



Early Childhood Environmental Education

Authored by

Christy Merrick, NAAEE

One million new neural connections every second. That's the incredible pace of brain development in the first years of life. After that, connections are pruned, and patterns set in. Adapting to new conditions becomes more challenging. At the Harvard Center on the Developing Child, scientists explain that "the basic principles of neuroscience indicate that early preventive intervention will be more efficient and produce more favorable outcomes than remediation later in life."¹

Economists agree. When young children are offered high-quality education in the first years of life, the benefits extend far beyond childhood into adulthood, generating returns for a lifetime.² These kinds of results can be more elusive when educational opportunities are introduced later later in life, as critical windows for intervention have closed.

Historically, most environmental education programming has been designed for kindergarten and subsequent years, missing the critical developmental windows available to educators in children younger than five. But as our understanding of the importance of the early childhood years has broadened, so, too, have environmental education programs for young children.

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Environmental education in the early years

Early childhood environmental education serves children from birth to age eight—infants, toddlers, preschoolers, and early elementary students. Environmental education for young children shares the same long-term goals as environmental education for older children, youth, and adults, but there are some important differences in how programs for young children are delivered, and who delivers them. Here, we look at four key distinctions.

A Focus on Whole-Child Development: Perhaps most importantly, environmental education for young children works toward two tightly interwoven goals: developing environmental literacy and promoting healthy child development. Early childhood environmental education focuses on whole-child development, using rich experiences with nature to promote all of the domains of development. For example, a toddler exploring a park with a teacher might enthusiastically gesture at a passing squirrel or stoop to examine a brightly colored flower. When the attentive adult responds to the “serve” from the child with a “return,” such as acknowledging the child’s interest, telling them about the animal or plant, or asking a question, a powerful serve-and-return interaction ensues. This not only helps promote brain development and create important bonds between adult and child, but also encourages the young child’s interest in and appreciation for the natural world. Healthy whole-child development is necessary for the development of environmental literacy.



Developmental Appropriateness and the Role of Play: Because young children’s capacities and abilities develop very rapidly and can vary widely between children, early childhood environmental education programs pay special attention to the developmental appropriateness of their activities. Most programs place considerable importance on the role of play, which has the benefit of allowing children to self-determine activities that fit their abilities and interests. Programs designed for older children or adults often are not appropriate for young children, as they do not typically integrate developmentally specialized approaches that target young children.

The Environment as Education: Professional educators play a critical role in delivering environmental education to young children, but the environment, itself, also plays a key educational role. Young children tend to spend more time exploring and learning from their environment than older children do, and natural environments are central to most early childhood environmental education programs. Nature play areas, parks, gardens, and natural materials that can be offered indoors and outdoors play key roles in environmental education for young children. Early childhood environmental educators can thoughtfully select and manage environments, both indoors and outdoors, that promote children’s development and environmental literacy.

The Role of Parents and Caregivers: Parents and caregivers also can play an important role in early childhood environmental education. Children’s exposure to formal education can vary greatly during the early years, with many young children spending less time in formal education programs than older children do. As a result, younger children often spend significant time with parents and caregivers, who are teaching children constantly, both intentionally and less consciously. Enlisting parents and caregivers in environmental education—whether through family nature outings, book readings, family programs, nature play areas, community-based nature groups, and more—is a key strategy in environmental education for young children.

Evidence supports the benefits of nature to children’s healthy development

As noted, environmental literacy and whole-child development are interwoven goals in early childhood environmental education. Introducing young children to environmental education can prime them for a lifetime of interaction with, and care for, the planet and all of its inhabitants. And research demonstrates that early childhood environmental education also brings significant benefits to children’s early development and promotes their success in school.

In 2020, researchers from Stanford University and Virginia Tech published a [systematic review](#) of research literature in early childhood environmental education. They found that the play-based, nature-rich approaches to education employed by environmental education programs led to positive outcomes in young children’s cognitive and social emotional development, physical development, language and literacy development—and, importantly, their environmental literacy development.³

And in a 2019 study, a team of researchers from the University of Minnesota and the University of Illinois at Urbana-Champaign found that outdoor learning is linked to positive shifts in perseverance, problem solving, critical thinking, leadership, teamwork, and resilience. The researchers also noted that nature-rich classrooms provide calmer, quieter, and safer conditions for learning. They conclude that, “In academic contexts, nature-based instruction outperforms traditional instruction.”⁴

In short, nature provides low-cost, high-impact educational opportunities that support young children’s healthy development and learning.



Key features of early childhood environmental education programs



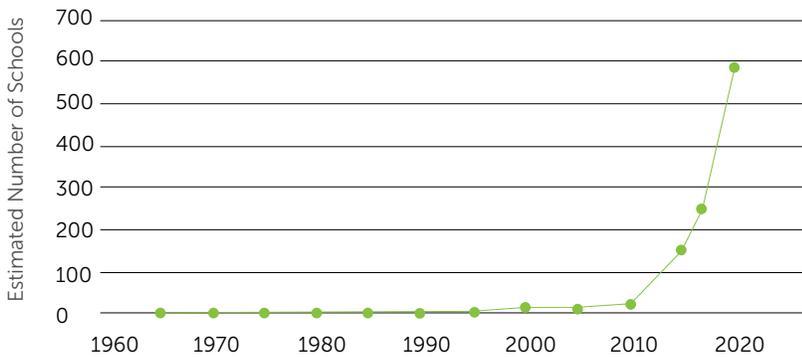
NAAEE's National Project for Excellence in Environmental Education's *Guidelines for Excellence* series includes recommendations for early childhood environmental education programs. These guidelines describe six key characteristics of high-quality environmental education programs for young children.

- **Program Philosophy, Purpose, and Development:** Programs' overarching philosophy encompasses both nature and young children's education, with a focus on cultural relevance, health and safety, partnerships, attention to interpersonal and intergenerational relationships, and commitment to ongoing evaluation and assessment.
- **Developmentally Appropriate Practices:** Programs are based on research and theory, focus on providing authentic experiences, are inquiry-based and child-directed, and focus on whole-child development.
- **Play and Exploration:** Programs ensure opportunities for nature-based play and exploration, both indoors and outdoors, with a focus on the use of the natural world and natural materials, and attend to the role of adults in supervising play and exploration.
- **Curriculum Framework for Environmental Learning:** Programs provide opportunities for children to explore their environment and develop knowledge and skills with a curriculum framework that focuses on social and emotional growth, curiosity and questioning, development of environmental understandings, skills for understanding the environment, a personal sense of responsibility and caring, and physical health and development.
- **Places and Spaces:** Programs provide environments—both indoors and outdoors—that enhance development, include natural components, are comfortable for both children and adults, are well maintained and usable for all learners (including children with disabilities), support health and safety, and are environmentally sustainable.
- **Educator Preparation:** Educators have a solid foundation in early childhood environmental education, maintain high standards of professional conduct, attend to their own developing environmental literacy, plan and implement effective instruction, foster learning, and assess and evaluate participants' learning and progress toward program goals.

Outdoor, nature-based learning for all young children

Early childhood environmental education can take many forms, from informal caregiver-and-child programs at parks to schools that immerse children in nature. Immersive nature-focused preschools—often referred to as outdoor preschools, nature preschools, or forest schools—offer a nature-rich curriculum that allows children to play and explore outdoors on a frequent, regular basis while simultaneously attending to developmental goals that prepare children for kindergarten and beyond. Over the past ten years, nature preschools have been spreading rapidly in the United States (see graph) and can now be found in almost every state.

Estimated number of nature-based preschools, 1965-2020



Source: Natural Start Alliance



Despite the growing popularity of these schools, many children do not currently have equal access to this approach to education. Children of color and dual language learners, in particular, are under-represented in these programs.⁵ *The Washington State Outdoor Preschool Pilot Case Study* explores a strategy to bring outdoor, nature-based education to more children by changing state policy.



DOWNLOAD THE CASE STUDY
"The Washington State Outdoor Preschool Pilot"





Discussion Questions and Activities



DOWNLOAD THE CASE STUDY
Washington State Outdoor Preschool Pilot"

Authored by
Alex Russ

After reading the *Early Childhood Environmental Education* chapter, discuss any of these questions:

- 1. Child development.** Can you recall experiences you had with nature as a child? Do you remember what you did and how you felt? Who were you with? Do you feel like those or other experiences have shaped who you are today in any way?
- 2. Whole-child development.** Imagine two children are engaged in outdoor play and are building a fort together out of branches, sticks, leaves, and other materials they find outside. Can you brainstorm a list of ways that this play could potentially support the children's development physically, cognitively, emotionally, socially, and also support their developing environmental literacy?
- 3. Serve-and-return.** How can you use serve-and-return interactions—such as eye contact, gestures, facial expressions, a laugh, or sharing a toy—to help a child learn about the environment in outdoor settings?
- 4. The role of play.** If you were asked to adapt a presentation designed for older children to be a more play-based experience for young children, what kinds of experiences or activities would you think about offering? Given that children's development varies widely between children, how would you ensure that the experience benefits all children in the group?
- 5. Forest schools.** In outdoor preschools or forest schools, children spend most or even all of the school time outdoors in almost all kinds of weather. The schools can be located in public parks, in nature centers, or on private land. What do you think are some of the possible upsides of using nature as your classroom? What do you think are downsides or challenges that these schools might encounter?
- 6. Natural materials and ecosystems.** In your geographic area, what natural materials are available for children, and how can you use these materials for play? In your neighborhood or within a short distance, which ecosystems provide a safe environment for unstructured play and purposeful nature exploration, and how would you introduce children to these ecosystems?
- 7. Safety concerns.** Nature play brings many developmental benefits for children, but nature play is only beneficial if risks are managed so that the play is healthy and not hazardous. Think about a nature play activity like climbing a tree or exploring along the shore of a pond. What kinds of safety concerns might parents or educators have about young children engaging in the activity, and what kinds of things could they do to address them so that children can engage in the activity safely?
- 8. Mutual benefits.** Nature-rich environments contribute to a child's emotional, physical and cognitive development, including environmental literacy. In your opinion, how can environmental literacy acquired in early childhood contribute many years later to adults' environmental behavior?

Serve-and-return engagement

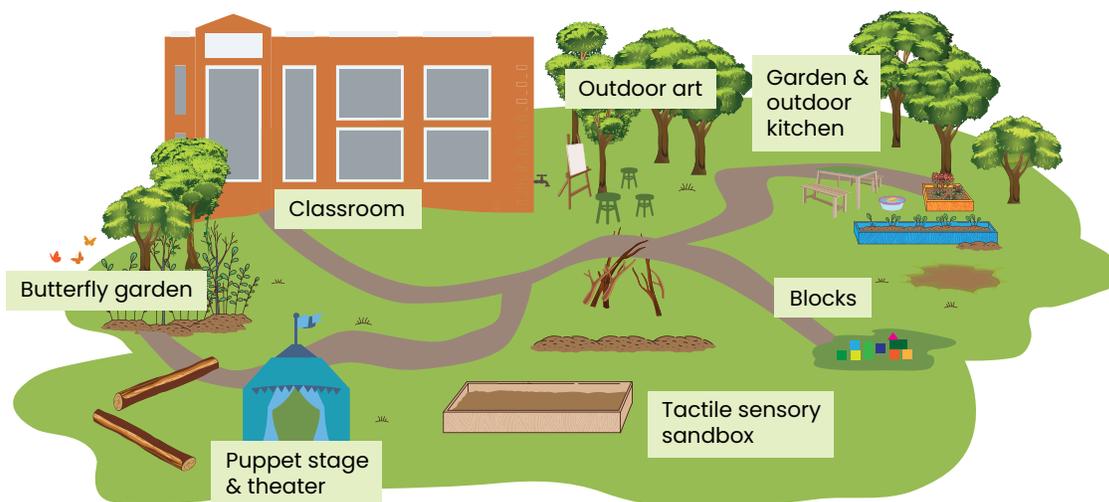


After reading the *Washington State Outdoor Preschool Pilot* case study, discuss these questions:

1. **Piloting.** If your state launched a program to pilot outdoor preschool licensing, what kinds of things would you recommend testing or monitoring to determine the programs' safety and effectiveness?
2. **Equity and Access.** What can educators in your community do to make nature-based education accessible, effective, relevant, and enjoyable for children from a diversity of cultural and socioeconomic backgrounds?
3. **Inclusion Outdoors.** Young children with disabilities are at risk of being left out of outdoor learning opportunities. What kinds of concerns do you think programs might have about including children with physical or mental disabilities? For each of those concerns, what are some ways programs could possibly adjust their physical spaces or program practices to address those concerns to accommodate all children?
4. **Outcomes.** If you established a new outdoor preschool program, which improvements in child development would you hope to see correlated with increased exposure to nature? How would you measure them?

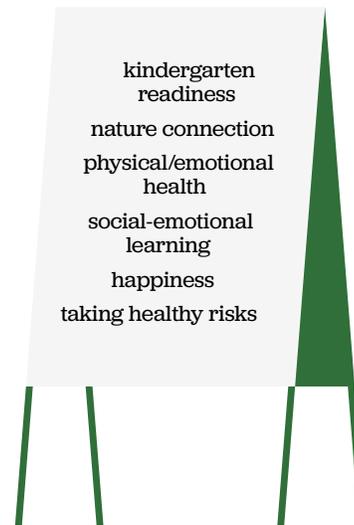
Use these activities to learn about early childhood environmental education and outdoor preschools:

1. **Design a nature play area.** In small groups, draw a nature play area for a local outdoor preschool, an elementary school, a nature education center, or an urban ecology center. Each small group can present drawings to the large group, and ask each other questions. Questions could include: What elements did you include for dramatic play, motor skill development, nature observation, making art, free play, and teacher-guided activities? How does this play area accommodate children with special needs? Are there places in the play area that could reflect the cultures of the children and teachers in the program? How does this play area foster exploratory play (learning about surroundings), constructive play (combining natural objects), or dramatic play (pretending to be someone or something else)? Which natural materials, native plants, and local ecosystems can you use in this play area to foster interaction between children and nature? Are there elements of this play area that allow children to engage in activities that are often associated with indoor learning (such as reading or writing)? Use the image below as an example.

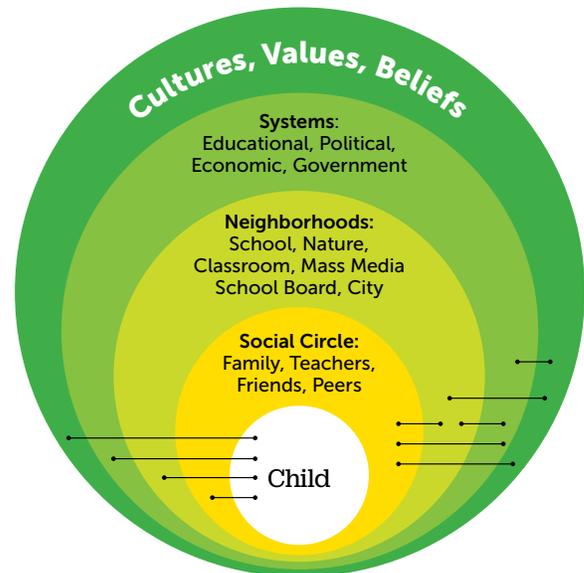


2. **Outcomes ranking.** In small groups, brainstorm any desired outcomes of an outdoor preschool (see the image of a flip chart for examples). Think about outcomes that are important for children in your location, as well as outcomes important for their families and communities. Rank them by their importance for your outdoor preschool program. Compare results between different small groups. What are the three most important outcomes in each group? Why did you choose these outcomes?
3. **Ecological systems theory.** Find information and learn about Bronfenbrenner's ecological systems theory.⁶ In sum, this theory claims that children develop within multiple levels of surrounding environments: from immediate family, friends, and teachers to the broad educational system, culture, values, and regulations. In small groups, discuss: How do outdoor preschools influence learning within this system? How do outdoor preschools influence children's interactions with other people and the environment reflected in this system? What role can a community, parents, and local cultures play in outdoor preschools? How do outdoor preschools fit and change the current educational system, cultures and social values in your location?

Examples of outdoor preschool outcomes



A modified version of Bronfenbrenner's ecological systems theory.⁷



Endnotes

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3. Nicole M. Ardoin and Alison W. Bowers, "Early Childhood Environmental Education: A Systematic Review of the Research Literature," *Educational Research Review* 31, (November 2020), <https://doi.org/10.1016/j.edurev.2020.100353>.
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6. Urie Bronfenbrenner, *The Ecology of Human Development: Experiments by Nature and Design*, (Cambridge, MA: Harvard University Press, 1979), <https://www.hup.harvard.edu/catalog.php?isbn=9780674224575>.
7. Bronfenbrenner, *The Ecology of Human Development*.