

Connecting Literature and Math – A Component of STEM Curriculum

#12: *Just a Little Bit* by Ann Tompert, illustrated by Lynn Munsinger and *Who Sank the Boat* by Pamela Allen

Introduction

Two delightful children’s books introduce children to the attribute of weight. In *Just a Little Bit*, Mouse and Elephant decide to go on the seesaw, one at each end. Mouse needs a lot of help from other animals before they can go up and down.

In the rhyming text and cheerful comical illustrations in *Who Sank the Boat?*, children are involved in predicting which of the good friends who decide to go for a row in the bay causes the boat to sink.

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: Measure and Comparison

Learning Goal:

MT3.1 Participates in exploratory measurement activities and compares objects (*measurement, comparison*)

Materials to Collect and Make

- Create magnetic or felt figures for the story. See Attachment: [Who Sank the Boat?](#)
- Magnetic board or cookie sheet that is magnetic

Story Presentation

Learning Goals:

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

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, story structure*)

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

MT1.1 Demonstrates number sense and an understanding of quantity (*number names and count sequence, connection of number, numeral and quantity*)

MT3.1 Participates in exploratory measurement activities and compares objects (*measurement, comparison*)

Book: *Just a Little Bit* by Ann Tompert, illustrated by Lynn Munsinger

First Reading of *Just a Little Bit*

- Prepare to read the book, *Just a Little Bit*.
- Show cover; give title, author and illustrator. (Explain that author is the person who writes the book and the illustrator is the person who draws the pictures.)
- Say to children, "I see three animals on the cover. Can you find the three animals and name them?" (elephant, mouse, beetle)
- Invite children to predict what they think the book is about. Accept all answers and say, "Let's read and find out about the elephant, mouse and beetle."
- Read the story so all children can see the pictures in the book.
- Invite children to explain why they think nothing happened when Mouse and the other animals that join him pushed down against the board. (Elephant weighed more than they all of the animals combined.)
- Continue to read until the end and invite children to explain why they think the little brown beetle caused the board with all of the animals on it to go down. (Beetle added just a little bit more weight)
- Follow up the reading of the story by inviting children to share their experiences on a seesaw. Where were they? Who were they with? Who was on each end of the seesaw? Did it go up and down?

Second Reading of *Just a Little Bit*

- Show the cover and invite children to recall the title of the book.
- Give author and illustrator and invite children to state what each does.
- Read the story so all children can see the pictures in the book.
- Follow up the reading by showing the picture of elephant on one end of the board and mouse on the other and invite children to recall which animal will join mouse. Show the next pages and ask children if they were correct.
- Continue this until the little brown beetle lands on mouse's head.
- Involve children in counting the number of animals on one end of the board, beginning with mouse. (10 animals). Ask how many animals were on the other end of the board (1 animal).

Book: *Who Sank the Boat?* by Pamela Allen

First Reading of *Who Sank the Boat?*

- Show the cover, give the title and author and illustrator. Explain to children that Pamela Allen is both the author and illustrator of the book.
- Read the story so all of the children can see the pictures in the book.
- Follow up the reading by showing the second page of the book and invite children to count with you the animals they see, beginning with the tiny little mouse. (counting from left to right)
- Show the pages where the cow got in the boat and state that the cow was the first animal to get in the boat.
- Continue this process, stating that the donkey was the second animal, the pig was the third, the sheep was the fourth, and the tiny little mouse was the last animal to get in the boat.
- Show the last double spread page where the animals are walking one behind the other and invite children to join you in saying which animal was the first, the second, the third, the fourth and the last animal in line. (again, from left to right)

Teacher Note: *When children are using terms like first, second, last, etc. they are demonstrating ordinality (place in a series) which is one of the indicators in the following Learning Goal.*

Additional Learning Goal:

MT1.1 Demonstrates number sense and an understanding of quantity (*comparison of quantity*)

Second Reading of *Who Sank the Boat?*

- Be familiar with the book, *Who Sank the Boat?*
- Show the cover, give title, author and illustrator. (Explain that the author is the person who writes the words and the illustrator is the person who creates the pictures, and that Pamela Allen is both the author and illustrator of the book).
- Invite children to discuss whether they would rather be the author or the illustrator of a book, or both, and explain why.
- Show the title page and ask children what kind of boat they see? (row boat with oars)
- Read the story so all children can see the pictures in the book.
- Allow children to answer the question at the end of each page: “Do you know who sank the boat?”
- Continue reading until the end of the story.
- Pause at the end of the reading and allow for children’s honest reaction.
- Follow up the reading by explaining to children that you are going to involve them in helping you read some of the pages of the book.
- Read the pages with the rhyming words, pausing before the rhyming word in the last sentence and invite children to complete the sentence. For example:
Was it the cow
who almost fell **in**
when she tilted the boat
and made such a _____? (**din**) (Explain to children that din is a lot of noise.)
- Continue this through the page where the question is: Was it the sheep.....

Teacher Note: *This process of pausing to allow children to fill in a missing word or phrase is called the cloze technique.*

Additional Learning Goal:

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

Additional Language, Literacy and Mathematical Thinking Activities

Learning Goals:

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

EL1.1 Shows interest in literacy experiences (*engagement in literacy experiences*)

MT1.1 Demonstrates number sense and an understanding of quantity (*comparison of quantity*)

Activity: *Who Sank the Boat?* Storytelling Figures

Materials: magnetic figures of the story *Who Sank the Boat?*, See Attachment: [Who Sank the Boat?](#) magnetic board or cookie sheet that is magnetic, the book *Who Sank the Boat?*

Directions:

- Show the book, *Who Sank the Boat?* and invite children to recall the main components of the story: the setting, the main characters, the plot, and the sequence of events.
- Explain that you will now tell the story in a different way.
- Use the magnetic figures to tell the story.
- Following up the telling by involving children in stating which animal was the first to get in the boat and place that animal in the boat.
- Continue with the second, the third, the fourth and the last animal to get in the boat and place the animals in the boat in that order.
- Explain to children that the storytelling figures and magnet board will be in the Library Center for them to use.
- Demonstrate and discuss with children the correct way to use the storytelling figures.

Learning Goals:

CD1.1 Shows curiosity and a willingness to try new things (*exploration and investigation, interest in new experiences*)

MT1.1 Demonstrates number sense and an understanding of quantity (*number names and count sequence, comparison of quantity*)

MT3.1 Participates in exploratory measurement activities and compares objects (*comparison*)

ST1.1 Engages in the scientific process to collect, analyze and communicate information (*investigation and hypotheses testing, data analysis and communication*)

ST3.2 Uses tools and engineering practices to explore and solve problems (*engineering practices and thinking*)

Activity: Float Your Boat

Materials: pictures of boats, especially canoe-type or row boat type boats, the book, *Who Sank the Boat?*, aluminum foil, a collection of pennies, and a tub of water

Directions:

- Involve of small group of children (3 to 5) in this activity.
- Show the book, *Who Sank the Boat?*, to children and discuss with them that one of the reasons the boat sank was because too many animals were in the boat. They were too heavy and the boat sank.
- Explain to children that you have provided aluminum foil for them to create a boat that will float. Suggest that they look at the pictures of boats and the boat in the book for ideas on how to make a boat that will float. Ask, "What shape do you think will work best?"
- Allow children time to create their own boats and then put them in the water to see if they float.
- Ask children how many pennies they think their boat will hold. Record that information. For example: Jered: 10 pennies, Eleana: 7 pennies, Miguel: 13 pennies, Susy: 20 pennies, and give each child that number of pennies.
- Allow children to add pennies one by one to their boat, counting as they add, to see how many each boat will hold until it sinks. How many pennies did their boat hold before it sank? Did some boats hold more pennies than the others? Did one or more of the boats stay afloat? Why do they think these different things happen?
- Compare their predictions with the number of pennies it actually took to sink their boat. Did they have too many pennies, too few pennies, or just the right number?

Teacher Notes:

- Allow other children in the total group to participate in this activity.
- Make sure to collect all of the pennies when you and the children have completed this experiment.
- Allow children to experiment with other objects such as counting bears.

Learning Goal:

MT3.1 Participates in exploratory measurement activities and compares objects (*comparison*)

Activity: Children as Scales

Materials: a pair of socks, sand, small zipper sandwich bag, cotton balls

Directions:

- Place sand in a small zipper sandwich bag and place in the toe of one sock and cotton balls in the toe of the other and tie each one so that children cannot see what has been placed in each sock. Make the part of each sock that is tied off as close to the same size as possible so that size is not the attribute that children focus on.
- Involve two or three children at a time in this activity,
- Show children the two socks and ask them if they think the socks weigh the same or if they think one weighs more than the other. Accept all answers.
- Hold one sock in one hand and one sock in the other and ask children how they think you can tell if the socks weigh the same or if one weighs more than the other.
- Invite each child to hold one sock in one hand and one sock in the other and encourage him or her to describe what they discovered.
- Suggest that children use the scale in the Discovery Center to weigh the two socks to see what happens.

Learning Goals:

MT3.1 Participates in exploratory measurement activities and compares objects (*measurement and comparison*)

ST1.1 Engages in the scientific process to collect, analyze, and communicate information (*investigation and hypotheses testing, data analysis and communication*)

ST3.2 Uses tools and engineering practices to explore and solve problems (*engineering practices and thinking*)

Activity: Weighing Rocks or Stones

Materials: balance scale, rocks or stones of different sizes and weights

Directions:

- Take the balance scale and some of the rocks or stones to group time.
- Show the scale to children and invite them to tell what they know about it.
- Allow children to explore the rocks or stones.
- Explain to children that you will be in the Discovery Center with the scales and rocks or stones and invite them to join you for an experiment.

Activity: Moving Feathers and Rocks

Materials: feathers, rocks or stones and plastic squirt bottles (empty catsup, mustard or detergent dispensers that have been thoroughly cleaned)

Directions:

- Place rocks and feathers side by side on one side of a table.
- Invite two or three children to join you in an activity with the rocks, feathers and squirt bottles.
- Say to the children, “Do you think you can squeeze a squirt bottle to see if the air will move the rocks and the feathers from one side of the table to the other? Which do you think will be easiest to move, a rock or a feather?” Invite children to explain their answer.
- Allow children to experiment with using the squirt bottles to move the objects from one side of the table to the other. Listen to their comments.
- Invite children to discuss which was the easiest to move – the rock or the feather and why they think the feather was the easiest to move. (rock is heavier than the feather)
- Ask if there is another way to determine which is the heaviest. (hold feather in one hand and rock in other, place feather in one bucket of balance scale and the rock in the other)

Learning Goals:

PH1.1 Demonstrates locomotor skills (*traveling, complex movement*)

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

Activity: Move Like the Animals

Materials: book, *Just a Little Bit*

Directions:

- Conduct this activity in an area either indoors or on the playground where children have room to move about safely.
- Show the book, *Just a Little Bit*, and recall with children that the animals moved up the seesaw in a variety of ways, As you say how each animal moved up the seesaw, invite children to move in place like that animal:
 - mouse climbed
 - giraffe walked
 - zebra trotted
 - lion pranced (lively high-stepping, shoulders back, head up)
 - bear lumbered (walk slowly and heavily)
 - crocodile, mongoose, monkey and ostrich climbed
 - small brown beetle flew
- Describe and demonstrate any movements that are unfamiliar to children; trotted pranced and lumbered, for example.
- Explain that you will now describe how each animal moves and they can move around the room or playground like that animal.
 - “Mouse, climb!”
 - “Giraffe walk!”
 - “Zebra, trot!”
 - “Lion, prance!”
 - “Bear, lumber!”
 - “Crocodile, Mongoose, Monkey, and Ostrich, climb!”
 - “Small brown beetle, fly!”
- Allow children time to move like each animal before moving on to the next one.

Learning Environment

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

- Emergent Literacy
- Mathematical Thinking
- Science and Technology

Library Center:

- Add the books *Just a Little Bit* and *Who Sank the Boat?*
- Add magnet board
- Add *Who Sank the Boat?* storytelling figures

Discovery Center

- Add a sign, **Weight Station**, with picture of balance scale with buckets or pans
- Add balance scale with buckets or pans
- Provide items in small individual baskets/containers for weighing: rocks, shells, smooth stones, small wooden blocks, counting bears or other small animals
- Add socks from **Activity: Children as Scales**
- Add index cards and pencils or markers to encourage note-taking
- Involve children in weighing rocks and or stones as a follow-up to **Weighing Rocks or Stones** discussion during group time.
 - Allow children to explore the rocks. Involve them in discussing what they notice about the rocks. Which rock is the heaviest? Which is the lightest?
 - Explain that they can find out by weighing the rocks.
 - Invite them to put one rock in one balance pan and another rock in the other balance pan. What do they notice about the pans?
 - Involve them in discussing why they think one pan is lower than the other. Guide them to discover that the heaviest rock causes the pan to be lower than the other.
 - Allow children to experiment with weighing the rocks. Can they balance the rocks on the scale?
 - Suggest that children experiment with weighing some of the other objects in the center.

Water Center

- Tub of water
- Clean containers such as butter tubs or whipped topping containers
- Sheets of aluminum foil (variety of sizes, such as 4"x6" rectangles, 5"x5" squares or 6" diameter circles)
- Small plastic animals or small people figures

Transition Activities

Activity: Move Like the Animals

- Have children move like the animals in the book, *Just a Little Bit*, to transition from one activity to another.
- Consider using this activity when moving children one or two at a time from group time to hand washing, or moving the entire group from indoors to outdoors, for example.

Family Connection

- Let families know that children have been involved in stories and in activities that focus on weight; that an elephant weighs more than a mouse and that too many animals can sink a boat.
- Give families the name of the two featured books and suggest that they check with their local library to see if the books are available, and if so, check them out and read them with their child. If this isn't possible, suggest that they ask their child to tell you one of the stories.

Additional Books

Mr. Gumpy's Outing by John Burningham
Balancing Act by Ellen Stoll Walsh

Assessment Ideas

Refer to page #8, **Discovery Center** where you are involving children in weighing rocks or stones and assess the following Learning Goal:

Domain Component: Measurement and Comparison

Learning Goal:

MT3.1 Participates in exploratory measurement activities and compares objects (*measurement, comparison*)

To Assess:

- Work with each child individually to complete this activity.
- Assess children's competence by becoming involved with them in this activity. Observe them and listen to their comments.
Do they add or take away rocks to try and balance the scale?
Do they use comparative language such as "heaviest" or "lightest"?
Do they look for other objects to weigh?