

## Connecting Literature and Math – A Component of STEM Curriculum

### #1: *Big Fat Hen* by Keith Baker

#### Introduction

Many of us grew up chanting the Mother Goose rhyme, “One, two, buckle my shoe.” Keith Baker has taken this classic rhyme and created a picture book with illustrations in vibrant colors. The result is a book with beautiful hens, each with different colored feathers, and each laying an increasing number of eggs.

#### 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: Number Concepts and Operations**

**Learning Goals:**

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

**MR1.2 Explores combining and separating groups (numerical operations) (early division and fractions)**

**Domain Component: Algebraic Thinking**

**Learning Goal: MT2.1 Uses classification and patterning skills (patterning)**

**Learning Goals and Strands** will be identified for all activities in the guide.

#### Materials to Collect and Make

- Collect plastic eggs that are usually found during the Easter season.
- Purchase a box of Crayola Neon Colors and washable markers in vibrant colors.
- Make two-piece puzzles with numerals from one to ten and corresponding number of eggs. (See Attachment: [Numeral Cards](#) and Attachment: [Counting Eggs](#))
- Create an illustrated chart with the rhyme. (See photograph with activity) (See Attachment: [1.2 Buckle My Shoe](#))
- Create magnetic or felt figures for the rhyme. (See Attachment: [1.2 Buckle My Shoe](#)).
- Locate a CD with the song, 1, 2, Buckle My Shoe on it; for example. We All Live Together Volume 3 by Greg and Steve.
- Locate counting bears or plastic chips or collect plastic caps from milk jugs
- Provide chart for families (See Attachment: [1, 2, Buckle My Shoe Small Illustrated Chart](#)).
- Collect rhythm sticks or 12” wooden dowel sticks

**Teacher Note:** *If you have enough eggs, create egg shakers by placing items such as paper clips, small rocks and small bells in eggs (one type of item per egg), and permanently seal them so children cannot get into them. Egg shakers can be placed in music center and also used during group music activities.*

## 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*)

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

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

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

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

**MT1.2 Explores combining and separating groups (numerical operations)** (*early division and fractions*)

**Book:** *Big Fat Hen* by Keith Baker

### First Reading of *Big Fat Hen*

- Be familiar with the book, *Big Fat Hen*.
- Take a CD player and the CD that contains the song, 1, 2, Buckle My Shoe, to the story reading area.
- Begin to play the song as you invite children to join you in the story reading area.
- Play the song again and invite children to join in the singing.
- Explain to children that 1, 2, Buckle My Shoe is a Mother Goose rhyme and ask if any of them have ever heard the rhyme before.
- Explain to children that they will now hear a story about the song they heard, 1, 2 Buckle My Shoe.
- Show the cover, give title and illustrator. (Explain that the illustrator is the person who creates the pictures.)
- Invite children to look at the cover and describe what they see.
- Read the story so all children can see the pictures in the book.
- Follow up the reading by inviting children to read the book with you.
- Show the pages with the numerals on them, point to the numerals and ask children to say them with you, and say the rhyme on the next page.
- Ask children to stand and join you in singing the rhyme as you play the CD.
- Continue playing the song as children transition to the next activity.

**Teacher Note:** *Include the song at other times during the day; for example during music time.*

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### Second Reading of *Big Fat Hen*

- Show the cover and invite children to read the title with you as you run your fingers under each of the words.
- Read the story so all children can see the pictures in the book.
- Follow up the reading by inviting the children to count the chicks on each page as you point to them.
- Comment after chicks are counted on each page, "That's right. There are 3 chicks on this page" as you point to the numeral."

### **Third Reading of *Big Fat Hen***

- Take a collection of plastic eggs in a basket, one per child in the group. Keep the basket out of sight until the end of the reading.
- Show the cover and invite children to look at the big fat hen and name the colors they see.
- Read the story so all children can see the pictures in the book.
- Follow up the reading by showing the page with 2 eggs, then the next page with a corresponding number of chicks, plus egg shells in half.
- Invite children to discuss where they think the eggs came from. Accept all answers, then, depending on what children say, explain to them that the baby chicks hatched from the eggs. The hen laid the eggs, sat on them for 21 days, and the chicks came out of the shells.
- Involve children in counting the egg shell halves.
- Bring out the basket of eggs, give each child one, and allow children to open the eggs. Say that each child had one egg shell, and now each has two halves. When the egg shell halves are put back together, children will have one egg.

### **Teacher Note:**

- *All of the story presentations are teacher guided activities.*
- *If any of the children express an interest in learning more about eggs and how they hatch, go online and do a search.*

## Additional Language and Literacy Activities

### 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 and variety of interests*)

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

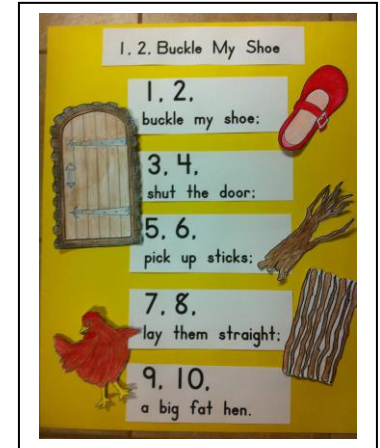
**EL3.1 Responds to features of books and print** (*print knowledge*)

**Activity:** 1, 2, Buckle My Shoe Chart

**Materials:** illustrated chart of the Mother Goose rhyme, 1, 2, Buckle My Shoe, Mother Goose rhyme book that contains the rhyme

### Directions:

- Take the chart and Mother Goose rhyme book to group time.
- Show the chart and invite children to say the rhyme with you as you run your hand under the numerals and words.
- Invite children to say the rhyme without you. Prompt as needed.
- Explain to children that you will now say a word from the rhyme and they are to say the word that rhymes, or sounds like the word. Tell them that they must use their ears to listen and to hear the rhyming words.
- Point to and say "two" and point to and invite children to say "shoe."
- Repeat this process with each part of the rhyme.
- Follow up by explaining to children that they will now say both rhyming words as you point to them.
- Point to 2 and shoe and continue through 10 and hen.



### Extension Activity:

- Explain to children that you will read the rhyme from a Mother Goose rhyme book and that they are to listen carefully to determine if the words are exactly the same as on the chart. (See additional books for Mother Goose rhyme books containing the rhyme).
- Invite children to discuss the differences they heard in the rhyme in the book and the one on the chart. Read both again if children seem to need this to help them hear the differences.
- Explain to children that you will post the chart in the room (indicate where: music, library, dramatic play/home living) and they can read and say the rhyme to each other and that the Mother Goose rhyme book will be in the library.

**Teacher Note:** *This is a teacher guided activity.*

### Learning Goals:

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

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

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

**Activity:** 1, 2, Buckle My Shoe Storytelling Figures

**Materials:** magnetic story figures of the Mother Goose rhyme, magnetic numerals (1-10) or numeral cards, magnetic board or cookie sheet that is magnetic

- Present the rhyme to the children using the storytelling figures and the magnetic numerals.
- Involve children in saying the rhyme as you place the figures on the board.
- Place the figures and board in the library area so children can use them on their own.

**Teacher Note:** *This is a teacher guided activity.*

**Learning Goal:****MT2.1 Uses classification and patterning skills** (*patterning*)**Activity: Rhyme and Rhythm Sticks****Materials:** rhythm sticks or 12" wooden dowel sticks in a container; two for each child**Directions:**

- Invite children to join you for a group activity.
- Pass the container around and ask each child to select two sticks.
- Discuss and practice with the children holding a stick in one hand and striking it with the stick they are holding in the other hand.
- Explain that they are to strike one stick with the other when you say each number. For example, as you say, "One", strike once, then strike once again as you say "two" as you repeat together, "One, two, buckle my shoe." Continue with three and four to nine and ten.
- Invite children to tell you how many total times they hit the sticks. (10 times). If they do not know how many, explain that they hit the stick ten times, one for each number from 1 to 10.

**Teacher Note:** *This is a teacher guided activity.***Learning Environment****Teacher Note:** *As children are involved in the learning centers listed here, they are engaged in activities that support the following Domains of Child Development and Early Learning:*

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

**Art Center**

- Add neon crayons and markers in vibrant colors

**Dramatic Play Center**

- Add a basket of plastic eggs

**Library**

- Add a magnetic or felt storyboard.
- Add magnetic or felt figures for the rhyme.
- Add Mother Goose rhyme books and rhyme chart (if not posted in music center)

**Manipulatives (or Math Center)**

- Add the teacher-made two-piece numeral/number puzzle.
- Observe children to see if any of them need help with the activity.
- Invite children who seem to be ready for this to put the puzzles in order from one to ten.
- Add counting bears and invite children to put one bear on each egg (one-to-one correspondence) or to put the correct number of bears on each numeral card.

**Teacher Note:** *Know your children so that you will know those who are ready for which of the counting bear activities.***Music Center**

- Post rhyme chart in music center.
- Add rhythm sticks to the center.
- Observe children to see if they say the rhyme as they look at the chart and/or use the rhythm sticks.
- Place egg shakers in music center.

## Transition Activities

### Count and Move

- Identify two children at a time to transition to the next activity.
- Say a line from the rhyme and invite the two children to act out the rhyme. For example, “Jonas and Rebecca, one, two, buckle my shoe.” Children act out the rhyme and move to the next activity.
- Continue with this activity until all children have transitioned to the next activity.

## Family Connection

- Send home to families the illustrated chart with the rhyme (See Attachment: [1, 2, Buckle My Shoe Small Illustrated Chart](#)).
- Invite families to say the rhyme with their children.
- Ask families who are familiar with the rhyme to talk with their children about how they came to know the rhyme.
- Suggest that families with Mother Goose rhyme books in the home check the book to see if the rhyme is included. If so, ask them to read the rhyme with their child.

## Additional Books

Crews, Donald. *Ten Black Dots*  
Keats, Ezra Jack. *Over in the Meadow*

### Mother Goose books containing 1, 2 Buckle My Shoe:

dePaola, Tomie, *Tomie dePaola's Mother Goose*  
Opie, Iona, illustrated by Rosemary Wells. *Here Comes Mother Goose*

## Assessment Ideas

Refer to page 5 in this guide: **Learning Environment - Manipulatives (or Math Center)** for an activity to assess the following concepts and benchmarks.

### Domain Component: MT1. Number Concepts and Operations

#### Learning Goal:

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

#### To Assess:

- Add the teacher-made two-piece number/numeral puzzle and counting bears to the center.
- Assess children's competence by becoming involved with them in the activities as they use the materials and by listening to their comments.