

Connecting Literature and Math – A Component of STEM Curriculum

11: *Titch* by Pat Hutchins

Introduction

Meet Titch, the main character in a book with the same name, by Pat Hutchins. Titch is littler than his brother and sister. Everything they have is bigger than the things that Titch has. Discover what happens when Titch plants a tiny seed.

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: Measurement and Comparison

Learning Goal:

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

Learning Goals will be included for each activity.

Materials to Collect and Make

- Gather materials to plant a flower: flower pot, potting soil, flower seed or bulb, small shovel, watering can, paint paddle
- Make size sequence mat and size sorting cards (See Attachment: [Size Sorting Cards](#) and Attachment: [Size Sorting Mat](#)). Copy on cardstock, laminate and cut apart size sorting cards)
- Make sequence Cards and Sequence Mat. (See Attachment: [Sequence Cards](#) and Attachment: [Sequence Sorting Mat](#)) Copy on cardstock, laminate and cut apart sequence cards)
- Collection of mittens/gloves and container.

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*)

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

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

Book: *Titch* by Pat Hutchins

First Reading of *Titch*

- Be familiar with the book, *Titch*.
- 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, Pat Hutchins is both the author and illustrator)
- Invite children to look at the cover and describe who and what they see.
- Expect that some children may say Titch is a girl and some may say Titch is a boy.
- Say, "Let's read and find out if Titch is a girl or a boy and what Titch is doing in the story."
- Read the story so all children can see the pictures in the book.
- Read the second page: "His sister was a bit bigger." and ask children if Titch is a boy or a girl. ("His" means Titch is a boy.)
- Follow up the reading by involving children in discussing their siblings. Ask if their brothers and sisters are bigger or littler than they are and some things they can or can't do that their bigger or littler brothers and sisters can do.

Second Reading of *Titch*

- Show the cover, give title, author and illustrator.
- Show the title page and invite children to look at the clothes hanging on the line.
- Invite them to identify which clothes belong to Mary, to Pete and to Titch and to explain their answer. Refer to the pictures in the book if children need prompts.
- Read the story so all children can see the pictures in the book.
- Follow up the reading by inviting children to help retell the story.
- Show each page and invite a different child to tell what is happening on that page.

Third Reading of *Titch*

- 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 involving children in a discussion about things that can change and things that can't.
- Show the picture in the book of Pete on his great big bike. Ask children if they think the size of Pete's bike will change and to explain their answers.
- Continue by asking the same question about Mary's bike and Titch's bike.
- Show the pages where Pete is holding the board and saw, Mary is holding the hammer and Titch is holding the nails.
- Involve children in discussing whether or not Pete will stay the same size or will he grow and to explain their answers.
- Continue by asking the same question about Mary and about Titch.
- Invite children to discuss their growth. For example, have they always been the same height they are now, or have they grown since they were babies? Will they continue to grow?
- Invite children to name other things that grow: flowers, trees, animals.
- Conclude by stating that some things such as bicycles and tricycles remain the same size, while children, animals, flowers and trees grow taller.

Additional Learning Goals:

CD3.2 Engages in symbolic and abstract thinking (*abstract thinking*)

ST2.1 Demonstrates knowledge of core science ideas and concepts (*stability and change*)

Additional Language, Literacy and Mathematical Activities

Learning Goals:

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

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

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 (*observations, questions, and predictions*)

ST3.1 Demonstrates knowledge of the characteristics of living things, the earth's environment, and physical objects and materials (*living things*)

Activity: Planting a Flower

Materials: flower pot, potting soil, flower seed or bulb, small shovel, watering can, paint paddle

Directions:

- Involve children in planting a seed or bulb.
- Begin by showing the children the pages in the book, *Titch*, that involve the spade, the flower pot, the tiny seed, and the growing plant.
- Allow each child to add soil to the pot.
- Place the paint paddle in the pot, near the outer edge.
- Explain to children that the paddle will be used to determine if the flower is growing.
- Place the seed or bulb in a hole in the soil and cover it with soil.
- Explain to children that the seed will need water and sun to grow.
- Decide how much water is needed and how often to water and explain this to the children.
- Develop a chart with each child's name and the date they are to water the plant. Add to the chart how much water to use. Mark the amount on a plastic measuring cup and place it near the pot.
- Involve children in checking the chart to determine watering days and the person who is to water the plant that day.
- Check the plant each week and involve children in helping you mark on the paint paddle the height of the plant. Call attention to how much the plant has grown.

Teacher Note: Consider conducting this activity outdoors and have several pots for planting. Children can not only measure the growth of each plant, but compare the growth of the plants in each pot. This will also add an area of interest to the playground.

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

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

Activity: Size Sorting Cards and Sorting Mat

Materials: Size Sorting Cards and Size Sorting Mat (See Attachment: [Size Sorting Cards](#) and Attachment: [Size Sorting Mat](#))

Directions:

- Place size sorting cards in individual zip lock bag (small) and place in a larger bag with sorting mat.
- Allow children to explore and experiment with the cards.
- Observe them with the materials. Do they place each set on the mat in sequence?
- Ask questions and guide them in the activity. For example, "Can you tell me how these 3 bicycles are different? (different sizes) Can you show me how to place them on the mat from smallest to largest?"

Activity: Sequence Cards and Sorting Mat

Materials: Sequence Cards and Sequence Sorting Mat (See Attachment: [Sequence Cards](#) and Attachment: [Sequence Sorting Mat](#))

Directions:

- Place sequencing cards in individual zip lock bag (small) and place in a larger bag with sequencing mat.
- Allow children to explore and experiment with the cards.
- Observe them with the materials. Do they place each set on the mat in sequence?
- Ask questions and guide them in the activity.

Learning Environment

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

- *Mathematical Thinking*
- *Creativity and Aesthetics*

Art Center

- Add paper shapes of different sizes and colors
- Add lids of 3 different sizes for tracing around.

Dramatic Play

- Add at least 3 plates and 3 cups of different sizes to the center.
- Add measuring cups and spoons.

Manipulative Center (or Math Center)

- Add Size Sorting Cards and Sorting Mat.
- Add Sequence Cards and Sorting Mat.

Block Center

- Place 3 different lengths of unit blocks in center: half unit (square), unit (rectangle – 2 squares make a unit), double unit (long rectangle – 2 units or 4 half-units/square make a double unit).
- Place at least 3 empty paper towel or wrapping paper tubes, each a different length, in the center. Tubes can be cut into sections to make 3 different lengths.

Teacher Note: *Observe children as they play with the blocks and tubes. Make comments and ask questions that encourage them to compare and put in order the different sizes of the objects. For example, “I see you are building with the short and long blocks. Can you use the middle size block as you build?”*

Transition Activities

Take Giant/Baby Steps

- Say to each child one of these statements:
 - Take big giant steps as you.....
 - Take tiny baby steps as you.....

Teacher Note: *Add to the statement where you want the child to transition to.*

Family Connection

- Suggest that families plant flowers with their children and observe their growth.

Additional Books

Miller, Margaret. *Big and Little*.

Assessment Ideas

Refer to page 4 in this guide: Activities – **Size Sorting Cards and Sorting Mat** and **Sequence Cards and Sorting Mat** for activities to assess the following concepts and benchmarks:

Domain Component: Measurement and comparison

Learning Goal:

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

To Assess:

- Invite individual or small groups of children to join you in the Size Sorting and Sequencing activities.
- Assess children's competence by observing them in the activities and by listening to their responses as you ask questions and guide them in the activities.