

# Small Moments, Big Opportunities to Learn

## How to Get Started

### Nature is everywhere!

Every place, urban/suburban/rural has some nature somewhere... wind, rain, sunshine, insects, birds, a plant growing in a sidewalk crack – look for it!



### Be present and pay attention.

It's easy to miss those small moments if you are not looking for them. The learning is happening whether you notice it or not. Sharing an experience with a child is powerful for adults and children.

### Be prepared physically.

We find it helpful to have, at the very least, a phone or camera to document moments (photo, video, text). If you can have things like paper and pencil, ziploc bags or a bucket for collection, scissors, rope or yarn, small hand lenses, fold-out field guides – wonderful! If not, think of ways you'll be able to remember what the children were interested in and curious about so that you can support and extend that learning later.

### You don't need to be an expert about everything!

In fact, you can't be. But you can tell children that you don't know something and then figure out how to learn it together. Every encounter in the natural world brings new experiences and new questions. Even if you're revisiting the same places. Nature isn't static.

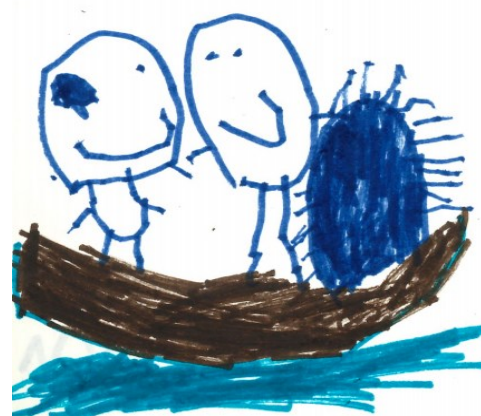
*Taken from a presentation given by Kari Nusbaum, Brenda Jerde and Dani Porter Born at the 2016 Dodge Nature Preschool Learning Conference.*

### Now what? How do I start?

- Go outside.
- Observe the children. Read their cues. Four little bodies gathered around something, heads down, means something interesting is happening.
- Get close. Get right in there with them as a partner sharing in their discovery.
- Ask questions! Promote inquiry and avoid the urge to give away the answers.
- Document and reflect when you can. You will be amazed at what you learn later when you engage in the simple process of writing down an experience or conversation.
- Plan for and revisit experiences and discoveries with the children to deepen or expand on their ideas.

### Questions to Guide Inquiry

- What does it look like? Or remind you of? Have you seen that before?
- What do you think it is?
- How does it smell? Feel? Taste (when appropriate)? Sound?
- How does it work? Is it changing?
- What made that happen?
- How is it like or different from something else?
- How is it connected to something else?
- How do you know?
- How can we find out more?



Artwork by Hunter, age 5

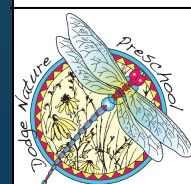


# The Dragonfly

Dodge Nature Preschool: Inquiring Minds



2017 Edition



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# The Importance of Inquiry

by Marty Watson, Dodge Nature Preschool Director

Our approach to learning here at Dodge Nature Preschool includes the Inquiry Learning Approach. Memorizing facts and information is not the most important skill in today's world. Facts change, and information is readily available. What is needed is an understanding of how to get and make sense of the mass of data in our world.

Through the process of inquiry, individuals construct much of their understanding of the natural and human-designed worlds. Inquiry implies a "need or want to know" premise. Inquiry is not so much seeking the right answer—because often there is none—but rather seeking appropriate resolutions to questions and issues. For educators, inquiry implies emphasis on the development of inquiry skills and the nurturing of inquiring attitudes or habits of mind that will enable individuals to continue the quest for knowledge throughout life.

-excerpt from Joe Exline, science teacher and author

The collection of stories in this "Dragonfly" gives examples of children participating in Inquiry Learning at Dodge Nature Preschool. Through these examples and the teacher's reflections you can see the depth and importance of this style of learning. As we think of fostering educational encounters for children, inquiry is a natural, satisfying and desired way to learn. It can be practiced by adults and children throughout our lives. Enjoy the questions, inquiries, and discoveries with your child. Join us in creating lifelong learners.

## A Path to Inquiry

by Dani Porter Born, Spruce Room Teacher

The inquiry process doesn't always start with a question children can verbalize. The process starts with curiosity, something they notice and want to explore. Sometimes they ask questions. Sometimes teachers ask questions to nudge them toward their own discoveries. Often children compare what they notice to something else, something familiar.

On a small group hike this winter, I spent time with five children as they veered off-trail and headed to the creek to look at the ice. On that day they noticed many changes and made a lot of observations around ice and water. (You can read those observations below.)

The children spent about half an hour along the edges of the creek testing ice, breaking through weak spots with their sticks, and finding safe places to step on the ice and on branches to get to the other side.

In this instance, the children learned about different states of water, solid and liquid, that there are layers in ice, about looking closely at the ice and testing it for safety. They learned that they can use their brains and their bodies to get themselves safely across the creek.

What makes it all so meaningful is that I didn't tell them any of that. I followed them to the creek, made sure they were staying safe while they explored, asked a few questions, and just let them learn.

### The Creek Ice

Child: This ice is safe. I hit it with my stick and it didn't break.

Child: Look, there's ice UNDER ice here.

Teacher: What does that look like, that shape in the ice?

C: It looks like circles.

C: Yeah, or bubbles.

T: Yes! Air bubbles trapped in the ice. What happens if you poke at them with your sticks?

C: They break! That ice isn't so strong! Let's call that bubble ice!

C: The bubble ice is easy to break, and there's more ice under it.

C: This looks like a skating pond.

C: The ice isn't thick in places where it's black. I can see water under there.

T: Yes, when I jump on the ice, watch that black spot.

C: The water moved when you jumped!

C: Hey, there's slush on top of the ice here.

C: Look guys, more water!

C: This ice looks like it can break because it's dark.

C: Look, there's sticks here. Like a bridge.



# Hooked on Nature

## Using Technology to Spark Curiosity

by Britney Stark, Oak Room Teacher Assistant/ Naturalist

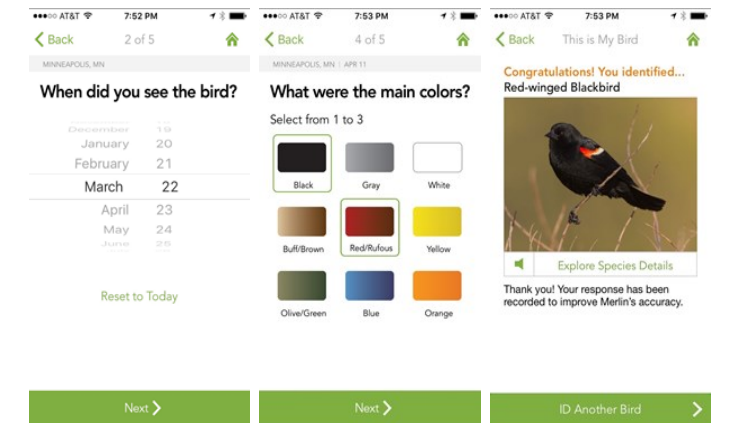
In the twenty-first century, technology seems as embedded into our everyday lives as water. As a naturalist, my tendency is to minimize the use of technology while out enjoying our natural world. A few new tools have opened my mind to technology when teaching in nature.

I was introduced to a bird identification app a few years ago at the MN Naturalists' Annual conference. It is now one of my go-to tools when out hiking with ... anyone! It is called **Merlin Bird ID**. It is a free app managed by the Cornell Lab of Ornithology. It is simple to use, especially when working with young children.

When we see or hear a bird I begin by asking, "Do you hear that (or see that)?" "What is it?" Or "Who is it?" Some children will know or have some guesses. And even when you get the correct answer you can still use the app to confirm your ID. I find it most useful when helping the children to engage in what bird we are seeing or hearing. Using the app almost always gets their attention. It asks simple questions leading to a list of possible birds.

We have used it to identify many different species. The app includes a short bio of the bird, photos of both the male & female, and recordings of the songs and calls.

When using the app, young children love listening to the calls. Many times, when we are sitting and listening,

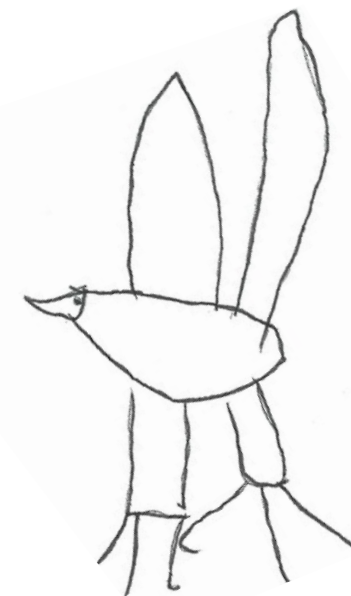


the actual bird begins to move closer and closer to us.

Just this spring, we were identifying the Red-winged Blackbird. As we listened to the song, it flew over us from one tree to the next, getting closer and closer. It continued to look around as it moved. It eventually landed on the ground below the tree. The bird then began to walk right up to us. The children were so excited! One declared, "I'm going to catch that bird!"

Last year, our discovery of the Red-winged Blackbird led to a long discussion of their migration, mating, why they have songs versus calls, one child said, "maybe they are calling their friends to ask for help." These children then painted the bird when we returned to the classroom.

In this new age of technology I am learning to embrace the wealth of knowledge available at my fingertips and will continue to use it judiciously as a way to help build curiosity and learning in young children.



Artwork by Veronica, age 5



# Scientific Inquiry Practices

## A Research Study with Dodge Nature Preschoolers

by Dr. Peggy Novak, Ed.D.

What scientific inquiry practices do preschoolers demonstrate during repeated experiences? This was one of the research questions that I investigated for my doctoral thesis in the spring of 2014 with the Willow Room's preschoolers. The outcomes exceeded my expectations. The preschoolers proved that young children really are natural scientists!

I accompanied the teacher, Kristenza Nelson, and her small group, video recording them as they hiked two mornings per week for five weeks. The video recordings were transcribed and studied to reveal four major themes:

- Sustained Observation – 393 times
- Problem-Solving Investigation – 198 times
- Peer Collaboration – 128 times
- Initiating the Cycle of a Scientific Inquiry – 131 times

**Sustained observation** is when the children use their senses of sight, sound, or touch to observe a phenomena of nature for a minimum of two minutes. Almost half of the inquiry investigations were longer than 5 minutes.

**Problem-solving investigations** occur when the preschoolers solve real-life problems. During these investigations, the preschoolers engaged in many scientific inquiry practices including posing questions, comparing/measuring, communicating, inferring, predicting, and defining/controlling variables.

**Peer collaboration**, defined as two or more peers interacting with one another in various degrees of cooperative play, was a theme in every hike. Some of the children appeared to have some preferred playmates, but peer acceptance and an open invitation for everyone to join in the play was the typical peer interaction pattern for all of the 11 hikes.

**Initiating a cycle of scientific inquiry** means some type of stimulus provoked a chain of scientific inquiry. Frequently, the preschoolers' scientific inquiry practices

### About the Author:

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were not isolated incidents, but in a successive grouping of practices initiated by the discovery of a plant or animal.

I want to express my gratitude to Kristenza and the Dodge Nature Preschool community for participating in this project. The preschoolers' approach to this science investigation proved how nature provokes their natural sense of wonder and curiosity.

The following example demonstrates all of the major research themes. It occurred on Hike #6 at The Creek with the two culverts and fast moving water. For confidentiality purposes, I use pseudonyms.

### Research Example of Preschool Scientific Inquiry:

The small group was exploring the creek with natural materials that they labeled "boats". The group floated them on the creek and placed them inside of one culvert.

When their boats failed to reach the other culvert, they detected a problem.

Bill: "It's floating really fast!" (Very excited as he put his boat into the water.)

Max: "It floats! It broke! My boat floats. Now it got stuck."

Sue: "A mudslide!" (Sue moved the mud with her boots.)

Bill: "I am going to try to unplug it! There is a problem!" (Bill repeated this as he used a stick to push it under and through the culvert.)

Max: "I am looking for something different for a boat to see what will happen."

Sue: "Two logs and the smaller one is pulling the

bigger one!" (She explained about what she is putting under the culvert and looked from one culvert to the other one.)

Sue: "It's not towing enough! It's stuck! It's too far away. I am trying to move it to the other end. It's further!" (Worked intently on this for over 5 minutes.)

Bill: "I am going to solve the problem. I am going in the tunnel. I am getting it. I solved the problem! I solved the problem! I solved the problem!" (He put a long stick through the culvert's tunnel.)

Sue: "I have to get the logs to push it. The pile will get so big and I am going to push it. It will take a really long time. I am going to push it. We are trying to unplug it." (Found a long stick and placed it through the culvert's tunnel.)

Sue moves over to stand by Bill and they both watch the tree chunk that was clogged under the culvert's tunnel become released and float down the creek. Max and Bill begin to follow the tree chunk down the creek.



# The Caterpillar Tree and the Chance to Be Wrong

by Kristenza Nelson, Willow Room Teacher

It was an early spring morning when the Willow Room children raced down the hill towards the woods. Free of all of their heavy winter gear, the preschoolers were light on their feet.

Halfway down the hill, a young boy stopped in his tracks, almost falling over. I watched as he crouched low to the earth. He ever so gingerly cupped something small inside the palm of his hands. A treasure! He stood still, mesmerized, as the other children raced by. I asked him what he had found.

He turned to me, his eyes beaming, "Look! Look! I found a beautiful caterpillar! Feel it, it's so soft!" He saw in his hands a fuzzy, long, pink caterpillar. He was ecstatic. He once again carefully cupped his hands around his discovery as he made his way to the group. He couldn't wait to share his discovery.

"I found a caterpillar! It's so soft, feel it. Well, his head is a little sticky." The children gathered around, taking turns petting it.

"It is so soft! I wonder what it eats? Can I hold it? Let's call him Fuzzy!"

I asked the children, "What will the caterpillar turn into?" Without hesitation, these Dodge children enthusiastically shouted, "A butterfly!" A concrete reply in unison.



"I know, lets make a habitat back at school." When we returned to the classroom the boy carefully lined the bottom of a "critter keeper" with leaves and a small dish of water. "I just love him!" he said, as he gently settled his treasure in its new home. He placed it in a premier spot on the science table before our day came to a close.

He couldn't wait to show his new discovery to his mom. He proudly patted the habitat and waved goodbye as he skipped out the door.

The next day, when students returned to school, we again began our day out on the grounds. In the familiar rhythm of our routine, he raced down the hill toward the Piney Forest, and once again he stopped in his tracks.

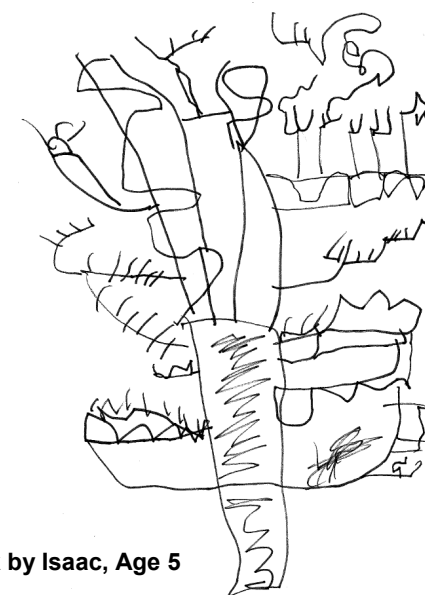
He reached to the earth, this time picking up an entire branch knocked to the ground by the wind. It had several heart shaped leaves and a long soft pink seed pod with a sticky tip. He cheered; he jumped; he squealed in delight!

"It's a tree leaf! It's a tree!" He lifted the branch over his head, in true parade fashion. He hiked through the woods with the branch swaying overhead. When we returned to the classroom, he gently placed the branch on the habitat.

He now knew this 'caterpillar' would become a tree!

If I had corrected the boy at the beginning of our hike, his inquiry process would have ended then and there. Had I told him, "That's a seed pod, not a caterpillar," he wouldn't have had the chance to wonder, be wrong, and discover the answer on his own. When we allow children to take on the role of expert, we help them learn "how to think" not "what to think."

TREE



Artwork by Isaac, Age 5



Artwork by Veronica, age 5

# The Power of Questions

by Joey Schoen, Spruce Room Teacher

In preparation for this newsletter focused on children's inquiry, I started keeping track of children's questions—especially out in nature.

In paying special attention to what children wonder about, it quickly became apparent that they wrestle with some pretty big questions as they work to understand the world:

"How do the geese even know what season it is?"

"Why does wood burn?"

"How do they make the trees?"

"Why is the wind invisible?"

"Why are there questions that don't have answers?"

When I reflect on the children's questions—even in just the small sample that I've been collecting—I notice that philosophical inquiry comes naturally to them. Children are

puzzling over the same questions that people have for centuries.

Their questions frequently fall into the heady category of metaphysics, which can be defined as "the branch of philosophy that deals with the first principles of things, including abstract concepts such as being, knowing, substance, cause, identity, time and space."

In our busy lives, it can be tempting to brush off some of

the weightier questions. We don't always want to stop what we're doing to think about things. We can become uncomfortable when we realize that we don't really know the answer and we're not sure that there is one.

However, we can choose to embrace the questions of young philosophers at our side. This world is full of wonder. Every now and then, it's good to marvel at and ponder the mystery of it all.

## Do Questions Need Answers?

### The Beauty of Stepping Back

by Kari Nusbaum, Spruce Room Teacher

As an adult and as a teacher, I sometimes find it difficult to know when to step in to the spiral of inquiry with children. All too often, I find myself talking, forgetting to take a step back and listen to the children's process of discovery.

When I hear children asking questions, I have to remind myself to listen to what they are *really* saying, which is often not a question at all. It can be a phrase that holds in it a rich opportunity of authentic discovery and learning, one that may not occur if I step in to answer.

A small group and I recently started our day hiking towards the mammoth log where we found a hole we hadn't noticed before.

What happened next occurred only because the children had an opportunity to converse, explore, and ponder without my intervention. They used their scientific knowledge and previous experiences, used sticks and branches as tools, and used their whole bodies in an effort to investigate:

"Who made this hole?"

"It could have been a squirrel or a fox."

"We can even put our sticks in it. It's so big! It's stinky!"

"Then it must have been a skunk hole."

"Yeah! A skunk hole! What could have made that stinky hole?"

"If it's too stinky then it must be a skunk hole."

"It goes really way down, you can't even put a stick in there."

"I wonder if the deer made it."

"The deer can't make that big of a hole with their feet. Maybe a bunny made it."

"It's too big for a deer foot. It's very long down."

"I'm going to figure out if this stick can get in. Yep. It's pretty long I can almost reach the bottom if I put my arms in, too."

"It's pretty long. I can't even feel the bottom!"

"Maybe there's a skunk in there..."



The experience soon ended with no answer. I found myself thinking about my role as a teacher in this experience. I wondered what answers they were seeking, if any at all, and if they cared that they didn't come to a conclusion.

As I reflected later, the meaning of their dialogue and questions seemed to be more about the act of authentic exploration and learning rather than finding the answer to "Who made this hole?"

The children were working on solving their own problems and answering their own questions both collaboratively and in the quiet of their minds.

I reminded myself that sometimes it is okay to question or jump in to give an answer. But other times, such as this day, it's okay to sit back and let their experience happen naturally and without adult

interruption.

My teacher voice is loud, powerful, and full of answers. That can be stifling to inquiry. They didn't need me to interfere that day. What they needed was a chance to work together; to share knowledge with each other; to have the freedom and space to authentically and joyfully learn and explore, which is what we strive for every day here at Dodge.

## Can I Go Out on the Rock?

### Supporting Safe Exploration in Nature

by Julie Nelson, Oak Room Teacher

As children explore the Nature Center, questions come up about physical challenges they want to attempt:

Can I jump off this wall?

Can I climb over the creek on this log?

Can I wade in the creek?

Can I cross the ice?

At Dodge Nature Preschool we want to support children's exploration, their emerging physical skills, their problem solving and their sense of competence. We also want to make sure children are safe! Teachers and children together assess risk, assess skills, and decide whether it is safe for a child to attempt a specific physical challenge. Teachers also plan ahead to have what they need if something goes wrong.

On an unseasonably warm February afternoon, a five year-old was playing at the edge of the Prairie Pond. A large rock that had been at the pond's edge was now several feet out in the water because of recent snowmelt and rising water. The children had often played on the rock in the fall.

The preschooler asked if she could go out on the rock. Icy cold water and mud separated her from the rock. A single branch stretched from shore to rock, just 2½ inches in diameter.

Child: Can I go out on the rock?

Teacher: I don't think so. The water is really cold and it's deep there right now, and it is so muddy.

C: I'm sure I can make it!

T: That stick is really small! Look how narrow it is.

C: I'm a really good climber. I know I can do it.

T: It is so narrow. I think you would need something wider to get over the water to that rock.

C: We could build a bridge! CAN we build a bridge?

T: A bridge might work. You could try to build a bridge and we can see if it is strong enough.

C: (To the other children) We can build a bridge! Come on! Teamwork!

Four preschoolers went to work building a bridge. There were many logs and branches on the ground in the area, and the children found branches five to seven feet long and together carried them over to the pond's edge. The teacher helped the children stretch the branches from the shore to the rock.

As they worked the children sang, "What's it going to take? Team work!" over and over. Some branches were too heavy for the children, and they called to their teacher, "We need your help on this one." Soon the bridge was ready.

C: Can I go on the rock now?

T: The bridge looks strong. Remember the water is cold, so be careful to not fall in.

C: We all want to go!

T: You have to take turns.

C: But we all want to play!

T: If you fall in, I have to get you out really fast! The water is ice water, and so muddy. I can only pull one of you out at a time. One at a time, but you can watch from this log.

C: OK! Come on!

The four children ran over and sat on the log on dry ground. Three



children took turns crossing the bridge they had made and sitting on the rock surrounded by mud and cold water. The fourth child stayed on shore announcing, "I'm the one who is going to watch!"

The answer to "Can I go out on the rock?" changed from No to Yes, with the children working for a solution so that they could carry out their plan. And no one fell in!

Of course, sometimes children DO end up wet. Tackling real physical challenges is part of children's experience of exploring nature. Some adventures come with only joyful memories, some with the memory of problems, too. At Dodge, we work to support children's exploration, problem solving, and competence, while carefully assessing safety.