



VINS Small Wonders Program

Lesson Descriptions

2022/2023

Science, Engineering, and Nature Explorations for Preschoolers

Ages 3 – 5 years

Science and Nature Exploration Themes

Each Small Wonders lesson under this theme starts with a welcome song and an engaging puppet show that introduces the topic. There are hands-on activities, touchable animal artifacts or nature materials, song, movement, and opportunities to take the learning outside, depending on weather and topic. Lessons typically last 40 minutes.

Animal Homes

Investigate animals' homes, match animals to their habitats, and go outside to see who is making their home outside your back door. Work collectively to create a forest and pond habitat scene out of natural materials, and then make sure each New England animal puppet finds its home in the habitat.

Animal Olympics

Run, play, leap, hop and bound like animals in their habitats! Scamper like a squirrel, slither like a snake, hop like a hare and fly like a falcon. Turn yourself into a hawk as you catch your food, and hop from lily pad to lily pad like a frog. *Available in Spring, Summer and Fall.*

Run, play, leap, hop and bound like animals in winter! Feel the thick fur of a fox; can you stay warm on a cold winter day like this animal? Turn yourself into an owl as you catch your food, search for your buried cache like a squirrel and bound through the snow like a snowshoe hare. *Available in Winter.*

Animals in Winter

How do animals survive the cold winter months? Examine the fur of an otter, feel how a layer of body fat keeps you warm in icy water and send your otter sliding down a snowy bank. Examine the soft feathers of a songbird and then work as a team to make sure you keep the birdfeeders full so the birds don't go hungry! *Available December – February.*

Note: This lesson involves placing a hand briefly in cold water. Children's hands will get wet.



Apples – NEW!

Fill your basket with apples, sort them by color, and learn that not all apples are red, yellow or green! Discover the various animals that rely on apples and apple orchards for food and habitat as you complete the apple murals. Have fun with patterns, letter recognition and counting. *Available in Fall.*

Baby Animals – NEW!

Peek into a den and see what babies are hiding inside, and help to feed the baby eagles in their nest. Turn yourself into a duckling as you waddle in a duck parade. Imagine you are a fawn as you try to lie still and hide in the grass. Can you match all of the baby animals with their parents?

Bats

Bats are friendly creatures with some amazing features. View a skeleton up close and discover how big your wings would be if you were a bat. Feel the weight of a bat in your hand and challenge yourself to be like a bat. What's it like to roost in a colony or use echolocation?

Bears

Learn about the lives of black bears by touching their soft thick fur, looking at a bear skull up close, and following the tracks of a bear as it walks and climbs a tree. Find out what bears eat for lunch, and what bears do throughout the seasons. Go home with your own bear finger puppet made out of paper.

Beavers

Can you build a dam out of sticks and mud? Look at a beaver skull, admire their special teeth, and examine beaver sticks and chew marks. Touch their waterproof fur and their webbed feet. Turn the instructor into a beaver by dressing them up in a costume to review what helps beavers swim, build things out of mud and sticks, and cut down trees.

Note: This lesson involves water, sticks and playdough-mud, and can get a little messy.

Birds

Touch the wings of different bird species and see if you can match the wings to the bird's feet and beaks. Look at the different beak shapes and imagine what they would eat. Try your hand at being a bird and see how much food you can pick up with your 'beak'. Soar like a bald eagle, flap like a hummingbird and stand tall and still like a great blue heron. Head outside to listen and look for birds.

Note: This lesson includes an activity in which children will handle toothpicks.



Butterflies and Moths

What makes a butterfly different from a moth? Can you tell who's who in each picture? Turn yourself into a butterfly and flutter your own colorful wings as you try to hide from a hungry bird. Become a monarch and play the *Life of a Butterfly* game as you follow the monarch through its days on its long journey to Mexico.

Chipmunks and Squirrels – NEW!

Can you scamper like a chipmunk or a squirrel? But watch out! You have to stay safe from the predators. See if you can find the hidden nuts, explore a chipmunk's underground burrow, and pretend you are a red squirrel as you pull off the scales of a pine cone to make your own midden.

Day and Night Animals

Put puzzles together to learn which animals are diurnal, nocturnal or crepuscular. Test your eyes as a diurnal hunter – can you find the animals hiding in the pictures? Use a flashlight to uncover the secrets of eye shine and learn what allows owls to fly almost silently in the darkness.

Note: This lesson includes using flashlights, and is best if part of the room can be darkened.

Deer and Moose

How do you measure up against a moose? Follow the tracks of a deer and a moose and get a close look at their hooves. Can you jump as far or as high as a deer? Feel the pelt of each animal and see if you can figure out which one it belongs to. Compare the skull of a moose and a deer and examine evidence of deer and moose browse on twigs and bark.

Earthworms

What are the special characteristics of an earthworm? Compare them to other worms as you work with either red wigglers or night crawlers to discover the preferences of your worm through two experiments, focusing on light and moisture. Then, design your own investigation! Choose from the natural materials provided and be a scientist as you gather information from your investigation. *Available in Spring, Summer and Fall.*

Note: This lesson involves live animals. Children will need to wash their hands after touching the worms.

Frogs and Toads

How is a frog different from a toad? Act out the lifecycle of each to discover some of the answers and learn how to leap like a frog and hop like a toad. Using natural materials, create a habitat for a toy frog. Can you get your frog to float on a lily pad in your little pond?

Note: This lesson includes playing with toy frogs in bins of shallow water, and children may get wet



Honeybees

Help the instructor dress up like a honeybee by learning what it takes to be one of these insects. Turn yourself into a bee as you act out the life of a worker bee and then leave the hive to pollinate flowers and gather nectar. Learn the waggle dance, find out what common food items are pollinated by bees, and discover why a hexagon is a better shape than a circle for constructing honeycomb.

Insects

Explore the characteristics of insects by sorting animal pictures into the appropriate groups and dressing the instructor up as an insect. Investigate insect homes and turn yourself into a variety of insects as you play the *Life of an Insect* game. See if you can jump like a grasshopper or flap your wings like a honeybee. Head outside to look for insects with sweep nets and magnifiers. *Available in Spring, Summer and Fall.*

Life in the Pond

Imagine you are at a pond as you get a close look at the nest of a red-winged blackbird, the shell of a turtle and sticks chewed by a beaver. Help complete the pond picture by adding the animals to the habitat. Using natural materials, create your own pond habitat for a miniature toy animal. Does your animal live in the water or at the pond's edge? *Available Spring, Summer and Fall*

Note: This lesson includes playing in bins of shallow water, and children may get wet.

Life Under Ground

What is it like to be an animal living underground? Which animals burrow down deep? Peer under a rotting log to see who lives beneath our feet. Imagine you are an ant and go on a Tweezer Trek to collect tiny natural items. Look at them up close using a digital microscope. *Available in Spring, Summer and Fall.*

My Five Senses

Test out your sense of smell with our scent canister and use your sharp ears to listen for the match to your sound shaker. Use your sense of touch to explore natural items and walk barefoot on a sensory mat to discover which materials are soft, bumpy or smooth. Try to camouflage your animal so no one else can see it with his or her keen eyes, then head outside on a sensory scavenger hunt.

Owls

Get an up-close look at the wings of different owl species, and compare their silent flight to the noisy flight of a hawk. Pretend you are an owl as you fly quietly and slowly. Use your owl ears to match sounds you hear and look at an owl skull to see where the ears are located. Touch sharp owl talons and imagine using your feet to catch your food.



Patterns and Shapes

The world around us is full of patterns and shapes. Explore the beauty of nature through patterns, colors, shapes and textures. Make a pattern out of colorful leaves, and learn about leaf shape while playing the *Leaf Match Relay*. Learn about animals that use patterns to communicate and make your own patterns out of natural materials. Head outside to discover the designs of nature as you go on a scavenger hunt.

Pebbles and Rocks

Rocks tell a story and you can uncover their secrets by looking closely. Hold on to a wishing rock as you make a wish and feel the smooth surface of a rock washed by the ocean. Admire the beauty of colored rocks as you arrange them in rainbow order. Become a geologist and conduct investigations with your rock kit. Can you find a rock that floats or leaves a colored streak on a tile?

Preparing for Winter

Winter is just around the corner. What do animals do to prepare for the cold and snow? Learn about animals that hibernate, migrate and stay active. Touch the soft wing of a hawk and the thick fur of a bear. Play *Red Squirrel*, *Grey Squirrel* and see how good you are at finding your food in the winter months. Available October - December.

Pumpkins – **NEW!**

How many little bright orange pumpkins can you put in the basket? Play with pumpkin seed shakers, learn how pumpkins grow, and help to count all the pumpkins in the pumpkin patch. Can you find the pumpkin matches? See what happens when you put a pumpkin in a bin of water!

Seasons

Using images, follow the pattern of the seasons through the years, and learn what animals do in each season. Imagine you are water. What does each season feel like? Can you guess the season from listening to the clues? Using a twig 'tree', flowers and colored leaves, mimic the flow of the seasons as you add the appropriate elements to your tree.

Seeds

Look inside different fruits and vegetables to find the hidden seeds. Examine sprouting seeds and sequence the pictures to show how plants grow from a tiny seed. Pretend you are a seed as you listen to the story of growing up into a big tall plant, and play with a variety of nature's seeds. Make your own maple seed and watch your samara flutter to the ground.



Snakes

Explore the wonderful world of snakes as you touch a snakeskin, examine a snake skeleton, and learn what our local snakes do in each season. Become a snake as you bask in the sun, slither through the grass, go on a hunt for your lunch, and find your favorite habitat. Meet a live snake ambassador from VINS and learn what makes snakes so special.

Note: This lesson involves a live animal. Children will need to wash their hands after touching the snake.

Spiders

How is a spider different from an insect? Create a spider using felt pieces and imagine a place where your spider would live. Lace your own spider web design, and then work together to build a spider web as a large group. Can you catch any flies in your web? Meet some real spiders and take a close look at what makes these animals special.

Tracks

Look where a coyote, bear and moose walked, and see if you can match the tracks to the feet. Can you walk like a moose? Examine a scene and let the tracks tell you a story. What happened here? Using footprint cards, set out a pattern for your friends to follow. Will they need to hop, take baby steps or use giant strides?

Available December – March.

Turtles

Touch the shell of a turtle, feel a turtle's backbone, and learn why a turtle can't walk out of its shell. Become a turtle as you crawl into your shell and go on a hunt for your lunch. Meet a turtle ambassador of VINS, see what she likes to eat, and learn what the turtle calls home in the wild.

Note: This lesson involves a live animal. Children will need to wash their hands after touching the turtle.

Winter Wonderland

Explore the frosty, white, and wintery world with a scavenger hunt, hidden snowflakes and Discovery Boards. What beauty will you uncover in the winter landscape? Find your mitten match, build with fun ice shapes and try your hand at rolling balls made of ice. *Available November – February.*



Science and Engineering Themes

Each Small Wonders lesson under this theme includes multiple opportunities for engineering and design, problem solving and discovery. During each lesson a puppet presents a problem to be solved and celebrates success with high-fives and hugs. Many lessons also include natural materials, time outside (weather permitting), and song. Lessons typically last 40 minutes.

Ball Ramps

Send a ball down special wooden tracks and see where it goes. What happens when you let the black and white ball roll down the ramp, or the multi-colored felt ball? Watch balls roll through see-through tunnels and across different surfaces. Add teeter-totter ramps to your design and see what happens!

Big Bridges

Design and build bridges like an engineer! Discover what type of bridge can hold the most weight by constructing a beam bridge, supported beam bridge and an arch bridge out of thick paper and wooden blocks. Use what you've learned with standard building materials to build a bridge using natural materials.

Color Science

Enjoy a "Rainbow in a Jar" as you watch the colors shift, swirl, and mix. Create a rainbow with colored dancing scarves and then capture some of nature's beauty in a simple and colorful weaving. Head outside to see how many colors you can find in nature. Which ones match the color cards in your hands? Use clear Discovery Boards as a palette for creating your own nature art.

Demolition

Meet our puppet who needs your help engineering a solution to her problem. Can you design a wrecking ball that can knock down a tower of blocks? What about building a wall so strong and thick that you *can't* knock it down with your wrecking ball? Think like an engineer and discover which materials are best suited for the task.

Fantastic Fans

Become an engineer as you test out a variety of materials and come up with solutions to a problem. Can you make the perfect hand-held fan? Discover all that a fan can do, and see how far and fast you can get your Ping-Pong ball to move with your fan. What other objects can you move down the track with your fan?

Loose Parts – *NEW!*

Let your imagination run wild as you explore a wide array of loose parts carefully designed to inspire, engage and captivate young engineers. This collection of loose parts contains natural materials, wooden pieces and colorful fabrics. What can you build, create and imagine?



Magical Magnets

Explore the world of magnets, make predictions and discover which items are magnetic. Can you retrieve a lost paperclip from a jar of water without getting wet? Use a magnet wand to move your animal through a habitat maze. Pretend to be an owl as you swoop down and catch your prey – all with the aid of a simple magnet.

Mixtures and Solutions

Watch patterns appear, shift and disappear as you explore a set of shakers. Make predictions in a series of investigations as you mix different liquids and powders together. Watch what happens to the food coloring in the Magic Milk experiment and record your observations with crayons or markers.

Outdoor Ramps

Take your ramp-building skills outside. Using special ramps and balls designed for the elements, and see what happens when you make a ramp for balls, water, snowballs, a leaf, pinecone or nuts. Add teeter-totter ramps to your design and see what happens!

Pulleys

Meet our engineering puppet and discover the world of pulleys. Rotate through several stations as you explore how pulleys work. Can you use a pulley to drag a car up a ramp or raise and lower an object? How many cubes does it take to pull the heavy container across the table? What can you lift with your own pulley?

Race Car Ramps

Using unique materials, work in small groups to build ramps for your race car. How far and how fast does your car go? Can your car go through the tunnel? Work together as a whole group to figure out how to move the race car along the track without touching the car.

Sink and Float

Why do some things float and others sink? Choose an object, make a prediction, and test it out. Did it float? Did it sink? Use what you've learned about sink and float to help our puppet solve a problem. Can you design a raft that will keep a toy animal from sinking? Think like an engineer and discover which materials are best suited for the task.

Note: This lesson includes playing in bins of shallow water, and children may get wet.

Sound Shakers

Work together to create a Sound Story that tells of an approaching rainstorm. Look at an animal's skull and learn how different shapes of ears help animals to hear. Be an engineer and help our puppet learn how to make a noisy shaker. Design your own sound shaker, and use it to add music to our song.



Sticks

Create letters and numbers with nature's counting sticks, build your own patterns with polished wooden ones and work together to build a stick structure. Try to balance the magical balancing stick on your finger without it falling off. Use your own rhythm sticks to add a beat to our song.

Note: This lesson involves using real sticks for building that may be long, pointy and oddly shaped – pure nature!

Tall Towers

How can a flimsy piece of newspaper turn into a strong tower that supports weight? Discover how much weight a newspaper tower can hold! Use a set of rounded cork blocks to test your tower-building skills, and work with loose parts to see how high you can go.

Water and Ice

Set up an ice cube race and see which chunk of ice will melt faster. Watch what pattern food coloring makes in jars of hot water, cold water and crushed ice. Does the color move in the same way in each jar? Rotate through stations to explore colored ice cubes, pouring water with funnels, and play with animals who call water home.

Note: This lesson includes playing in bins of shallow water, and children may get wet.

Weather

What's the weather like today? Sort picture cards into categories and learn about different kinds of weather. Set up several experiments to test what happens to natural materials in sun, rain, and wind. Explore the power of wind using our traveling wind tunnel. What objects stay aloft in the wind column, and which don't? Design and test out your own creation!

Note: This lesson requires access to a power source

