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# PARTNERING WITH *Nature* IN EARLY CHILDHOOD

## A GUIDE TO *Outdoor Experiences*

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## BULK PURCHASE



## DISCLAIMER

# DEDICATION

To Anya and Rowen,
our spirited nature child and grandchild,
may you find peace and joy in nature always.

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# ACKNOWLEDGMENTS

Foremost, thank you to all of the preschool teachers, past and present, at Schlitz Audubon Nature Center for your inspiration, your ideas, and your insight. Our nature-based curriculum was literally developed in the field (and forest) under your care and guidance. Thank you for the creativity, compassion, and joy that you carry with you into the classroom, for the depths of your dedication (even on days that require waterproof gear and an extra set of mittens), and for making it your mission to teach in partnership with nature.

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# INTRODUCTION

*Partnering with Nature in Early Childhood Education* is a practical guide to creating a nature-based curriculum for young children. It draws its ideas from nearly twenty years of nature-based early childhood programming at the Schlitz Audubon Nature Preschool in Milwaukee, Wisconsin. This book is created as a resource for anyone interested in a high-quality nature-based preschool curriculum. It can support new programs that are just starting up and those hoping to infuse more nature into already existing classrooms. It is written for educators, by educators, and it turns theoretical ideas about the benefits of nature in childhood into achievable results.

The Schlitz Audubon Nature Center is located just north of downtown Milwaukee on a bluff overlooking Lake Michigan. It features 185 acres of forest, prairie, wetland, and ponds. Our mission is to provide a high-quality early childhood environment that will meet young children's developmental needs while initiating them into a lifelong, meaningful relationship with the natural world. Although many of our nature activities seem place-specific, we recognize that most early childhood programs may not have equal access to nature. For this reason, we make a point of including ways to explore nature in a variety of settings, including neighborhoods that seem at first glance to have no natural spaces. We believe that for very young children, a single tree can be as meaningful as an entire forest. A dandelion growing through a crack in the sidewalk is as worthy of attention as a field of flowers. We have collaborated for more than a decade now with two urban preschools in central Milwaukee that serve families whose incomes are below the federal poverty level, and we know firsthand that, with the right mix of understanding and communication, it is possible to create meaningful nature experiences for children everywhere.

For those programs that do have access to a natural area—a city park, a school playground with a small patch of green space—we discuss how to safely and effectively take children outdoors to explore the world beyond the four-walled classroom. We include a list of essential items to carry and discuss challenging weather and bathroom concerns. Our goal is to make *Partnering with Nature in Early Childhood Education* a useful guide while trusting in the creativity and capability of educators to adjust for their specific programs as needed.

Our decision to publish this book comes from a growing national interest in nature-based education in the preschool years. Teachers and directors from across the country regularly contact our school requesting our curriculum. As new nature preschools and forest kindergartens continue to open each

year, it is clear that this practical, inclusive curriculum is needed, as it not only talks through daily activities but also shows teachers how nature can support state-mandated standards. We include an assessment tool designed with these standards in mind.

We have organized this book into eight chapters, as follows:

- **Chapter One: Making the Case for Nature and Play in an Early Childhood Curriculum**
  In this opening chapter, we make the case that nature-based play is an essential part of early childhood development. Playing in nature provides children with opportunities to create and problem solve in a stimulating, ever-changing environment. Nature play strengthens social skills and communication. It exercises fine motor skills. And it allows children to develop confidence and self-efficacy, enabling them to encounter new experiences and potential challenges knowing they have the skills to succeed.
- **Chapter Two: Creating a Nature-Based Classroom**
  This chapter demonstrates simple approaches to creating a classroom infused with nature, such as adding potted plants, photographs, and pine cones; constructing campfire circles; and setting up a terrarium or toad habitat. We look at ways to add natural materials to already existing art areas, sensory tables, blocks, and dramatic play zones. We also discuss the purpose of each area and the role of the teacher as children move from space to space, exploring and experimenting. We describe the outdoor classrooms and how these spaces evolve and change over time. The chapter ends with a discussion on licensing and meeting state-mandated regulations.
- **Chapter Three: Teaching with Intention**
  This chapter covers what we consider the most fundamental and important part of our nature-based curriculum: our teaching intentions. We consider these to be the foundation of our program and our approach to assessment. Teaching intentions differ from activities or lesson plans. Our intentions include creating a sense of community in the classroom, developing environmental awareness, encouraging independence, learning to value the ideas of others, developing empathy, and building an awareness of other cultures, all while developing a sense of responsibility and compassion toward nature. We see these as the underlying themes that inform our entire program.
- **Chapter Four: Putting Intention into Practice**
  For early childhood teachers who are new to nature-based education, this chapter is a helpful guide that will allow them to venture forward with confidence. It includes a sample class schedule, advice on the fundamentals of hiking with children, a list of what to include in a backpack, an outline of seasonal topics, and seasonal activities at a glance.
- **Chapters Five-Seven: Nature-Based Curricula in Autumn, Winter, and Spring**
  These chapters provide examples of seasonal topics and activities that link our intentions to our daily practice. Each section includes general concepts about the seasonal topic; a discussion of how to explore that topic outdoors; and ideas for art and science activities, sensory and discovery tables, and group-time opportunities.

## A NOTE ABOUT SEASONAL TOPICS AND ACTIVITIES

At our nature preschool, the four seasons are the backbone of our curriculum, and we observe certain calendar events, such as the winter solstice, with gatherings and celebrations. Because Wisconsin is in the temperate zone, we experience spring, summer, autumn, and winter with noticeable differences in light, temperature, flora, and fauna.

We recognize that not everyone lives in the northern United States. We tend to experience our coldest days in January and February, but we understand that in other parts of the world the coldest days may fall in July. We also understand that some programs may never experience winter the way we understand it and have no use for our snow activities. While you may not have snow where you live, you most likely have a season of rest. Likewise, you may not have sugar maple trees, but you almost certainly have edible plants and local flora with a rich cultural history. You may not have your mud season in March and April, but you almost certainly have a mud season. We know that educators are adaptable enough to transpose these activities to work with their own seasons and climates, just as they take other teaching ideas and reconfigure them to their individual classrooms.

- **Chapter Eight: Challenges and Inspiration**
  This chapter addresses some of the ongoing challenges that come with teaching outdoors, including how to hike with children who walk and explore at different paces (the "runners" versus the "seed counters"); managing bathroom needs when far from a building (one of our most common questions); handling inadequate clothing, threatening weather, and safety; dealing with emergencies; and balancing free play with more focused learning. We also address COVID-19, which introduced a new set of challenges. In an interesting twist, this health crisis pushed us to move outdoors even more and to replace some of our most beloved preschool traditions with new ones. With each new decision, rather than feeling only the loss we expected, we have gained. We end the chapter with a hard look inward, noting that there is still a lot of work to do when it comes to providing nature-based programs for children of diverse needs and backgrounds. We highlight a number of outstanding programs across the country that are leading the way toward greater inclusion, and we discuss our a long-running partnership with two urban preschools in Milwaukee.
- **Appendix A** offers a list of recommended books about nature to share with children. **Appendix B** features our Nature-Based Early Childhood Assessment Tool.

We conclude the book with this seemingly simple but often misunderstood idea: Nature is not simply *what* we teach. Nature is *how* we teach. It is our mentor. Nature reminds us to slow down, embrace the quiet in-between moments, and focus on our deeper intentions. It inspires us to find the courage and the strength we need in difficult moments. Nature, if we let it, can encourage us to become better educators by allowing us to feel more fulfilled and more at peace as human beings. That, we believe, is the greatest gift that comes from partnering with nature—and what *Partnering with Nature in Early Childhood Education* is all about.

## - CHAPTER ONE -

# Making the Case for Nature and Play in an Early Childhood Curriculum

**Play is often talked about as if it were a relief from serious learning. But for children, play is serious learning. Play is really the work of childhood.**

— Fred Rogers

Imagine a classroom where there is moss on the floor, sky for a ceiling, and walls made out of towering pines. Imagine a room that is always changing, perhaps cool and sunny one day and warm and rainy the next. In place of indoor art time, the children take watercolor paints to a spot near the edge of a shallow pond. Instead of a sheet of math problems, they measure eight-foot-high sunflowers or subtract water from sap as they cook down maple syrup.

With nature as our teaching partner, the classroom expands beyond its usual four walls to include the natural world, whether it be shoreline, prairie, or the neighborhood sidewalk. Partnering with nature provides teachers with almost endless opportunities to educate and fascinate. Whether we're exploring amphibian life cycles, bird migration, autumn leaves, or the hidden world beneath a rotting log, nature allows us to explore and engage with our students in a classroom that is always in flux. Taking a group of children outdoors does not come risk-free, but, despite the risks (or perhaps because of them), the benefits of outdoor exploration are powerful and lasting.

In this first chapter, we make the case for an early childhood education that's based on nature and play. First, we briefly describe the history of nature in early childhood education. We then look at the skills and dispositions young children develop by being in nature. Finally, we discuss how high-quality nature programs support children's play and learning, prepare them for later schooling, positively affect their brain development, and foster a sense of spirituality and wonder.

# THE HISTORY OF NATURE IN EARLY CHILDHOOD EDUCATION

Although there has been a rapid rise in the number of nature-based early childhood programs throughout North America in the past decade, taking children outdoors to learn is hardly a new idea. In the early 1800s, Friedrich Fröbel, the father of kindergarten, provided garden plots for young children to cultivate (Morrison, 2001). Maria Montessori, in the early 1900s, also provided opportunities for children to cultivate gardens, and she connected nature education with the natural development of the child (Montessori, 1912). Rudolf Steiner, who started the Waldorf School in 1919, created classrooms that included natural materials and celebrated the seasons. The time spent playing with these materials formed a foundation for scientific understanding, engendering a sense of responsibility for the natural world (Schwartz, 2009). Following World War II, the schools of Reggio Emilia emphasized the importance of environments as the third teacher (after the parent and the classroom teacher) and pushed for classrooms with natural light and ready access to nature (Edwards, Gandini, and Forman, 1998). Historically, nature education has been a key part of preschool and kindergarten curricula, providing authentic experiences for young children, especially for learning through the senses (Bailie, 2016).

Although nature education has been a fundamental part of early childhood education, following the World Wars and the launch of Sputnik, academic instruction took on more importance in the primary grades. Early childhood programs often sacrificed nature education to prepare children for this higher level of academics (Elkind, 1986). Although children who are encouraged to read at an early age often outperform their peers—at least in terms of test scores—they rarely maintain this advantage beyond kindergarten or first grade. As the years go by, these same children tend to express frustration with school, having never learned to enjoy the actual process of learning, which should have begun with play (Gray, 2013).

In recent years, kindergarten teachers have noted that, for the first time in memory, children are entering elementary school lacking the necessary hand strength and fine motor skills to hold a pencil properly, use scissors, or control a bottle of glue. While these children can cut and paste on a screen easily enough, they lack the coordination to do so in real life. Researchers attribute this decline in fine motor skills at least in part to a dramatic decrease in simple, unstructured outdoor play (Marselas, 2015).

Research backs up what many early childhood educators have known for years—there is a direct link between physical activity and early childhood brain development (Jensen, 2013; Medina, 2014). When you restrict a child's access to movement, you create a developmental delay that should not exist. Early childhood educators often find themselves at odds with a system that emphasizes unrealistic standards, such as reading before children complete kindergarten, and worksheets in place of real experiences. We are left with children who are being asked to perform tasks for which they are physically and mentally unequipped, a reality that many families are starting to resist.

Those of us fortunate enough to teach in schools that support and encourage nature-based play see firsthand the powerful and lasting developmental strides that our students make when allowed to run, climb, touch, and learn in an outdoor setting. At the Schlitz Audubon Nature Center Preschool, we

simply do not believe that a worksheet is as valuable as following a stream of water through the woods, down a ravine, over a waterfall, and into a lake. The former is a sedentary and often abstract exercise that holds little meaning for the child. In contrast, the latter incorporates adventure and discovery, large motor skills, curiosity, a sense of place, and scientific concepts such as gravity and the water cycle.

Of course, we understand that most preschool programs do not have access to hills, rivers, forests, or ravines. Yet, authentic experiences can be had with a single tree, dandelion, or patch of sky. And the impact that exploration and play have on children's development is enormous.

## NATURE AND THE DEVELOPMENT OF SKILLS AND DISPOSITIONS

A growing body of research supports the benefits of nature-based education on the developmental domains of early childhood for developing motor skills (Fjørtoft, 2001), decreasing symptoms of attention deficit disorder (Di Carmine and Berto, 2021; Faber Taylor and Kuo, 2011), and increasing resilience (Ernst, Juckett, Sobel, 2021). However, we do not intend to repeat the full extent of that research in this book. Much of what we know about the benefits comes from our twenty years of experience working with young children in the natural world. Therefore, we know that a high-quality nature-based program can—and should—support the following skills and dispositions:

**Curiosity:** Spending time in nature encourages children to notice their surroundings. The natural world is filled with things to pick up, lift, catch, hold, and release. There are animal tracks to follow, storm clouds to monitor, puddles to jump in, and new discoveries around every bend. Teachers provide opportunities for their students to collect and display objects from nature (always taking care to differentiate between what is appropriate to collect, such as a pine cone or an empty shell, and what is not, such as bird eggs or a shell that houses a living creature). When children have opportunities to share what they find with others, to ask questions, and to celebrate their discoveries, their curiosity grows.

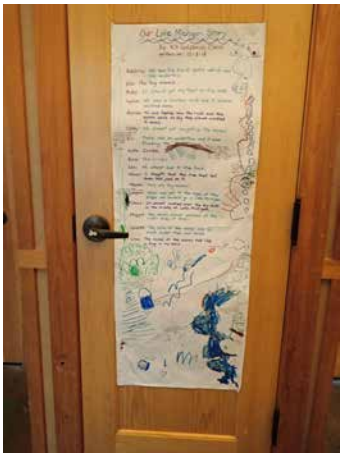
**Observation skills:** In a nature-based program, children spend time exploring sensory-rich natural environments that are constantly changing. They develop observation skills by noticing changing details in the environment and ignoring those that remain constant. We provide them with tools to support their observations, such as magnifying glasses and binoculars, which help children notice changes such as birds flying or plants sprouting. Observation helps a child develop *ecoliteracy*, the understanding of natural systems that support life on Earth. An observant child will soon be able to identify a red-winged blackbird, a swallowtail butterfly, and even poison

ivy and will begin to understand the connections among all forms of life in an ecosystem. Such knowledge helps develop confidence, sustainable practices, and a foundation for future academic learning.

**Sensory experiences:** Young children derive nearly all of their information through sensorimotor experiences. The more comfortable children are in using their senses to make discoveries, the more they will gain from each new experience. Teachers support sensory-based experiences by encouraging children to touch a worm or hold a frog (and by being willing to do so themselves). Using positive language when describing sensory experiences such as walking in mud or going out in the rain encourages nature-based investigation through observing, handling, listening, smelling, and even tasting (when appropriate). Activities that encourage the senses include touching trees, moss, and water; taking color hikes or listening walks; and growing herb gardens and smelling the plants and soil in different seasons. Stepping outside is a sensory experience.

**Ecological identity and understanding of self:** Teachers encourage a child's understanding of self and of the natural world by visiting the same tree or pond in several seasons, comparing each visit with the one before. Repeat visits help children draw on their memories of past experiences of a place. Opportunities to walk the local landscape, learn the names of the flora and fauna in the area, and grasp the local environment through the senses help children to determine their own place in the natural world. These activities can support children's development of an ecological identity (Pelo, 2013).

**Experimentation and critical-thinking skills:** Children develop confidence in their ability to make predictions and strengthen their understanding of cause and effect as they experience natural phenomena. Teachers encourage experimentation by bringing attention to children's actions and the resulting effects. They also provide activities specifically designed to promote predictions, experiments, and conclusions. For example, at our preschool, we often try to predict the size of the waves on Lake Michigan. We listen for the sound of the water from a distance, observe the strength and speed of wind, and even note the air temperature. The children may start the year not understanding that these factors are connected, but over time they recognize the links. After several months, the children have an excellent sense, even before they arrive at the beach, of how loud, high, quiet, or still the waves will be. They are learning critical-thinking skills, and they are learning to make guesses based on evidence rather than waiting for the answer.



**Communication skills:** Language includes reading, writing, talking, and listening. Because young children are in the process of learning to communicate orally, it is important that teachers speak with children, individually and in both small- and large-group settings, every day about their experiences in nature. They should use scientific language in these discussions (for example, saying *cardinal* rather than "red bird" and *migration* rather than "flying away"). Reading stories with nature themes encourages children to look for books about nature on their own. Teachers encourage children to take photographs and to draw pictures of their experiences in nature. Meanwhile, the teachers use a camera to document children playing and exploring, later sharing the images with the children to spark further conversations.

Beginning attempts to communicate about nature in writing and drawing are also valuable. Teachers can introduce children to the concept of writing by allowing them to handle and experiment with different writing tools such as feathers in paint, sticks in sand, and pieces of charcoal on wood. Young children can then simply play with different writing implements and designs before gradually learning to form letters.

Several of our teachers have documented the words and phrases children use on the trails while in the midst of an observation. While watching a controlled prairie burn, for example, a teacher recorded children saying *smoke*, *crackle*, *fireplace*, "sounds like popcorn popping," *stinging eyes*, *white smoke*, and "black ash in the air like snowflakes falling." Later, she transcribed these words and phrases onto paper and showed the parents these wonderful examples of child communication, which is often far more astute and poetic than we may realize in the moment. Communication is a part of literacy. We sometimes prioritize learning to read and write while failing to honor and appreciate the importance of children sharing their own stories aloud.

**Large motor skills:** Large motor activities in a natural environment include hiking and walking on uneven surfaces, running, climbing, jumping, digging, boot-skating on ice, lifting, pulling, raking, and heavy work such as hauling water and rocks. These types of activities challenge children to take manageable risks and help them learn self-regulation and ways to be safe with their bodies. Activities such as sweeping tall grasses with insect nets involve crossing the body's midline, which promotes brain development. Playing actively in nature also helps children build stamina throughout the year, provides a noncompetitive atmosphere in which to develop physical skills and eye-hand coordination, and gives children a sense of accomplishment.

**Fine motor skills:** Fine motor activities are abundant in nature play. When children shuck corn, pry caps off acorns, take apart pine cones, and pick up shells, rocks, and beach glass, they are developing fine motor skills. As they pick up sticks and draw designs in dirt or sand, plant seeds, open the pods of a wild indigo plant, and stack rocks, they are using fine motor skills as well as honing their ability to focus. These skills encourage patience and self-regulation, which are necessary before learning to read.

## LEARNING THROUGH PLAY AND DIRECT EXPERIENCES WITH NATURE

The National Association for the Education of Young Children (NAEYC) reminds us that "play is the central teaching practice that facilitates young children's development and learning. Play develops young children's symbolic and imaginative thinking, peer relationships, language, physical development, and problem-solving skills. All young children need daily, sustained opportunities for play, both indoors and outdoors . . . Through play, children explore and make sense of their world" (Friedman et al., 2022).

Play is an essential part of childhood and is fundamental to the way children grow and make sense of their experiences. Playing in nature allows children to interact with diverse habitats, identify different plants and animals, and build and experiment with natural materials. Nature affords opportunities for children to overcome physical challenges, work in cooperation with others, and develop empathy for other living organisms.

Outdoor learning experiences help turn children from passive learners into active ones. The teachers act as facilitators, helping to guide experiences while encouraging the children to listen, observe, think, and make connections. In doing so, the children are eagerly involved in their own education. Nature has become their laboratory, a place where they may experiment.

At the Schlitz Audubon Nature Preschool, the children may spend hours looking under leaves and logs. They will regularly uncover pill bugs, worms, millipedes, and beetles. By studying these secretive creatures and learning how to touch, hold, and place them gently back in the soil, children express care and respect for even the smallest living things. In the process, they also discover hidden worlds. They learn about the unique body parts of the worm, so unlike our own, and the importance of healthy soil. They learn about exoskeletons, food chains, and camouflage. They learn through observation, by asking questions, and with the guidance of their teachers. Curiosity lies at the heart of the entire experience.

In the winter, our preschool students might wish to venture across a frozen pond. Before doing so, they must first stop and wait while the adults test the thickness of the ice. They need to learn caution and risk assessment. Once on the ice, they test their balance and quickly discover that they must move

in new ways to manage the slippery surface. Water freezes, they realize, and later it melts, and this melting and freezing is connected to temperature. They may look through the ice and recall the turtles and frogs, now sleeping, that they saw swimming just a few months earlier. The children discover that animals also must change their behavior when the temperature changes. They learn about animal adaptations along with the physical properties of water in a way that is both appropriate and meaningful for their age.

Stephen Kellert (2005), Professor Emeritus of Social Ecology at the Yale University School of Forestry and Environmental Studies, describes three ways children experience contact with nature: direct, indirect, and vicarious. Direct contact with nature is often spontaneous and unsupervised and occurs in spaces such as forests, creeks, parks, or even a child's backyard. Children might, for example, look under logs in the woods, catch frogs in a pond, or chase butterflies in a field. Indirect contact with nature is more structured and organized and occurs in more controlled environments under the supervision of adults, such as during a visit to a park, zoo, garden, or nature center. Vicarious contact with nature involves no actual contact with living organisms. Instead, children are presented with images or representations of nature. Reading a nature book or watching a television show about animals is vicarious contact. All three types of contact with nature are important for children, but Kellert (2005) asserts that "both theory and evidence support the view that direct, ongoing experience of nature in relatively familiar settings remains a vital source for children's physical, emotional, and intellectual development."

In our nature preschool, we do provide vicarious experiences by reading books and looking at pictures. We also provide indirect experiences when we plan a specific structured indoor or outdoor activity.

Our primary aim, however, has always been to offer children direct experiences. Such experiences include time for the children to play and explore outside without the perception of adult supervision. There is nothing wrong with vicarious and indirect experiences overall, unless they entirely take the place of direct experiences. Reading a picture book about exploring a forest is hardly the same as actually hiking in a park with a naturalist. And a structured hike in the park isn't the same as unstructured play in a forest where children make discoveries on their own.

## SUPPORT FOR INDIVIDUAL SUCCESS

It is worth pausing for a moment to note that while it is important for children to have direct experiences outdoors if they are to develop any lasting relationship with nature, we need to provide these experiences in ways that respect each child's temperament and personal needs. Children with mobility issues or vision impairment, for example, can enjoy nature just as much as children without these specific challenges, but the space may need to be adapted. Children who are just expanding their horizons, venturing for the first time away from the familiar bond of their family into the unknown, need to feel safe as they explore wild areas.

Creating an outdoor play space with clear boundaries will often encourage free play among preschool children in a way that an open, boundless space will not. Providing tools such as watering cans, shovels, and wheelbarrows can help younger children feel more assured as they play outdoors. These tools encourage active movement as well.

We do not advocate taking very young children into the woods and letting them play without limits. Some boundaries, some sense of caution, and some guidelines are important. If children are throwing rocks, breaking branches, or hurting other living things, adults should intervene. If children are climbing logs and testing their balance or are busy building forts and fairy houses, it is best to stand back and let their creativity flourish. Children deserve the freedom to explore and to assess for themselves the limits of their own abilities. Teachers and parents need only step in when children fail to meet expectations for safety or when their explorations are, perhaps accidentally, harming other living things.

Having said this, adults should not remain silent and invisible while children play and explore in nature. While children should not feel overly controlled by adults as they play, our nature preschool teachers regularly demonstrate their interest in and enjoyment of the natural world. They model respect by showing the children how to handle living creatures and when to leave them alone. They are present when children wish to climb trees or logs, supporting them with either hands or words. They are willing to get wet or muddy and are dressed as the children are, in rain pants and waterproof boots, ready to play.

We have found that the more teachers and children interact together within the natural world, the stronger the bond between them. We regularly work to find the balance between joyful adult-and-child interactions and giving children time and space without the perceived presence of adults to experience nature on their own terms.

## NATURE AND ACADEMIC READINESS

One question prospective parents ask us most frequently is how a nature-based curriculum will help their child become ready for school. Although several parents in our community agree that young children learn best through play, they also know that kindergarten "is the new first grade," and they do not want their children heading off to grade school without the tools to succeed. "But do you also teach reading and math?" is one of our most common questions.

The answer we give to parents is yes, we do teach early reading and math, but not necessarily using the approach they expect. We do not push writing to children who are not ready to hold a pencil. We do not have a designated letter of the day. Rather, when we learn about life cycles and seasonal changes, we are learning about patterns. When we identify and mimic the springtime calls of chickadees and red-winged blackbirds, we are gaining a deeper understanding of how language works. We use literacy tools and play with numbers in ways that are organic and correspond to how preschool-aged children learn.

Joshua Sneideman, the Albert Einstein Distinguished Educator Fellow at the Office of Energy Efficiency and Renewable Energy, notes that teaching mathematical and science concepts as stand-alone topics with no connection to the wider world not only leaves the subjects devoid of meaning but also fails to consider how younger children learn best. Children need to be at the center of the learning experience. They need opportunities to approach the same topic through a multitude of experiences and lenses.

> The research is quite clear that the best practice in early childhood education is to break away from passive instruction and allow for more play and investigation, and this kind of learning early in life builds skills and interests that serve children throughout their school years . . . Long-term research also indicates that being allowed opportunities to take initiative in your own learning is not only good for STEM learning, but for overall long-term academic success (Sneideman, 2013).

We must not forget to communicate this information to parents. We often see busy parents dressing and feeding their children to save time while simultaneously asking us, "What are you doing to get them ready for school?" As educators, we understand that teaching the children to put on and take off their own boots, hats, mittens, and jackets also teaches independence, self-efficacy, memory, sequencing, and fine motor dexterity. We do not always remember to translate this information to parents, however, which is a necessary part of the process.

At the Schlitz Audubon Nature Center, our preschool children from our inaugural year, 2003, are now out of college. Many of our former students have returned over the years to volunteer in our classrooms. Year after year we have seen firsthand that as children age out of our program, they have had no difficulty transitioning from preschool to grade school. Kindergarten teachers often tell us that they know the children from our preschool are more inquisitive, confident, and willing to take risks. Parents report that their children are well adapted and successful in kindergarten and elementary classes.

Several studies have compared children in nature preschool to those in traditional programs. Researchers have found that children in a nature preschool are at least as ready for kindergarten as their peers in other programs (Skibbe et al., 2017; Ernst and Burcak, 2019). One study looked at the effect of nature on children's resilience, initiative, self-regulation, and attachment, important qualities for children moving from preschool to kindergarten. The authors of that study found that attending a nature preschool was more likely to support these skills (Ernst, Juckett, and Sobel, 2021).

Research shows that "nature preschools positively impact two components of school readiness, peer play interactions and learning behaviors" (Burgess and Ernst, 2020). The independence, curiosity, coordination, ability to get along socially with others, and ability to control one's emotions that our nature-preschool students exhibit contribute not only to future academic success but also to greater overall happiness.

## NATURE AND EARLY BRAIN DEVELOPMENT

The staff at Schlitz Audubon Nature Preschool have been especially interested in the effect that positive nature experiences have on early brain development. In 2009, we teamed up with BrainInsights to provide families and teachers with simple activities that help support brain development.

We used this experience to look closely at our own curriculum, using scientific evidence to support our anecdotal observations that engaging with nature at a very young age enhances cognitive development.

# HOW WE PREPARE YOUNG CHILDREN FOR SCHOOL

**When parents ask, "What are you doing to get my child ready for school?" we offer these replies:**

We read to children.

We sing songs together.

We speak to children using complex language and science words.

We encourage book handling.

We keep journals.

We model writing.

We provide writing areas in our classroom.

We identify words and letters, indoors and out.

We learn to use maps.

We look for letter shapes in nature.

We draw shapes, lines, squiggles, and letters using sticks in sand, snow, or soil.

We write children's names.

We take pencils, chalk, and paper outdoors.

We count rocks, branches, leaves, snowflakes, sticks, turkeys, and people.

We measure sunflowers and other tall prairie plants.

We weigh pumpkins.

We sort things by color, shape, length, smell, season, or behavior, such as nocturnal and diurnal.

We make patterns.

We identify shapes, especially circles, stars, and hearts, in nature.

We sing counting songs.

We play adding and subtracting games.

We cook.

We count at snack time.

We count and sing songs in Spanish, French, German, Chinese, and other languages.

We study the changing seasons.

We learn about migration, hibernation, and activation.

We explore puddles, snow, and ice.

We learn about evaporation.

We strengthen children's hands and fingers through fine and large motor play.

We give children time and space to develop friendships and social skills.

We provide opportunities for children to learn patience and empathy.

We provide children time and space to develop confidence and independence.

We encourage curiosity and a desire to learn by allowing the children to explore their own interests.

We explored the relationship between nature-based exploration and early childhood brain development. Current research suggests there are several principles at play: exercise, what children attend to, integration of multiple senses, and exploration (Medina, 2014). In addition, enriching environments are the cornerstones of a brain-based classroom (Jensen, 2013). What could be more enriching than the natural world?

We have condensed much of that information into Ten Simple Ways Nature Supports Early Childhood Brain Development (see pages 14-15). We often use this document as a handout for families; we encourage you to share this information with the families you work with.

## THE NATURE-SPIRIT CONNECTION

> On a summer afternoon, several five-year-old boys were having fun playing in one of our preschool play spaces. These boys were not graduates of our preschool but had come to the center to hike with their families. As often happens, the families made their way to one of our fenced-in play areas, where presumably the parents could relax and talk while the boys played within the provided boundaries.
>
> Their play was a little rowdy but not particularly concerning, until it shifted into a game called Smash the Bug. The boys were having great fun tipping logs, looking for bugs, and crushing them. Watching them from a distance, one student who was also visiting the center that day grew alarmed. As the boys smashed bug after bug, this young girl spoke up. Despite being two years younger and considerably smaller, she approached them with determination. "You need to stop that," she said. "Bugs live here. You shouldn't hurt them." The boys stared at the younger girl in confusion. This was news to them. Not sure what else to do, they stopped. The teacher who observed this moment could not have been prouder. Not only had this small girl felt keenly that bugs deserved protection, but she had also taken action to intervene on their behalf.

We do not fool ourselves into thinking all young children start out instinctively knowing how to play in nature. Nor are they born knowing how to share or take turns. If a child sees a flower, often their first instinct is to pick it. When they see a bug, they often stomp it. It takes patience, repetition, and modeling for some children to see nature as worthy of protection, just as it takes time to develop any new skill.

Conservation may not be a word they know. Nevertheless, we teach the principles of conservation every day. Over many months at nature preschool, this sense of stewardship for the land becomes a part of each child's experience. By making sure that nature is a part of everything we do, children come to see it as a part of their community, deserving respect, protection, and empathy.

There is another, often overlooked, component of nature and early childhood—the place that spirituality plays in a child's relationship with nature. To be clear, we are not talking about religious beliefs, although children will often mention God when discussing natural phenomena. Rather, we are exploring a child's ability to seek nature as a source of comfort and to feel peaceful and calm in the natural world, connected to other living things, and less stressed and anxious. Spending time in nature increases a child's awareness and empathy for others and builds a deeper sense of self. Again, this kind of connection takes time. It requires repetition, as well as trust, comfort, and space to contemplate the mysteries of the world. When children spend time in natural environments, there is the potential to experience what biologist, author, and conservationist Rachel Carson called a sense of wonder. Spirituality has a lot to do with experiencing something grander and greater than oneself.

Deborah Schein (2018) has spent considerable time researching theories of spirituality for young children and suggests, "When we provide time and space for children to explore their relationship with nature, we afford them moments to wonder, room to explore their questions and nurture their own innate dispositions. This also allows us to observe children's engagement with their own learning and support them on their journeys."

Spirituality has many elements and is open to interpretation. Some teachers place an emphasis on mindfulness in their classrooms, encouraging children to slow down, breathe deeply, and be present in the moment. Other teachers may incorporate yoga, music, and dance into their nature play, exploring the connection between mind and body.

When we consider spirituality in children, we are referring to the private, personal relationship that a child has with the natural world. We are referring to those quiet moments spent watching the clouds move and the thoughts that belong to those moments.

**"A kid today can likely tell you about the Amazon rainforest—but not about the last time he or she explored the woods in solitude or lay in a field listening to the wind and watching the clouds move" (Louv, 2005).**

We are also interested in how nature influences a child's understanding of death. It is common to find dead trees or animals while outside, and so it is important not to avoid the topic but rather frame it as a part of the cycle of life. At our nature preschool, we look at dying trees and decaying logs and discuss how the bark will slowly break down and eventually turn into soil, making it possible for new seeds to take root. We talk about how an animal might have died and about scavengers and decomposers, key players in the food chain. Most important, we allow the children time and space to feel sorrow, if that is what they need in that moment. We also try to invite parents into these conversations, as a child's changing understanding of death is not just a part of their own spirituality but of family culture and outlook.

# TEN SIMPLE WAYS NATURE SUPPORTS EARLY CHILDHOOD BRAIN DEVELOPMENT

In his book *Brain Rules: 12 Principles for Surviving and Thriving at Work, Home, and School*, John Medina (2014) describes key components of how the human brain works and what influences brain development. Eric Jensen (2008, 2013) provides guiding principles for brain-based education. The following list is derived from the research compiled by both authors.

1. **Nature provides an enriched environment.** Enriched environments are the cornerstones of a brain-based classroom. This includes experiences that are challenging and novel in environments that provide contrast. When children are exposed to enriched environments, such as nature, their brains can actually grow larger neurons and increase neural connections. You can support positive brain development by providing children with hands-on nature experiences as often as possible. Encourage trial-and-error play in an outdoor landscape. Give children opportunities for challenge and feedback, and let children work through problems both alone and in groups.

2. **Nature stimulates the memory.** When children pay attention to something, their brain cells form connections. This is how learning takes place and how memories are made. Meaningful things, such as nature, get our attention. Meaningful learning increases brain-cell survival and functionality, helping us to remember the learning later. Make memories with children through new and interesting experiences in nature. You can help capture their attention with scavenger hunts, memory games, and revisiting the same places in nature throughout the year. Encourage children to recall their memories of earlier nature experiences, compare different seasons, and study the growth of a plant or the life cycle of a frog or butterfly. Provide opportunities for meaningful experiences such as gardening, raking, digging, and planting trees and flowers. Go outside when it rains. Build a snowman. Play together.

3. **Nature allows us to cross the midline.** Activities that cross the body's midline (an imaginary line that divides a person's body into left and right sides) can increase a child's attention and concentration skills. Crossing the midline is important for activities that use both sides of the body together, such as putting on shoes, writing, and cutting. It promotes communication and coordination between both sides of the brain (Child Development Centre, 2018; Evans, 2018). Tracking things visually across the midline makes it easier for children to learn to read, and tracking things physically across the midline makes it easier for children to learn to write. Nature-based activities that involve crossing the midline include catching insects with butterfly nets, catching frogs or small crabs with nets, climbing trees, snowshoeing, building forts, raking leaves, gardening, playing with bubbles, and building sandcastles.

4. **Nature offers a multisensory experience.** All learning starts with sensory input. We learn best when multiple senses are stimulated, either individually or all at once. Provide opportunities for children to play with sand and water, feel different textures, smell plants and flowers, and taste food from the garden. Use magnifying glasses and binoculars to help focus attention. Lay back, close your eyes, and listen to the wind and the birdcalls. Remember the words of one

nature preschooler who, when told she would need to bring earbuds to kindergarten to listen to technology, noted, "At my old school, we listened to nature."

5. **Nature stimulates language development.** Language involves a huge amount of cranial space, including both the right and left hemispheres. The more words a young child hears, the better. Communication between the right and left hemispheres of the brain is key to language development (Norris, 2016). Talk about what you experience, and encourage children to use descriptive words. Play language games such as I Spy while hiking. Sing songs in nature. Have children mimic birdcalls and other nature sounds. Do not be afraid to use challenging science terms. (Children enjoy mastering difficult words.) Give children time to chat with each other, in pairs and in groups, while outdoors.

6. **Nature encourages large motor activity.** Exercise helps increase oxygen levels in the blood and brain and supports the release of brain-derived neurotrophic factor (BDNF). BDNF supports learning and memory function as well as the repair and maintenance of neural circuits. Provide opportunities for large motor activities such as running, jumping, climbing, lifting, balancing, and hiking.

7. **Nature encourages fine motor activity.** Repetitive exercise of fine motor skills strengthens the pincer grip and muscles in the hand and contributes to the brain's development by making connections between neurons. Allow children to pick up pebbles or shells, take seeds from the seedpods of Mexican bird of paradise or a sunflower head, or use small tools such as tweezers and eyedroppers.

8. **Nature provides opportunities for free play.** Play promotes neural development in those brain areas involved in emotional reactions and social learning. Unstructured free play in nature allows children to connect with their peers to explore the natural world. Encourage children to use their imaginations in nature, make up stories with friends, participate in parallel or cooperative play, and build with natural materials.

9. **Nature is calming and reduces stress.** Excessive stress produces a chemical called *cortisol* that reduces the growth of new neurons and the number of dendrites (appendages that receive synaptic inputs) on existing neurons in the brain. Lowering stress reduces the level of cortisol in the brain, allowing for the growth of new neurons and increased synaptic inputs. Take time to look at the clouds, sit near water, or stare up at a tree. Give children opportunities to play in the sand or dirt. Watch the sunset. Dip your feet in a puddle. Make a snow angel. Paint outside. Be intentional about helping children find peace and comfort in nature.

10. **Nature is fun!** Experiences that are joyful are remembered. Memories that contain emotional content help stimulate the amygdala, the center of our brains responsible for emotional behavior. Time spent in the natural world can have a positive effect on children's emotional development.

By creating positive, happy experiences, children will be more successful at controlling their moods, remaining calm, and expressing joy. Encourage a sense of wonder in nature by being a loving and supportive partner to children as you explore the natural world together.

# IN SUPPORT OF A NEW EDUCATION LANDSCAPE

Over the past thirty years, the American education system has not had a close relationship with nature. We have seen recess time decrease (Ginsburg et al., 2006; Associated Press, 2006) as the call for test preparation takes precedence over play. We have seen inquiry-based approaches to learning replaced by direct instruction. We have seen a rise in large and fine motor delays, increased stress, and young children struggling with depression.

There have always been educators willing to push back against the system, creating spaces for nature and play even in the face of resistance. We know of outdoor STEM labs, gross motor challenge courses, teaching gardens, and *en plein air* art studios designed and championed by determined teachers. Here in Wisconsin, our colleague Peter Dargatz created a forest kindergarten program at his local public elementary school by adopting and transforming the unused green space beyond the asphalt playground. The Tomorrow River Community Charter School in Amherst Junction was founded by parents who wanted a nature-based, Waldorf-inspired program for their children. Fox River Academy in Appleton is a public charter school that uses weekly field experiences along the Fox River to inform its curriculum. In short, there are many innovative educators who take children outdoors and who provide authentic, hands-on learning and nature-based play for their students.

But we know of just as many, if not more, who have been limited in their efforts. They have been stopped short by standardized testing, rigid curricula, and a lack of support from their administration. There may also be resistance from fellow teachers. Often, this resistance comes from those who simply do not understand what a nature-based experience looks like. The assumption is that nature is a parenthesis; it is a nice enrichment option for those programs that don't rely on test scores for funding but not worth the insurance risk or the time away from test preparation to be worthwhile.

But it is worth pushing back. Sometimes, it is a simple matter of educating the doubters. Policymakers need to see and understand the many ways academics (and test scores) are supported and even enhanced by nature-based education. Those who are alarmed by the risks need to understand the specifics of safety. Teachers who feel uneasy in nature need to be given well-thought-out plans for managing clothing and gear, handling bathroom issues, and coping with challenging weather.

We know from personal experience that a nature-based curriculum can only succeed and thrive when there's a supportive infrastructure holding it up. This requires more than a safe outdoor space. It requires teachers who are trained in how to take children outdoors. It requires parents who are supportive of a nature-based approach to teaching. It also requires politicians and policymakers who are willing to prioritize the emotional well-being of students. It means no longer assuming all learning is quantitative or that good test scores make the most thoughtful citizens. It means taking a bold leap of faith and seeing how outdoor learning can actually improve critical-thinking skills while also supporting empathy, curiosity, and a sense of place and community. It means having the energy, imagination, and—most of all—the resources to make nature a priority as we reconsider and reinvent the traditional American classroom.

In developing a nature-based curriculum for young children, we are not simply strengthening a child's early development or laying a foundation for future learning. We are helping to set children on a path to becoming the people we hope they will one day be. Building meaningful relationships with nature occurs when time spent outdoors is frequent, when children are allowed to climb a tree without help, or when they drop a leaf into a creek and follow its journey downstream. We are helping them develop a relationship with nature that will stay with them throughout their lives, a relationship that includes caring for, connecting with, and finding solace in nature.

- CHAPTER TWO -

# Creating a Nature-Based Classroom

**Come forth into the light of things,**
**Let nature be your teacher.**

—William Wordsworth | **"THE TABLES TURNED"**

In chapter 1, we made the case for nature-based education in an early childhood classroom. In this chapter, we explore what a nature-based classroom looks like and how you can begin to create one.

When developing a nature-based classroom, one of our goals is to merge best practices in early childhood education with best practices in environmental education. (We recognize that the term *best practices* is problematic to some and that perhaps a better phrase would be *evidence-based practices*, but for now we use the more common expression, understanding that best practices should always be evidence based.)

Many early childhood educators do not feel qualified to teach natural science programs. Likewise, many environmental educators do not know what to say when faced with a group of wiggly preschoolers. It is, therefore, useful to remember that what works best in one approach—hands-on, inquiry-based learning—also works best in the other. Paying due attention to developmentally appropriate nature-based education results in a program and physical space in which early childhood education and environmental education seamlessly weave together.

In the remainder of this chapter, we explore strategies to get your nature-based classroom started, examples of how to bring nature *inside* your classroom areas, ideas for bringing your classroom *outside*, and tips for handling licensing regulations.

# GETTING STARTED

## ADD NATURAL MATERIALS

Begin by setting up the classroom with learning centers that contain nature-related materials.

Your classroom could be indoors, but it might also be in an outdoor area where regular teaching and learning occur. In either case, be intentional about adding nature to your existing space. Consider large motor play and fine motor work, and then think about how you might use nature to support these activities in different learning areas. Consider a few quick examples, such as adding acorn caps, pine cones, pebbles, and sea glass to your math and manipulatives center; large logs, branches, stones, and shells to the block center; and tree stumps, fossils, leaves, seeds, and flower petals to the dramatic play area. These items can be used for sorting, counting, weighing, building, designing, and creative play, often all within the same hour. It is neither complicated nor expensive to supplement traditional (plastic) early learning materials with natural materials. For example, in the building area, you might add an assortment of tree cookies, sticks, and rocks alongside classroom blocks. (See pages 25–33 for additional information about materials to add to classroom areas.)

We are not advocating that nature replace existing classroom materials. Nor are we suggesting that teaching materials made of wood and sold in catalogs of high-priced goods are the way to go. (We have seen tree cookies selling for twenty dollars a round through some companies. Our tree cookies are made on site from branches, using a chainsaw.) We are big fans of reusing materials. Paper-towel tubes make wonderful telescopes, for example, and cast-off wrapping paper and ribbons are always a popular addition to an art area. Adding nature, along with recycled materials, into the classroom should be neither cost prohibitive nor difficult.

## ENCOURAGE SENSORY EXPERIENCES

Provide daily opportunities for the children to interact with sensory-rich materials. Even when it is not possible to take children outdoors, it is possible to provide them with sensory-rich natural materials in the classroom (see pages 25–33 for suggestions). Sensory tables or smaller sensory tubs are a fun and creative way to experience different textures, liquids, and even tiny habitats.

Provide items such as buckets, scoops, plastic insects, rubber frogs, watering cans, and eyedroppers to these sensory tables or tubs to encourage imaginative play and strengthen fine motor skills. Some children find water particularly soothing. They will happily spend an entire hour scooping and pouring water, transfixed and in the moment. Providing smocks and towels is always a good idea, and making sure there is room for more than one child to play with water—and enough time to do so—is essential.

## INVITE NATURE EXPLORATION AND ENGAGEMENT

Give children time and space outdoors in various habitats that are diverse, safe, and enjoyable.

Introduce children to natural habitats rich in diversity. Provide outdoor environments that are safe (free of poison ivy, thorns, and other hazards), and give children uninterrupted blocks of time to explore and interact with nature through free and creative play. For some, this may mean leaving school and walking to a nearby park; visiting a part of the school grounds seldom seen; or walking around the block, counting trees, or looking for birds' nests. What is important is to make the natural world a part of a child's everyday experience and to give children time to interact, play, and forge connections with nature in their own way.

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# NATURE IS NOT SIMPLY *what* WE TEACH.

# NATURE IS *how* WE TEACH.

Join the growing nature-based learning movement! Written for educators by educators, ***Partnering with Nature*** turns theoretical ideas about the benefits of nature in childhood into achievable results.

Discover how to meet state-mandated early learning standards while enjoying daily nature-based activities. With a sample class schedule, a list of essential items to carry in a backpack, an outline of seasonal topics, seasonal activities at a glance, and an assessment tool, this practical, inclusive guide demonstrates how nature can support preschool children's learning. ***Partnering with Nature*** is filled with practical advice that will allow early childhood teachers who are new to nature-based education to venture forward with confidence.

- Discover simple approaches to creating a nature-based classroom.
- Learn how to safely and effectively take children outdoors to explore the world beyond your four walls.
- Find tips for meeting some of the ongoing challenges that come with teaching outdoors.

Whether your program is right next to a forest, beach, or park, or your center is in the middle of a large city, you can provide a high-quality environment that meets young children's developmental needs while initiating them into a lifelong, meaningful relationship with the natural world.

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