

Rediscovering and Exploring Science through the

Arts

presented by

Wolf Trap Master Teaching Artist

Jeanne

Wall



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Goal and Objectives

Drama, creative movement, puppetry, and music are engaging tools for the exploration of Physical Science, Earth Science, and Life Science, three main areas of early childhood science education. The arts actively deepen scientific comprehension in both science content and science practices. We will use arts-integrated strategies to expand a child's knowledge of the world while developing skills that promote approaches to learning, observation skills, descriptive skills, and problem solving through exploring magnets, unique environments, what living things need to survive, and principles of engineering.

Goal:

Educators will be able to create developmentally appropriate arts-integrated learning experiences that align with preschool curriculum standards designed to introduce scientific discovery and foster essential habits of mind.

Objectives:

Participants will:

- Increase their knowledge of arts-integrated science experiences incorporating the dramatization of stories, puppetry, creative movement, and the use of simple songs into science curriculum.
- Identify curriculum standards and developmental objectives presented in the experiences.
- Work in small groups to develop an original experience that incorporates arts strategies with science lessons and share those with a larger group of participants.

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Introduction

One of our jobs as teachers is to help children develop observational skills needed in scientific inquiry. Our senses are the first tools we use in making observations. Let's warm up our senses with a call and response chant written by another Wolf Trap Teaching Artist, Joe Pipik.

Five Senses Song

By Joe Pipik

*If I had wings like a bird up in the sky, I'd spread my wings and away I'd fly.
I'd fly down low and I'd fly up high if I had wings like a bird up in the sky.*

*If I had great big elephant ears, ears that went from there to here,
There'd be nothin' I couldn't hear if I had great big elephant ears.*

*If I had a pair of eagle's eyes, I'd see it all no matter what the size.
I'd see teeny weeny, I'd see king-size, if I had a pair of eagle eyes.*

*If I had a nose like a blue tick hound, I'd take my nose and smell all around.
I'd sniff in the air, I'd sniff on the ground, if I had a nose like a blue tick hound.*

*If I had a tongue like a rainbow snake, I'd give it a lick, see how it tastes.
Might taste sour, or sweet as birthday cake, if I had a tongue like a rainbow snake.*

*If I had fingers like the monkeys do, I'd take my fingers I'd point at you.
I'd touch my head, I'd feel my shoe, if I had fingers like the monkeys do.*

Repeat first verse

Preschool Science

Besides science concepts like magnets and seasonal changes, Rochel Gelman in *Preschool Pathways to Science (PREPS)* talks about introducing key science practices. Gelman stresses the importance of encouraging children to think, talk and work scientifically. She sees five key science practices as an integral part of preschool science.

1. Observe, predict, check.
2. Compare, contrast, experiment.
3. Vocabulary, discourse, and language.
4. Counting, measurement, and math.
5. Recording and documenting.

Under language, Gelman gives a list of words to use often with children to promote science practices:

- Observe, observation, predict, check findings, results.
- Senses, see, touch, texture, hear, smell, taste.
- Describe, compare, contrast, same, different, similarities, differences.
- Investigate, explore, discover, experiment, test.
- Shape, size, height, length, width, weight, weight.
- Count, measure, measurement.
- Record, journal.

How to Use the Materials in This Handout

The lessons demonstrated in this workshop have been tested successfully in early childhood and kindergarten classrooms. They are written similarly to a script format that can be easily followed, but they may also be used as a reference and adapted for individual use in the classroom. It is my hope that you will adapt the lessons to fit your own needs and teaching style, finding new ways to reinvent them. Be creative and enjoy!

Title: Each lesson has a title followed by a short introduction.

Lesson Structure: Each lesson follows the same format:

1. **Introduction**
2. **Main Experience**
3. **Closing Experience**

1. Introductions are used to prepare children for the main experience. Your introduction can have many purposes. It can introduce a new topic or review a topic or skills from the last lesson. This is particularly good for scaffolding lessons –building one lesson upon another. Its purpose could be to focus the children’s energy, spark interest and attention, or manage transitions. The **purpose** of your introduction will help you decide which art form to use.

2. Main Experience: The purpose of the main experience is to engage the students in learning through an experience that allows them to explore their world, express themselves, and foster social skills. Dramatic play, dance, music, and puppetry are the artistic tools used to accomplish this.

3. A Closing Experience signals the end of the lesson. It wraps-up or summarizes the lesson, focuses the students, and facilitates transition.

Summary:

Each lesson is then followed by a summary of performing arts used in the lesson, and how the performing arts connect to curriculum, developmental objectives, and emergent literacy skills.

Physical Science: Force, Motion, Energy and Matter

Children develop an understanding of the physical properties and uses of materials as well as the vocabulary to describe position, movement, and physical properties of an object.

LESSON 1 - MAGNETS

There is no substitute for direct observation in scientific investigation!

Learning through experience, or *active learning*, is irreplaceable in generating an excitement for learning.

- **Exploring the properties of magnets hands-on is fun and facilitates critical thinking and reasoning skills.**

If magnets stick here, will they stick there? Why not?

- **Experiencing the force of polarity—attraction and repulsion—for the first time is an exciting mystery to a young observing mind.** Having children work with magnets and discover their properties is the beginning of any lesson on magnets. Let children discover which objects stick to a magnet and which don't.

*What happens when two magnets with poles marked **N** and **S** touch?*

This next lesson is an extension of that exploration using dramatic play, song, and dance.

LESSON OBJECTIVES

Children will be able to answer the questions:

- **What happens when opposite poles (N & S) touch?**
- **What happens when same poles (N and N) touch?**

VOCABULARY BUILDER

Attract: To pull toward

Repel: To push away

INTRODUCTION

Ask children about their magnets explorations.

- *What's so special about magnets?*
- *What is a magnetic pole?*
- *What does it mean when we say opposite poles attract?*
- *What does it mean when we say they repel?*
- *What does it feel like when the poles attract?*

Teach the following "Magnet Song" using gestures and clapping:

Magnet Song / Chant

By J. Wall

*Come here. Go away. Come here. Go away. (model gestures for lines)
That's what magnets say. That's what magnets say.
Come here. Go away. Come here. Go away.
That's what magnets say. That's what magnets say.*

*If you're the pole unlike me
You're the one I want to see.
Opposites attract you know.
If we're the same then Go Go Go!*

*Come here. Go away. Come here. Go away.
That's what magnets say. That's what magnet's say.
Come here. Go away. Come here. Go away.
That's what magnets say. That's what magnets say.*

*Poles are picky end to end
They need a certain kind of friend.
N and S attract and stick
N and N repel real quick*

*Come here. Go away. Come here. Go away.
That's what magnets say. That's what magnets say.
Come here. Go away. Come here. Go away.
That's what magnets say. That's what magnets say.*

MAIN EXPERIENCE

Magnet Dance #1:

Teacher: Explain to the children that we are going to pretend that we are magnets and we are going to do a magnet dance.
*We are going to do the **Magnet Waltz**.*

Children: Let the children listen briefly to the waltz music.

Teacher: Instead of teaching the traditional waltz steps, describe types of movements that can be used in our Magnet Waltz.

*In our waltz, we can make slow turns (demonstrate) and large side steps (demonstrate), our hands sticking out from our sides representing the different **N and S** poles. We are going to take turns dancing four at a time inside our circle.*

*Each dancer will get two colored mitts marked **N and S**. Dancers remember you are magnet dancers. You can move because you are repelled (pushed away) by like poles, or attracted (pulled) to opposite poles. You may start your dance when the music begins.*

Children: Encourage the children who are sitting and watching to warn the dancers if two similar poles are close together.

Teacher: Start the music. After briefly exploring the space, the magnet dancers will be asked to find a partner by matching correct poles and dance with that partner. The dancers are told to separate and dance alone again. To end the Magnet Dance, have all the dancers connect and dance in one group. New magnet dancers take their turn.

Magnet Dance #2:

Have the children form two lines with the children facing each other. One line should take three large steps backwards, so there is space between each line. Each child will partner with the person facing them in the opposite line. Sing the Magnet Song again, only this time each line will take a turn singing the chorus: *Come here, Go away, Come here*, -- using the gestures indicating “attract” and “repel.” The partner will move accordingly, moving forward and backward with the words “come here” and “go away,” as if pulled or pushed by their partner. Both lines of children clap and sing, *That’s what Magnets say. That’s what Magnets say.* Then it is the other line’s turn to sing and to attract and repel their partner. The teacher leads the verse singing and modeling gestures. The children repeat each line after her and repeat the pattern for the chorus.

CLOSING EXPERIENCE

Let’s pretend we are refrigerator magnets and the floor is a refrigerator.

Find a spot on the floor and let your magnet stick.

Make sure your whole body is stuck tightly to the floor.

Let’s take some deep breaths.

Feel the pull of your magnet to the refrigerator.

What are refrigerator magnets used for?

I’m going to come around and put a picture under each magnet.

When I clap my hands you are no longer magnets and you will be children again.

You can pick up your picture and take it to your seat. [It’s a picture of two magnets with arrows indicating whether they are being attracted (pulled) or repelled (pushed).]

I want you to label the poles with N or S and color the poles using only red or blue colors.

RECOMMENDED LITERATURE:

Mr. Fixit’s Magnet Machine, by Richard Scarry (Ready to Read Books)

LESSON 2 – DESCRIBING MATTER

Development of vocabulary to accurately describe matter is important to reporting one's observations, a key science practice. The next experience uses call and response chanting, creative movement, and dramatization to emphasize position words and movement of an object. It also uses the senses to observe objects and descriptive language to describe observations. Important words to use are ones that denote shape, size, height, length, width, weight, texture, and characteristics. This dramatic story is familiar to many teachers. It can be used with a science unit on Hibernation (Life Science) but will be used here to demonstrate how it connects with Physical Science. There are many good books to introduce hibernation and sleeping bears. The choice of *Time to Sleep* also emphasizes different senses.

INTRODUCTION

Read *Time to Sleep* by Denise Fleming. While reading, stop to ask the children to identify which of the senses each animal is using to understand its environment.

MAIN EXPERIENCE

Use *We're Going On a Bear Hunt* by Michael Rosen and Helen Oxenbury as the basis for this experience. Have the children stand and repeat each line and movement after you. Remember to make the movements and sounds correspond to the different environments encountered. Make dramatic movements BIG and exaggerated.

We're going on a bear hunt (clap once for each word)
I'm not afraid (use thumbs to point to yourself)
I've been there before
Let's start walking (walk in place)
Uh Oh! Uh OH! (stop and look surprised)
What do I see? (bring hand up to forehead, moving head forward to indicate looking)
I see a wide field of thick tall grass (create a gesture for tall grass)
We can't go around it. (use arms to indicate going around)
We can't go under it. (use arms demonstrating going under)
We can't go over it. (use arms to demonstrate going over)
We're going to have to go right through it! (use arms to gesture going through)
SWISH SWASH SWISH SWASH! (use your arms as if pushing the tall grass to the side as you walk through.)

Repeat from beginning adding different objects encountered:

A giant shallow long puddle – *Splish Splash.*

A wide muddy swamp – *Goosh Goosh.*

A tall steep rocky cliff – climb making exertion sounds.

A big dark cave – here the pace changes and dramatic play really begins.

Children, it's so dark we are not going to be able to see inside it.

Have the children tiptoe through the cave, lowering voices to a whisper.

Have the children stop. Sniff the air and tell the children you smell something.

Let's see if we can feel something.

Have them follow you as you gently feel the air pretending to touch something.

It feels soft and warm.

Feel in another direction. Report feeling something round and wet like a nose. Still in whispers, feel in the opposite direction.

It feels furry and is in the shape of a short tail.

Reach up and report *I feel two round warm furry things like an ear. What do you think it is?*

At this point the children say it's a bear.

Teacher says loudly *Quick! Let's get out of here!*

Reverse your steps going home but much faster, and IT WILL GET LOUDER. The children get very excited. Once home, have everyone go inside their imaginary house where they are safe.

CLOSING EXPERIENCE

Have the children do some deep breathing to calm down. Ask the children questions about their experience. *Why do you think the bear was sleeping in the cave so soundly? How did we know it was a bear? What did we feel with our hands? How did we know it was a nose, tail, ears? What were some of the things we had to go through while we were walking on our bear hunt? Why couldn't we just go around it?* Ask questions that will encourage children to use descriptive language to report on their experience.

When children are asked to describe things, they may have difficulty and lack the vocabulary to give accurate descriptive information. It is important, even in the earliest preschool ages, to provide children with opportunities to observe and describe. Broadening their vocabulary and providing experiences where children can look at objects and talk about attributes contributes to the process of scientific discovery that children need as they develop approaches to learning.

In this dramatic play, we encounter objects that we must either go around, under, over, or through. Being able to describe the movement of an object (in this case we are the "objects" who are moving) in relation to another is also part of the language skills needed to describe matter. Although this is a great lesson about hibernation, it also demonstrates a key component of physical science for preschoolers: vocabulary to describe position, movement, and physical properties of an object with emphasis on the senses.

SUMMARY

Performing Arts Strategies Used:

- Role play
- Creative movement
- Chanting

Curriculum Connections:

- Hibernation
- Science Vocabulary
- Matter – description of position and movement of an object
- Five Senses

Developmental Domains:

- Motor/Physical: Awareness of one's body in space, gross motor skills.
- Social/Emotional: Following directions, participating in a group, taking turns.
- Cognitive: Learning through active participation, using imagination to extend learning, problem solving, critical thinking.

- Approaches to Learning: Pleasure/enjoyment/enthusiasm/active learning.
- Attention: Ability to maintain focus, self regulation.
- Emergent Literacy Skills: Vocabulary development.
- Decoding: Connecting sign and meaning, story comprehension.

Principles of Engineering can be used effectively in this lesson: problem solving, collaboration and cooperation, finding multiple solutions/creative problem solving.

Life Science

Children will develop an understanding of living things (plants and animals), what they need to survive, the changes they go through during a life cycle, and their habitats.

LESSON 1 – JACK’S GARDEN

By Henry Cole

Working as a consultant in Early Learning and Kindergarten classrooms, I am often asked by the teachers to develop lessons about gardening in the spring. There is a wealth of good books to introduce this topic. I love Henry Cole’s book *Jack’s Garden* because each page is rich with information showing tools, garden preparation, planting, flowers, and the insects and birds that are necessary for a healthy garden. For this lesson, I am going to start by reading the book with the children, giving them a gesture for each sequence in the cumulative text. Whenever I read a book, I try to make it physically active for the children, adding gestures and always giving them a verbal phrase or response to the story. The gestures provide a kinesthetic learning experience while asking the children to work on a symbolic level, which is an emergent literacy skill. The spoken phrase reinforces vocabulary development, also enhancing emergent literacy. But the science emphasis in the lesson is what plants need to grow.

INTRODUCTION

Reading the book and having the children participate by using with gestures helps focus their attention, and kinesthetically helps them learn vocabulary and the sequence of the story. Often the children are able to use the vocabulary and understand the sequence after one reading when gestures are added. Some of the gestures will also be used in a song at the end of the lesson. This is just the first reading of this book. Throughout the week the book can be reread, stopping to discuss the details and illustrations on each page.

Children, this is the garden that Jack planted. He has worked hard to get his garden ready for planting. He’s made his garden soil flat. Let’s all make a flat garden bed like Jack using our arm.

(Model – hold forearm parallel to the floor and stroke arm, starting at elbow and ending at fingertips.)

Read – *This is the soil that made up the Garden that Jack built.* (Have students repeat garden bed gesture.)

Read – *These are the seeds. Everyone pick up a seed.*

(Model – thumb and finger picking up seed and putting it in garden bed – forearm.)

Continue reading the page. *These are the seeds that fell....*

Read – *This is the rain. Let’s all make some rain.* (Model – both hands, fingers open, starting overhead, bring them down slowly.)

Continue reading. *This is the rain that wets the seeds.....*

Read – *These are the seedlings. What is a seedling? The seedling is the tiny baby plant that grows when the seeds get wet. Let’s all make a seedling.* (Model – tip of finger sticking out above arm/garden bed.)

Continue reading. *These are the seedlings that sprouted with....*

Read – *These are the flowers. Let’s all make a flower.*

(Model – using forearm as garden bed, have other arm stick up perpendicular with elbow resting on top garden bed arm. Fingers on flower hand wide open.) *Let’s all smell our flowers.*

Continue reading. *These are the flowers that grew from the seedlings that sprouted when the _____*

(At this point leave out the word rain and others showing only the gestures allowing the children to fill in the missing words for each gesture.)

Read – *These are the insects. Many insects visit the garden to drink the nectar of the flowers. First we'll make a bumblebee.*

Hold out your fist to make a bee. Now put a stinger on it. BZZZZ! (Model – hold up fist with thumb sticking out to the side.) And this is a butterfly. Hold up both hands with palms facing toward yourself. Make sure your thumbs are on the outside. Let's have other thumbs say a thumb hello to our neighbors. Gently have your thumb touch the thumb of the person next to you to say hello. Now cross your hands and hook your thumbs together. This is the sign for butterfly.

Continue reading. *These are the insects that sipped nectar from the flowers.....*

Read – *These are the birds. This is the sign for singing bird. Put your thumb and finger together beside your mouth and move them open and closed.*

Continue reading, remembering to leave blanks for the children to verbally fill in, cueing them with the gestures. *These are the birds that chase after the...that sip nectar from the...that grew from the...that sprouted when the...wet the...that fell on the...that made up the garden that Jack planted. And this is the garden that Jack planted.*

PREPARATION

Need fabric and boom box.

MAIN EXPERIENCE

A simple drama experience can change the atmosphere in your classroom. Dramatic play and interaction with the environment are two of the best ways for children to learn. Tapping into children's love for pretending, you can accomplish curriculum goals through dramatic play while making your lesson active and engaging. Integrating the arts and learning creates lessons that appeal to a variety of learning styles and enhances child development.

Would you like to build a garden like Jack's right here in our classroom? We can because we have great imaginations.

Everyone, this is a flower seed. Is it large or small? Can anyone make their body small like this seed? Let's all try that. When you hear the music, it's time for the tiny seeds to sprout and very slowly grow up tall into beautiful flowers. Everyone make yourself small like a seed and start to grow when you hear the music.

(Music should be slow & soothing to help facilitate slow growing movements. Have everyone return to circle.)

We are going to take turns being actors and getting a chance to be a seed and grow in our garden, as well as be sun helpers and rain helpers. Children, what do we need first to make a garden? This cloth is going to be our garden soil.

(Choose the first group, making it small to play the part of the seeds.)

I'm going to place the first seeds in our garden.

(Hold up the word "seed" and place it somewhere out of dramatic action.)

Can you make your bodies small like a seed? Now we are going to cover the seeds with dirt or soil. (Hold up the word "soil," and place it with word "seed." Cover students who are playing the part of the seeds with a piece of fabric.)

Now what do we need to make the seeds sprout and grow? Rain!

(Place the word "rain" with other vocabulary words.)

We are going to need some rain helpers to gently pitter-patter rain on the backs of the seeds.

(Model the gesture and gentle touching of children under the fabric. Choose from remaining students to be rain helpers.)

Now the rain helpers sit down. What else do we need for our garden? Sun!

(Hold up the word "sun.")

We need some sun helpers to gently rub the backs of the seeds to warm them up, and let them know it's time to wake up and sprout.

(Again model gentle touch and rubbing. Use the remaining children for sun helpers.)

Now we are going to watch these seeds sprout and grow into beautiful flowers.

(Hold up word "flower." Start music and watch as the children become flowers. Finish with applause.)

Let's have a round of applause for our beautiful garden.

Now repeat the cycle one or two more times so every child gets a chance to be a seed in the garden.

CLOSING EXPERIENCE

Teach song "Garden Friends" with gestures children already know for bee, butterfly, and singing bird.

Garden Friends

by Jeanne Wall

Honey Bee, Honey bee

Making that honey in the honey tree

Bumblebee, Bumblebee

Making that honey all day

Flying high, flying low

Up and down and around you go

Honey bee, Honey bee

Making that honey all day

Butterfly, Butterfly

Flapping his wings as he flies by

Butterfly, Butterfly

Flapping his wings all day

Flying high, flying low

Up and down and around he goes

Butterfly, Butterfly

Flapping his wings all day

Singing bird, singing bird

Singing her song so she'll be heard

Singing bird, singing bird

Singing her songs all day

Singing high, singing low

Up and down and around she goes

Singing bird, singing bird

Singing her songs all day.

YEAH!

SUMMARY

Performing Arts Strategies Used:

- Creative representation
- Dramatization
- Role playing

- Representational movement
- Singing in group

Curriculum Connections:

- Life Science – what plants need to grow, seasonal topics, planting, gardens, flower, gentle touch.

Developmental Domain:

- Motor/Physical: Gross and fine motor skills.
- Social/Emotional: Participating in group activity, following directions, turn taking.
- Cognitive: Memory.
- Language: Using new vocabulary, sequencing.
- Emergent Literacy Skills: Vocabulary development
- Decoding: Using signs to represent words and ideas, comprehension, listening to a book, sequencing, cueing (filling in the blanks).

LESSON 2 – SEED STORY

This lesson goes deeper into plant life. It talks about seed transportation, and reinforces plant needs and functional parts.

INTRODUCTION

Start by showing the children different types of seeds. Real seeds would be best, but pictures will also work. Ask the children to look at them closely to observe how they are different, how they are similar. Spring is a good time to collect seeds that use wind to spread them such as dandelion puffs and maple tree seeds. Let the children blow the puffs and watch the seeds float. Drop maple seeds and watch their movement. Talk about different methods of seed distribution if it is age appropriate. You can also just use the seeds to impress on the children how small seeds can become trees and beautiful flowers.

Seed Song

By Jeanne Wall

*There's so much inside of me.
There's so much inside of me.
It's just waiting to be free.
There's so much inside on me.*

*Now I'm small and just beginning,
But with time I will grow.
With love and care I'll be special.
Then you'll see my beauty show.*

Repeat first verse

MAIN EXPERIENCE

Ask the children to help you tell a story of a different kind of seed: a sunflower seed. Have the children act out parts of the story both with gestures and sounds.

One spring morning, a bird was visiting a bird feeder, enjoying a breakfast of seeds (Let's all use our hands to make the feeder and bird). The bird was enjoying its meal and started to sing. Does anyone know what his song might have sounded like? (Children will make various bird sounds.) Something startled or scared him (let's all make a scared face). So, off he flew with a mouth full of seeds. (Have the children use their hands to show bird flying away.) As he flew, one of the seeds slipped from his mouth and fell through the air. (Create a sound and gesture for the seed falling.) Let's all make a seed fall through the air. The seed landed right in someone's garden bed. (Have the children stand and pretend the inner circle is the garden bed. Using gestures.) There it was laying on the ground. Well, this garden was about to be prepared for spring planting. Children, let's pretend this is our garden, and we have to get the soil ready for planting. Since we are going to go outside to work in the garden, let us:

- 1. put on sunscreen*
- 2. put on sun hat*
- 3. put on work gloves*
- 4. get some tools – shovel & rake*
- 5. start with shovel and turn the soil*

6. use the rake to get the rocks out and make the garden flat.

Now that is a good-looking garden ready for planting. We are finished for today. We'll plant the seeds tomorrow. Let's put away our tools, take off gloves and hats. Sit back down. Children, do you remember that seed that fell from the sky? I can't see it anymore. Where do you think it might be? You are right, it's now underneath in the soil. What do you think is going to happen? What does it need to start growing? Let's make some rain come down. Let's make a sun to warm up the soil and let the seed know it's time to grow.

(Now the dramatic play shifts to the children, each becoming a plant that grows. We will use our own body parts to represent the parts of the plants.)

Let's pretend that we are that sunflower seed and it's beginning to grow. Let's have our feet be our roots. The roots drink in the water and take in food for the plant. Let's let our roots suck up the water (create sound and gesture with feet). Everyone wiggle our roots. Our bodies can be the stem of the plant. The stems carry the water and food to our leaves (gesture & sound for water moving up the plant). Let's let our hands be our leaves. Wiggle our leaves. Our leaves are going to use the water plus the sunlight to make food for the whole plant (create gesture and sound for leaves making food and feeding the plant). With all this good food, our plant is growing taller. Let's all stand up and make our tallest plant. Now our head is going to be the flower. Flowers make either fruit or more seeds. Since we are a sunflower, let's let our flowers look up to the sun. The end.

CLOSING EXPERIENCE

This is a call and response chant with movements. Have the children repeat each line. Have them stand and use their bodies to represent the different parts of the plant: their feet the roots, their bodies the stem, their hands the leaves, and their heads the flowers. The physical gestures can be big, giving them a chance to move. I stomp my feet saying *roots roots deep in the ground*. Have the foot draw a big circle for taking in the water. Bend over and tap our legs, standing tap stomach, chest indicating the stem. Leaves reach out arms shaking hands. Rub stomach in a circle saying *yum yum*. Cup hands around face to indicate flowers etc.

Plant Chant

By J. Wall

*Roots, Roots go deep in the ground
Take in the water that's all around.
Stem, Stem grow tall and strong
Carry the water, Move it along.
Leaves, Leaves make food in the sun
Feed the plant, yum yum yum.
Flowers, Flowers make fruits and seeds
To start again a seed we need.*

SUMMARY

Performing Arts Strategies Used:

- Role play
- Creative movement
- Chanting
- Singing

Curriculum Connections:

- Life Science – plants, plant life cycle.
- Science vocabulary
- Seasonal changes

Developmental Domains:

- Motor/Physical: Awareness of one's body in space, gross motor skills.
- Social /Emotional: Following directions, participating in a group, taking turns.
- Cognitive: Learning through active participation, using imagination to extend learning, problem solving, critical thinking.
- Approaches to Learning: Pleasure/enjoyment/enthusiasm/active learning.
- Attention: Ability to maintain focus, self regulation.
- Emergent Literacy Skills: Vocabulary development.
- Decoding: Connecting sign and meaning.

Earth Science

Children develop an understanding of the Earth and the natural environment. They will be able to observe and describe the natural world around them.

LESSON 1 – PONDS ARE ALIVE

I was asked by a teacher to develop a lesson about ponds, with the overall objective of teaching the environmental science of a pond, the elements of a pond and the animals dependent on it. I also wanted the children to become aware of their senses and how important their senses are to discovering and observing new environments. I wanted the children to move very slowly and quietly, as if really looking for wild life, as well as to listen for sounds and to emphasize observation using only our eyes. How could we use descriptive language to describe what we see? The first time I used this lesson, it was designed for a special needs classroom. With this in mind, I had to anticipate problems that would require more management strategies. I also needed to consider the rhythm of the lesson: how to boost the energy level in some places while keeping the children ACTIVELY involved. First, I looked through my supply of little figures and materials, looking for things to visually create a pond scene in the classroom. I thought about how I could provide the children with an auditory experience and identify the right book for the subject matter. I wanted to incorporate an active movement component into the lesson at the point that I believed the students' attention span might be challenged. The illustrations of pond grass gave me an idea for a grass dance. Plus, I always like to include elements of problem solving for the children.

LESSON OBJECTIVES

- To explore, observe, and describe the elements of a pond environment.
- To identify the animals that live in a pond environment.

VOCABULARY BUILDER

Habitat: The kind of place needed for certain animals and plants to grow and to be healthy.

Naturalist: A person who goes out and studies plants and animals in their own habitats.

PREPARATION

On the floor, create a preset pond scene. I use brown fabric (pond's muddy bottom) covered with an opaque blue fabric that is big enough for all the children to sit around it. On the bottom (brown), I place a small figure of a fish, a turtle, crayfish, newt, and a scarf for pond grass. Mud and figures are covered with a blue fabric representing the water in the pond. On the pond, place a green felt lily pad.

INTRODUCTION

Bring students to the pond. Use a soft voice.

Today we are going to visit a pond, which is a small body of water. A pond is a special kind of habitat, or place, where certain kinds of animals and plants live. A person who goes out and studies the plants and animals in ponds is called a naturalist. Naturalists often share what they know about habitats (those special places animals live) and about the animals and plants that live there, by taking a group of children – like you – on a tour. Would you like to go on a tour and visit a pond today? I'm going to put on my naturalist hat because I'm going to be the naturalist today. The way a naturalist learns about a habitat is by observing, using their eyes and listening with their ears. If we are very quiet, we may see many birds and animals at the pond -- but birds and animals are scared by noises and fast movements,

so we must walk very slowly and quietly to the pond. Once we are there, sit very quietly beside the pond with our hands in our laps. Remember to move slowly and quietly. I'll lead the way.

If the children are not following your instructions, have them stop and go back. Emphasize that, if they want to see the animals, they must move slowly and quietly. Try again. Sitting around the pond, students will want to touch the water fabric. Still in a whisper voice, say:

Let's all take one hand and gently touch the water. How does it feel?

Encourage whispering voices.

We don't want to scare away the animals so all hands back in our laps.

MAIN EXPERIENCE

This main experience allows the children to discover the different animals that call the pond their home.

Shh! (In a whisper voice) *Listen, what do you hear?*

Play a recording of environmental sounds that include song birds and frog sounds.

Let's look around and see if we can observe any of the animals that we are hearing.

Using finger puppets, start a narration/puppet play of animals coming to visit the pond. The first to show up is a dragonfly. Demonstrate a bird flying **over** the pond looking for bugs to eat.

Where is this bird flying?

*Some birds land and sit **beside** the pond to get a drink of water. Where is this bird sitting?*

Are the birds the same? How are they different?

*Some birds go **in** the pond. What kind of birds are these? They are a mother duck and her baby ducks.*

*What **color** are they? How many ducks are there? Let's count them. Mamma duck likes to have her babies in a **straight** line. Are these ducks in a straight line? She quacks at her babies, telling them to get in a line.*

Show the children the baby ducks going in a **circle**.

What shape is this?

Mamma duck quacks again. Put ducks in a **square**, then a **triangle**.

Let's help Mamma duck and put her babies in a straight line? Now Mamma duck is happy. Off she goes with her babies.

Two Frogs/One Lily Pad

Two frogs are now brought into the scene. After a quick swim, both frogs are hungry and want to sit on the lily pad to wait for flies. They begin to squabble over who gets to sit on the lily pad. Ask the children what they think is happening. They will likely say that the frogs are fighting.

Why do you think they are fighting? If they keep fighting, will either of them catch their dinner? What do you think they should do?

Accept all answers that the children provide.

*They could **SHARE** the lily pad.*

Ask: *How they could share it? Take Turns.*

Demonstrate how the frogs can take turns.

Is the pad big enough for them to use together at the same time? Yes.

Put both frogs on the pad.

Now they can be friends and eat lunch together. The frogs decide to catch bugs and then share them for lunch.

Depending on children's ages and what you want to emphasize, this is a good place to put in a math problem for your children to solve.

Example:

The frogs could catch a number of bugs, but the bugs get divided unevenly. This causes the frogs to squabble again. Ask the children to explain what is wrong. Count the bugs. *Are the piles of bugs the same? Which has more? Can someone make them the same on both sides?*

You can tell the children that frogs really catch flies and eat them right away but, since we are pretending, the frogs will catch their bugs and wait to eat together.

Looking under the surface of the water

If we work together, we can explore what is under the water. When I tell you to, and without lifting it up, everyone must take a hold of the edge of the pond just like I am doing. Do not lift it up until I tell you to do so. We have to work together. When we lift it up, it's really important that everyone keep both hands on the pond. Don't let go. (This is designed to counteract the impulse to reach for the objects under the water.)

We will lift the water when I count to three. Using only your eyes, look at what is under there.

Count to three: *One, two, three, lift. Look with your eyes. On the count of three, put the water back down. One, two, three. What did you observe under there? Part of being a naturalist is **observing or looking very carefully.***

Remind the children to hold on and lift again – and then down.

What colors did you see? Repeat.

How many things do you see?

After various observations, tell the children to put their hands in their laps. *If we sit quietly, we can see what is under the water.* The teacher removes the blue fabric completely.

Looking under the water

Under the fabric, there are various small figures for the children to identify: turtle, crayfish, newts, fish. I ask the children questions about what they see.

Pond grass dance

Among the things under the water is a green scarf. The teacher takes the scarf and manipulates it, saying, *Not only do animals live in the pond, but special plants do, too. Pond grass grows under the water.*

Using the scarf in the pond, demonstrate how the long pond grass moves with the motion of the water. *Look how the grass dances in the water. Let's create a grass dance with me!*

Pass out scarves to each child (using soft fluid music). Direct the children to move from side to side, then up and down. It doesn't have to be a long dance -- shorter is usually better.

Let all the pond grass come to rest on the bottom of the pond.

Baby otter

Using a stuffed toy, introduce the baby otter and how he uses the pond. Place him in your lap.

Read a book to the children using objects in a pond: *Otters under Water*, by Jim Arnosky.

As you read the book, ask the children if they see an animal in the book like any of the animals we saw in our pond. As the children identify the animals, remove each one from the pond and place it out of sight. This collects all the items used in the lesson.

CLOSING EXPERIENCE

Shower curtain swim

Ask the children if they would like to pretend to be a baby otter and swim in a pond. Quickly gather up fabric with objects and set aside. Use a shower curtain on a rod to represent the pond. Ask the children what the baby otter needed to do before going into the pond.

That's right...Make sure Mamma is watching you.

Demonstrate holding breath, jumping in, swimming under water, and coming to the surface for a breath. Each child may take a turn "swimming." Using a spray bottle, let each child get a little wet as they swim. After each child has had a turn, use a call and response chant to refocus energy, like the one below. I use gestures for each line.

Closing Chant with Gestures

It's fun in the sun...

to take a swim....

I ask my Mom...

Then I jump right in....

I swim above...

I swim below...

then dry myself from head to toe!

We are now ready to record our observations in our field notebooks. At your table you will get a notebook. A naturalist records what he sees in the habitat he is studying. Our habitat is a pond. I want each of you to draw as many things as you can remember seeing. I will come around and help you write the names of what you saw.

This can be followed up by going outside to observe the animals, bugs and plants in the school yard. Each can be a **category** observed on different days and **recorded** in their field notebooks.

SUMMARY

Performing Arts Strategies Used:

- Dramatic play
- Creative representation
- Creative movement and moving to music
- Puppetry
- Call and Response

Curriculum Connections:

- Earth Science – ponds/environmental science
- Animal identification
- Prepositions and science vocabulary
- Shapes and colors
- Conflict resolution
- Sharing and social skills
- Observation and descriptive skills

Developmental Domains:

- Motor/Physical: Moving while holding object.
- Social/Emotional: Problem solving, following directions, participating in a group, identifying feelings, sharing.
- Approaches to Learning: Attention/maintaining focus/self-regulation.
- Language and Literacy: Associating symbols with object, vocabulary.
- Cognitive: Learning through active participation, using imagination.

LESSON 2 – EXPLORING A CORAL REEF

I developed this lesson as part of a series of lessons designed to explore the ocean, our largest environment on the planet. Because it is often difficult to bring classes to unique environments, drama works particularly well in helping children to understand the characteristics of these different habitats. Children will remember information better and be able to draw their own conclusions about the different important elements of that environment.

This lesson can also be used to demonstrate the principles of engineering for preschoolers:

1. Recognizing a problem to be solved.
2. There are many ways to solve a problem.
3. Cooperation and collaboration in solving a problem.

LESSON OBJECTIVES

Children will be able to answer the following questions:

- What is a coral reef?
- Where would you find reefs?
- Why are reefs important?

VOCABULARY BUILDER

Reef: A rock-like structure that is an important home or habitat for many fish and sea animals.

INTRODUCTION

What is it like below the surface of the ocean?

What do you think we might find under the water?

I have a book that shows many things we could see. As I read it, we'll look at the pictures and see how many different things we can find. It's called Rainbow Fish and the Big Blue Whale by Marcus Pfister.

READ the book to the children, taking time to point out different aspects and animals of the reef. This could be done on the previous day to shorten the lesson, especially for younger children.

The following day, show the children more pictures or photographs of actual reefs and ask the children to comment on how they appear to be **different**. Using a small aquarium model of a reef, talk about its shape, mentioning the holes and empty places.

- Ask the children if they remember where the fish in the book hid when they were scared.
- Show the children a star fish and a clam shell.
- Tell the children that we are going to make an imaginary reef in our classroom. Ask them to predict what they think they might see at our reef. Make a list of the predictions given by the children. We will check this list again at the end of the lesson to see how many predictions were correct.

MAIN EXPERIENCE

Using our imaginations, let's create our own reef to explore right here in our classroom.

There are two ways to do this depending on the ages and capabilities of the children.

1. **For kindergarten children:** Having the children create the reef using their bodies is challenging and exciting. One at a time, ask a group of children to use their bodies to make a shape that they can hold for a long time. As each child makes a shape, they should touch or connect with another child to build the reef. This will create interesting spaces for the reef fish to swim around and holes where the fish can hide when they need cover.
2. **For younger children:** They can build their reef out of classroom objects such as chairs. Allow the children to place chairs different ways (on their sides, upside down, etc.) to create a reef that has lots of hiding holes.

Principles of Engineering can be used effectively in this lesson:

A part of STEM is engineering. Allowing the children to use the chairs to build a coral reef in their classroom can be used to demonstrate the principles of engineering at a preschool level.

- Problem to be solved – how can we build a reef in our classroom?
- What functional needs must the reef meet: holes/spaces for the fish to hide in; space around it for the participants with their fish to move; all the pieces must be touching/connected; stable enough to use. There are many ways to solve the problem.
- Cooperation in solving the problem. Does it work? Is it safe?

A great engineering follow up would be to see what else in the classroom can be used to build a reef. This could be done all together as a class or in smaller groups. Have the children come up with their own ideas for materials in the classroom that could be used to make a reef. Let them build their reefs and see if they do solve the problem and meet the criteria need. If they don't work, well why not? A good book to follow up their engineering experience is *The Giant Jam Sandwich*, by John Vernon Lord.

Next, assign the various animal roles. Let some of the children be the fish swimming around the reef, feeding. Give those children pieces of fabric that they can move and make swim. Ask one child to be the starfish hunting for a clam. Have another child make his/her body into a clam shape and put them at opposite sides of the reef. Both the starfish and clam may move, but they should hold their bodies in the shape of the animal.

Younger children may be given stick puppets of a starfish and clam to help them play their parts. A simple sock puppet can be used to create the moray eel that finds a hole within the reef. A cardboard box makes a nice house for the hermit crab.

Once the roles are assigned, we can make our reef come alive. Explain to the children that all the fish should swim around the reef and the other animals should also move... but watch out for the shark! The teacher uses a shark puppet that tends to stay away from the reef, but then sometimes swims in close.

What happens to the fish? Where do they go?

Using recorded music facilitates the feeling of swimming under water.

When I start the music, you can all begin exploring the reef.

The reef fish swim around the reef feeding, but when the shark swims in close, the fish must find a place to hide inside the reef. After the scene has played for a little while, I ask the children to explain why the reef is important for the fish (food and protection).

When performing this experience with a group of the older children (where the children use their bodies to make the reef), give the children an opportunity to switch roles so that everyone gets a chance to explore the reef.

CLOSING EXPERIENCE

Bringing the children back to the circle, have them take some deep breaths since we are no longer under the water and now have air to breathe. Use the list of predictions created by children at the beginning of the lesson to check for accuracy. How many predictions were correct? Did we have any false predictions? You could even make a graph of right and wrong predictions.

SUMMARY

Performing Arts Strategies Used:

- Puppetry
- Singing in a group
- Drama

Curriculum Topics:

- Earth Science – ocean environments
- Conflict resolution
- Sharing

Developmental Domains:

- Motor/Physical: Awareness of one's body in space, gross motor skills, fine motor skills.
- Social/Emotional: Following directions, participating in a group.
- Language: Singing, associating symbols with ideas.
- Cognitive: Learning through active participation, using imagination to extend learning, likenesses and differences, memory skills.
- Approaches to Learning: Interest/curiosity/pleasure/enjoyment/enthusiasm.
- Attention: Ability to maintain focus.
- Emergent Literacy Skills: Vocabulary development.
- Decoding: Connecting sign and meaning.

Recommended Literature

Going on a Whale Watch by Bruce McMillan (Scholastic Inc., N.Y. 1992)

Mr. Fixit's Magnet Machine by Richard Scarry (Simon & Schuster)

Otters Under Water by Jim Arnosky (Penguin Putnam Books, N.Y. 1992)

Jack's Garden by Henry Cole (Greenwillow Books, N.Y. 1995)

Preschool Pathways to Science by Gelman, Grennema, MacDonald, Roman (Brooks Publishing Co., Baltimore, MD. 2010)

Rainbow Fish and the Big Blue Whale by Marcus Pfister (North -South Books, N.Y. 1998)

The Whale Watchers Guide by Robert Gardner (Simon & Schuster, N.Y. 1984)

Whales by Gail Gibbons (Holiday House, N.Y. 1991)

What Makes a Shadow? By Clyde Robert Bulla. (Harper Collins, N.Y. 1962)

Time to Sleep by Denise Fleming (Henry Holt, N.Y. 1997)

The Giant Jam Sandwich by John Vernon Lord (Houghton Mifflin, N.Y. 1972)

We're Going On A Bear Hunt by Michael Rosen and Helen Oxenbury (Simon & Schuster, N.Y. 1989)

Any of the *Let's-Read-And-Find-Science* Series

Presenter's Biography

JEANNE WALL received her B.A. from the University of Maryland in Drama Therapy. As a variety artist, she has toured the United States from coast to coast as well as appearing in Canada, Asia, and the Caribbean with her unusual blend of humor and circus skills, including juggling, unicycle, puppetry and music. Jeanne taught drama for the Mount Vernon Community Children's Theater for several seasons. In addition to her work as a Wolf Trap Master Artist, she designs puppets and performs in Goodlife Theatre productions, Tanka Tales & Granny's Appalachian Tales. In 2000 Jeanne was commissioned to design & perform a special shadow puppet show for The National Museum for Women in the Arts in conjunction with the Julie Taymor Exhibit. In 2005 Jeanne and husband premiered a new music show, Crooning with the Critters, combining live music & puppets.



Research has proven that the arts are a powerful tool through which children can learn. The Wolf Trap Institute for Early Learning Through the Arts was established in 1981 under a grant from the Head Start Bureau of the U.S. Department of Health and Human Services to support teachers' professional development and young children's learning. Through residencies and workshops across the country, early childhood professionals in partnership with Wolf Trap Teaching Artists learn arts-based techniques and strategies that empower them to link and embed the arts in all developmental domains of curriculum. Age-appropriate experiences in music, movement, drama, and puppetry foster a love of learning and help support young children's skill development in social relations, creative representation, initiative, logic, mathematics, language, literacy, movement, and music.

The Wolf Trap Institute offers a variety of services including:

Professional Development Workshops for teachers are designed to provide age-appropriate performing arts strategies that are linked to early childhood curricular learning outcomes.

Family Involvement Workshops offer parents and caregivers of young children an introduction to performing arts activities that can be employed at home, in the car, and even in line at the grocery store.

The Wolf Trap Institute operates successful programs across the United States and has taken its services as far as Singapore, Jamaica, England, Greece, Wales, Canada, Italy, Ireland, Northern Ireland, Brazil, and Mexico. With the support of local sponsoring organizations and Wolf Trap's Affiliate Programs across the country, the Institute serves more than 35,000 children, parents, and teachers annually.

For more information about the Wolf Trap Institute for Early Learning Through the Arts, please visit: wolftrap.org/Education.aspx, or call 703.255.1933 or 1.800.404.8461.

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