Math Detectives - where’s the math?

using drama to discover the math hidden in books

presented by
Wolf Trap Master Teaching Artist

Katherine Lyons

Wolf Trap Institute for Early Learning Through the Arts
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Goal and Objectives

Workshop Description:
Is math a mystery to you? Do you find yourself clueless? *Numbers and Number Sense, Geometry, Measurement, Graphing, Algebra*; math is everywhere if you know how to find it! Let’s look at children’s literature. Discover the math already there, hidden in books you love. Old books, new books, we’ll learn to look at books in a different way, uncovering the natural math concepts embedded in the story experience.

Goal:
To uncover the math hidden in books and create active, arts-based experiences that support curriculum standards and engage children in creating and performing as a means of developing math skills.

Objectives:
Participants will:
- Explore elements of drama and the natural connections to math objectives in the curriculum
- Find the math in children’s literature through examination, group discussion, and demonstration
- Create an arts-integrated math experience using drama strategies, appropriate arts/math vocabulary and intentional questioning
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Introduction

This workshop is not about finding a book specifically in math, such as a counting book; it’s about uncovering the math hidden in almost any book, just waiting there to be discovered – looking at children’s books in a new way and finding the natural math connections to stories and the world around us.

Then, instead of directly teaching the math skill, we ask, “How do I get a child to feel the concept and understand by doing?” We will discover ways to learn math by exploring the concept in an active, concrete, and arts-based way. We will move our bodies, we will sing and chant, we will dramatize stories and characters, we will learn to use props, and you will find, embedded in the arts and literature, solid math concepts.
Warm Up

“Up On the Mountain”
(This song is originally done with children’s names, but in the workshop, participants are given different colored gloves and mittens on their name-tags.)

Where’re the ________ (“red gloves?”)
There, there. (raise hands)

Where’re the ________ (“green mittens?”)
There, there.

Where’re the ________ (“striped gloves?”)
There, there.

And where are the ________ (“blue mittens?”)
There, there.

Are they up on the mountain? (Point up.)
No, no.

Are they down by the fountain? (Point down and stomp.)
No, no.

Have they gone out to play? (Thumbs point back.)
No, no.

I see my friends are here today. (Gesture to all.)

(After 1st verse, all stand and sing.)
STEM (Science, Technology, Engineering and Math) education has become a top priority across all sectors of our society. Research now shows that students’ math skills as they enter kindergarten are the strongest predictor of later school achievement.

Yale astrophysicist Priya Natarajan says:

“If we want more Americans to pursue careers in STEM professions, we have to intervene much earlier than we imagined.

Starting early in children’s education, we need to provide these types of engaging, interactive learning environments that link school curricula to the outside world. Growing up in Delhi, India, I explored numbers and searched for patterns in everyday settings long before I ever saw an equation.

…but the U.S. schools’ approach to math and science lacks in large part a creative element. [We need to] help students understand that science and math aren’t just abstract equation, but tools we use to understand our world.”

There is a natural connection between math skills and elements in the performing arts. The arts and sciences both require imaginative thinking and creative problem solving, the 21st century skills the next generation will need in order to become successful in the workplace, in life and in society:

Communication
Collaboration
Critical Thinking
Creativity – using creative problem-solving, thinking outside the box
Community – that sense of belonging, that we are responsible for one another.

Children must have regular experiences involving counting, observation, comparison and problem-solving in ways that connect to their environment and everyday life. In Early Childhood Education, the arts are a connection to play, to social skills and cognitive development. “Using the arts, all the senses – this is just good teaching. This is the way we all should be teaching. English learners, children with special needs, these are ways all children should be learning.”
— STEM project Pre-K Teacher

Today, I will demonstrate active, arts-based learning—arts experiences that engage children in creating and performing as a means of developing math skills.

When approached about developing work for the STEM project, I thought, “I don’t teach math in any of my lessons—how would I do that?” But when I learned about the math content areas for Early Childhood, I immediately began to make connections to the stories I already use and love:

Counting
Sequencing
Beginning, middle and end
Ordinal numbers; who came first, second, third?
One to one/symbolic representation
Comparing and contrasting; sorting and classifying
Ordering by size; bigger, smaller, longer, shorter
Attributes of characters or objects
Geometry – shapes and spatial relationships – traveling under, over, around and through
Measurement – more or less, louder or softer, faster, slower
Algebra – seeing the relationship between things and discovering patterns; sets or repetition of chants, characters and events.

I realized that almost all stories have these elements—they just have to be brought out through focus, intentional questions, using math vocabulary and repetition. Everything you do has to be planned—it has to have intention and purpose. Find places in the story where you can introduce math vocabulary, “Math Talk” and use the arts vocabulary, scaffolding lessons so that all children can be successful.

“The most effective learning experiences build on what children already know and can do, but also make them stretch a reasonable amount toward what the children don’t yet know or cannot yet do. Children have enormous capacities to learn and almost boundless curiosity about the world.”*

And the performing arts enhance and reinforce this capacity for learning in the most creative and lasting ways.


Intentional Questions:

What happened? How do you know?

What would happen if . . . ?

What else can you find that is like this?

Is there any other way to show . . . ? Can you show me another way to . . . ?

About how many . . . ? Why do you think so?

How are these alike? How are they different?

(From Copley, Juanita. "Assessing Mathematical Learning: Observing and Listening to Children," Numbers and Math.)
Drama Elements

My background is as an actor, storyteller, and teaching artist in drama. By using all the senses, drama motivates children to participate. Children learn by taking part. We can use these drama elements to create our Math/Arts experiences.

**Drama Elements**

- Character
- Setting
- Action/Story/Plot
- Beginning-Middle-End
- Gesture
- Props/Costume
- Role Play
- Story Telling
- Conflict-Resolution
- Dialogue

Intentional questions are a built-in assessment tool to know that children are grasping the concept. I never knew what these questions would be ahead of time but they live within the story and they started coming out as I explored it, a process of discovery.

Now let me take you on my discovery as a Math Detective...

Each demonstration I will be doing here today would normally be spread out over four or five different lessons in the classroom and scaffolded so children could build on prior knowledge and be successful. We will use drama strategies to identify, practice, and find the MATH! Remember, math is everywhere—you just need to know where to look for it, and what it looks like.

Note: Story box theater is a Wolf Trap strategy originating from Wolf Trap Teaching Artist Michael Littman’s coffee can theater, in which a simple coffee can was transformed into a magical container of small objects that were elements of a story.
Menu of Dramatization Process

Introduce the Book:
Discuss author, title, look at cover, make predictions.

Present the Setting:
Ask – What is “setting?”
Hold up object (can use Coffee Can props). What is a “prop”? 
Name it – chant it.
Create physical gesture – Put it in your body and voice

Present Characters:
Hold it up. 
Name it – clap it.
Then “put on” character with body and voice; practice “being” the character. 
Establish musical, vocal or visual cue to sit down. What is a “cue”? 

Interact with Character:
Ask questions – What does the character want? Where is he going? (Objective.) 
Create obstacles. (Conflict.) Ask – What is the character’s problem? Physicalize.

Bear Hunt Strategy:
Discuss where character wants to go and why. 
Lead children on a journey creating chant or song. 
Create obstacle – Oh no! There’s some squishy mud! How can we get through it? 
Have children come up with a solution. 
Physicalize it and chant it. 
Reverse on return trip and create new solutions.

Form Dialogue:
Ask – How does this character feel? What would he say? What would his voice sound like? Show me. 
Let’s all say it together. 
Can create a repeating phrase or chant for characters – add gesture – teach and repeat with children.

Assess Learning:
Ask intentional questions and have children come up and put props away. 
Who was the first character? 
Which character had a vertical line for one of its body parts? 
Find the two characters that had wings. 
Who was on top of the mushroom? 
Bring me the animal that has the loudest voice. How did it sound? 
Which caps have no points?

Other questions:
Did we make good predictions? 
Can we find other things in our classroom that we could use for props in our story?
Mushroom in the Rain Lesson Plan

Materials:
Story Box props, book, word cards, spray bottle

Math Concept for Math Skills Development:
Comparisons and contrasting, counting, fast/slow, sizes, sequencing, subitizing, abstraction, ordinal numbers, recognizing numerals

Arts Concept for Performing Art Skills Development:
Using imagination to create characters with body and voice

Arts Strategy (How are you using the art skill to teach the math skill):
Story Dramatization

Arts/Math Vocabulary:
Tiny/bigger
Slow/faster
First character, second character, third character
Setting
Prop
Long
Beginning, middle, end
Under, beside, over, above
Problem
Attributes
Vertical and Horizontal lines
Symmetrical
Equal

Children’s Objectives:
• The children will be able to understand “bigger” and “smaller.”
• The children will be able to count sequence of characters.

Teacher’s Professional Development Outcome:
• Teacher will be able to use props and movement in drama to teach concept of “bigger” and “smaller.”
• Teacher will be able to use props and chants to teach a counting sequence.

Teacher and Teaching Artist’s Intentional Questions:
What does the Mouse’s tail look like? (A line.) How many of us are holding “red” for the rainbow? “Yellow?” How many characters have wings? How many characters can jump? Which character has symmetrical wings? How many animals can the Fox see? How many are hiding?
I Have a Box

Why?

RATIONALE (Why am I teaching this?): Children will use gesture to represent real objects. Characters of the story will be introduced and children will visualize and create them through movement and sound, work with different tempo rhythms (slow/fast), and sizes (small/large).

PREREQUISITES OF THE EXPERIENCE (What do children need to know before this experience?): What is a character? Real vs Imaginary

How?

STRATEGY/TECHNIQUE (Include simple definition): Children make predictions about what is in real box, then through finger play, gesture and physical movement, create and explore what characters are in their imaginary “magic boxes.”

EXPERIENCE PROCEDURES:


Step Two: I have another box. An imaginary box that you can’t see. It’s behind my back. (Count to 3. Take it out.) See if you have one behind your back. Let’s take them out together. One, two, three.

I have a box
The box has a top
Let’s peek inside
And then, we’ll stop!
I see a (spider) moving about
Let’s open the box
And take it out!

He’s crawling up on my head. Get off my head, spider! (Children suggest different body parts.) He’s going slow, slow, slow, now faster and faster and faster. Quick! Put him back in your box. Put the lid on.

Step Three: Continue with other characters in sequence. After first one, stand up and use full body movement. When character goes back in the box, we sit back down. Each time, look into imaginary box and remember who’s still in there.

Closure: Now let’s put the boxes away behind our backs. How did we count when we took them out? What’s a different way we can count to put them away? Three, two, one! – They’ve disappeared. Brush off imaginary powder from hands. Now clean it up off floor and throw it at my big box. We’ll see what magic comes out of this one now.
Procedure

Introduction:
I have imaginary box behind my back. Let’s count to “three” and take them out. Find ant, butterfly, thunder/rain in box. All do physical movements and sound effects. “I Grow Like This.” Bigger and bigger and bigger. Put imaginary boxes away. Put magic boxes away. We counted to 3 when we took them out, how can we count backwards to put them away? “3,2,1.”

Main Experience:
Take out book and setting. What is setting? Put up words in spatial relation on the board. Teacher models the Ant character and does the first scene. Continue middle of story with Coffee Can figures, Mouse and Sparrow. Mouse has a long, long tail. Show me “long” with your hands. What does his tail look like? A line. If I hold it this way, it’s a horizontal line. Now, when it’s hanging down, what kind of line is it? Vertical. Can you make a horizontal line with your finger? Can you make a vertical line with your finger? Show me with your whole body. Can you find a vertical line in the room? Children are given animal props and create movements, dialogue and sound effects. “How many animals are under now? They say, “No, No, No, there’s only room for... How many are beside? The Sun is above.” Teacher puts up words and numbers on the board. Children come up and show her spatially where they should go. Rabbit goes behind mushroom. Have child put prop and word behind mushroom. How many characters can we see? How many are hiding? How many in all are under? When Fox looks under, he counts the 4 he can see. We count the 4 on the board. When rain stops, animals come out one by one and sit in front of the mushroom on different size mushroom tops. Reverse sequence. Ask which animal goes on which top. What animal went under when the mushroom was biggest? (Rabbit.) How many are still under? Who is the last to come out? (Reverse order.) Frog is on top. We hand out rainbow colors to children and they stand up and make a rainbow. Teacher asks who has red and children bring cloths up. Then sit. We lay them on floor and count them. Do this for each color. Which color do you think had the most? Why?

Talk about how Kindergarten teachers adapted it: One teacher asked, “Which character has symmetrical wings?” (Butterfly.) Another found symmetry in other characters as well. “The Ant has 3 legs on each side.” What does symmetrical mean? Same size, same shape, equal.

Closing:
Play a guessing game to put props away. "What was the first thing I took out of my real box? Who was the first character in the story? Who was second? Who had a long tail? Who was flying above the mushroom? Who had six legs?" Match words and numbers to the characters. Find “sleeping powder” in the box. Then rain (spray) wakes them up. They grow into flowers, bigger, and bigger, and bigger. Tap them on head to sit back down.
Teacher’s Role:
Teacher asks questions and puts word cards up. Put words in spatial relation on board. Ex:

Sun    Rain
Frog
Mushroom
Ant    Butterfly    Mouse

Children come up and identify words.

Assessment Strategies Used Within the Lesson
Open-Ended Questions: Where is the Mouse going today? What does he want to do when he gets there?

Demonstrations: How many animals are under now? Show me a vertical line with your whole body. Make a frog with your hand and put him on top of your mushroom (other hand).

Application to Other Areas: Weather, spring, growing things, animals, insects, colors

Child-Directed Learning: Can you make a flower grow using just one hand? Show me with two hands.

Evidence of Problem Solving/Critical Thinking: What do you think the fox is going to do? Say? What is the Rabbit’s problem? What character has a horizontal line for one of its body parts?

After each Experience, ask:

What math concepts did you discover in this story?
Do you see connections to your current math curriculum?
Can you think of others you could add?
What drama strategies did you see?
**Caps for Sale Lesson Plan**

**Materials:**
Book, felt caps, peddler’s cap and coat, bell, bag of hats, monkey puppet, monkey prop.

**Math Concept for Math Skills Development:**
Geometry: Shapes, Attributes  
Sorting  
Matching  
Alike and Different  
Graphing  
More/Less

**Arts Concept for Performing Art Skills Development:**
Using imagination to create characters with body and voice.

**Arts Strategy (How are you using the art skill to teach the math skill):**
Story Dramatization.

**Arts/Math Vocabulary:**
Circle  
Square  
Rectangle  
Triangle  
Heart  
Large/Small  
Prop  
Character  
Problem  
Imitate  
More/less

**Children’s Objectives:**
- The children will be able to recognize different two-dimensional shapes: Square, Triangle, Circle, Rectangle, Heart, and their attributes.  
- The children will be able to sort the caps in piles according to their shape and then by color.

**Teacher’s Professional Development Outcome:**
- Teacher will be able to use story dramatization of *Caps for Sale* by Esphyr Slobodkina to introduce shapes.  
- Teacher will be able to use props and play a role to teach and have children match two-dimensional shapes.

**Teacher and Teaching Artist’s Intentional Questions:**
- Who has a square cap?  
- Which cap has no points?
- How many sides does a triangle cap have?
- How are these two blue caps alike? How are they different?
- How many shapes does the Peddler have?
- How many colors?

**Procedure**

**Introduction:**

*When I clap, clap, clap*
*All the monkeys clap, clap, clap*
*And when I stand up tall*
*All the monkeys stand up tall*
*‘Cause Monkey see and Monkey do*
*Just like the monkeys in the zoo!*
*And when I turn around*
*All the monkeys turn around*
*And when I sit back down*
*All the monkeys sit back down*
*‘Cause Monkey see and Monkey do*
*Just like the monkeys in the zoo!*

**Main Experience:**
Show them bag of hats. Talk about different shapes. Triangle - witch’s hat; circle - red beret; square - graduation cap. We can act out movements for these characters. Show them colored shape caps that I wear on my head. Find Monkey in bag. How many caps does the monkey have? What shape are they? “I hope no monkeys get my caps.” Begin story of *Caps for Sale*. Walk together chanting, “Caps, caps for sale, fifty cents a cap!” Peddler gets tired and sits down to rest under a tree. Feels on top of his head for all the colored caps. When he is asleep, teacher chooses monkey children to tiptoe up and take different shaped caps. Monkeys put them on their heads. Peddler wakes up and caps are gone. “What will happen next? What is Peddler’s problem? What will he do? Where will he look?” Ask the children to make predictions. Peddler tries different things to get back his caps and the monkeys imitate. Peddler remembers that monkeys like to sing and he sings: “If you have a gray circle, gray circle, gray circle? If you have a gray circle, bring it back!” Children bring caps back to front and match them in piles. Then lay piles out in lines like a graph. Which pile has the most? The least? How do you know? Let’s count and see.

**Closing:**
Magic Sleeping Powder is found inside Peddler’s cap. All go to sleep and Monkey puppet wakes them up.
Teacher’s Role:
Teacher chooses children and shapes for them to take. Teacher helps ask questions at end to sort caps into piles. Teacher helps lead Monkey warm-up. Teacher can also play Peddler.

Assessment Strategies Used Within the Lesson
Open-Ended Questions: Where will the Peddler look for his caps? Why do you think the monkeys took the caps?
Demonstrations: The Heart Cap Monkeys turn around and put your caps back on the ground.
Application to Other Areas: Colors, counting, sorting, alike and different, sizes
Child-Directed Learning: What movement can the Peddler try now?
Evidence of Problem Solving/Critical Thinking: What is the Peddler’s problem and how can he solve it?
Which pile has the most caps? The least?
**Conejito Lesson Plan**

**Materials:**
Book, Story box with setting props.

**Math Concept for Math Skills Development:**
Geometry: Spatial Awareness
Sequencing and Reverse Sequencing

**Arts Concept for Performing Art Skills Development:**
Using imagination to create characters with body and voice.
Interact within a setting or environment (imaginary travel).

**Arts Strategy (How are you using the art skill to teach the math skill):**
Story Dramatization.

**Arts/Math Vocabulary:**
Across
Through
Under
Over
Up
Down
Around
Slow/fast
Character
Setting
Prop
Problem
Objective
Obstacle

**Children’s Objectives:**
- The children will understand and demonstrate spatial location and positions.

**Teacher’s Professional Development Outcome:**
- Teacher will be able to use story dramatization of *Conejito: A Folktale From Panama* by Margaret Read MacDonald to introduce spatial relationships.
- Teacher will be able to use “Imaginary Journey” to explore spatial vocabulary.

**Teacher and Teaching Artist’s Intentional Questions:**
Show me how you can go *under* the fallen log. Now, *over* the bumpy rocks. Where is Conejito going? Why? What is his problem?
Procedure

Introduction:
“Setting Chant:” What is a setting? Take out props for the setting. (Talk about what a prop is.)

In the land of Panama, In the land of Panama
There was a little house,
Some tall, tall grass,
The prickly bushes,
Some bumpy rocks
A fallen log
A long, cool stream,
A high, high hill,
And a great big house.
(Show gestures and make our voices little and big.)

You can also have two children be each obstacle, making it with their bodies.

Main Experience:
Step One: Conejito, the little rabbit, lived in the little house with his Mama. One day, Mama said,
“Conejito, my little rabbit, you are so thin, so thin, you are nothing but skin-and-bones.” (Show gesture.)
“It is now vacation time and you must go visit your Auntie, Tia Monica who lives way up the mountain.
She will feed you fruits and vegetables and healthy foods until you are strong-strong-strong.” (Gesture.)
So Conejito said goodbye to his mama and started on his journey to see Tia Monica. Let’s stand up and
go on that journey with him. How would he move? He loves to sing and dance as he goes.

(to tune of “Dayo”)
Jump, jump, jump, jump, jump, jump, jump
I’m going to see my Tia Monica. (Samba dance)
Jump, jump, jump, jump, jump, jump, jump!
I’m going to see my Tia Monica.
Uh, Oh! Conejito came to the tall grass. How can he get through it?
(Take children’s ideas and incorporate movements into song.)
Cut, cut, cut, cut, cut, cut, cut!
I’m going to see my Tia Monica.
We keep coming to new obstacles and must find solutions. What is an obstacle?
Around prickly bushes
Over bumpy rocks
Under fallen log
Across long, cool stream
Up high, high hill
Down the other side.

Talk about main character’s objective. Where is he going? Why?
What do you think will happen next?
After Conejito gets to Tia Monica’s house, he goes back in reverse sequence.
End with
Jump, jump, jump, jump, jump, jump, jump!
Now I’m sitting down to rest.
Main Experience with Algebra patterning:
As Conejito is traveling, dancing and singing .... “Whunk! Uh- Oh! Out jumped Señor Zorro, Mr. Fox!”
(Take out Fox character.) “Show me how he looked. Señor Zorro smiled. Show me his teeth. He brushed his white, white teeth. What did Señor Zorro want?”
Señor Zorro said, “Conejito! Conejito! I think I’ve met-my-lunch!” (All practice saying it with his voice and movement, rubbing stomach.)
Then Conejito said, “No! No! No! (Wag finger.)
Don’t eat me!
I’m nothing but skin and bones. (Fist over fist gesture.)
I’m on my way to Tia Monica’s house
Where I’ll get nice and fat. (Pat stomach 3 times.)
You can eat me when I-come-back! (Slap knees 3 times.)
Señor Zorro:
“Why not? Como no! (Shrug 2 times.)
I’ll eat you when you-come-back!” (Slap knees 3 times.)
(These experiences repeat with Señor Tigre (paint on stripes) and Señor Leon (brush mane.))


Closing:
Ask questions as props are put away. What was the first obstacle we went through?

Teacher’s Role:
Teacher helps lead obstacle journey. Teacher asks questions and calls on children.

Assessment Strategies Used Within the Lesson
Open-Ended Questions: What do you think Tia Monica will feed Conejito?
Demonstrations: I need two people to make the tall grass. How can we make it with our bodies? Who can be the prickly bush? Show me how we got across the stream?
Application to Other Areas: Colors, counting, senses, large motor, following directions, making predictions, sequencing.
Child-Directed Learning: How can we get up the hill?
Evidence of Problem Solving/Critical Thinking: What was the first obstacle we came to? Can you think of another way we could go through it?

Possible Extension Experiences: Children make map of Conejito’s journey. Travel and dance at different speeds, slow and fast.
Too Much Noise Lesson Plan

Materials: Book, parachute or rug, bag or can of animal props, farm mat or map, hobby horse, claves, wooden xylophone, wooden grogger, leaves on stems, farmer’s hat, wise man’s hat or cape, flow chart, music box or quiet sound, large dice, *smart board.

Math Concept for Math Skills Development:
Measurement
Comparisons
Sequencing volume/dynamics - softer, louder, loudest - then reverse sequence
Size
Counting corresponds to volume (full/empty, more/less)
Ordinality
Time (“The next day...” “That night...”)
Mapping
Patterns
*Adding On
Subitizing

*Kindergarten objectives

Arts Concept for Performing Art Skills Development:
Using imagination to create characters with body and voice.

Arts Strategy (How are you using the art skill to teach the math skill):
Story Dramatization.

Arts/Math Vocabulary:
Circle
Around
Inside
Outside
Empty/Full
Prop
Character
Problem
Quiet/Loud
Softer/Louder
More/Less
Cue
Map
Flow Chart

Children’s Objectives:
Children will be able to measure quiet/loud/louder and empty/full, more/less.
*Talk about kindergarten teachers using story to combine sets of numbers and “adding on” numbers starting with “5” (shown below).
**Teacher’s Professional Development Outcome:**
- Teacher will be able to use story dramatization of *Too Much Noise* by Ann McGovern to introduce measurement and comparisons of sounds from soft to loud to louder.

**Teacher and Teaching Artist’s Intentional Questions:**
- Is the house **empty** or **full**?
- Is the house getting **quieter** or **noisier**?
- What will happen next?
- Are there more animals **inside** the house or **outside** the house?
- What animal will leave the house next?
- What was the **first** animal the farmer took into the house? The **last**?
- **How many** days have passed?
- What animal will leave the house next?
- What was the **first** animal the farmer took into the house? The **last**?
- *Which group* of animals has the **most**?

**Procedure**

**Introduction:**
Look at book *Too Much NOISE*. What do you notice about the words? (They’re getting larger and larger.) How do you think the author wants us to read this? Song: “Down In the Barnyard” with animal sounds from the story *Too Much NOISE*. When we sing the animal’s sound, we make it louder each time and make our bodies grow up larger and larger like the title of the book. (Use low level, medium level and high level.)

**Main Experience:**
Begin story dramatization of *Too Much NOISE* by Ann McGovern. Lay out parachute to be farmer’s old, old house. (Use rug to be inside farmer’s house if space is limited.) We all sit around the outside. What **shape** is it? Is it **empty** or **full**? Take out farm mat. It is a map. Where do you think this story takes place? (Discuss setting.) Set up room like the map with Farmer’s House, Barn, Wise Man’s House. Assign someone to be the map maker. Emphasize “**that night, the next morning, that afternoon.**”

Once there was a farmer who lived in an old, old house. Every **night** the bed **creaked** (grogger instrument given to a child to sit around outside of circle), the stairs **squeaked** (wooden xylophone), the wind **blew the leaves on the roof** (leaves shaken). (Cue children to make their noise when I speak these lines but stop when I put my hand up.) “This house makes too- much-NOISE, I can’t sleep,” said the farmer, “I’ll go and see the wise man (woman), and he’ll know what to do.”

So the next **morning**, the farmer got on his horse (hobby horse w/child playing sticks for sound effect) and **rode around** his house to see the wise man of the village. (Show Wise Man’s house on map) “**Wise Man, Wise Man, what can I do?** My house makes too- much-NOISE, I can’t sleep. The bed **creaks**, the stairs **squeak**, the wind **blews the leaves on the roof**.” If you were the Wise Man, what advice would you give him?

“Here’s what you must do,” said the wise man. (Teacher, playing Wise Man, reaches in bag and pulls out an animal.) “Get a **cow**. Take that cow into your house.” Farmer: “A cow?” Wise Man: “A cow. Now go.” (Put animal prop in map house.)
*Wise Man reaches in bag and pulls out card with an animal set. (Ex: 2 cows.) “Get 2 cows. Take those cows into your house.” Farmer: “2 cows?” Wise Man: “2 cows. Now go.” (Put animal card up on board. This can be done with Smart Board too. Roll giant dice, then choose a child to drag that number into the house. We all count them and compare to number of children sitting on rug.)

So the farmer got on his horse and rode home. That **afternoon** he got a cow and put it in his house. (Put child or children who are cows inside house to sit on parachute.) That **night** the bed *creaked*, the stairs *squeaked*, the *wind blew the leaves on the roof* and the cow went “**moo!”** (All keep making noise until signal to stop. Each time ask if it is *quieter or noisier* than before. “**Too- much- NOISE!”** said the farmer...)

*Kindergarten Teachers made a flow chart with pictures from the book: (Show)

#1 **Night** (Farmer trying to sleep)-> #2 **Morning** (Farmer visiting Wise Man) -> #3 **Afternoon** (Farmer puts animals in house). Teacher points to flow chart and chooses children to come up and point to correct picture. Ask “How many days have passed? Let’s count the animals on the map to see.”

...The next **morning** the farmer got on his horse and rode around to the Wise Man. The children decide if he will ride **fast** or **slow** to the Wise Woman’s house. Why does he choose to ride that way? A child is selected to be the Wise Man or Woman. ("We knocked 5 times before, what comes next?" “Wise Man, Wise Man, I did what you said. I took a cow into my house but there’s still **too- much- NOISE!”** The Wise Man thought. “Hmmm. Here’s what you must do. Get a (chicken, etc.) Take that chicken into your house.” Farmer: “A chicken?” Wise Man: “A chicken. Now go!”

(Repeat this sequence, accumulating animals and noises in the house. Let a child play the Wise Man or Woman and choose animals from the bag.) Ask, “Is the farmer’s house getting quieter or noisier? What do you think will happen next? How can he get some sleep? Do you have some advice for him? How many days have passed? Let’s count the animals on the map to see.”

After all the children/animals are in the house, the farmer rides back to the Wise Man. “Wise Man, Wise Man, I did what you said but there’s still **too- much- NOISE!** I’m going crazy!” The Wise Man says, “Here’s what you must do. Take that (last animal) out of the house.” (All make sounds and when farmer touches that animal, it goes back outside the house and is quiet. Do same with props on map.) Let’s hear the sounds in the house. **Is the house quieter or noisier now?** (The Wise Man tells him to take each animal out in reverse sequence and we listen to the sounds each time. Animal props are put back in barn/outside area in reverse sequence.) What animal will he take out next? **What is happening to the house? Are there more animal inside or outside the house? How do you know? Let’s count them.**

When all animals were gone, the Wise Man said, “Now go back home.” The farmer rode back to his house and that night the bed *creaked*, the stairs *squeaked*, the **wind blew the leaves on the roof**. **Is it a noisy house now or a quiet house?** “Ah!” said the farmer, “How quiet my house is. This is the nicest sound of all.” And he went to sleep and dreamed a very quiet dream. (Music box.)

**Closing:**
All go to sleep. Rooster sound wakes them up. Ask questions as props are put away. What was the **first** animal the farmer put in the house? The **last**? **What was his quiet dream?** What was the farmer’s problem? Why do you think the Wise Man told the farmer to take the animals into his house? Did it work?
Teacher’s Role:
Teacher plays role of Wise Man. Teacher asks questions and calls on children.

Assessment Strategies Used Within the Lesson
Open-Ended Questions: What was the farmer’s quiet dream?
Demonstrations: Show me the way a chicken moves its wings. What sound does it make?
Application to Other Areas: Colors, counting, alike and different, senses, large motor, following directions, making predictions, animals, sequencing, problem, storytelling, role playing.
Child-Directed Learning: How can the farmer get some sleep? Will the Farmer ride fast or slow? Why?
Evidence of Problem Solving/Critical Thinking: Are there more animals inside the house or outside?
How do you know? Why did the Wise Man tell the farmer to take the animals into his house? Did it work? If the rug will be the inside of the Farmer’s house, why do we need to sit outside of it at the beginning of the story? What happened in the afternoon? How does the author want us to read the title of the book? How do you know? How many days have passed?
*Which set of animals has the most? The least? How do you know? How many animals in the house in all?

Possible Extension Experiences: Repeat dramatization and let children play all roles and create dialogue. Story can be set in jungle with jungle animals. Draw picture of the farmer’s quiet dream. What would it sound like? Create sounds and music or maybe a dance for his dream. Act out different ways the farmer could solve his problem. (Cut down tree, fix steps, get a new bed, move to a new house.)
Small Group Work

Each group picks a math concept out of a hat. Then go through the books, choose one, and find the math and arts connections. Use drama strategies to create an arts experience that will explore that math concept using intentional questions and active learning. Demonstrate the experience as you would in the classroom.

Kinds of Intentional Questions to Assess and Further Learning:
  - Open Ended (children contributing ideas, possibilities, thoughts)
  - Demonstration (“show me…”)
  - Application to other Areas (making connections)
  - Problem Solving/Critical Thinking (“how do you think we can…?”)
  - Factual (how many?)
Early STEM/Arts Children’s Literature Bibliography


Presenter’s Biography

Master Teaching Artist and actor Katherine Lyons has worked for Wolf Trap Institute for Early Learning Through the Arts since 1989 in Public Schools, Head Start, and Early Head Start and gives professional development workshops for teachers nationally. She has created drama programs for the Baltimore Symphony Orchestra, the Walters Art Gallery, Peabody Institute, Young Audiences, the Maryland State Arts Council, Children’s Theatre Association, and a theatre ensemble of developmentally disabled adults in San Francisco.

Katherine is active in a variety of media including film, video and theatre. She tours regionally with her interactive story dramas, performs a one-woman show on immigration for the Jewish Museum of Maryland and has appeared on Baltimore stages at Performance Workshop Theatre, Center Stage, the Theatre Project, and Fells Point Corner Theatre, as well as in theatres in New York, Austin, and San Francisco.

Katherine has a B.A. in Creative Arts from the University of Virginia and studied Creative Arts Education at San Francisco State University.
Wolf Trap Institute for Early Learning Through the Arts leverages the power of the performing arts to provide early childhood educators with high-quality professional development to create joyful, active learning experiences for young children.

Through professional Teaching Artists, Wolf Trap Institute delivers customized, in-class professional development to early childhood educators using proven, arts-based strategies that reach across curricula and support development in key areas like language, literacy, math, science, and social-emotional skills. Wolf Trap Institute works through a nationwide network of affiliate organizations and partners that together impact nearly 100,000 children, educators, and families each year.

Wolf Trap Institute is the flagship education program of Wolf Trap Foundation for the Performing Arts, a 501 (c)(3) nonprofit organization that produces and presents a full range of performance and education programs in the Greater Washington, DC area and nationally.

_The Wolf Trap Institute offers a variety of services including:_

**Classroom Residencies** that bring professional performing artists – musicians, dancers, actors, or puppeteers trained in the Institute model as Wolf Trap Teaching Artists – into early childhood classrooms to provide innovative and effective arts-integrated strategies that align with curriculum objectives and support children’s development.

**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.

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

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