

Connecting Literature and Math – A Component of STEM Curriculum

#5: *The Gigantic Turnip* by Aleksei Tolstoy & Niamh Sharkey

Introduction

The Gigantic Turnip by Aleksei Tolstoy and Niamh Sharkey is a hilarious retelling of an old Russian folktale for children. The book is a fine combination of quirky illustrations and text with lots of repetition.

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

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

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

Materials to Collect and Make

- Make two sorting cards; one labeled **Gigantic** (letters really large) and one labeled **Small** (small letters). Add to the appropriate card a picture of the same object; one large and one small.
- Collect objects in two sizes: balls, cars or trucks, blocks, drinking glasses, forks, for example.
- Collect pictures of animals such as an elephant, whale, and giraffe that are large and pictures of animals such as a kitten, squirrel, bird, and mouse that are small.
- Try to find pictures that show animals that show size in relationship to each other. For example, a large elephant and a small squirrel. Children are perception bound. This means that if a picture of an elephant is small and the picture of a squirrel is large, they may say that the squirrel is larger than the elephant.

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

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

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

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

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

Book: *The Gigantic Turnip* by Aleksei Tolstoy & Niamh Sharkey

First Reading of *The Gigantic Turnip*

- Be familiar with the book, *The Gigantic Turnip*.
- Place several turnips in a bag and take it to the book reading area.
- Invite children to look at the cover and describe who and what they see.
- Say, "The title of this book is *The Gigantic Turnip*".
- Invite children to discuss what they know about turnips.
- Take the turnips out of the bag and allow children to examine them. Encourage them to comment about the turnips. Collect the turnips and return them to the bag.
- Explain to children that turnips can be eaten either raw or cooked.
- Repeat the title and ask children what they think the word "gigantic" means. (big, huge, enormous)
- Invite children to name other things that are gigantic. (elephant, whale, mountain)
- Ask children if they think the turnips they held were gigantic?
- Ask children to show with their arms how big they think a really gigantic turnip would be.
- Repeat the title, name the author and illustrator, and say "Let's read and find out about the gigantic turnip."
- Read the story so all children can see the pictures in the book.
- Explain words such as "sowed" to children. Say, "When we say someone sowed vegetables such as peas, that means they planted seeds."
- Pause after reading about the old man heaving and pulling and yanking, but the turnip will not move. Ask the children how they think he is going to get the turnip out of the ground.
- Accept all answers and continue reading to the end of the story.
- Follow up by asking children to recall how they said the old man was going to get the turnip out of the ground. Were they correct?
- Read the pages where everyone, including the mouse, pulled and heaved and tugged and yanked and POP! That's how the gigantic turnip came flying out of the ground.

Second Reading of *The Gigantic Turnip*

- Scrub, peel and cut up a turnip into small pieces, one for you and for each child in the group. Place the turnip pieces into a small bag and take to the book reading area.
- Give each child a small piece of turnip and suggest that they taste it and describe how it tastes. If a child does not want to taste the turnip, return the piece to the bag.
- Show the cover and invite children to recall the name of the book. Give author and illustrator.
- Read the story so all children can see the pictures in the book.
- Follow up the reading with these counting activities:
Show pages 2 and 3 and invite children to count with you the animals kept by the old man and the old woman: six yellow canaries, five white geese, four speckled hens, three black cats, two pot-bellied pigs, and one big brown cow.
Skip to the page where the old man and the old woman were unable to move the turnip and the old woman went to fetch the big brown cow.
Read the first paragraph and invite children to say which animal the old woman went to fetch. (the big brown cow)
Continue this activity as each set of animals is added to the story, inviting children to say which animal and how many are fetched: two pot-bellied pigs, three black cats, four speckled hens, five white geese, and six yellow canaries.
- Conclude the activity by skipping to the page where the old woman catches the mouse and invite children to recall what she did. Show the next three pages and invite children to describe what is happening.

Third Reading of *The Gigantic Turnip*

- Form small groups of children, from 4 to 6, for this reading.
- Show the cover and ask children to recall the title of the book.
- Read the story so all children can see the pictures in the book.
- Follow up the reading as follows:
Explain to children that they will help you read the story again by “reading” some of the words.
Begin by reading the first page to the children.
On pages 2 and 3, where the animals are introduced, read “The old man and the old woman kept”, run your hand under “six yellow canaries” and ask children to read the words with you.
Continue with “five white geese, four speckled hens, three black cats, two pot-bellied pigs, and one brown cow.”
On the next two pages, continue to read the story and invite children to complete the sentence as follows: “They sowed ____ (peas) and ____ (carrots) and ____ (potatoes) and ____ (beans). Last of all they sowed ____ (turnips).” Point to each of the vegetables as they are presented in the story.
Continue reading the story until you come to the pages where the animals are added. Pause and allow children to complete the sentences about each set of animals. For example, “So, the old woman went to fetch the _____ (big brown cow).” “So the old man mopped his brow and went to fetch the _____ (pot-bellied pig).”
Continue reading after all of the animals have been added until the end of the story.
- Thank children for helping you read the story about *The Gigantic Turnip*.

Additional Learning Goal:

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

Teacher Notes:

- *Pausing to allow children to complete a sentence is called the cloze technique.*
- *Read the story to other small groups so that all children have an opportunity to be involved in the experience.*

Additional Language and Literacy Activities

Learning Goals:

EL1.1 Shows interest in literacy experiences

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

Activity: Vegetable Finger Plays

Materials: None

One Turnip, Two Turnips

(Hold up appropriate number of fingers while counting)

One turnip, two turnips,
Three turnips, four.
Five turnips, six turnips
Seven turnips, more
Eight turnips, nine turnips, Where is ten?
Now, we must count all over again.

Additional Learning Goal:

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

Dig a Little Hole

(Make appropriate motions)

Dig a little hole,
Plant a turnip seed.
Pour a little water,
Pull a little weed.

Give a little sunshine,
And what do you know?
Your seed will be a little plant,
And grow, grow, grow.

Turnips, turnips, turnips,
Grow so very slow.
Hurry, hurry, hurry,
And grow, grow, grow!

Learning Environment

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

- *Cognitive Development*
- *Mathematical Thinking*
- *Science and Technology*

Discovery/Science Center

- Add to the center two sorting cards labeled **Gigantic** and **Small**.
- Place the sets of large and small items with the cards.
- Allow children to explore the items.
- Observe to see if they sort the items by size.
- Invite them to sort and classify the items by size if they seem to need this prompt.
- Place the sets of pictures of large and small items with the cards.
- Observe to see if they sort the pictures by size.
- Invite them to sort the pictures by size if they seem to need this prompt.

Teacher Note: *Observe your children so that you will know which ones are ready to sort concrete objects and which are ready to sort representations (pictures).*

- Add a pan balance scale and two turnips of different sizes.
- Allow children to explore the items.
- Observe to see if they weigh the items and comment about the results.
- Invite them to place one turnip in one pan and the other turnip in the other pan and to decide which weighs the most. Ask them how they know this. (Pan that drops the lowest is the heaviest)
- Add additional items that they might weigh and compare weights.

Teacher Note: *As children are involved in this group time activity, they are engaged in activities that support the following Domains of Child Development and Learning:*

- *Social and Emotional Development*
- *Cognitive Development*
- *Language Development*
- *Social Studies*

Group Time: Helping Others

- Recall with children all of the animals in the story, *The Gigantic Turnip*, who helped the old man and the old woman pull the turnip out of the ground.
- Show the book and pictures if children need prompts.
- Ask children what they think would have happened if none of the animals had helped the old man and the old woman.
- Allow children to express their thoughts about the question.
- Say, "In the story, everyone worked together to get the turnip out of the ground. They helped each other. When we work together, we are cooperating." Invite children to repeat the word "cooperating."
- Invite children to discuss how they can work together, or cooperate, in the classroom and outdoors. This means cooperating with each other as well as the teacher. Examples might include:
 - Share toys and materials in the learning centers
 - Help pick up and put away toys.
 - Rest quietly on cots/mats so that others can get to sleep.
 - Listen to (name of teacher) when she is reading a book so everyone can hear the story.
- Repeat children's ideas and invite others.
- Invite children to discuss how they can work together, or cooperate, at home.

Transition Activities

Be a Gigantic Turnip

- Invite children to pretend to be gigantic turnips as they transition to the next activity. (Arms over head, making a large circle.)
- Ask them to be small turnips as they transition to another activity. (Make circle with thumb and forefinger, also called index finger)

Family Connection and Engagement

- Suggest that families point out turnips to children when they are in the grocery store.
- Invite families to let you know if they eat turnips at home and how they cook them.
- Suggest that families ask their children to recall the story of *The Gigantic Turnip* and explain how the turnip was finally pulled out of the ground.
- Suggest that families visit their local library and check out the book, *The Gigantic Turnip* by Aleksei Tolstoy & Niamh Sharkey, to read with their child. If this book is not available, similar books can be found about this same folktale and with the same title, *The Gigantic Turnip* or a similar title, *The Enormous Turnip*.

Additional Books

Allen, Pamela. *Who Sank the Boat?*
Burningham, John. *Mr. Gumpy's Outing*
Galdone, Paul. *The Little Red Hen*
Wood, Audrey, illustrated by Don Wood. *The Napping House*

Assessment Ideas

Refer to page 5 in the guide: **Learning Environment - Discovery/Science Center** for activities to assess the following:

Domain Component: Algebraic Thinking

Learning Goal:

MT2.1 Uses classification and patterning skills (*classification*)

Domain Component: Measurement and Comparison

Learning Goal:

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

To Assess:

- Add sorting cards, large and small items and pictures of large and small animals to the center.
- Add balance scale and two turnips of different sizes to the center.
- Assess children's competence by become involved with them in their activities, as they use the materials and by listening to their comments.