

Connecting Literature and Math – A Component of STEM Curriculum

#4: *Quack and Count* by Keith Baker

Introduction

Quack and Count is a counting book that features seven ducks that group themselves in all of the combinations that add up to seven. Children will enjoy Keith Baker's rhyming text and the illustrations of cut paper collage.

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 and Operations

Learning Goals:

MT1.1 Demonstrates number sense and an understanding of quantity

MT1.2 Explores combining and separating groups (numerical operation) (*changes in quantity, addition and subtraction*)

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

Materials to Collect and Make

- Make two piece puzzles with numerals from one to seven and corresponding number of ducks from the story. (See Attachment: [Numeral cards](#) and Attachment: [Duck Counting Cards](#) or Attachment: [Wild Duck Counting Cards](#))
- Collect or make 7 magnetic duck shapes, magnetic numerals from 1 to 7, magnetic storyboard
- Collect 7 rubber ducks, an aquarium fish net and counting mats for the water center Make mats with 7 dinner size, waterproof or plastic disposable plates. Write a numeral 1-7 in the center of each plate
- CD of dance tunes, player, numeral mats (purchased or teacher-made)

Story Presentation

Learning Goals:

CD2.4 Holds and manipulates information in memory (*short-term and working memory*)

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

EL1.1 Shows interest in literacy experiences

EL1.2 Engages in read-alouds and conversations about books and stories

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

MT1.1 Demonstrates number sense and an understanding of quantity

MT1.2 Explores combining and separating groups (numerical operations) (*changes in quantity, addition and subtraction*)

Book: *Quack and Count* by Keith Baker

First Reading of *Quack and Count*

- Be familiar with the book, *Quack and Count*.
- Show the pages of the book with copyright information before showing the cover and reading the title and invite children to count the duck feet with you (1 to 14). Then say, "There is a total of 14 duck feet."
- Ask children two questions as follows:
"How many feet does each duck have?"
"So if each duck has 2 feet and there are 14 feet total, how many ducks do you think there are?"
- Accept all answers.
- Say to children, "Let's count the ducks and see if you are correct."
- Count the ducks and say, "There are 7 ducks and each duck has two feet, so that makes a total of 14 feet."
- 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 draws the pictures. In this book, Keith Baker is both the author and illustrator.)
- Read the story so all children can see the pictures in the book.
- Follow up the reading by showing the pages and inviting children to count the ducks with you. Point to each duck as you count.

Second Reading of *Count and Quack*

- Show the cover, give title, author and illustrator.
- Read the story so all children can see the pictures in the book.
- Follow up the reading by inviting children to help you read the story again.
- Review each double-spread page and involve children in counting and adding the number of ducks. For example:
1st double-spread: Count the 6 ducks on the left page and say, "6 plus ___" and have children say the number as you run your finger under the 6 and the 1.
- 2nd double-spread: Involve children in counting the ducks on the left page and say "5 plus 2" as you and the children count the 2 ducklings on the right page. "Playing games of peekaboo."
- Continue until all of the ducklings have been added.
- Read the final pages that end with FLY!
- Thank children for helping you read the story.

Third Reading of *Quack and Count*

- Show the cover and ask children to recall the title of the book.
- Give the author and illustrator and ask children if they remember what each does. Give them prompts if necessary.
- Read the story so all children can see the pictures in the book.
- Follow up the reading by inviting 7 children to come up and be the 7 ducklings and explain to other children that they will help you count and add the ducklings.
- Stand behind the 7 children and invite the audience to count the 7 ducklings as you put your hand on each child's head.
- Move one child to your left so that there is space between the 6 children and the one child.
- Invite the audience to count the 6 ducklings plus 1 as you put your hand on each child's head.
- Move one more child to your left and invite the audience to count the 5 ducklings plus the 2 ducklings as you put your hand on each child's head.
- Continue this activity until all of the sets of ducklings have been counted.
- Invite the audience to stand and join the 7 ducklings as they pretend to fly in place.
- Thank the children for helping you add the ducklings.

Teacher Note: *Repeat the follow up activity if other children want a turn to be ducklings*

Extension Activity:

- Invite 7 other children to be ducklings.
- Explain that you will reread the story and they will form all of the different groups and to count and quack as they make their duck groupings.

Fourth Reading of *Quack and Count*

- Form a small group of no more than 2 or 3 children.
- Show the cover, read the title and state the author and illustrator.
- Show the title page and invite children to find the 3 ladybugs on the page. Count the ladybugs with the children.
- Read the story so the children can see the pictures in the book.
- Follow up the reading by reminding children that they saw 3 ladybugs on the title page of the book, that these same ladybugs are on other pages and you need their help in finding them.
- Begin with the copyright pages and involve children in finding the 3 ladybugs.
- Continue this activity with each double-spread page.

Teacher Notes:

- *Repeat this activity with other small groups of children.*
- *Locate the ladybugs on each page before involving the children in the follow up activity.*

Additional Language and Literacy Activities

Learning Goals:

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

MT1.2 Explores combining and separating groups (numerical operation) (*addition and subtraction*)

Activity: Adding Ducks (small group)

Materials: 7 magnetic duck shapes, magnetic numerals from 1 to 7, magnetic story board, book *Quack and Count*, container for duck shapes, numerals and book

Directions:

- Place the container of materials and the storyboard in the library area.
- Allow the children to explore and manipulate the materials
- Observe to see how children use the materials.
- Join the children and invite them to play a game with you.
- Begin by place a magnetic numeral on the board and invite a child to identify the numeral and place that number of ducks next to the numeral.
- Continue this activity, allowing each child a turn.
- Leave the center and observe how the children play with the materials in your absence. Do they count the ducklings? Do they form groups of ducklings and count and add them? Do they use the magnetic numerals to indicate how many ducklings in a group?

Teacher Note: *If some children do not recognize and name written numerals, say the name and invite them to place that number of ducks on the board.*

Learning Goals:

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

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

MT1.2 Explores combining and separating groups (numerical operations) (*addition and subtraction*)

CA1.1 Explores through listening, singing, creating, and moving to music (*exploration of music and movement*)

Activity: Seven Little Ducks Went Out to Play

Materials: None

Directions:

- Involve children in singing this fun song and finger play.

Seven little ducks went out to play (children hold up seven fingers)

Over the hills and far away.

Mother duck said, "quack, quack, quack, quack" (move hands in quacking motion)

And six little ducks came running back. (hold up six fingers)

Six little ducks went out to play (children hold up six fingers)

Over the hills and far away.

Mother duck said, "quack, quack, quack, quack" (move hands in quacking motion)

And five little ducks came running back. (hold up five fingers)

Continue reducing the number of ducks until "no more little ducks came running back."

Last Verse

The sad mother duck went out to play (make sad face)

Over the hills and far away.

Mother duck said "quack, quack, quack, quack" (move hands in quacking motion)

And all of her little ducks came back. (hold up seven fingers)

Extension Activity:

- Invite seven children to act out the song as you and the children sing it.
- Lightly tap one children on the head as you sing the first verse and that child moves away from the group.
- Continue this activity until there are no ducks in the group.
- Invite the seven children to come back as you sing the last verse.

Teacher Note: *Form additional groups of seven if other children want a turn being ducks.*

Learning Goals:

MT1.1 Demonstrates number sense and an understanding of quantity

CA1.1 Explores through listening, singing, creating, and moving to music (*exploration of music and movement*)

Group Time: Number Dance

Materials: CD of dance tunes, player, numeral mats (purchased or teacher-made)

Directions:

- Scatter the numeral mats in a large, open space.
- Explain to children that you will play a dance tune and they are to dance around the mats until the music stops. When the music stops, they are to put their hand on one of the mats and say the number when asked. State that more than one child can put his or her hand on the mat and they will say the number together.
- Begin to play a lively dance tune, then stop the music and invite children to say the number they are touching.
- Continue this activity as long as children remain interested.

Teacher Note: *Make mats by printing a different numeral, from 1 to 10, on cardstock, laminate and attach non-stick shelf/drawer liner on the back to prevent the mats from slipping when children put their hands on them.*

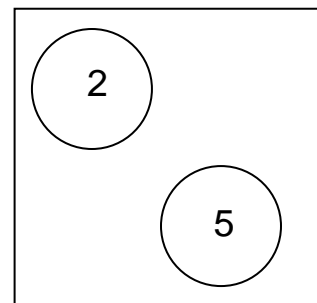
Learning Environment

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:*

- *Physical Development and Health*
- *Emergent Literacy*
- *Mathematical Thinking*

Water Play

- Place 7 rubber ducks, an aquarium fish net and counting mats in the center
- Make mats with 7 dinner size, waterproof or plastic disposable plates. Write a numeral 1-7 in the center of each plate
- Observe to see if children catch and count the correct number of ducks to place on the plate and if they make number combinations of $2 + 5 = 7$ or other combinations from the story.
- Involve yourself in this activity if children seem to need some guidance with this activity.



Manipulatives (or Math Center)

- Place the duck numeral/number cards in the center.
- Provide number puzzles

Library

- Place magnetic board and **Adding Ducks** activity in the center
- Add to the center children's books related to math.

Transition Activities

Quack and Move

- Ask each child to quack a specific number of times (no more than four) and make quacking motion with hands as he/she transitions to the next activity.
- Say, “Josh, quack two times and get on your cot for rest time.”
- Continue this activity until all children have transitioned to the next activity.

March and Quack

- Invite children to quack as they march to the playground, for example.

Family Connection and Engagement

Family Count

- Suggest that families do counting activities with their children. For example, involve the child in counting the number of male and female family members. Ask child how many total people in the family as they count them together.
- Involve the child in counting the number of adults and the number of children in the family. Ask child how many total people in the family as they count them together.

Additional Books

Cronin, Doreen, illustrated by Betsy Lewin, *Click, Clack, Splish, Splash: A Counting Adventure*
Fox, Mem, illustrated by Helen Oxenbury. *Ten Little Fingers and Ten Little Toes*
Franco, Betsy, illustrated by Shino Arihara. *Zero Is the Leaves on the Tree*
Jenkins, Emily. *Five Creatures*
Keats, Ezra Jack. *Over in the Meadow*
Walsh, Ellen Stoll. *Mouse Count*

Assessment Ideas

Refer to page 4: **Additional Language Activities – Adding Ducks** for an activity to assess the following:

Domain Component: MT1. Number Concepts and Operations

Learning Goals:

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

MT1.2 Explores combining and separating groups (numerical operations) (*addition and subtraction*)

To Assess:

- Add the container of materials from the activity, **Adding Ducks**, and the storyboard to the library area.
- Assess children’s competence by becoming involved with them in their activities, as they use the materials and by listening to their comments.
- Observe the children in water play with the rubber ducks and plates with written numerals.