

Connecting Literature and Math – A Component of STEM Curriculum

#14: *The Greatest Gymnast of All* by Stuart J. Murphy, illustrated by Cynthia Jabar

Introduction

The rhyming text by Stuart J. Murphy and the spunky illustrations by Cynthia Jabar do more than tell a story, they combine to teach geometry, which is the spatial side of math. Join red-headed, zipping, zooming Zoe as she assumes certain positions in space while demonstrating that she is truly *The Greatest Gymnast of All*.

Teacher Notes about STEM

- *Early Childhood Educators are now linking together science, technology, engineering, and math into what is called STEM curriculum.*
- *CLAM focuses on Math, one of the components of a STEM curriculum.*
- *CLAM was developed to give preschool children foundations of mathematical understanding through concrete experiences; a foundation for life-long learning and school success in math.*

Arkansas Child Development and Early Learning Standards: Birth through 60 months

Domain of Development and Learning: Mathematical Thinking
Domain Component: Geometry and Spatial Sense

Learning Goal:

MT4.1 Explores and describes shapes and spatial relationships (*shape knowledge, spatial sense, shape manipulation*)

Learning Goals will be included for each activity in the guide

Definition:

Spatial relationships: the positions of objects in space and how objects are oriented in relation to one another (e.g., whether something is over, under, beside, or on another object)

Materials to Collect and Make

- Create teddy bear puppets, one per child. Print on cardstock, laminate, cut out and attach to craft stick. (See Attachment: [Teddy Bear Puppet](#))
- Hoops
- Crepe paper streamers
- Plastic woven laundry baskets
- Lacing cards

Story Presentation

Learning Goals:

LD1.1 Understands and responds to language (in child's home language) (*vocabulary and language comprehension*)

LD2.1 Uses increasingly complex vocabulary, grammar, and sentence structure (in child's home language) (*expressive vocabulary*)

EL1.1 Shows interest in literacy experiences (*engagement in literacy experiences, variety of interests*)

EL1.2 Engages in read-alouds and conversations about books and stories (*story comprehension*)

EL3.1 Responds to features of books and print (*book knowledge*)

MT4.1 Explores and describes shapes and spatial relationships (*shape knowledge, spatial sense*)

Book: *The Greatest Gymnast of All* by Stuart J. Murphy, illustrated by Cynthia Jabar

First Reading of *The Greatest Gymnast of All*

- Be familiar with the book, *The Greatest Gymnast of All*.
- Show the cover and say, "Meet Zoe. She is the greatest gymnast of all."
- Explain that a gymnast is a person who participates in gymnastics.
- Invite children to discuss what they know about gymnastics. Some of them or their family members may participate in gymnastics.
- Give title, author and illustrator. (Explain that the author is the person who writes the words and the illustrator is the person who draws the pictures.)
- Show the title page and ask children what they think Zoe is doing in the picture. (the splits).
- Read the story so all children can see the pictures in the book.
- Allow children to make comments about what Zoe is doing as you read the story.
- Follow up the reading by inviting children to tell you why Zoe is the greatest gymnast of all.

Second Reading of *The Greatest Gymnast of All*

- Show the cover and invite children to recall the name of the girl in the story.
- Give title, author and illustrator, explaining what each does.
- Read the story so all children can see the pictures in the book.
- Show the last page which has these words, "*I'm ZIPPING, ZOOMING ZOE – the greatest gymnast of all!*", point to the trophy and the blue ribbons and invite children to discuss what they know about trophies and blue ribbons. Do they know anyone who has received a trophy or a blue ribbon? If so, what was it for?
- Follow up the reading by showing the pictures and inviting the children to describe what Zoe is doing in each one.
- Help them with the action words such as swinging, jumping, turning a cartwheel, doing a roll, a flip, and swinging.

Third Reading of *The Greatest Gymnast of All*

- Show the cover and invite children to recall the name of the story.
- Give title, author and illustrator and invite children to discuss what each does.
- Read the story so all children can see the pictures in the book.
- Follow up by showing specific pages in the book and involving children in naming the opposite words that describe Zoe's actions:
 - on and off the mat
 - short and long leaps
 - inside and outside and over and under the hoop
 - forward and backward
 - high and low
 - up and down
 - near and far

Additional Language, Literacy and Mathematical Activities

Learning Goals:

EL1.1 Shows interest in literacy experiences (*engagement in literacy experiences, variety of interests*)

EL2.1 Notices and manipulates the sounds of language (*rhyme, alliteration*)

MT4.1 Explores and describes shapes and shape relationships (*spatial sense*)

Activity: We're Going on a Bear Hunt (Action Story)

Materials: none

We're Going on a Bear Hunt

<p><i>Let's go on a bear hunt.</i> (Tap hands on thighs like walking) <i>All right, let's go.</i></p> <p><i>Oh-oh, there's long, wavy grass.</i> <i>Can't go over it,</i> <i>Can't go under it.</i> <i>Let's go through it.</i> <i>Swishy swashy!</i> (Rub hands together like swishing through grass) <i>Swishy swashy! Swishy swashy!</i></p> <p><i>Oh-oh, there's a deep, cold river.</i> <i>Can't go over it,</i> <i>Can't go under it.</i> <i>Let's go through it.</i> <i>Splash, splosh, splash splosh, splash splosh!</i> (Pretend to swim)</p> <p><i>Oh – oh, there's thick, oozy mud.</i> <i>Can't go over it.</i> <i>Can't go under it.</i> <i>Let's go through it.</i> <i>Squelch, squerch!</i> (Move hands up and down as though walking through mud) <i>Squelch, squerch! Squelch, squerch!</i></p>	<p><i>Oh –oh, there's a big, dark forest.</i> <i>Can't go over it.</i> <i>Can't go under it.</i> <i>Let's go through it.</i> <i>Stumble trip! Stumble trip! Stumble trip!</i></p> <p><i>Oh, oh, there's a swirling, whirling snowstorm.</i> <i>Can't go over it.</i> <i>Can't go under it.</i> <i>Let's go through it.</i> <i>Hooo wooo!</i> (Pretend to shiver) <i>Hooo wooo!</i> <i>Hooo wooo!</i></p> <p><i>Oh, oh, there's a narrow, gloomy cave.</i> <i>Can't go over it.</i> <i>Can't go under it.</i> <i>Let's go through it.</i> <i>Tip toe! Tip toe! Tip toe!</i> (Tip toe fingers)</p> <p><i>Oh, oh, I feel a shiny wet nose!</i> <i>I feel two furry ears!</i> <i>I see two big, big eyes.</i> <i>It's a bear!</i> (Retrace steps) <i>Whew! We made it.</i> <i>Under the covers, safe in bed!</i></p>
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Activity: Rhymes

Materials: none

Directions:

- Involve children in saying the following rhymes while making accompanying motions:

Teddy Bear	Itsy Bitsy Spider
<p>Teddy bear, teddy bear, turn around. Teddy bear, teddy bear, touch the ground. Teddy bear, teddy bear, reach up high. Teddy bear, teddy bear, touch the sky. Teddy bear, teddy bear, jump up and down. Teddy bear, teddy bear, turn around. Teddy bear, teddy bear, sit right down.</p>	<p>The itsy-bitsy spider Climbed up the water spout Down came the rain And washed the spider out</p> <p>Out came the sun And dried up all the rain And the itsy-bitsy spider Climbed up the spout again</p>

Learning Goals:

LD1.1 Understands and responds to language (in child’s home language) (*vocabulary and language comprehension, follows directions*)

MT4.1 Explores and describes shapes and spatial relationships (*spatial sense*)

Activity: A Game of Opposites

Materials: children and book, *The Greatest Gymnast of All*

Directions:

- Introduce the concept of opposites to the children by showing the page in the book, *The Greatest Gymnast of All*, where Zoe is inside the hoop and then outside the hoop. Say, “Inside and outside go together because they are opposites.”
- Continue this activity by saying, “If I say big, what is the opposite?” Guide children to respond by saying small or little or tiny.
- Involve the children in saying other opposites. Examples include:
 - over and under
 - in and out
 - up and down
 - high and low
 - short and long
 - fast and slow
 - on and off
 - inside and outside
 - near and far
 - backward and forward

Extension Activity:

- Locate pictures that illustrate opposites.
- Involve a small group of children in this activity.
- Keep one half of each set of opposites and give children the other half of each set.
- Show your picture and say, “This is high. Who has the opposite of high?”
- Guide the child to show picture and say, “This is low.”

Learning Environment

Teacher Note: *As children are involved in learning centers listed here, they are engaged in activities that support the following Domains of Development and Learning*

- *Language Development*
- *Emergent Literacy*
- *Mathematical Thinking*
- *Creativity and Aesthetics*

Dramatic Play Center

- Basket Weaving
Provide plastic woven laundry baskets and crepe paper streamers.
Encourage the children to weave the streamers through the holes in the basket.
Describe what the children are doing: "You've weaving the streamer in and out of the holes."

Manipulative Center

- Lacing cards

Games - Bean Bag Toss and Hoops

- Bean Bag Toss
Provide a bean bag and a box. Use masking tape to create a throw line.
Invite children to stand behind the line and toss the beanbag into the box.
Ask children to describe where the bean bag lands: in the box, outside the box, in front of the box, in back of the box, on the side of the box.
- Hoops
Place several hoops on the floor, spacing them so that children have room for movement.
Invite one child per hoop to walk around the hoop, step inside the hoop, step outside the hoop, hop into the hoop, hop outside the hoop.
Continue this activity until all children have had an opportunity to play the game.

Group Time: Music and Movement

- Involve children in Hokey Pokey or Looby Loo

Hokey Pokey

You put your right foot in,
You put your right foot out,
You put your right foot in
And you shake it all about.
You do the Hokey Pokey
And you turn yourself around,
That's what it's all about.

You put your left foot in,
You put your left foot out,
You put your left foot in,
And you shake it all about.
You do the Hokey Pokey
And you turn yourself around,
That's what it's all about.

You put your right hand in,
You put your right hand out,
You put your right hand in
And you shake it all about.
You do the Hokey Pokey
And you turn yourself around,
That's what it's all about.

You put your left hand in,
You put your left hand out,
You put your left hand in,
And you shake it all about.
You do the Hokey Pokey
And you turn yourself around,
That's what it's all about.

You put your head in,
You put your head out,
You put your head in,
And you shake it all about.
You do the Hokey Pokey
And you turn yourself around,
That's what it's all about.

You put your whole self in,
You put your whole self out,
You put your whole self in
And you shake it all about.
You do the Hokey Pokey
And you turn yourself around,
That's what it's all about.

Looby Loo

Here we go looby loo
Here we go looby light
Here we go looby loo
All on a Saturday night
You put your right hand in
You take your right hand out
You give your hand a shake, shake, shake
And turn yourself about

Here we go looby loo
Here we go looby light
Here we go looby loo
All on a Saturday night
You put your left hand in
You take your left hand out
You give your left hand a shake, shake, shake
And turn yourself about

Here we go looby loo
Here we go looby light
Here we go looby loo
All on a Saturday night
You put your right foot in
You take your right foot out
You give your right foot a shake, shake, shake
And turn yourself about

Here we go looby loo
Here we go looby light
Here we go looby loo
All on a Saturday night

You put your left foot in
You take your left foot out
You give your left foot a shake, shake, shake
And turn yourself about

Here we go looby loo
Here we go looby light
Here we go looby loo
All on a Saturday night
You put your whole self in
You take your whole self out
You give your whole self a shake, shake, shake
And turn yourself about

Group Time: Where's the Teddy Bear?

- Provide one bear puppet per child. (See Attachment: [Teddy Bear Puppet](#))
- Begin the activity by putting the teddy bear over your head and say, "My bear is **over** my head. Can you put your teddy bear over your head?"
- Continue by placing the bear in different positions and asking the children to do the same:
Over my head
Under my chin
In front of my face
In back of my head
On my knee
Between my knees
Behind my knee
- Change up the game by holding the teddy bear in a position and ask, "Where's the teddy bear?" Children respond by giving the location shown by you.

Inside Obstacle Course

- Create an indoor obstacle course that includes some of the following: low balance beam or taped line on the floor, rope on floor to jump over, table to crawl under, chair to walk around, box to move through on stomach, hoop or circle of yard to hop into and out of.
- Involve children in the Going on a Bear Hunt action story or read the book, *We're Going on a Bear Hunt* by Michael Rosen, illustrated by Helen Oxenbury, to the children.
- Involve children in discussing some of the obstacles they had to go through on their bear hunt. If necessary, help children understand that an obstacle is something that gets in the way of where you want to go.
- Explain to children that you have created an obstacle course that they will have to travel through to get back to their home (carpet square or personal space marker in area designated for group time).
- Give children directions for traveling through the obstacle course by letting one child model the correct way to travel as you describe the directions.

Outdoor Activities

- **Outdoor Obstacle Course**
Create an outdoor obstacle course for children to travel through: walk around the climbing structure, crawl through a box or large snap together cube, walk on a balance beam or timber that encloses fall zone material, zigzag around cones or two-liter bottles weighted with sand or rocks.
- **Outdoor Obstacle Course for Tricycles**
Create an obstacle course for children to steer tricycles through. Use cones or two-liter bottles weighted with sand or rocks to create the course.
- **Fence Weaving**
Let the children weave crepe paper streamers through the links on a chain link fence.

Teacher Notes:

- *Describe what the children are doing as they travel the obstacle course, ride their tricycles through the obstacle course or weave streamers.*
- *In all of the activities described in this section, children are increasing their understanding of spatial sense.*

Transition Activities

Learning Goals:

LD1.1 Understands and responds to language (in child's home language) (*vocabulary and language comprehension, follows directions*)

MT4.1 Explores and describes shapes and spatial relationships (*spatial sense*)

Activity: What Do You Say?

- Involve children in a game of opposites by having them name the opposite of what you say.
- Say to an individual child, "Logan, if I say high, what do you say?" That child says low and transitions to the next activity.
Continue this activity with other opposites until all children have transitioned to the next activity.
Opposites include:
over and under
in and out
up and down
high and low
short and long
fast and slow
on and off
inside and outside
near and far
backward and forward

Family Connection

- Send home to families a copy of the action story, *We're Going on a Bear Hunt*, and invite them to involve their child in saying the story with them. Suggest that if they need assistance, ask their child's teacher to demonstrate how to do the story.
- Send home a note to families explaining that children have been learning about opposites and give them examples: in and out, up and down, inside and outside, over and under, high and low, fast and slow, big and small.
Suggest that they involve their children in activities that help their child understand about opposites. For example, ask your child to:
take two steps forward, then two steps backward
stand up, then sit down
reach up high, then bend down low

Additional Books

Hoban, Tana. *Exactly the Opposite*

Rosen, Michael, illustrated by Helen Oxenbury. *We're Going on a Bear Hunt*

Assessment Ideas

Refer to page 5 of this guide: **Games – Bean Bag Toss and Hoops** for activities to assess the following concepts and benchmark:

Domain Component: Geometry and Spatial Sense

Learning Goal:

MT4.1 Explores and describes shapes and spatial relationships (*spatial sense*)

To Assess:

- Involve children in the two games: **Bean Bag Toss and Hoops**
- Assess children's competence by observing them as they describe where the bean bag lands and as they follow your directions with the hoop.