategies, 2006); and *The Creative Curriculum Developmental Continuum for Ages 3–5* (Washington, DC: Teaching Strategies, 2005).

## Social-emotional development

Nature supports children's engagement in social interaction and arouses curiosity and exploration. In this vignette the two girls engage in the social experience of exploring their surroundings. Because of their relationship with each other, Sofia knows that Kya is the person she wants to show her discovery to. They share this moment and the goal of exploring the leaves of the plant.

These toddlers are exploring their independence and demonstrating competence in their environment. These elements encourage them to build a sense of self (relates to Nebraska Early Learning Guidelines—Sense of Self, and *The Creative Curriculum Developmental Continuum for Infants, Toddlers, and Twos* [2006] Goal 1-3:1—Manages Own Feelings). As children explore nature, they interact with their peers and naturally build social skills. Many times teachers see children negotiating, sharing, problem solving, and working together in outdoor spaces. Nature is a natural facilitator of social interactions.

### Three-year-old Sequojah conducts a careful investigation

The following documentation by Michaela Masching, a student teacher in our classroom, captures a moment when Sequojah explores in the garden and Michaela observes him watching a caterpillar moving as it crawls along the stem of the plant.

**Sequojah:** It's moving with its legs.

**Teacher:** You're right, it is!

**Sequojah:** Carefully, carefully! (*talking under his breath to the caterpillar, telling it not to fall*)

The next day the teacher provides a provocation of walking to the structure on campus that the children call the Big X. Sequojah puts his hands on top of the structure and pulls himself up onto it. He then begins crawling up slowly, sideways, and twisting first to his left side and then to his right. His teacher had observed Sequojah's previous experience and takes the next step in provoking Sequojah's thinking.



**Sequojah:** I move with my hands and feet.

**Teacher:** Yes, you do.

**Sequojah:** I be carefully.

**Teacher:** Like the caterpillar?

**Sequojah:** Yeah, caterpillar.

## Physical and motor development

Natural landscapes often lead us to physical challenges. Crawling through low bushes, ducking under tree branches, feeling tiny next to a huge cottonwood tree, or stretching our arms up just like the branches that reach up to the sky—all are common experiences in the natural environment.



## Make the Most of What You Have

Exposing children to nature is not limited to grass, dirt, bugs, and plant life. Children can make many different connections to nature without even going outside. In the smallest of spaces, the wonder of nature is evident.

- **Food.** Connect during lunch and snack times by asking questions like, "How do vegetables and fruits grow?" "Where does milk come from?"

- **Bring the outdoors inside.** Plant flowers in the classroom, watch them grow, and observe daily changes in the plants. Pose questions such as, "What happens if we don't water the plant?" "How does the plant grow?" Help the children graph the changes they see.

- **Life cycles.** Introduce a classroom pet or bring in tadpoles one day. Have the children watch their growth and identify changes. When children feed their pet, talk about how an animal needs food to grow just like they do. If a pet dies, let the children decide what the class should do rather than hide its death from them.

- **Human nature.** Talk with children about the environments where they live and compare these with animal habitats. Talk about different types of families and how human families are similar to and differ from families of other mammals. Encourage each child to draw or tell the group which foods he or she eats, and then compare them with what their peers and teachers say they eat.

Sequojah explores movement using his hands and feet to climb a large structure. He actively explores the environment and develops balance and strength through his gross motor actions. In navigating the natural environment, children develop spatial awareness and coordination (relates to Nebraska Early Learning Guidelines—Gross Motor, and the *Creative Curriculum Developmental Continuum for Ages 3–5* [2005] Goal 16:III—Gross Motor).

### Four-year-old Derek compares and classifies plants

While walking in the outdoor classroom, Derek finds in the ground a small evergreen-type plant. He picks it and brings it to his teacher, saying, “I know there is something like it.”

Derek takes his teacher to the big evergreen tree and begins touching his plant to the needles on the tree. He looks back and forth between the two, comparing them closely.

With his plant in hand, Derek finds Xiangyu and Sef and tells them about his discovery. “Compare this leaf with those trees,” he says. “I have to figure out how ‘pokey’ [with sharp points] my plant is. I think it’s the same as this one [the pine tree].”

Derek keeps trying to sort things out, saying, “I know something around here is just like this other plant.” For the rest of his time outside, he looks at various plants to find the perfect match.



### Cognitive development

Nature constantly provides opportunities to challenge children’s cognitive abilities. Changing weather and seasons, life cycles of plants and animals, and opportunities to categorize species, just like Derek was doing here, are

always present outdoors. For children the natural environment provides many chances to explore and become familiar with math and science concepts. They can use these experiences to revise or change their existing thought processes and challenge their theories about the world.

Children who explore nature use observation skills to gain knowledge and create theories about the information they gather (relates to

Nebraska Early Learning Guidelines—Scientific Knowledge, and *The Creative Curriculum Developmental Continuum for Ages 3–5* [2005] Goal 24:II—Learning and Problem Solving). They develop the ability to observe and discuss the similarities and differences among objects in the natural world. Nature challenges children to ask questions and to look for answers.

### Five-year-olds discuss how roots work

One day on a walk around our beautiful east campus landscape, the children pull weeds to see their roots. They actively debate which plants have roots and how the roots work.

**Thomas:** Here is a tree. It doesn’t have roots. You can’t see them.

**Ani:** Yes, trees do have roots. They are underground.

**Thomas:** You can’t pull a tree to see the roots.

**Madeline:** The roots hold the plant down.

**Nola:** They have to grow from dirt and soil. Water helps.

**Ani:** Roots grow. Water comes down the roots.

**Madeline:** No, roots suck up water. It goes up the roots.



The natural environment provides many chances to explore and become familiar with math and science concepts.

## Language development

Open-ended questions and inquisitive children exploring in nature are a great combination to support the development of language skills. Through interaction with nature, each other, and attentive adults, children learn rare words and differences, such as between *dirt* and *soil*, that guide their exploration. In this experience children scaffold each other's learning with their ideas about roots and debate about soil or dirt as well as the function of roots.

As teachers we notice the children building and creating new ideas through conversations with each other. Children share their individual knowledge to extend the understanding of their peers. Each child uses concepts and language that supports his or her understanding of the investigation. Through this dialogue the children form a new understanding of roots (relates to Nebraska Early Learning Guidelines—Listening and Understanding, and *The Creative Curriculum Developmental Continuum for Ages 3–5* [2005] Goal 43:II—Listening and Speaking).

## Use Conversations to Help Meet Standards

Conversations with children allow teachers to begin to understand what children know and are yet to learn. This knowledge and the questions children ask are helpful planning guides. Teachers' questions can guide children in a natural way toward appropriate standards. Here are some guidelines:

- Provide enough wait time so children can fully explain their ideas, theories, and knowledge about a topic.
- Talk about your own thought processes. Children see this as an invitation to talk about the way they think about things. Teacher: "I wonder why the snow is melting." Child: "I think because it rained yesterday."
- Offer opportunities that challenge children's theories and guide them in the direction of correct information, rather than tell children they are wrong about a theory they have. Learning is more meaningful when children figure it out on their own, with the teacher's support as needed. Let children talk and debate with each other about their theories and hear differing viewpoints. This richness makes learning meaningful.
- Ask intentional questions to scaffold children's thinking, but in moderation to allow children's creative thoughts to emerge. Teacher: "What do you know about shadows?" To provoke children's thinking and challenge their misconceptions about shadows, let them freely share their theories with you; use their initial theories to decide what to do next.

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As the children explore outside, they often create vocabulary to express their experiences. A unique language emerges about their space, which connects them to each other and to their understandings of the environment. During and after nature experiences, children use language to communicate what they know, to listen and respond to the ideas of others, and to ask questions to further their own understanding.

## Conclusion

Exploration in nature allows children to develop many skills important to later learning and academic success. Social interaction skills developed through joint collaborations in nature let children practice negotiation and sharing and help them build relationship skills. Language development naturally flows with the rhythms of nature. As children observe and take in the wonders of the outdoor world, language emerges as a key communication tool to share ideas and to express feelings, thoughts, and theories about the world.

Physical movement is a major part of outdoor exploration. Natural environments provide many movement opportunities as children use their bodies as a tool to explore spaces. Examining rocks, sticks, and plants gives children unique experiences in fine motor development. Through the exploration of natural materials, children can develop scientific knowledge. They use this knowledge to create theories about their surroundings and to adapt them as they gain more information and experiences in new settings.

All of these skills transfer to multiple settings, where children will use them in their future interactions as they continue to grow and learn.

Many meaningful things happen all at once in each of the vignettes. No one moment can easily be categorized as *only*

cognitive or physical, or language or social-emotional. In each vignette children gain skills in all developmental areas at any given time. We can see developmental domains easily identified in all the experiences and some of the early learning standards achieved (see “Experiences in Nature Meet Multiple Standards,” p. 24).

Experiences in nature provide an easily accessible pathway to addressing standards. Through all of these experi-

## Identify Learning in Ordinary Moments

By using keen observation skills teachers can identify how the environment steps in as a teacher. The natural environment spontaneously invites interaction and learning experiences for children. These points are important to keep in mind:

- Higher level thinking skills emerge when children begin to wonder about how a flower blooms. Children might observe it for several days, noticing the changes. With encouragement they will smell and touch the flower. They begin to internalize the process and make connections from one day to the next.
- Problem-solving strategies begin to form as children think about how to climb a tree. They will decide on the best strategy and make several attempts and try different ways to be successful. Children may support one another in their efforts to climb, thus working on collaboration and social skills.
- Literacy connections result as children role-play favorite nature storybooks, like *We're Going on a Bear Hunt* or *The Very Hungry Caterpillar*. Nature becomes the backdrop for their storytelling, and they begin using props from the natural world in their role playing.
- The aesthetics of nature expose children to the beauty of diversity. They become aware of differences and similarities in nature as they observe and experience plant life, bugs, sand, mud, clay, and human life, and make connections to their daily lives.

ences, one outcome is significantly clear: children are using the natural world to learn. The outdoor environment gives teachers a perfect location and the tools to teach.

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