EDMONTON CATHOLIC SCHOOLS &
UNIVERSITY OF ALBERTA

EARLY NUMERACY PARTNERSHIPS: EXPLORING PROFESSIONAL DEVELOPMENT TO ENHANCE EARLY NUMERACY

AMY SWINKELS & STEPHANIE POWER

NCTM Annual Conference 2018 – Washington D.C.

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EARLY NUMERACY PROFESSIONAL DEVELOPMENT PROJECT

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EARLY NUMERACY PROFESSIONAL DEVELOPMENT PROJECT

Monthly Professional Development Sessions

Thursday Mornings (3 hours): October 2016 – June 2018

NUMERACY COHORT:

- Preschool (100 Voices) Teachers + Early Learning Facilitators (9 teams)
- Early Learning Consultants (Amy Swinkels & Stephanie Power)
- University Mathematics Education Researchers (Dr. Lynn McGarvey, Nicole Jamison, Barbara O'Connor)

PRESCHOOL MATHEMATICS

- Early exposure to mathematics has a tremendous impact on children's readiness for school and later school success (Bagiati, Yoon, Evangelou & Ngambeki, 2010)
- Mathematical thinking, however, beyond counting and shape labelling, has not been part of the educational experiences of many preschool teachers (Ginsburg, Lee, & Boyd, 2008)
- As a result, opportunities for rich mathematical interactions may go unnoticed (Ginsburg, Lee, & Boyd, 2008; Clements, Sarama & DiBiase, 2004)

EARLY NUMERACY PROFESSIONAL DEVELOPMENT PROJECT

PROFESSIONAL DEVELOPMENT GOALS:

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1. To increase teachers' and facilitators' knowledge and awareness of mathematics appropriate for young children and the ways they might support children's learning

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1ST PROFESSIONAL DEVELOPMENT SESSION (OCTOBER)

- Introduction to the early numeracy professional development project & participant survey

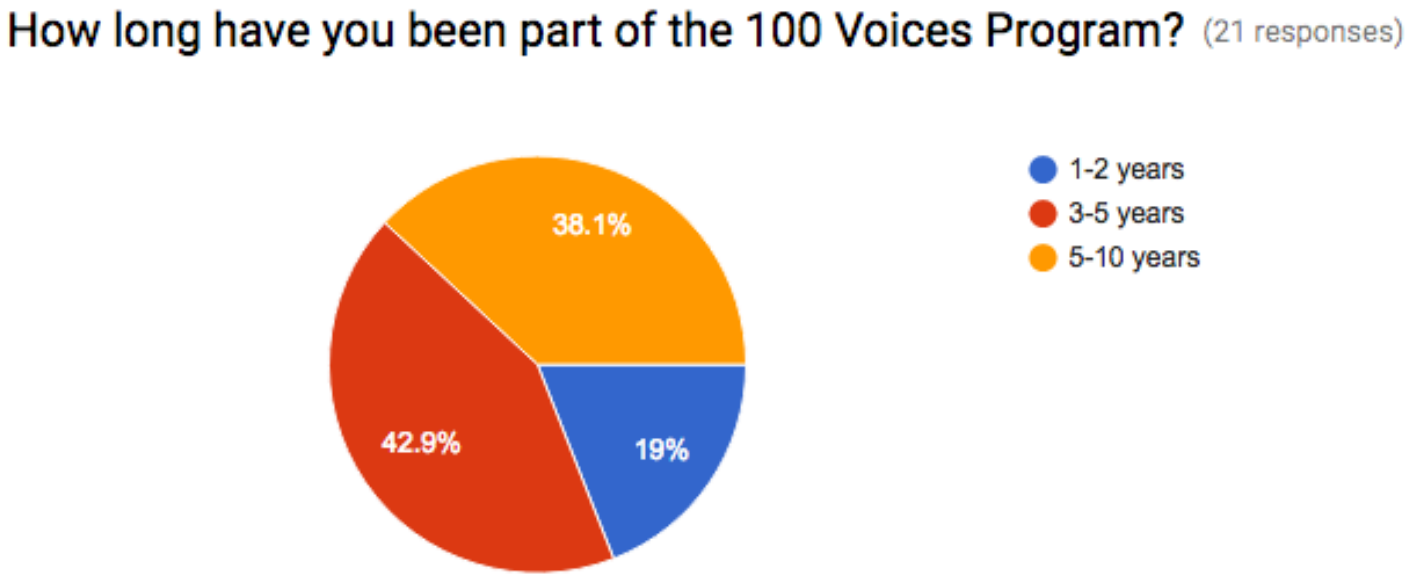
SURVEY:

- Profile of the participants
- Personal experiences and comfort with mathematics
- Current preschool practices
- Learning goals the cohort hoped to achieve while participating

- Results were used by the university researchers and early learning consultants to collaboratively plan and deliver subsequent PD sessions for the year.

NUMERACY COHORT PARTICIPANTS

COHORT DEMOGRAPHICS:



NUMERACY COHORT PARTICIPANTS

PERSONAL EXPERIENCES WITH MATHEMATICS:

- 48% of the participants had positive experiences with mathematics and still do
- 29% struggled with mathematics in school and still do not feel confident
- 14% struggled in school but it is now an area of interest

NUMERACY COHORT PARTICIPANTS

CURRENT CLASSROOM PRACTICES:

The Kindergarten curriculum is based on the following four strands/substrands. Indicate how strongly you focus on these topics in your program.

NUMERACY COHORT PARTICIPANTS

CURRENT MATHEMATICS RESOURCES:

- Pinterest
- Previously used mathematics ideas and materials
- Coworkers or preschool team
- Storybooks and literacy

NUMERACY COHORT PARTICIPANTS

COLLECTIVE LEARNING GOALS:

- How to incorporate more mathematics into classroom activities?
- What is considered developmentally or age appropriate?
- How to have purposeful, meaningful, interesting and fun mathematics?
- How to communicate and share mathematics information with parents?

NUMERACY COHORT PARTICIPANTS

COLLECTIVE LEARNING GOALS:

- Wanted opportunities for collaborative sharing of ideas
- Interested in increasing personal confidence with mathematics
- Interested in increasing mathematics knowledge and strategies

SUBSEQUENT PROFESSIONAL DEVELOPMENT SESSIONS

NOVEMBER	2D Geometry (Shapes)
DECEMBER	3D Geometry (Spatial Literacy/Orientation)
JANUARY	Measurement (Direct Comparison/Ordering)
FEBRUARY	Data Analysis
MARCH	Patterns & Relations (Pattern Core)
APRIL	Number (Counting/Subitizing)
MAY	Mathematical Opportunities within Classroom Routines
JUNE	Wrap Up & Concluding Mathematics Survey

FORMAT OF PROFESSIONAL DEVELOPMENT SESSIONS

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1. Group sharing of classroom practices/activities related to the previous PD's focus

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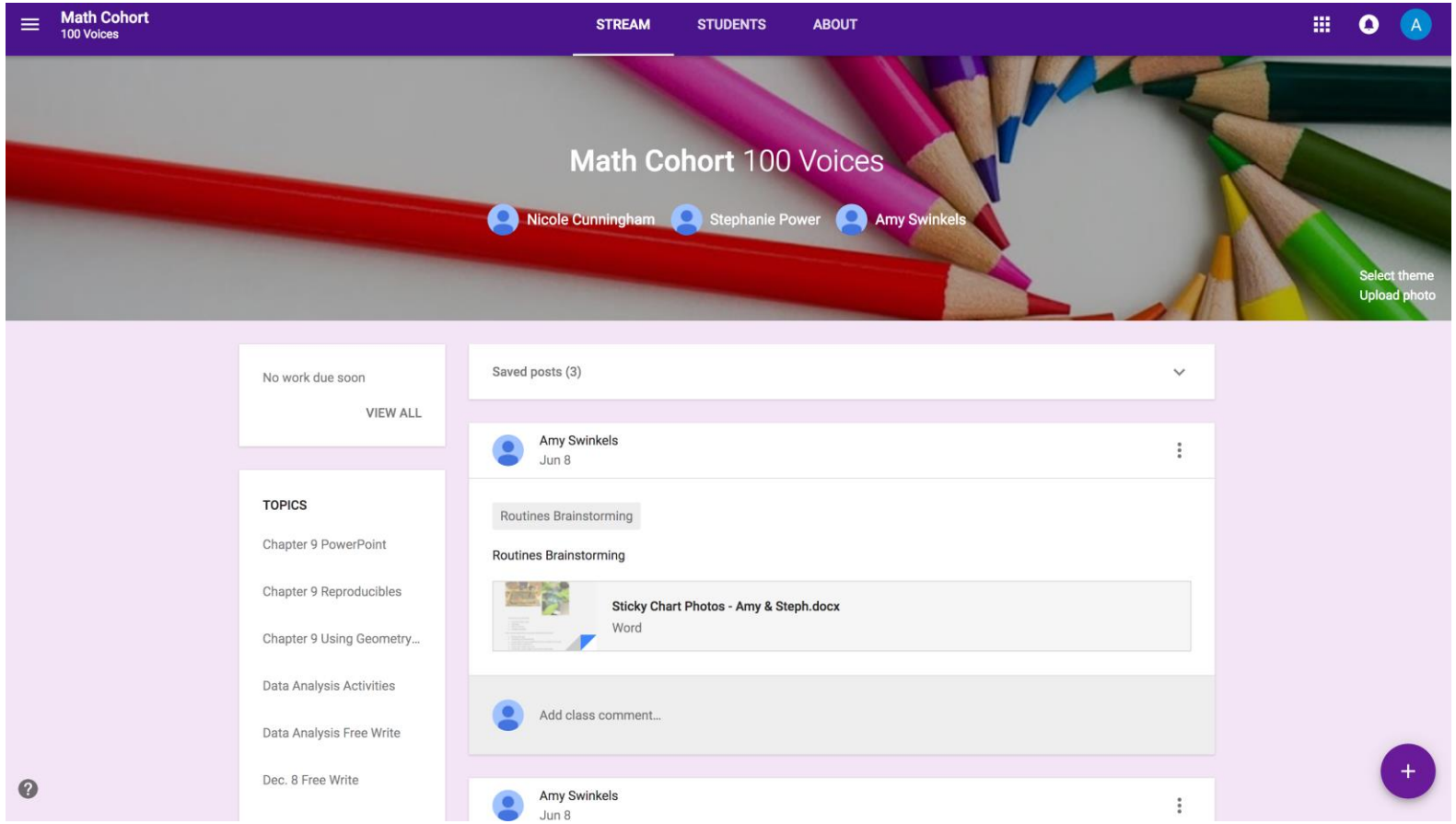

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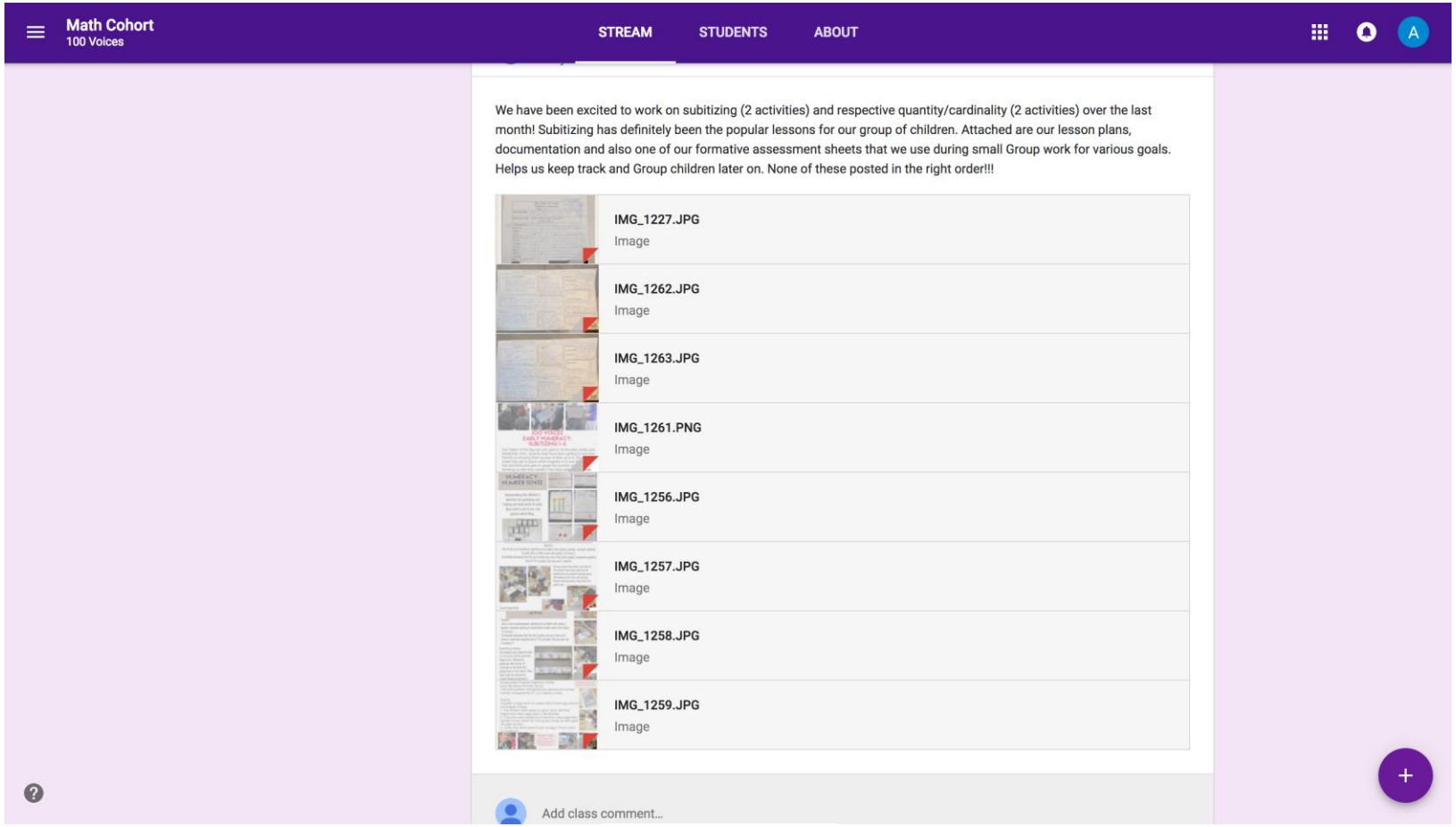

FORMAT OF PROFESSIONAL DEVELOPMENT SESSIONS

2. Written reflections on understandings/practices related to a specific focus/strand in mathematics

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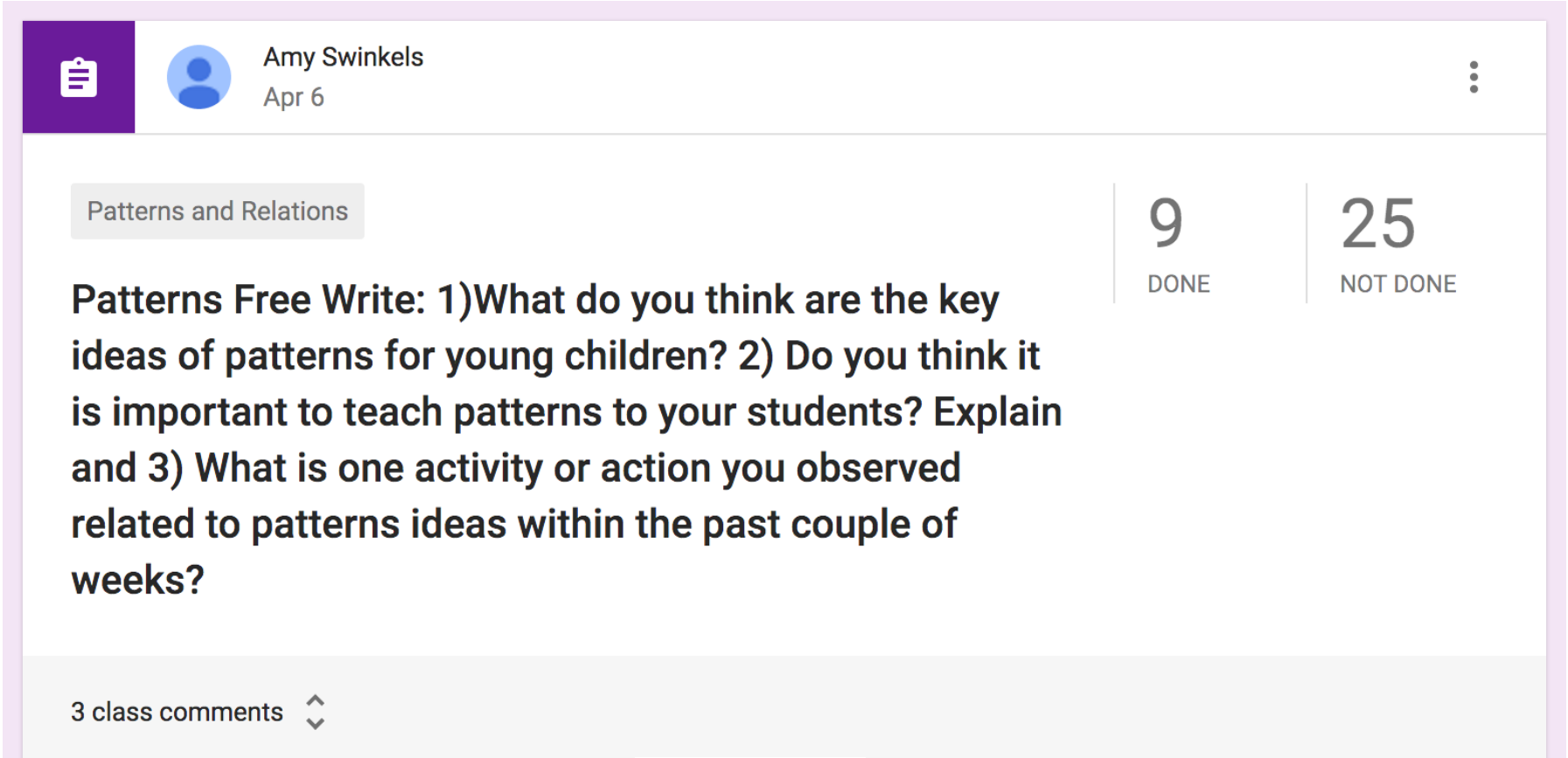

FORMAT OF PROFESSIONAL DEVELOPMENT SESSIONS

3. Presentation of current research, best practices, and discussion of challenges for a specific focus/strand in mathematics

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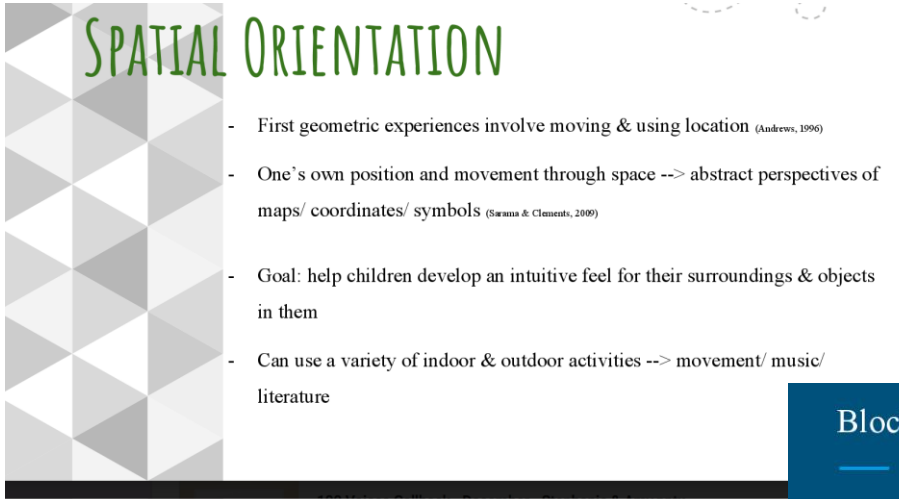

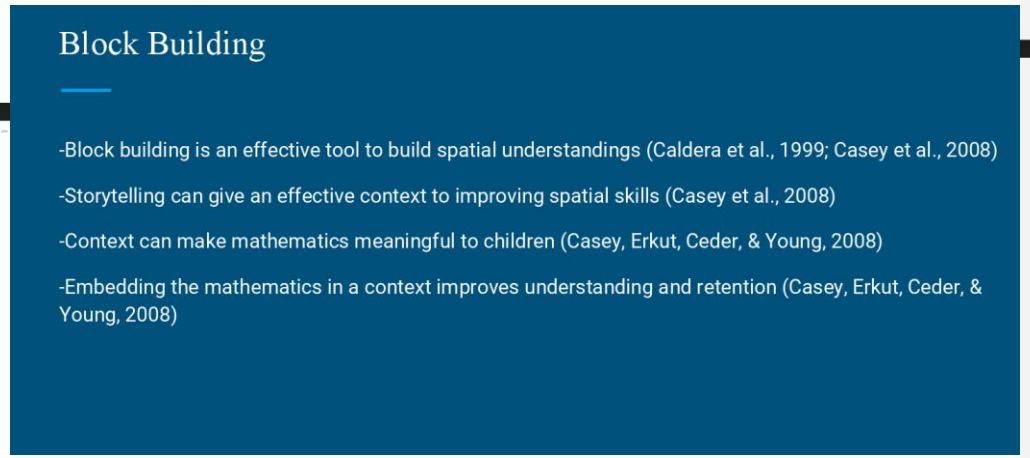

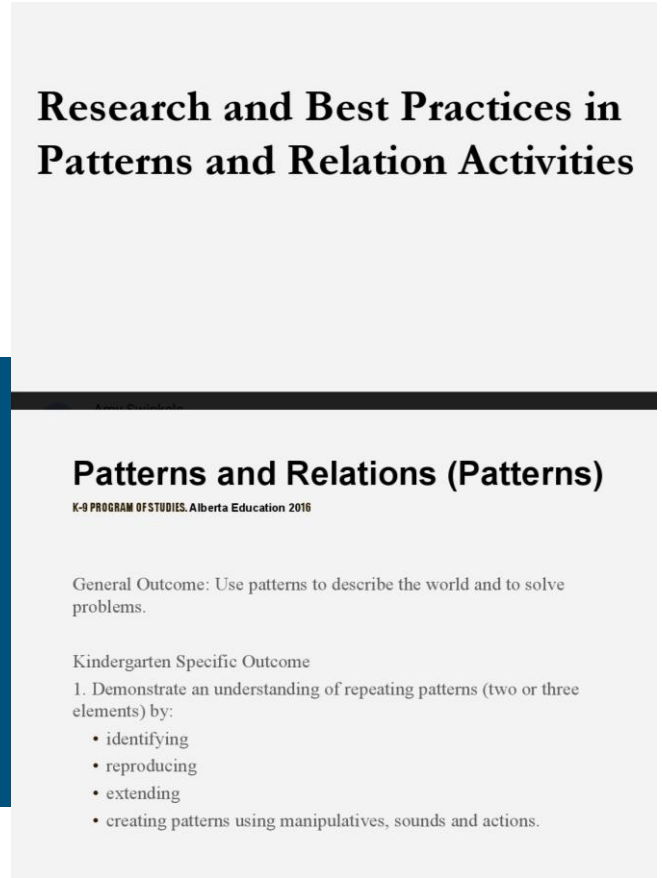

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FORMAT OF PROFESSIONAL DEVELOPMENT SESSIONS

4. Hands-on participation in teacher and student activities for a specific focus/strand in mathematics

FORMAT OF PROFESSIONAL DEVELOPMENT SESSIONS

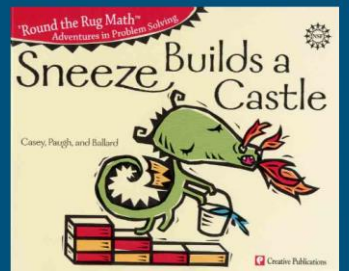
4. Hands-on participation in teacher and student activities for a specific focus/strand in mathematics

Block building activity

As you are working:

-What spatial reasoning skills are being used in each task in the activity?

-What problem solving and mathematical language is being built through the task?



Hap Palmer - The Circle Game

Getting to Know Myself Album

https://www.youtube.com/watch?v=ERmx3p_QAFc (Circle Game at 14:31.)

Children doing circle game dance

https://www.youtube.com/watch?v=ET3rax2zBc0

Where is the mathematics?

What spatial understanding is developed?

What might you do to make the spatial aspects of the dance more explicit for children?

- Select a spatial word from Rosie's Walk or the list below:
  - **In/ Out**
  - **Forward/ Backward**
  - **Top/ Bottom**
  - **Around/ Through**
  - **Over/ Under**
  - **In Front/ Behind**
  - **Up/ Down**
  - **Above/ Below**
- Draw a picture representing the word & action using a prop in the room as a reference point
- If you finish early, select another word(s) to draw
- Stack the drawings in a pile for your table group to use

Spatial Orientation Activities

1. **SPATIAL TABLEAU:** Select one of the cards and create a still image using your body (and props) to represent the spatial word for your group to guess
2. **SPATIAL OBSTACLE COURSE:** As a group, place your cards in a sequence and create an obstacle course (using props - i.e., chairs, tables, other items). Say your spatial action as you complete the movements

- If you finish your obstacle course:
  - Try it again by moving in a different way (i.e., tiptoe, crawl, etc.)
  - Rearrange your cards and create a new obstacle course

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FORMAT OF PROFESSIONAL DEVELOPMENT SESSIONS

5. Collaborative planning time for teacher and facilitator teams (commit to try)

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Name of Centre: _____ Created By: _____

Role of Materials

Learning Goals:

SHAPE AND SPACE (Measurement)
General Outcome
Describe the characteristics of 3-D objects and 2-D shapes and analyze the relationships among them.
Specific Outcomes
2. Sort 3-D objects, using a single attribute. [C, CN, PS, R, V]
3. Build and describe 3-D objects. [CN, PS, V]

Assessment:

Portfolio Artifact:

Documentation:

UDL Strategies:

- ☐ SLP
- ☐ EBS
- ☐ OT
- ☐ AP
- ☐ PT

Intentional Groupings:

MDT Strategies Used:

Literacy Connections:

Technology (iPad, Smart Board, Computer, Camera)

Intentional Questions:

Role of the Teacher/ELF/EA:

PRELIMINARY FINDINGS

PROFESSIONAL DEVELOPMENT GOALS:

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PRELIMINARY FINDINGS

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GEOMETRY REFLECTIONS

Initial Understandings

- Learning about shapes (labelling/observing)
- Spatial awareness and visual perception (2)
- Connection to measurement (1)

PRELIMINARY FINDINGS

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GEOMETRY REFLECTIONS

Initial Understandings

- Learning about shapes (labelling/observing)
- Spatial awareness and visual perception (2)
- Connection to measurement (1)

After PD Session/Classroom Implementation

- Distinction between 2D shapes and 3D objects
- Identifying shapes (labelling) but also attributes/classifying/ comparing
- Building 2D shapes and 3D objects
- Spatial awareness, directions, mapping, and sequencing
- Connection to measurement and number sense

PRELIMINARY FINDINGS

1. To increase teachers' and facilitators' knowledge and awareness of mathematics appropriate for young children and the ways they might support children's learning

FINAL SURVEY REFLECTIONS

- "I feel more confident in planning appropriate activities focusing on Math for this age group"
- "As an educator, I gained increasing confidence in math concepts"
- "I have become more aware of purposeful, developmentally appropriate 'math' activities"

PRELIMINARY FINDINGS

2. Change teaching practices so that educators purposefully plan for rich mathematical experiences and capitalize on mathematical opportunities that take place during common classroom routines and activities

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FINAL SURVEY REFLECTIONS

- "Participating in this cohort has drastically changed the intentionality of our whole group and small group numeracy conversations. We have as a classroom staff pushed ourselves to think more mathematically in the classroom and encourage students to do so. Our preconceived notions of what our students can understand with respect to mathematics has changed drastically"

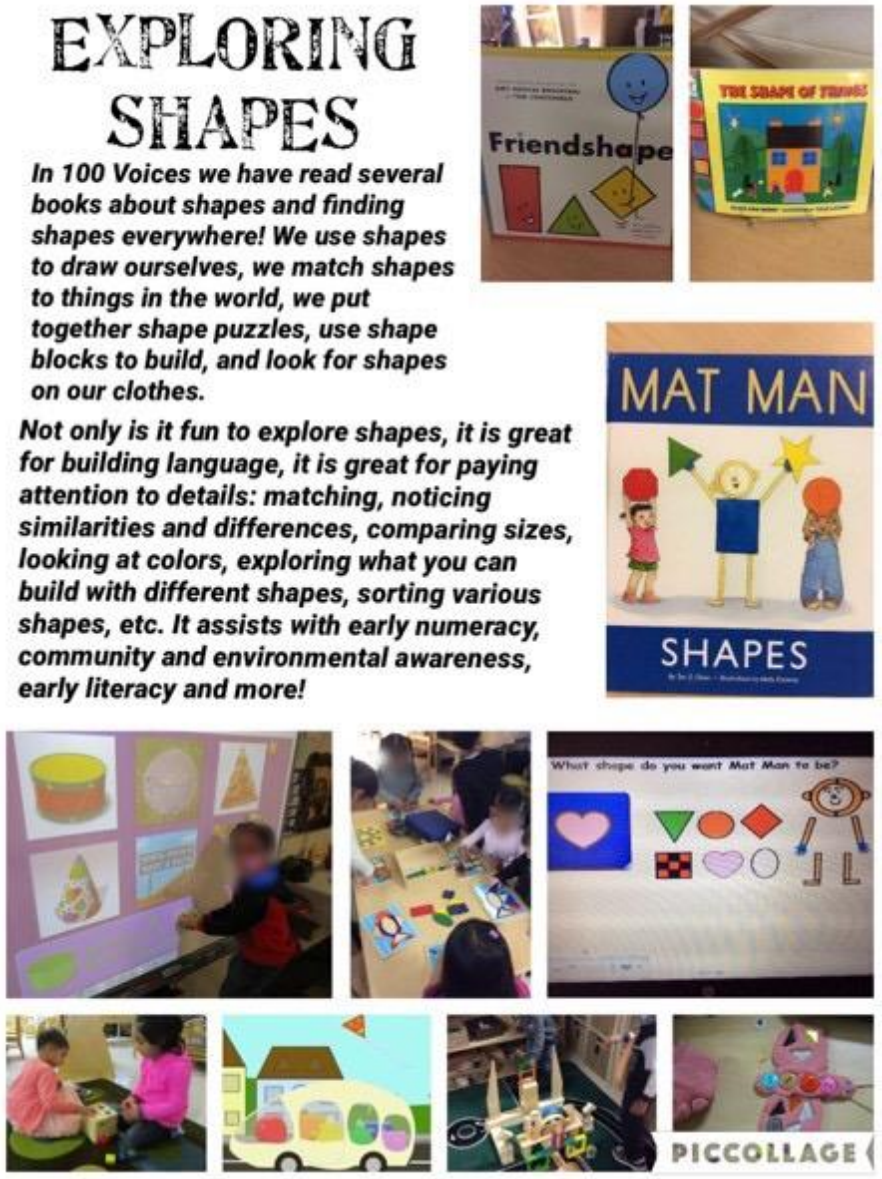
CLASSROOM EXAMPLES

Common Core Geometry Standards

CCSS.Math.Content.K.G.A.2
- Correctly name shapes regardless of their orientations or overall size.

CCSS.Math.Content.K.G.B.5
- Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.

CCSS.Math.Content.K.G.B.6
- Compose simple shapes to form larger shapes. *For example, "Can you join these two triangles with full sides touching to make a rectangle?"*



WNCP

General Outcome

Describe the characteristics of 3-D objects and 2-D shapes, and
analyze the relationships among them.

Specific Outcomes

- Sort 3-D objects using a single attribute.
[C, CN, PS, R, V]
- Build and describe 3-D objects.
[CN, PS, V]

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CLASSROOM EXAMPLES

Familiar activities:

- Read books about shapes
- Find shapes in the environment
- Explore shapes with puzzles

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CLASSROOM EXAMPLES

New activities:

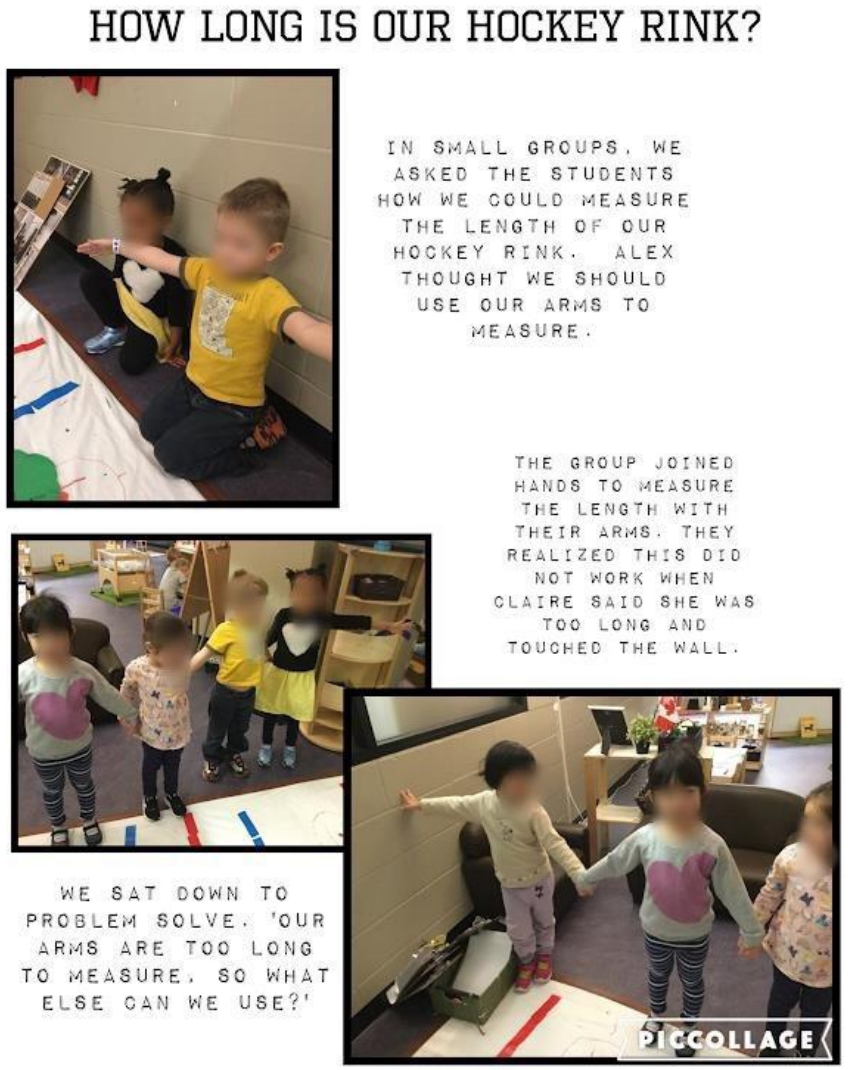
- Match shapes
- Display shapes in different rotations
- Notice similarities and differences
- Sort shapes (attributes)

CLASSROOM EXAMPLES

Common Core Geometry Standards

CCSS.Math.Content.K.MD.A.1
Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

CCSS.Math.Content.K.MD.A.2
Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*

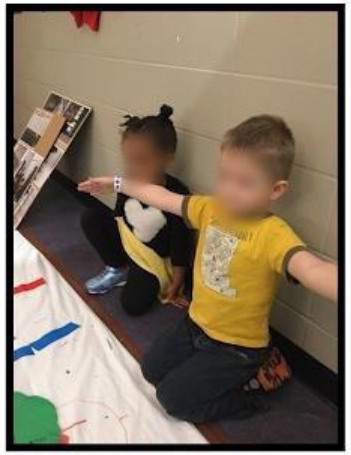


Common Core Geometry Standards

CCSS.Math.Content.1.MD.A.2
Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*

CLASSROOM EXAMPLES

HOW LONG IS OUR HOCKEY RINK?



IN SMALL GROUPS, WE ASKED THE STUDENTS HOW WE COULD MEASURE THE LENGTH OF OUR HOCKEY RINK. ALEX THOUGHT WE SHOULD USE OUR ARMS TO MEASURE.

THE GROUP JOINED HANDS TO MEASURE THE LENGTH WITH THEIR ARMS. THEY REALIZED THIS DID NOT WORK WHEN CLAIRE SAID SHE WAS TOO LONG AND TOUCHED THE WALL.

WE SAT DOWN TO PROBLEM SOLVE. 'OUR ARMS ARE TOO LONG TO MEASURE, SO WHAT ELSE CAN WE USE?'

WNCP

General Outcome

Use direct or indirect measurement to solve problems.

Specific Outcomes

- Use direct comparison to compare two objects based on a single attribute, such as length (height), mass (weight) and volume (capacity).

[C, CN, PS, R, V]

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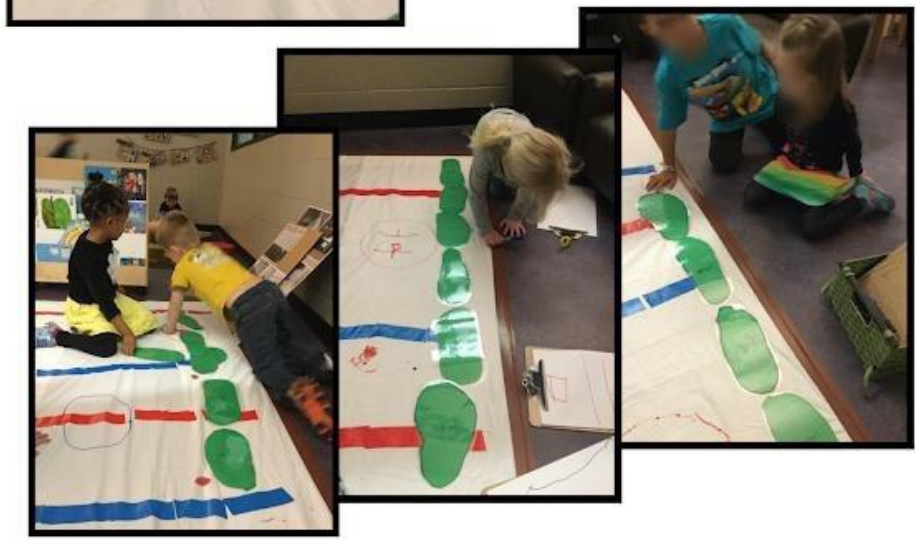
CLASSROOM EXAMPLES

HOW LONG IS OUR HOCKEY RINK PART 2

We made 'skates' for our rink and sorted them into sizes: small, medium and large. The first group decided to use the large skates to measure the length of the rink. The teacher put two skates down first and asked the children how many skates long the rink would be. There were guesses such as 100, 20 and infinity! Some students studied the skates carefully and then counted imaginary skates all the way to the end of the rink. Alex predicted the rink would be 10 skates long.

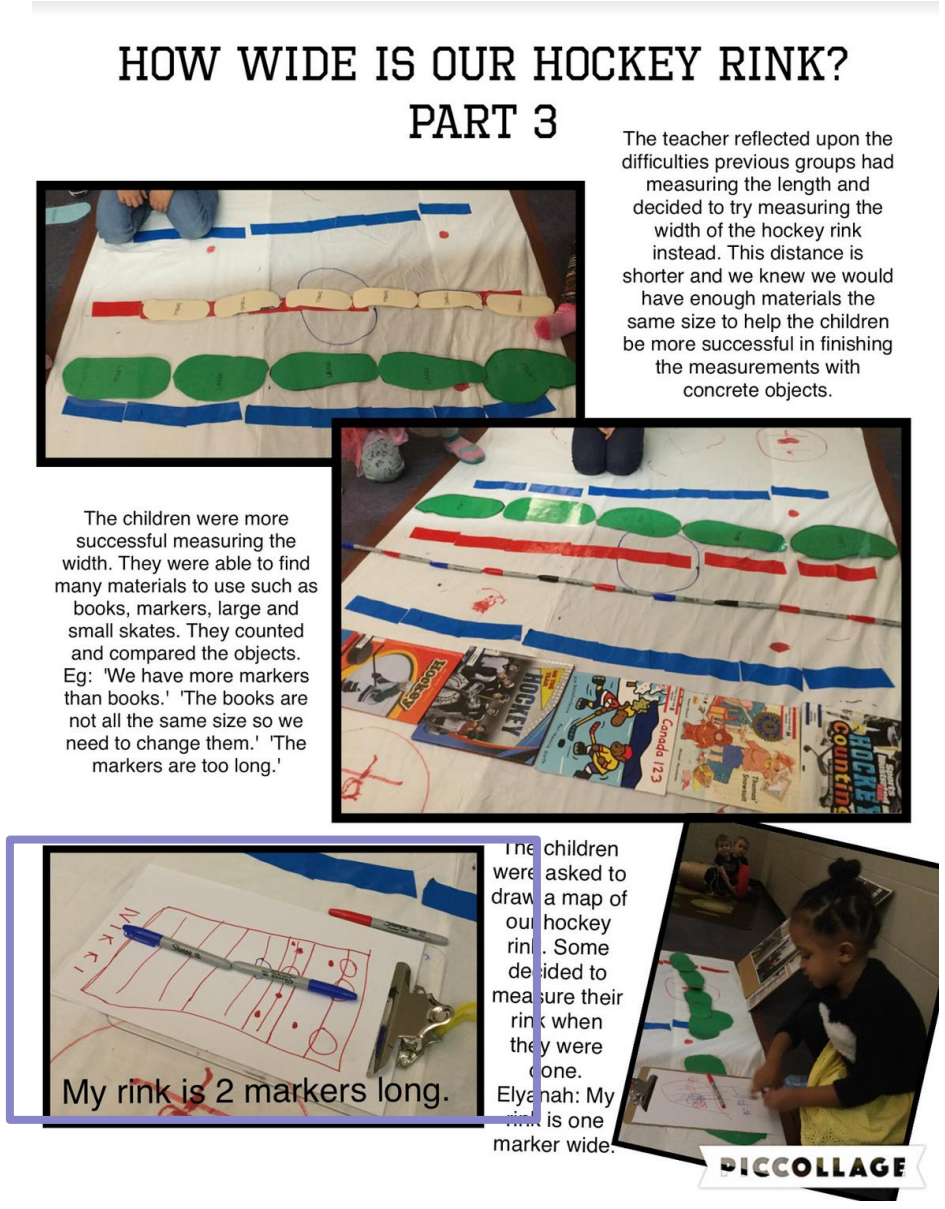


The students placed the skates end to end to count them. When they ran out of large skates, they had a difficult time deciding what to do next. One child added small sized skates but the other children said they were not the same and took them off the rink. The teacher suggested we remember the count of 6 and then remove one of the skates from the beginning of the line and add it to the end and continue counting. The students did not like this option. This was a difficult concept to understand. Many students finished the activity saying the rink was 6 skates long rather than 10 skates long. I believe this was because there were only 6 concrete skates visible to them.

CLASSROOM EXAMPLES

Familiar activities:

- Introducing measuring with nonstandard units and concrete objects



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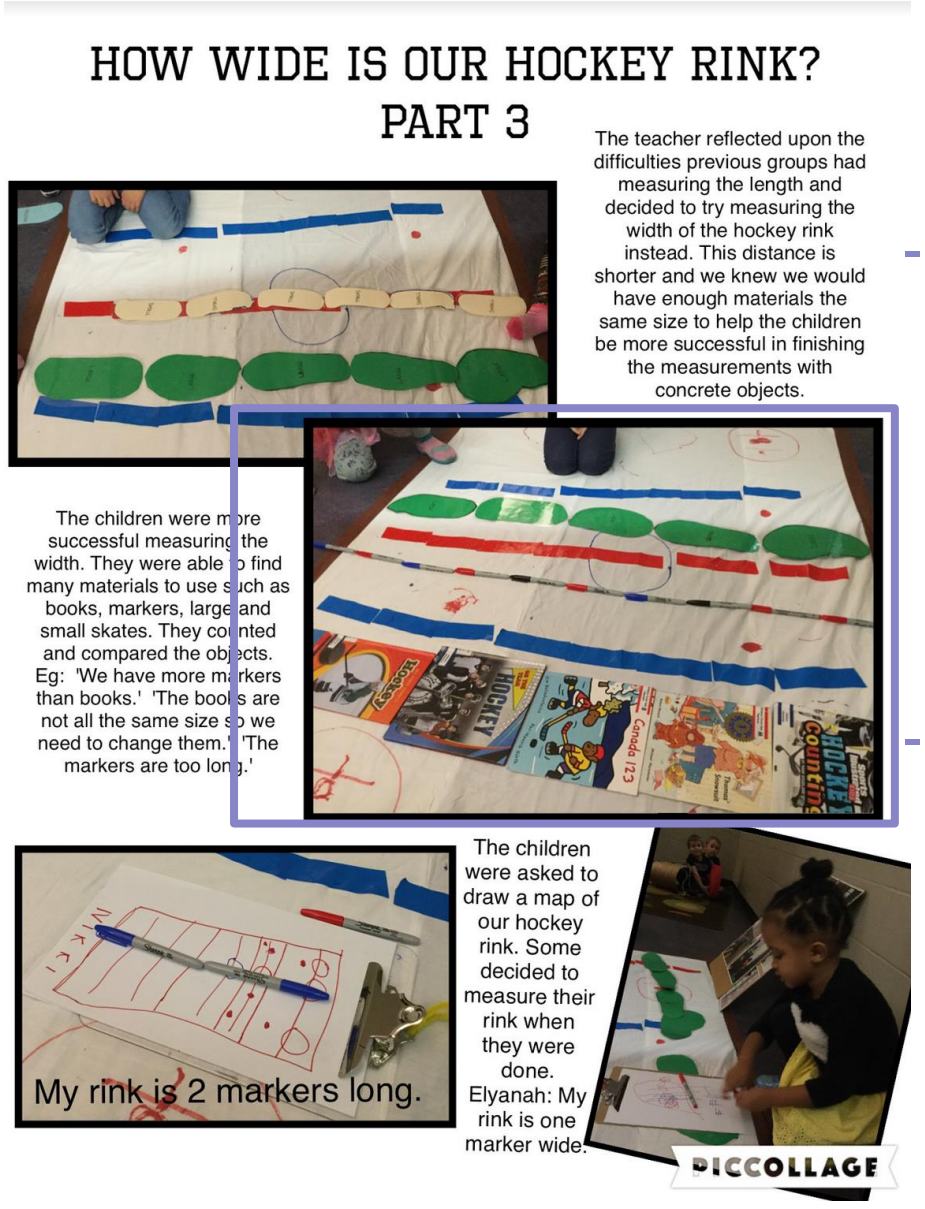

New activities:

- Using a variety of nonstandard units and concrete objects to measure
- Discussion about which unit was more or less (comparing quantities)

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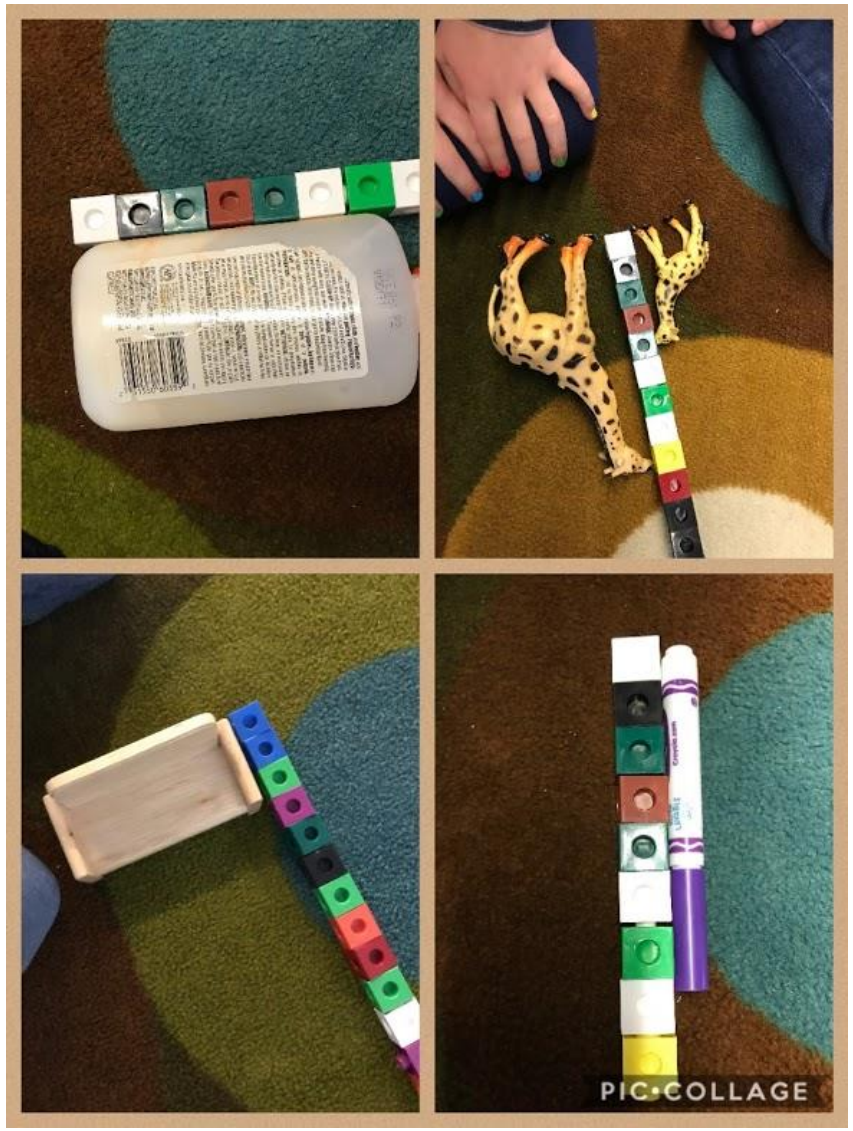

CLASSROOM EXAMPLES

CLASSROOM EXAMPLES

We need to measure this. It's gonna be big.really big. Like as big as me. -Shep

How are you going to remeber how big it is - Mrs. K

Um, we have to write down the numbers. Quick. I need writing paper. -Huixin

Look! Now I know it's as big as me. I used me to measure.

PICCOLLAGE

CLASSROOM EXAMPLES

EDMONTON VALLEY ZOO
Get Closer

We asked the children what they wanted to learn about last week. A group of children in the morning class wanted to learn about bees, and in the afternoon they wanted to learn about tigers. Our interpreter, Mr. Robert, sat and taught the children as they ate their snacks, and then took them to visit the insect and animal sites in the zoo. We are very lucky to have an interpreter twice a week as part of our program!

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CLASSROOM EXAMPLES

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CLASSROOM EXAMPLES

Pre-Kindergarteners going on to become Physiotherapists
By Jasmine Spraakman, Zoo Experiences Program Manager (Edmonton Valley Zoo)
February 1, 2018

Meet Frodo, the Edmonton Valley Zoo's resident 20-year-old Central Asian Tortoise. Frodo came to the zoo after being confiscated by Canada Border Services Agency from a passenger returning from Europe. Frodo had a vet check recently and it was noted that he had some weakness in his rear limbs. The zoo's vet, Dr. Limoges, recommended that he get daily exercise over uneven terrain to help his back legs get a little stronger. The animal care and zoo experiences teams put their heads together to find a solution to get Frodo some more daily exercise.

They had an idea to move him into the 100 Voices Pre-Kindergarten classroom. Recently, the Pre-K classroom lost their friend Floppy, a lop-eared rabbit, to old age. They did such a great job creating an exercise area for Floppy (who was blind) that they thought it was a great idea to move Frodo into their classroom and get the whole class involved with his rehabilitation! Working with a zookeeper, the class built Frodo a ramp and a new area where he can exercise.

The children in the 100 Voices classroom get to try out news activities with Frodo and interact with him daily. They recently found out that he gets very excited when he sees his reflection in the mirror and have used this tactic to get him to walk up his new ramp.

The 100 Voices Pre-Kindergarten program is in partnership with the Edmonton Catholic School District. They have 19 classes in City of Edmonton recreation centres and attractions facilities, including two at the Edmonton Valley Zoo.

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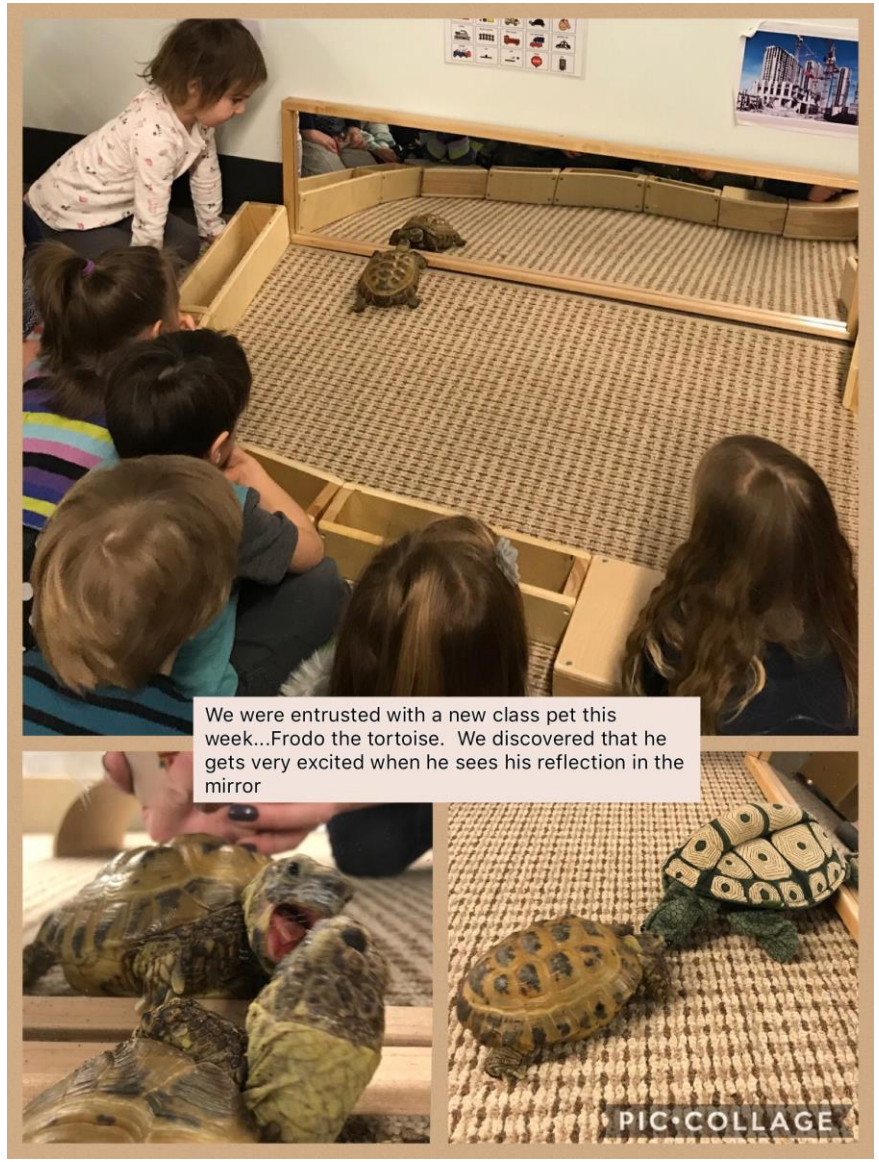

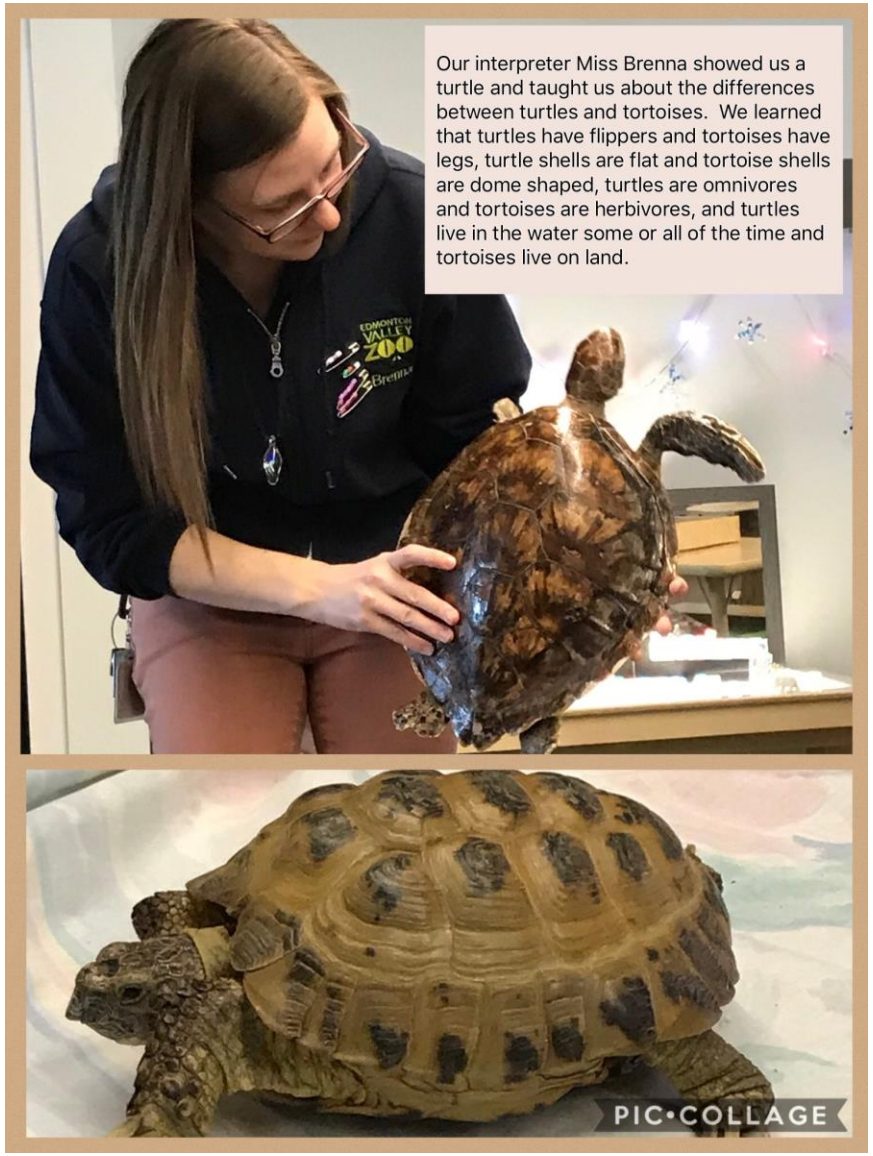

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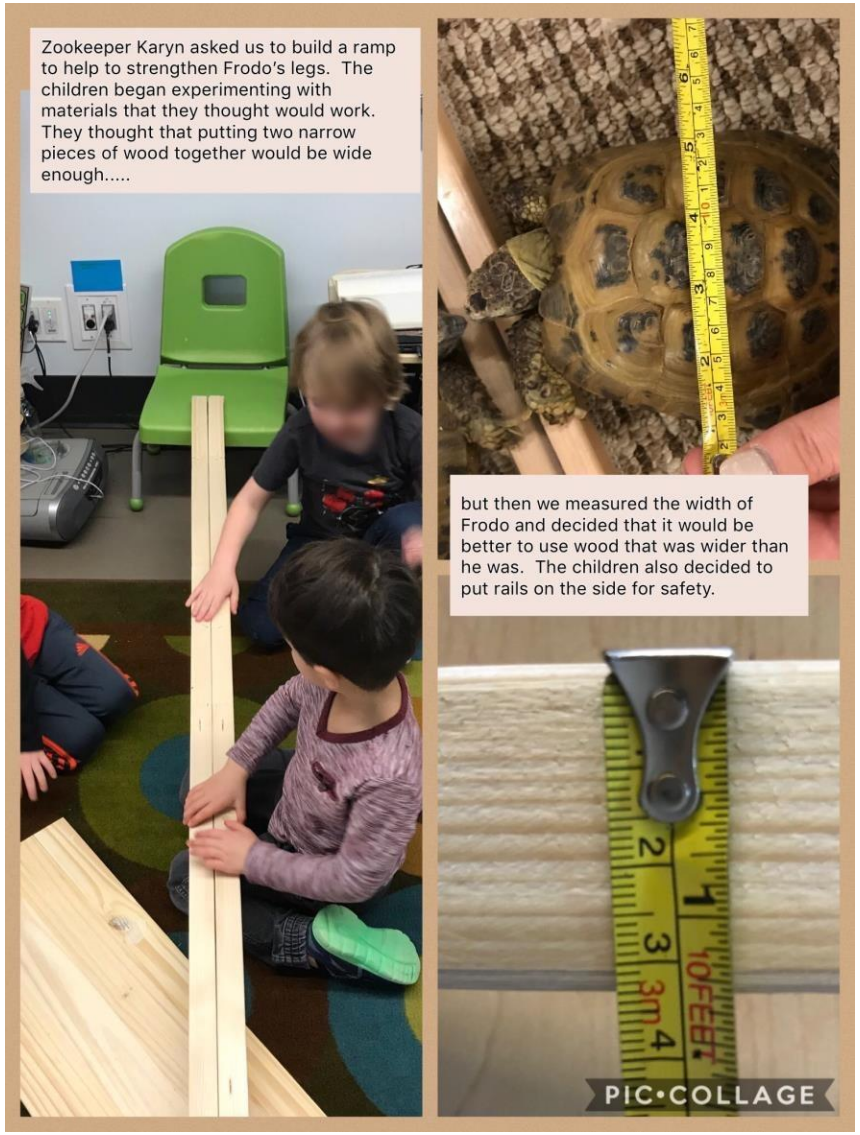

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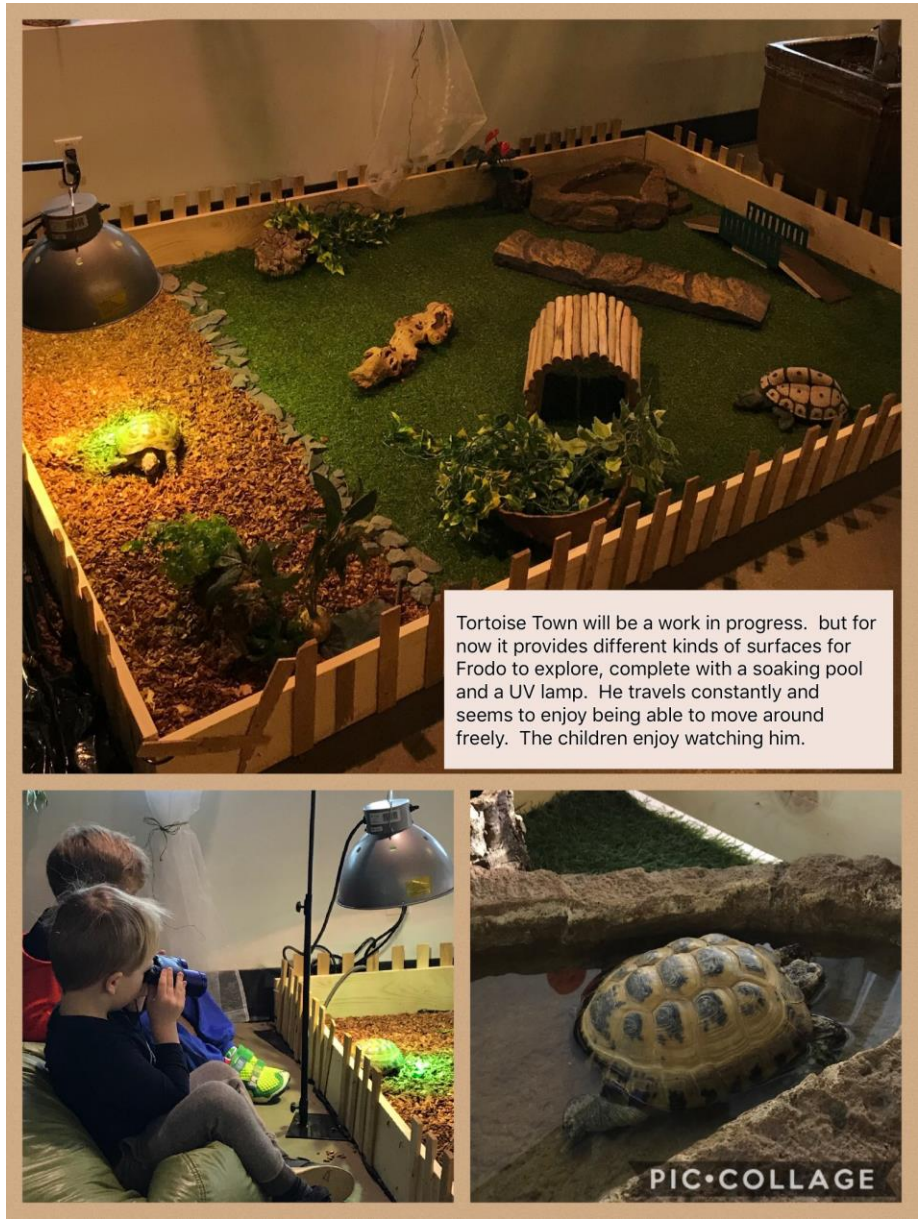

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SPATIAL THINKING

"Spatial thinking is integral to everyday life. People, natural objects, human-made objects and human-made structures exist somewhere in space, and the interactions of people and things must be understood in terms of locations, distances, directions, shapes, and patterns" (National Research Council, 2006, p.5)

Mathematics achievement is related to spatial abilities

Two types of competencies (Sarama & Clements, 2009):

SPATIAL VISUALIZATION & SPATIAL ORIENTATION

SPATIAL VISUALIZATION

"Spatial visualization involves understanding and performing imagined transformations of two- and three-dimensional objects, including motions, matching, and combining" (Sarama & Clements, 2009, p.183)

Generating or creating a mental image and manipulating it (sliding/turning/flipping/diagonal)

IMAGERY/ VISUAL REPRESENTATIONS

SPATIAL ORIENTATION

First geometric experiences involve moving & using location (Andrews, 1996)

One's own position and movement through space --> abstract perspectives of maps/ coordinates/ symbols (Sarama & Clements, 2009)

Goal: help children develop an intuitive feel for their surroundings & objects in them

Can use a variety of indoor & outdoor activities --> movement/ music/ literature

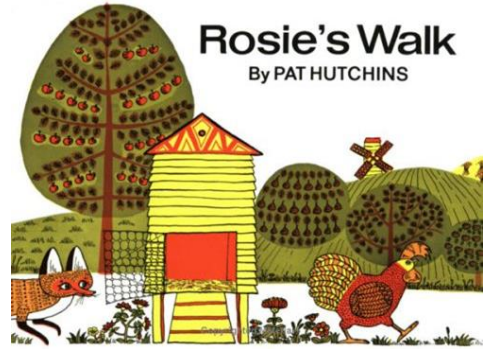
SPATIAL ORIENTATION

LANGUAGE OF SPACE

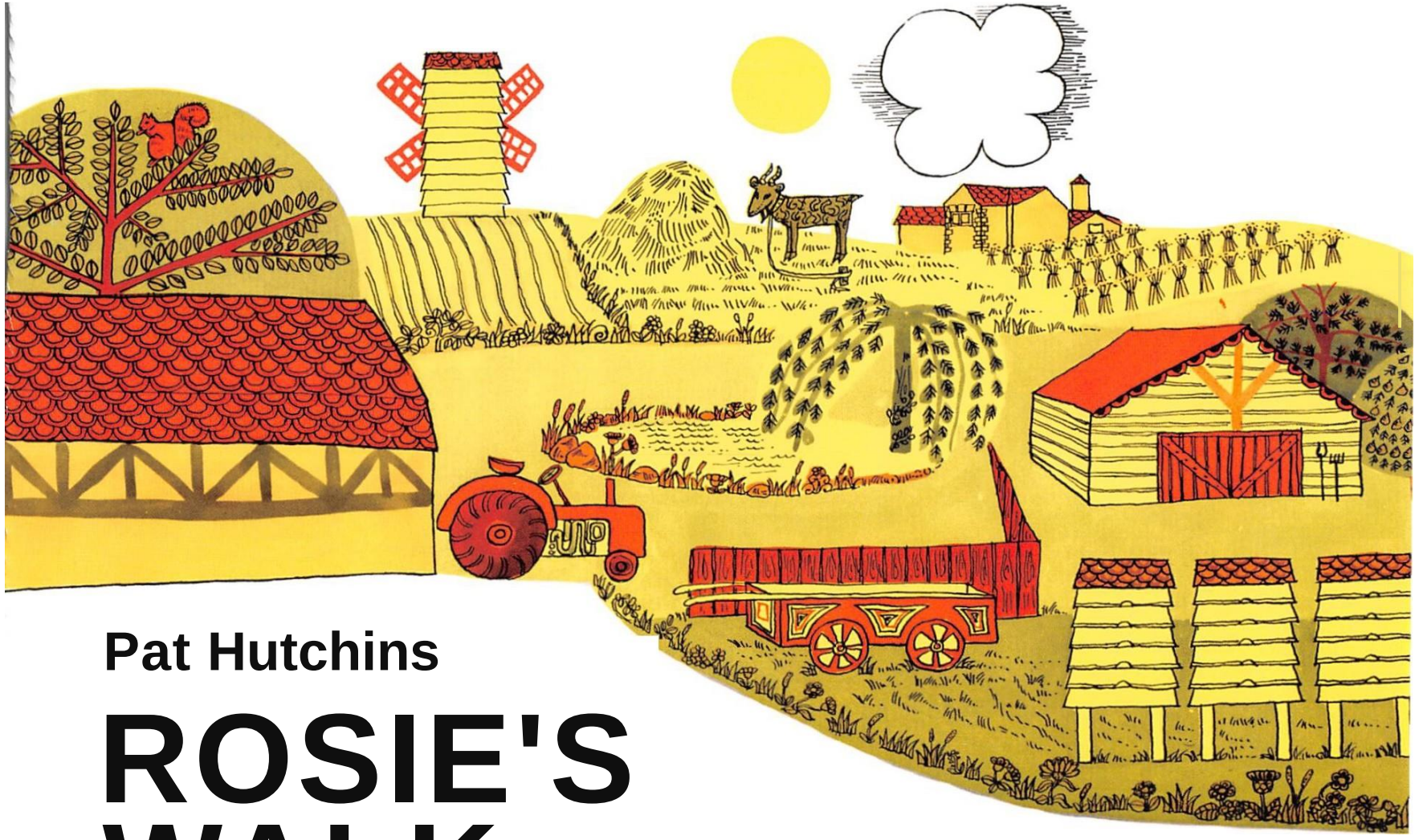
(Sarama & Clements, 2009)

1. **In/ On/ Under** (topology) & **Up/ Down** (directionality)
2. **Beside/ Between** (proximity)
3. **In Front Of/ Behind** (frames of reference)
4. **Left/ Right** (learned later --> 6 - 8 years of age)

ROSIE'S WALK



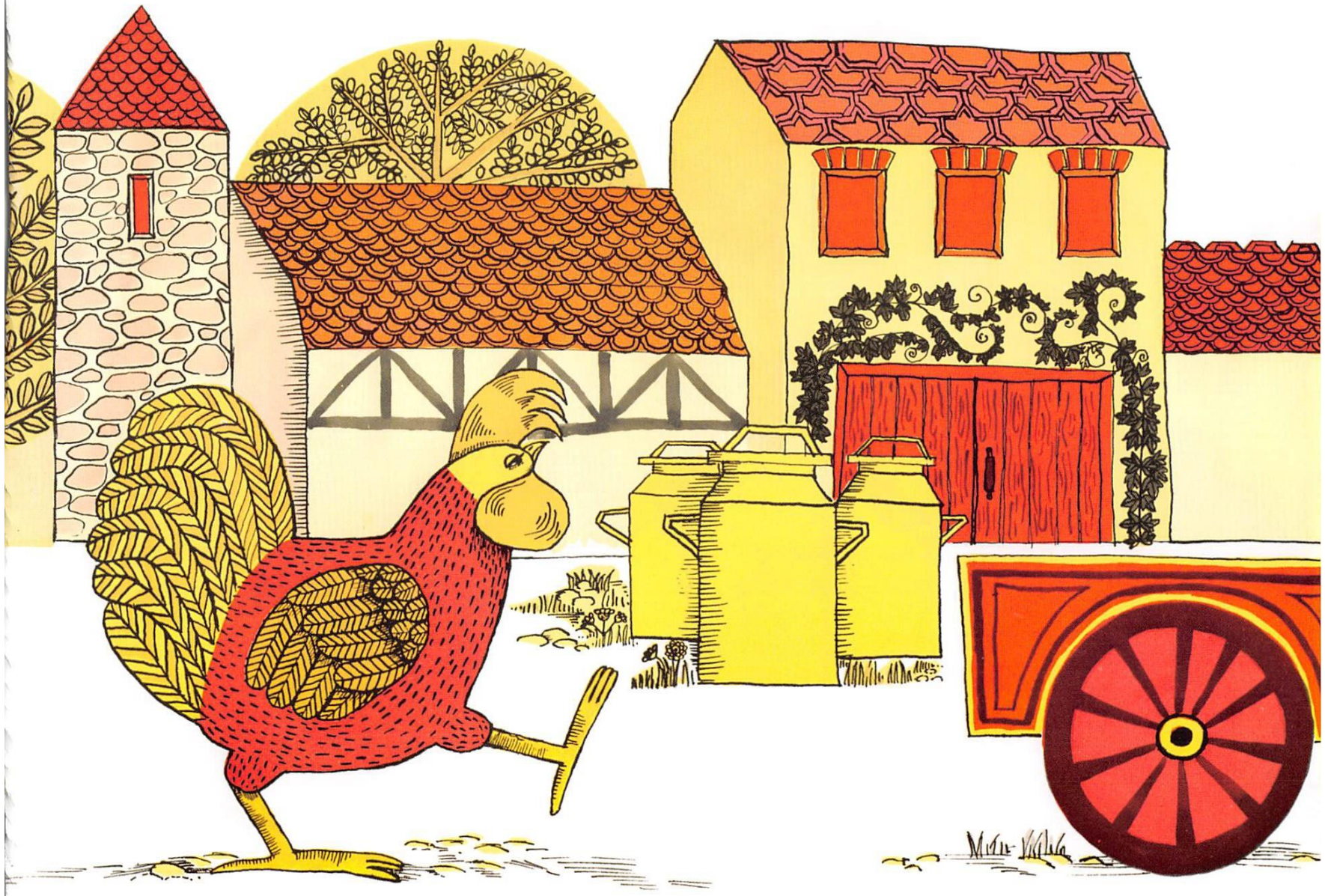
- As you watch Rosie's Walk:
- Pay attention to the spatial vocabulary or "language of space" used
- Consider how to represent these words with a drawing
- Consider what actions & movements could represent these words



Pat Hutchins

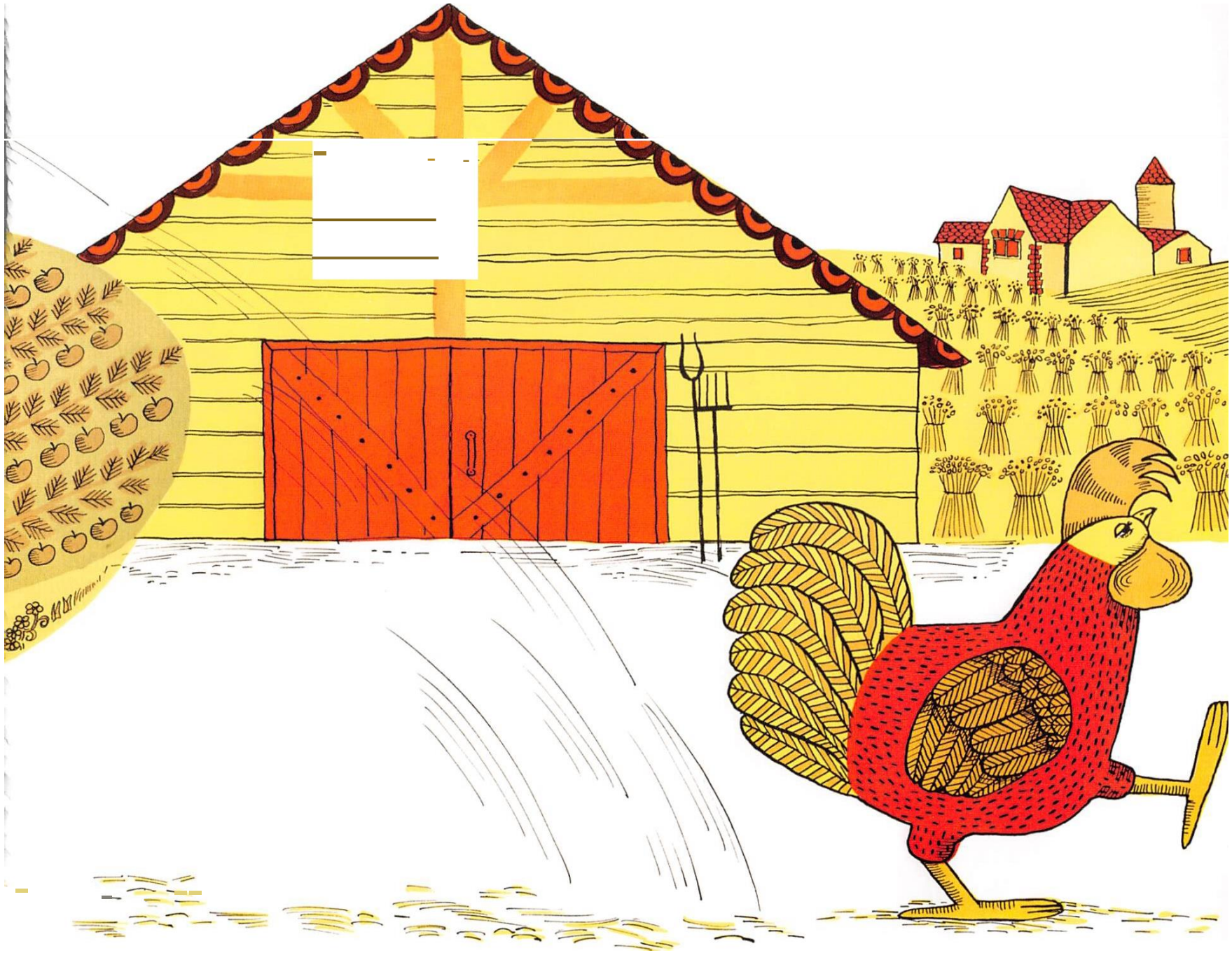
ROSIE'S WALK

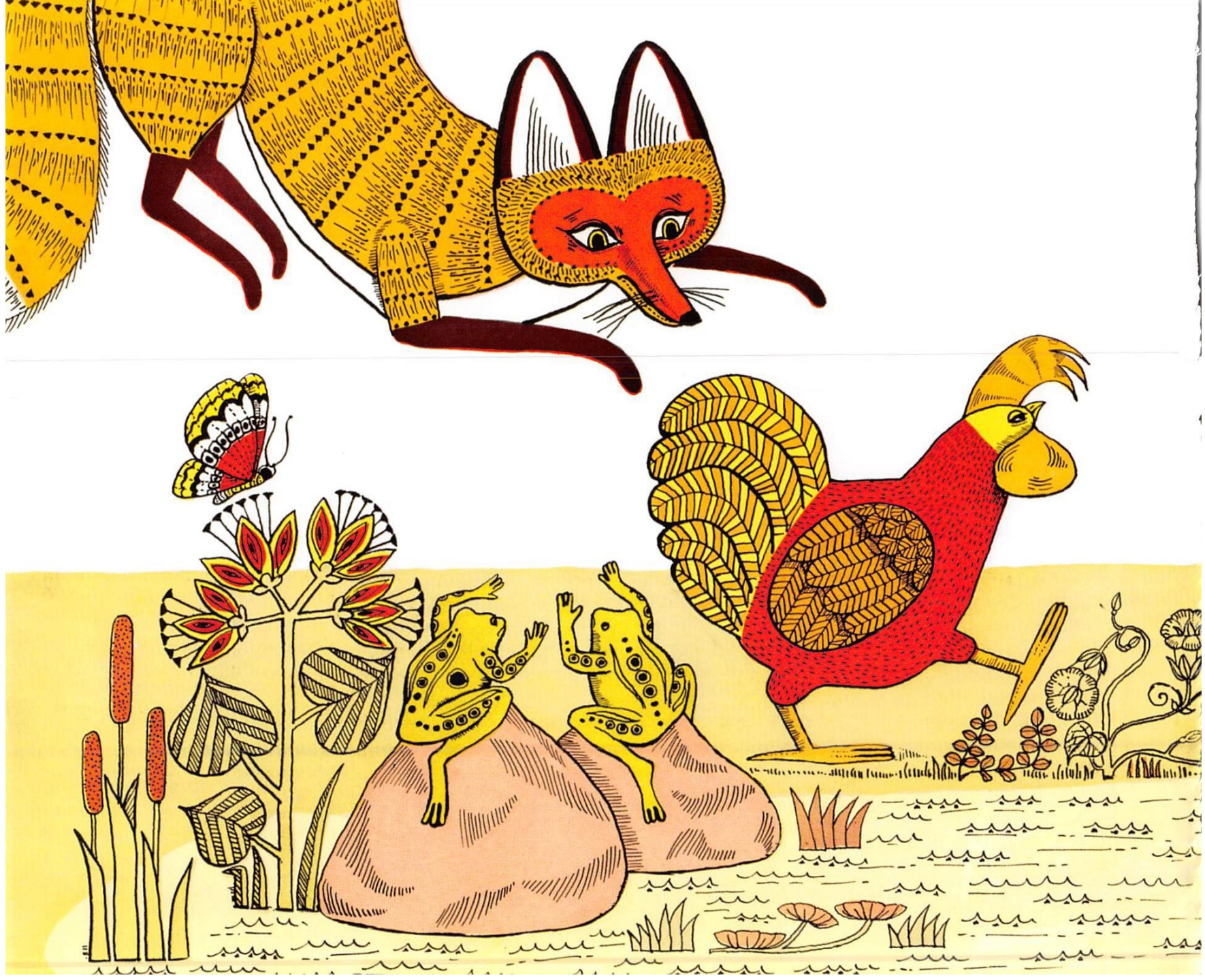
ALADDIN PAPERBACKS



Rosie the hen went for a walk

across the yard

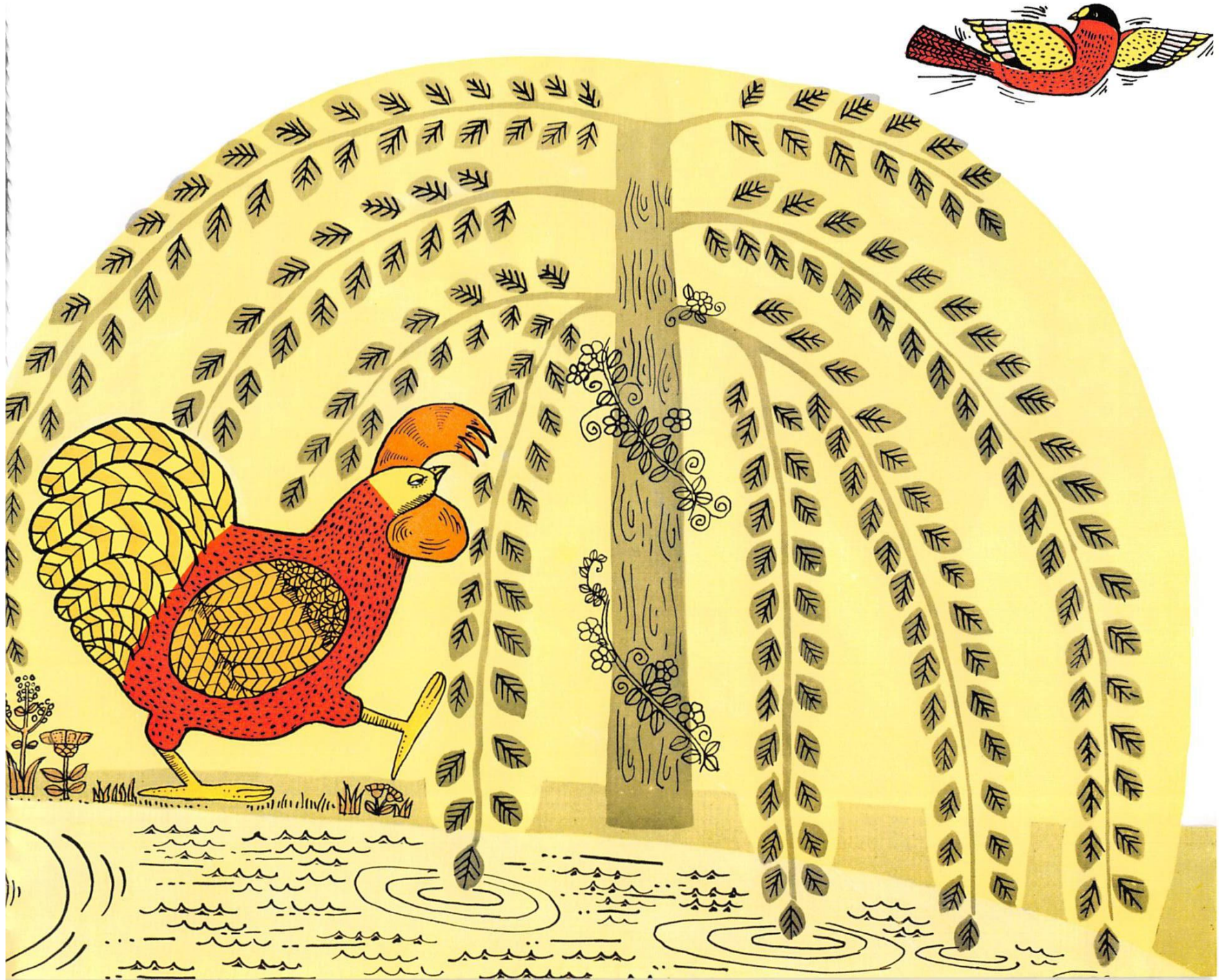




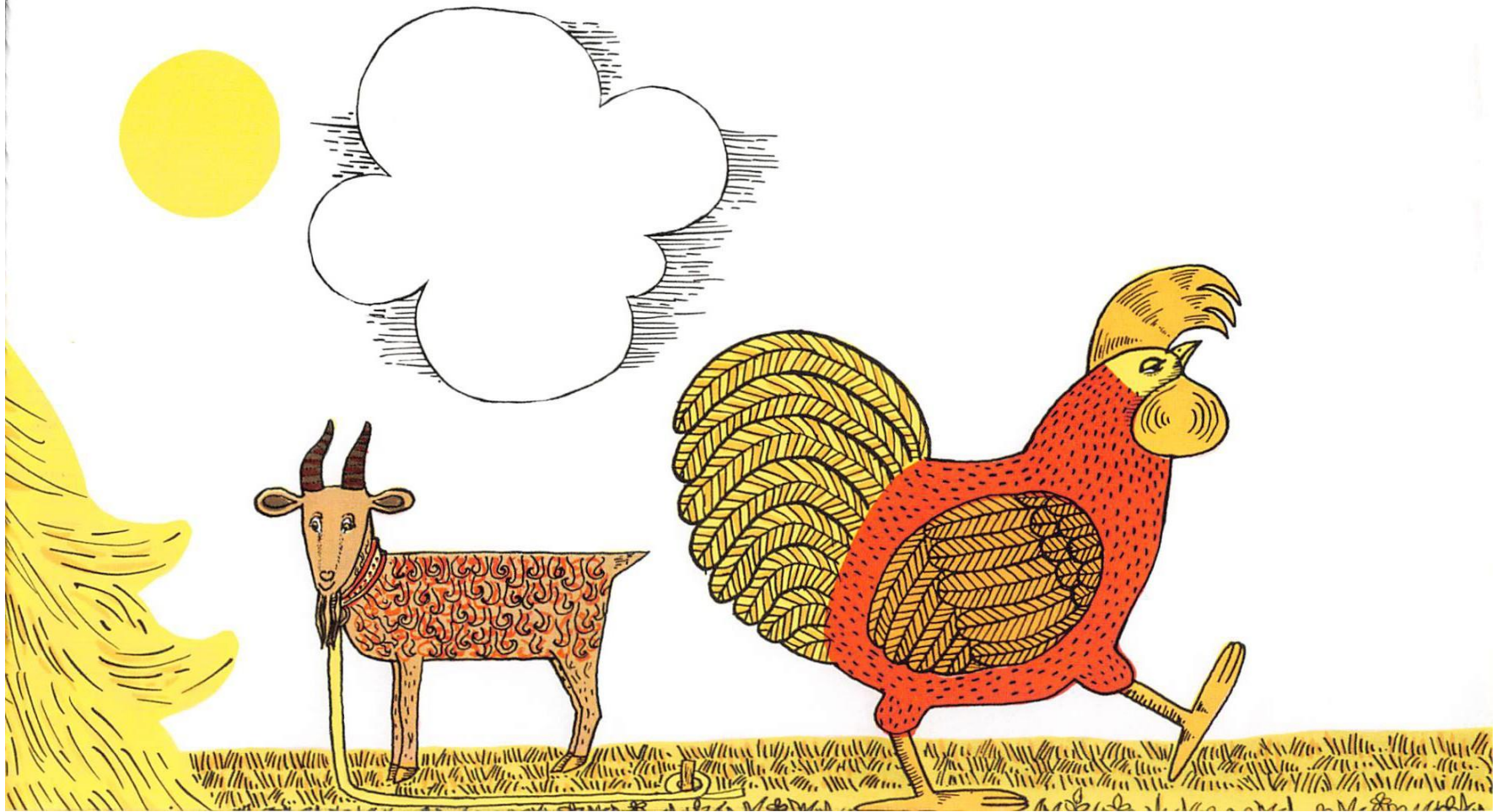
around

the

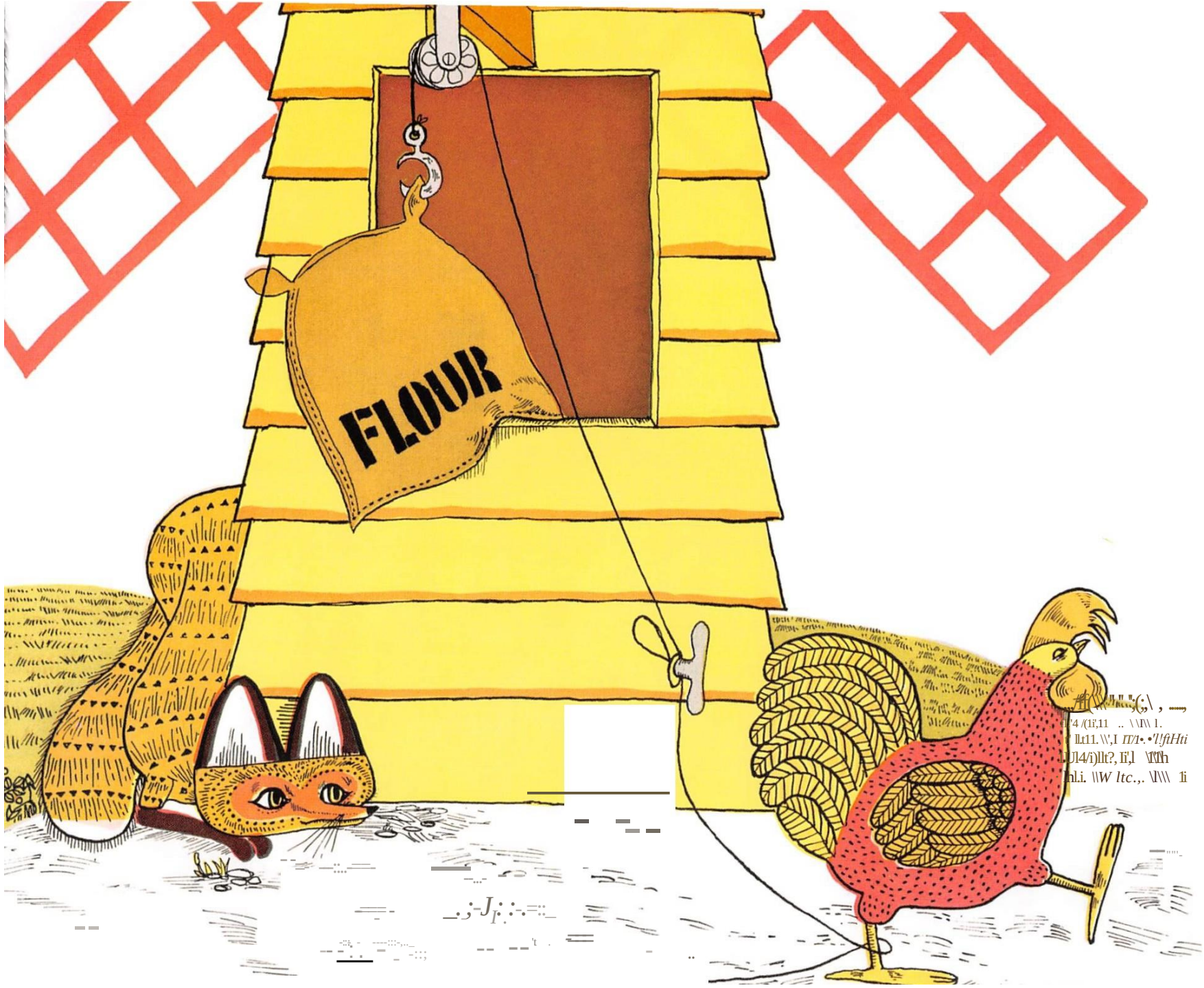
pond

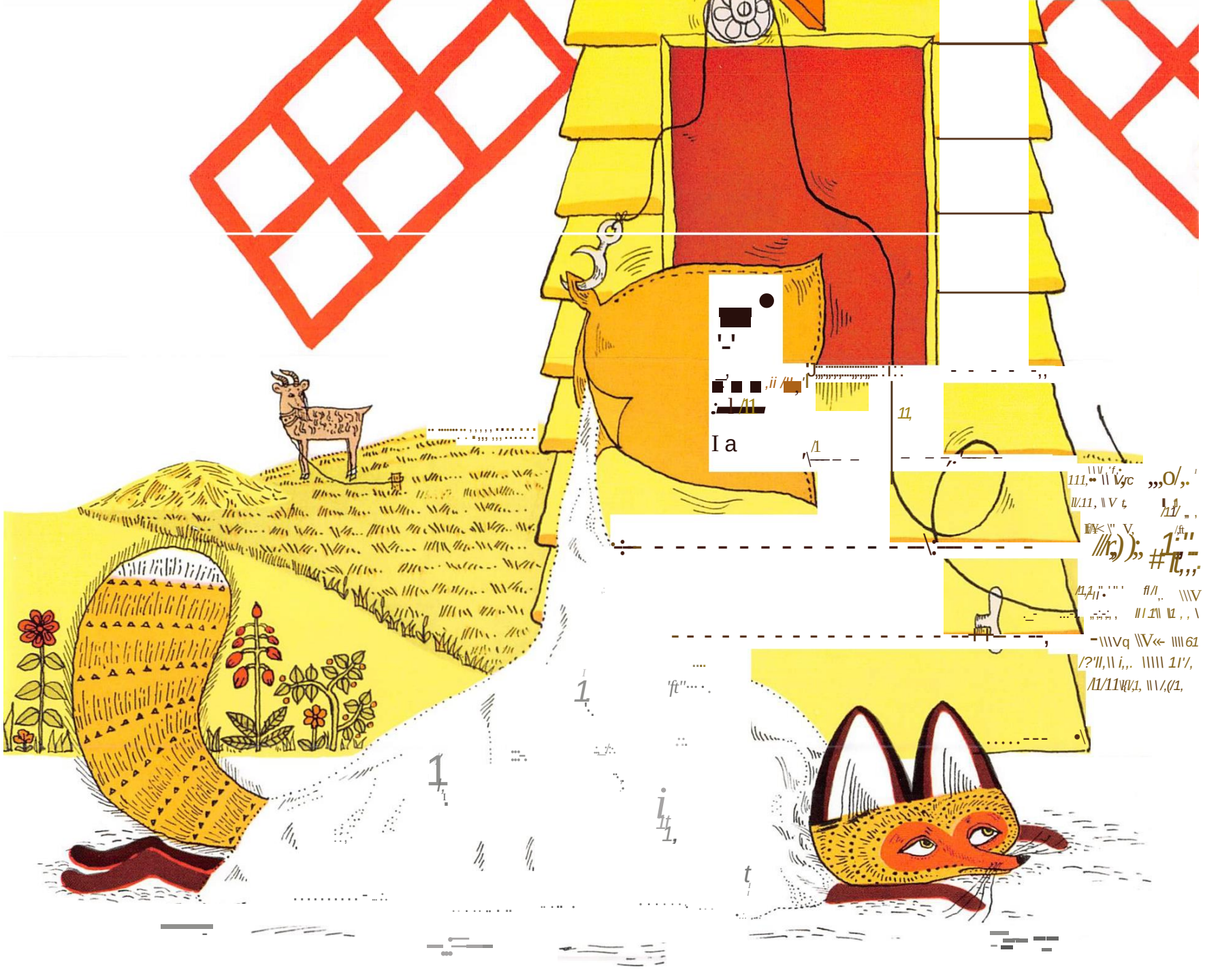


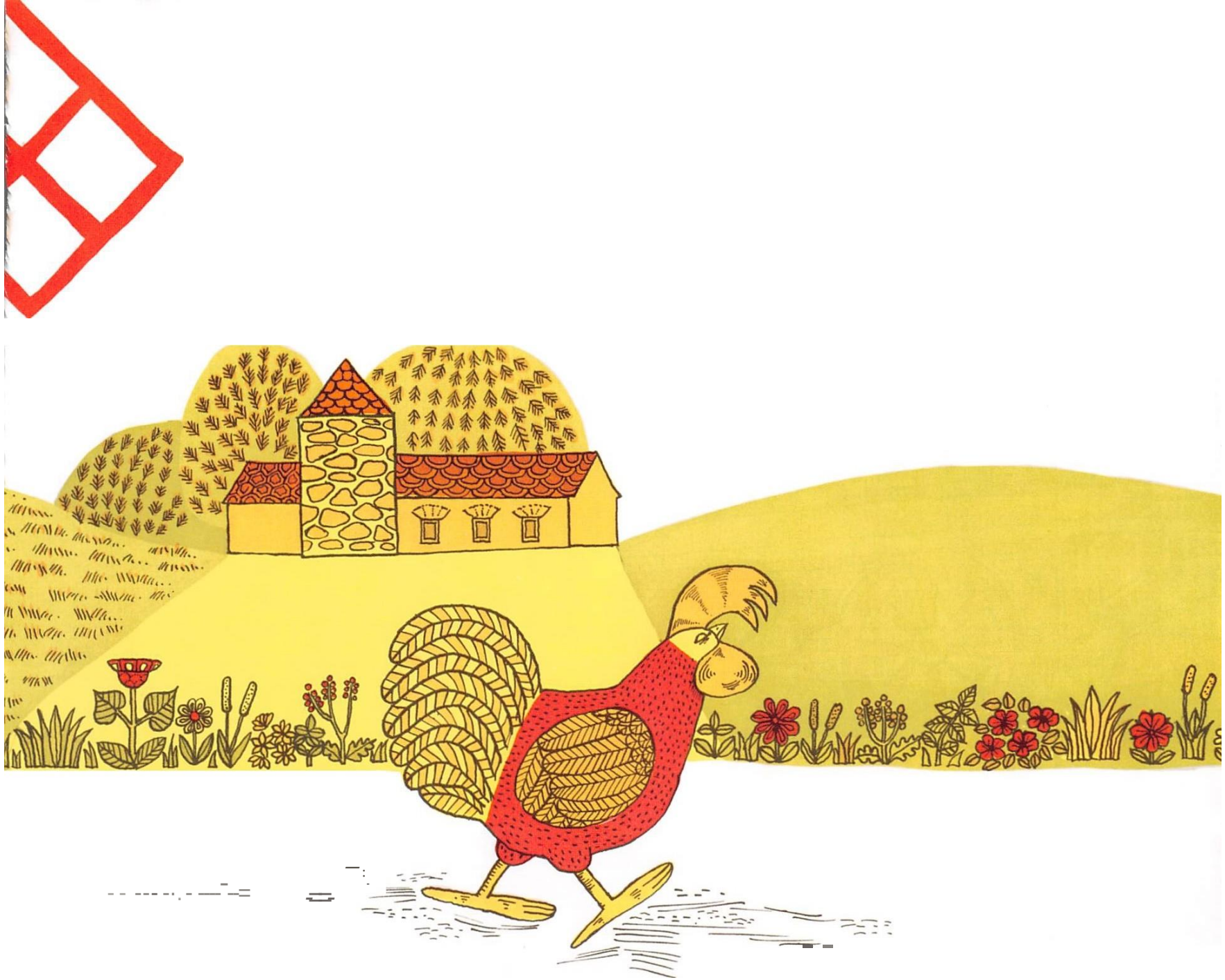
OVER THE HAYSTACK



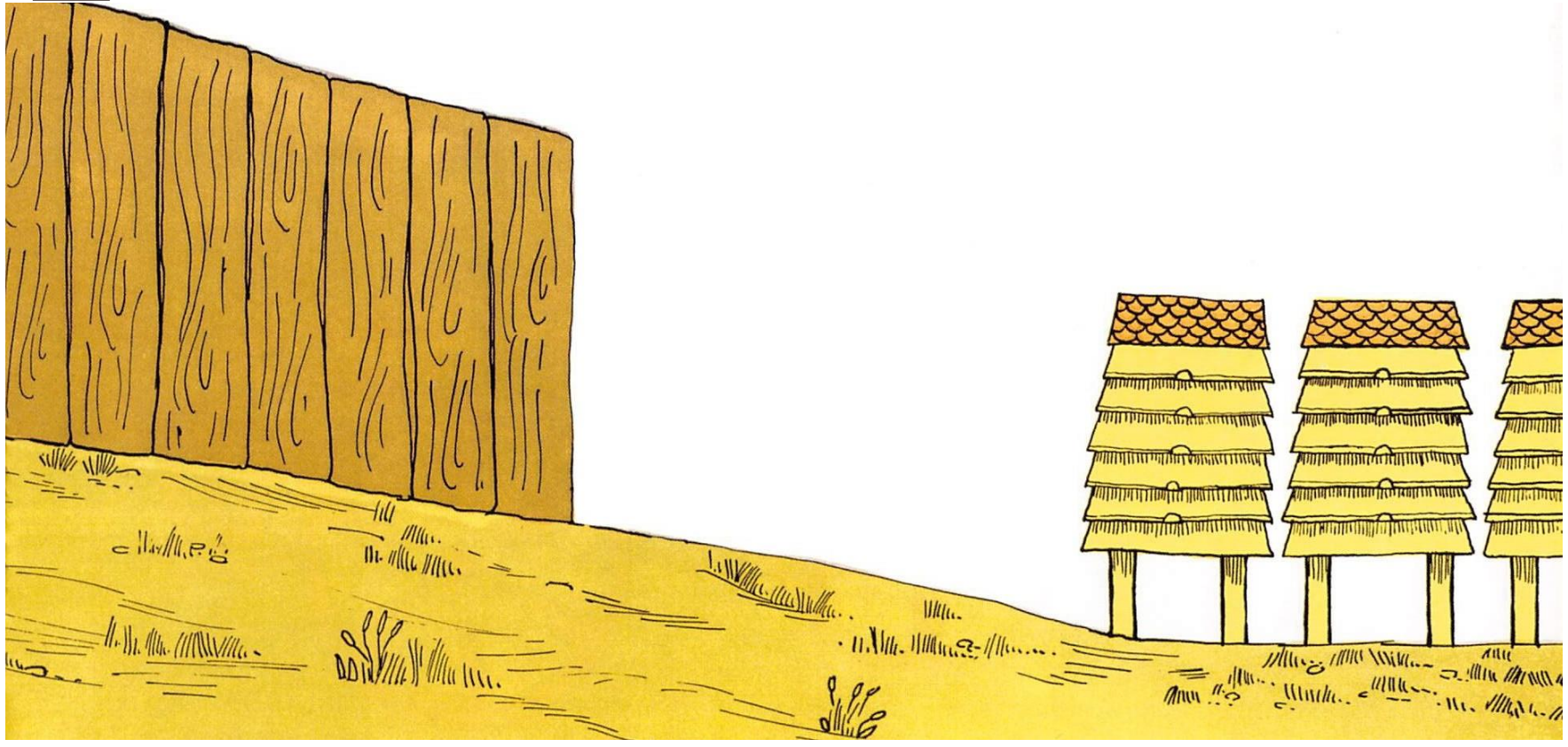
PAST THE MILL

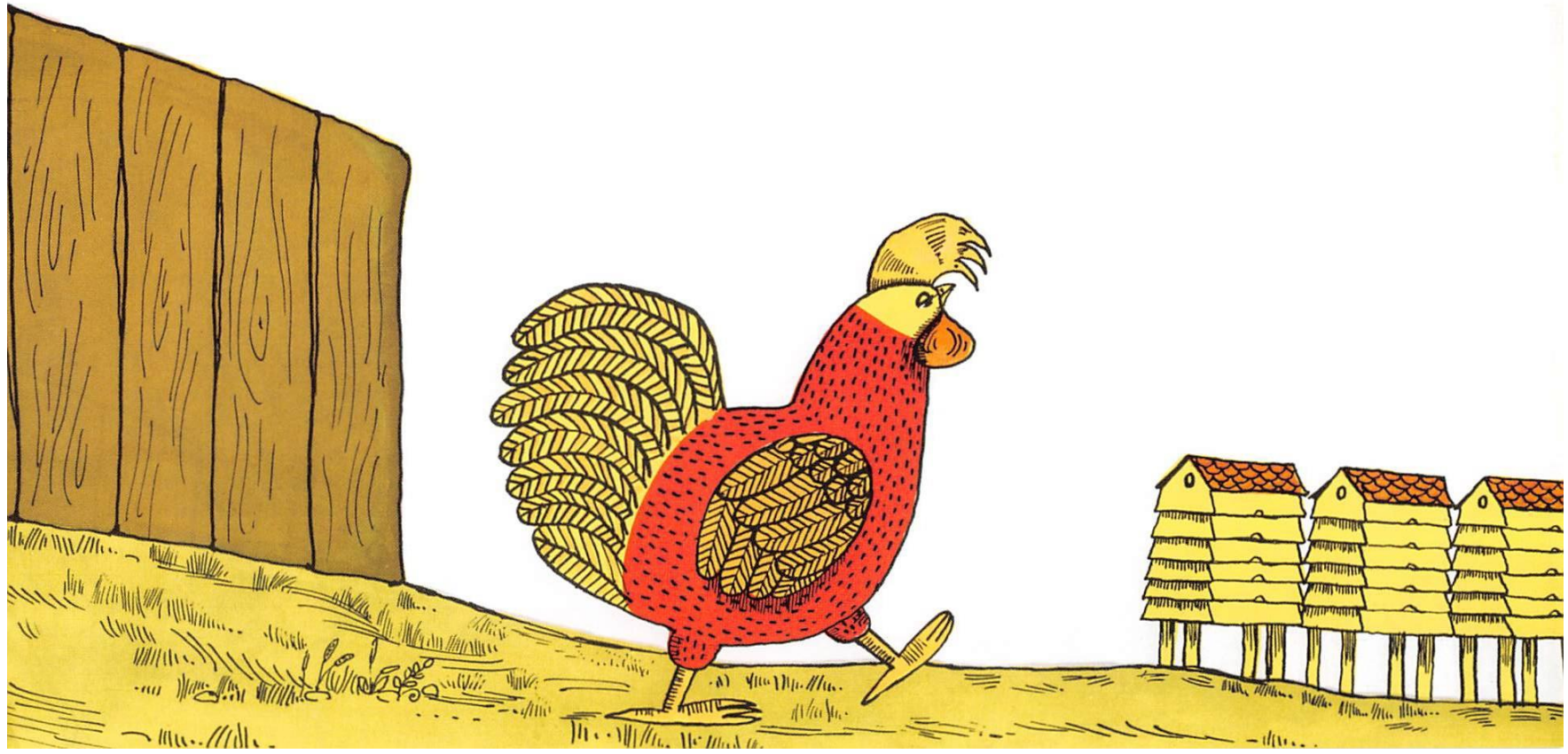

FLOUR



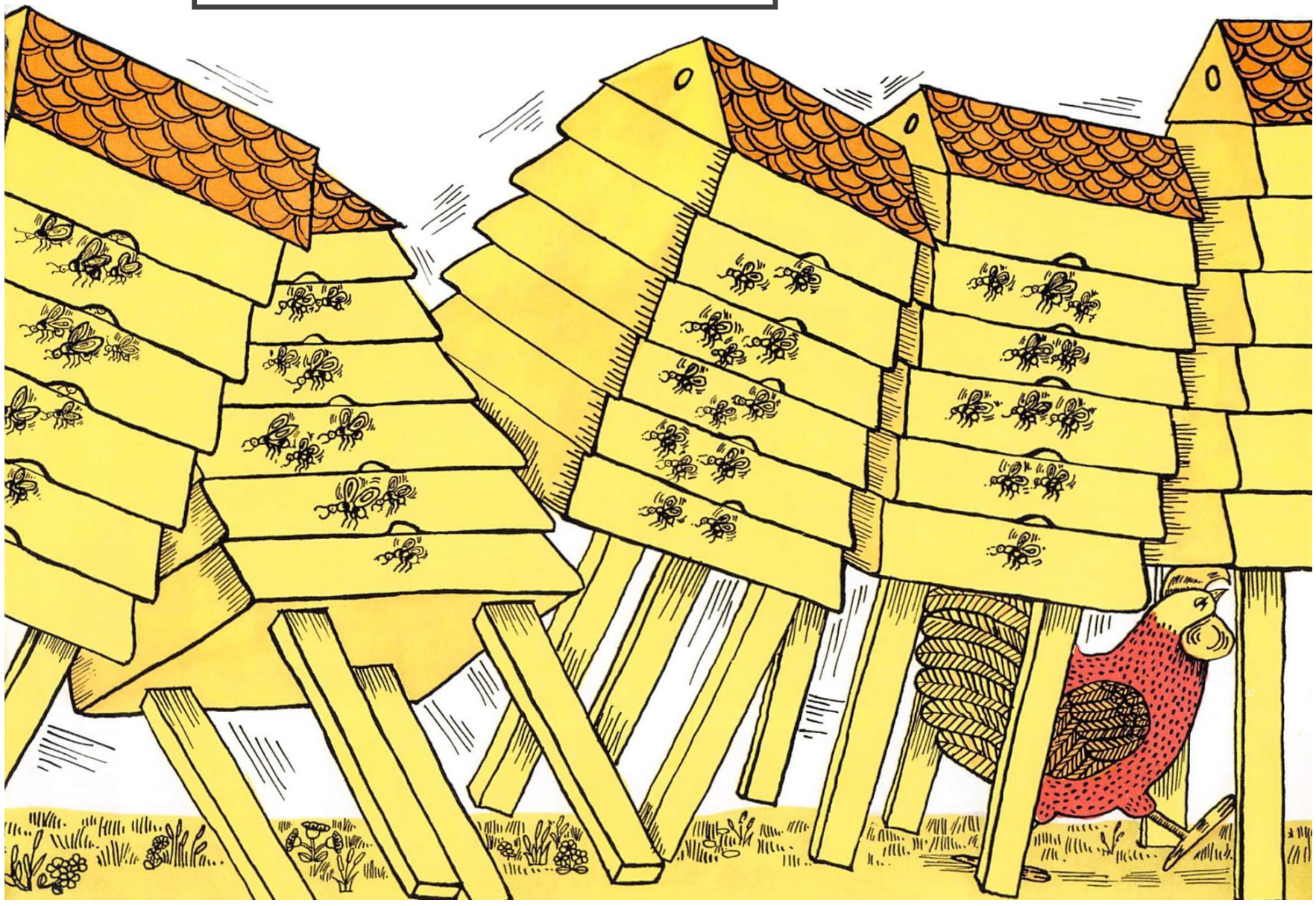


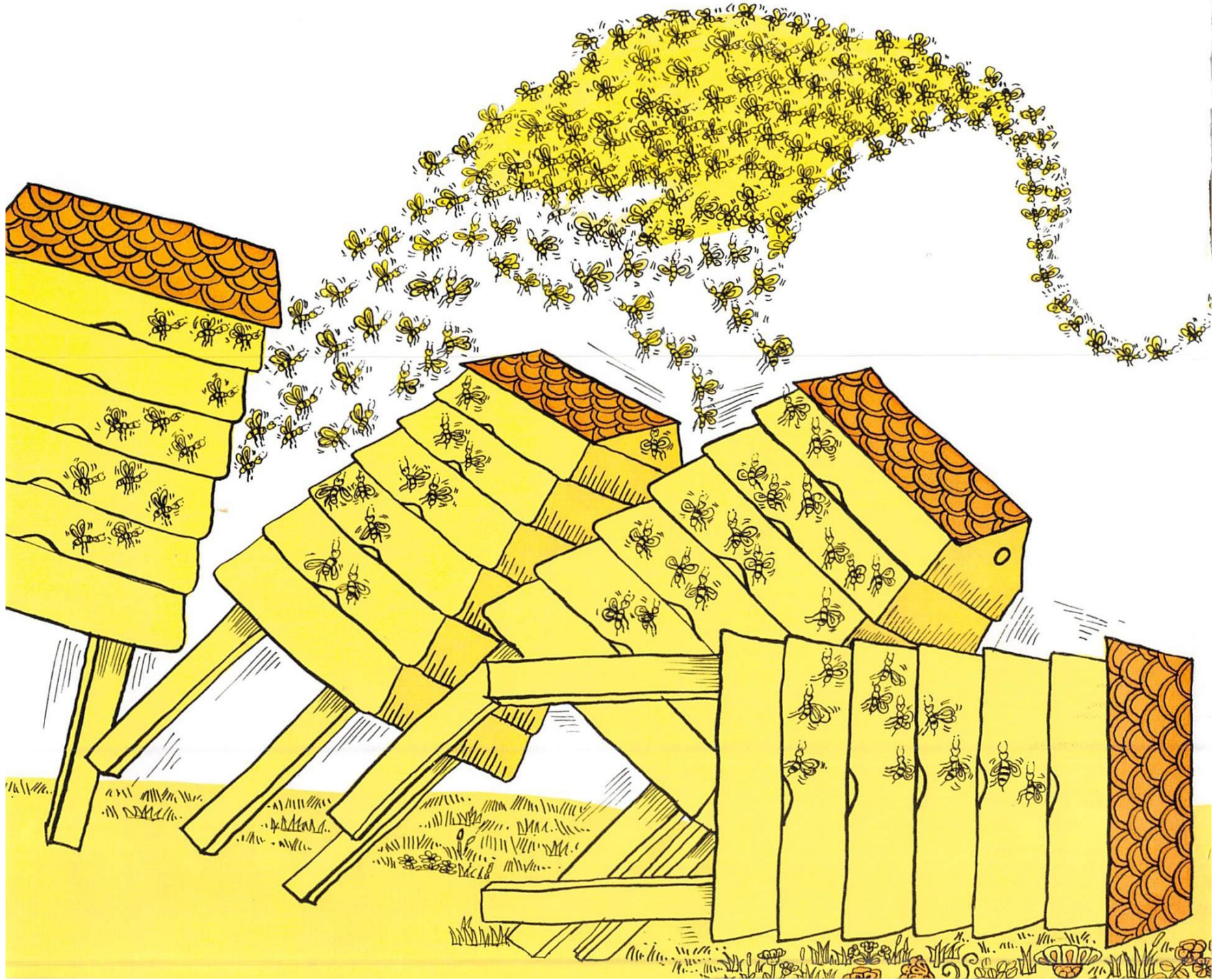
THROUGH THE FENCE

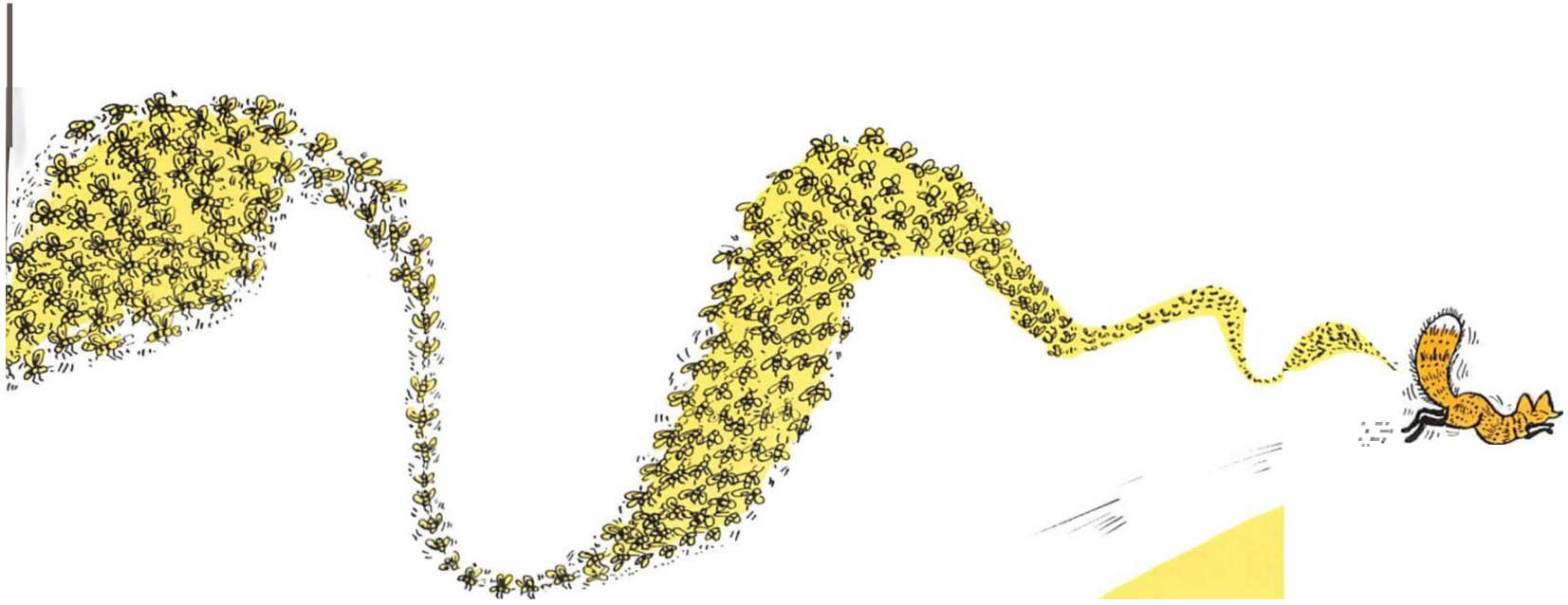




UNDER THE BEEHIVES





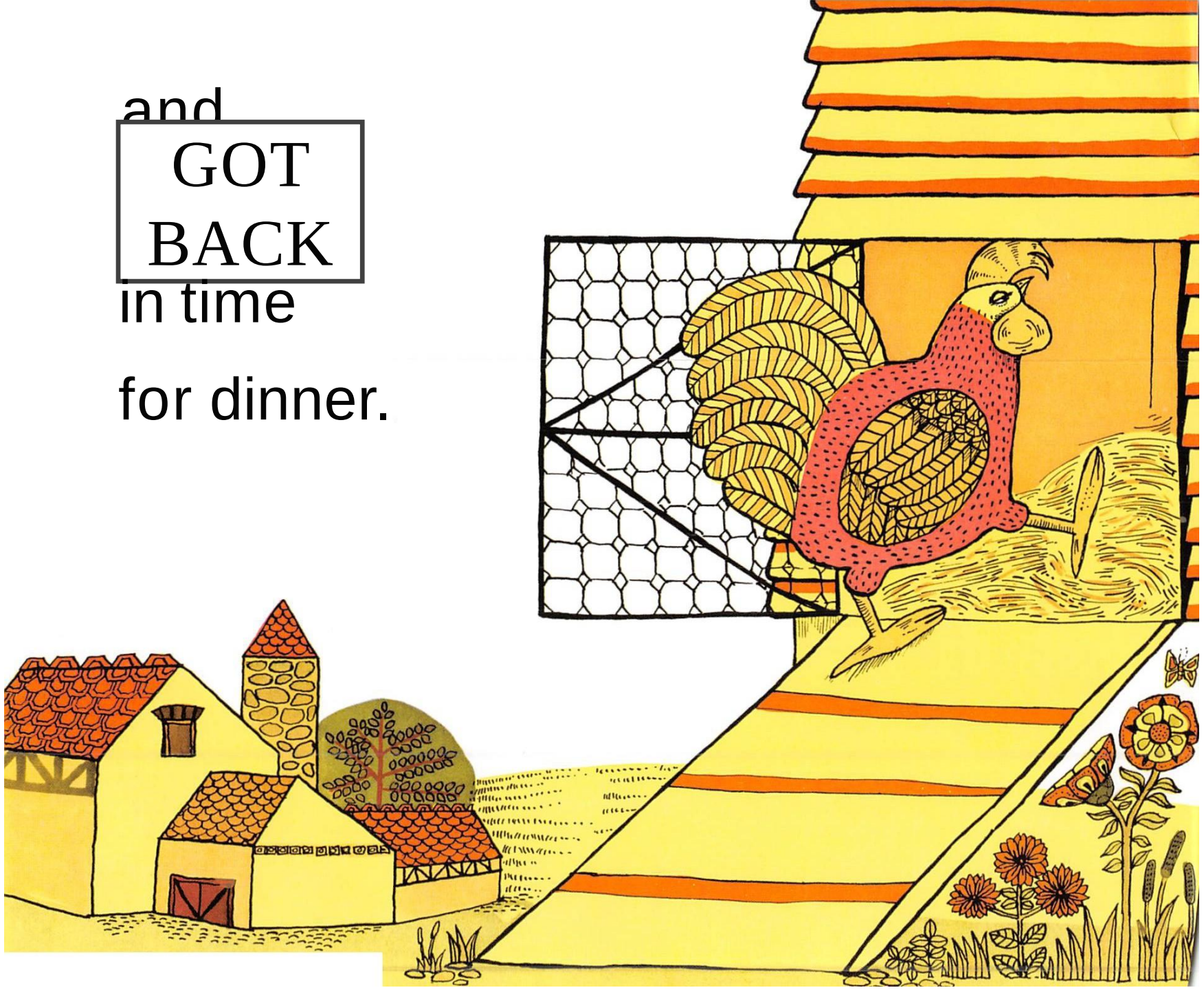


and

GOT BACK

in time

for dinner.

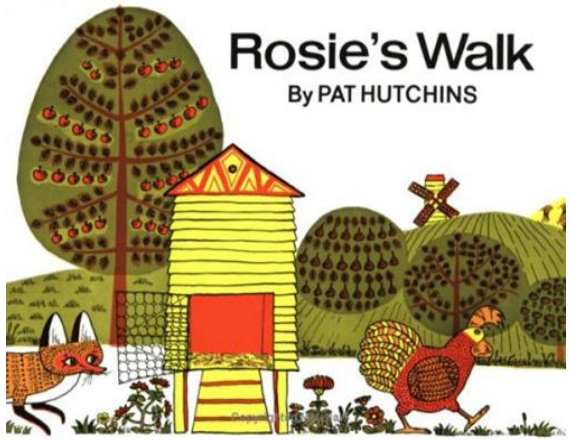


CCSS AND WNCP CONNECTIONS

Common Core Geometry Standards

CCSS.Math.Content.K.G.A.1

Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*.



WNCP

Spatial Sense

Spatial sense involves visualization, mental imagery and spatial reasoning. These skills are central to the understanding of mathematics.

Spatial sense enables students to reason and interpret among and between 3-D and 2-D representations and identify relationships to mathematical strands.

VISUAL SPATIAL REPRESENTATIONS

Select a spatial word from Rosie's Walk or the list below:

In/ Out

Top/ Bottom

Over/ Under

Up/Down

Forward/ Backward

Around/ Through

In Front/ Behind

Above/Below

Draw a picture representing the word & action using a prop in the room as a reference point

If you finish early, select another word(s) to draw

Stack the drawings in a pile for your table group to use

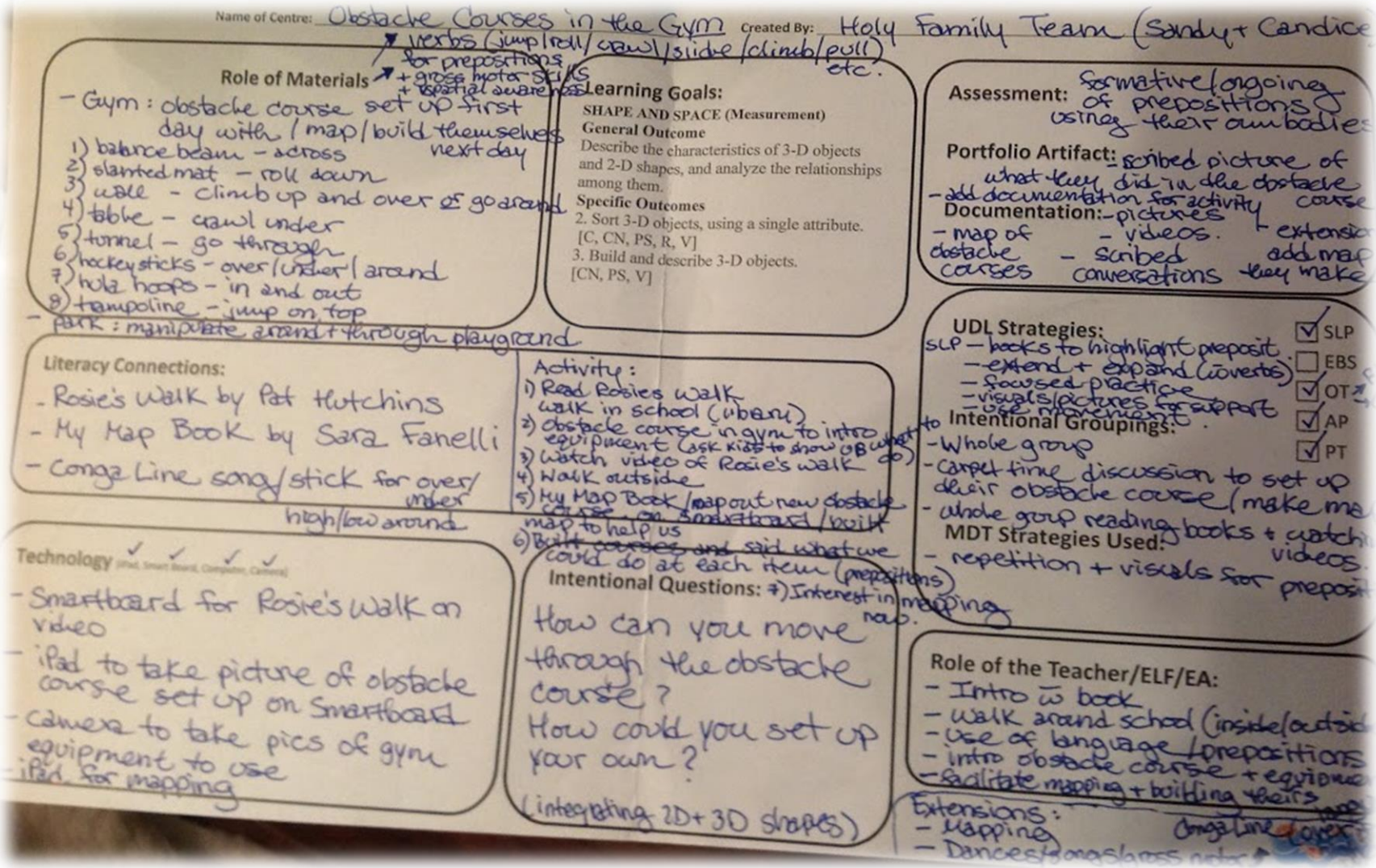
SPATIAL ORIENTATION ACTIVITIES

1. **SPATIAL TABLEAU:** Select one of the cards and create a still image using your body (and props) to represent the spatial word for your group to guess

2. **SPATIAL OBSTACLE COURSE:** As a group, place your cards in a sequence and create an obstacle course (using props - i.e., chairs, tables, other items). Say your spatial action as you complete the movements

- If you finish your obstacle course:
- Try it again by moving in a different way (i.e., tiptoe, crawl, etc.)
- Rearrange your cards and create a new obstacle course
- Switch cards with another group and create a different course

CLASSROOM EXAMPLES



Name of Centre: Obstacle Courses in the Gym Created By: Holy Family Team (Sandy + Candice

Role of Materials

- Gym: obstacle course set up first day with / map / build themselves next day
  1) balance beam – across
  2) slanted mat – roll down
  3) wall – climb up and over & go around
  4) table – crawl under
  5) tunnel – go through
  6) hockey sticks – over / under / around
  7) hula hoops – in and out
  8) trampoline – jump on top
- park: manipulate around + through playground

Learning Goals:

SHAPE AND SPACE (Measurement)
General Outcome
Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.
Specific Outcomes
2. Sort 3-D objects, using a single attribute. [C, CN, PS, R, V]
3. Build and describe 3-D objects. [CN, PS, V]

verbs (jump / roll / crawl / slide / climb / pull) etc.
for prepositions
+ gross motor skills
+ spatial awareness

Assessment: formative / ongoing of prepositions using their own bodies

Portfolio Artifact: scribed picture of what they did in the obstacle course

Documentation: - pictures - videos + extension add map they make
- add documentation for activity
- map of obstacle courses - scribed conversations

Literacy Connections:

- Rosie's Walk by Pat Hutchins
- My Map Book by Sara Fanelli
- Conga Line song / stick for over / under high / low around

Activity:

1) Read Rosies walk
2) walk in school (library)
3) obstacle course in gym to intro equipment (ask kids to show us what to do)
4) watch video of Rosie's walk
5) My Map Book / map out new obstacle course on smartboard / built map to help us
6) Built courses and said what we could do at each item (prepositions)

UDL Strategies:

SLP – books to highlight preposit.
– extend + expand (converse)
– focused practice
– visuals / pictures for support
– use movement

- [x] SLP
- [ ] EBS
- [x] OT
- [x] AP
- [x] PT

Intentional Groupings:

- Whole group
- carpet time discussion to set up their obstacle course (make me
- whole group reading books + watch videos

MDT Strategies Used:

- repetition + visuals for preposit

Technology ✓ ✓ ✓ ✓

- Smartboard for Rosie's walk on video
- iPad to take picture of obstacle course set up on Smartboard
- camera to take pics of gym equipment to use
- iPad for mapping

Intentional Questions: 1) Interest in mapping

How can you move through the obstacle course?
How could you set up your own?
(integrating 2D + 3D shapes)

Role of the Teacher/ELF/EA:

- Intro w book
- walk around school (inside / outside
- use of language / prepositions
- intro obstacle course + equipment
- facilitate mapping + building theirs

Extensions:

- Mapping
- Dances / mashups

Conga Line (over

CLASSROOM EXAMPLES

Curricular Links

Early Numeracy:

Describe the characteristics of 3D objects and 2D shapes, and analyze the relationship among them.
1.Build and describe 3D objects

Early Literacy:

The child listens, speaks, reads, writes, and represents to manage ideas and information and enhance the clarity and artistry of communication
~The child represents and talks about ideas and information; dictates to a scribe
~The child explores and experiments with new words and terms associated with topics of interest

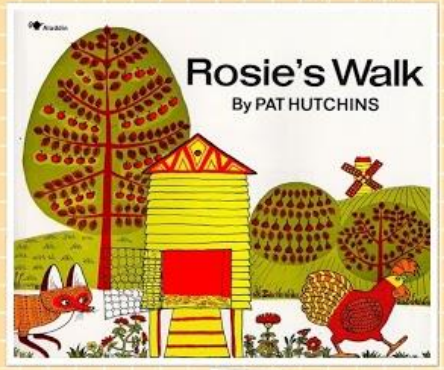
Physical Skills and Well-Being:

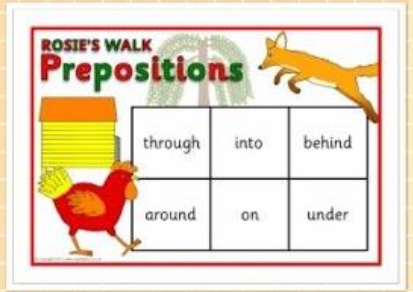
~The child experiences and develops locomotor skills through a variety of activities; e.g., walking, running, hopping, jumping, leaping, rolling, skill if, galloping, climbing, sliding
~The child experiences and develops nonlocomotor skills through a variety of activities: e.g., turning, twisting, swinging, balancing, bending, landing, stretching, curling
~The child experiences the basic skills in a variety of environments
~The child experiences educational gymnastics

PIC•COLLAGE

100 Voices Mathematics

Visual- Spatial Skills, Integrating 2D and 3D Objects, Physical Skills and Speech and Language for Prepositions





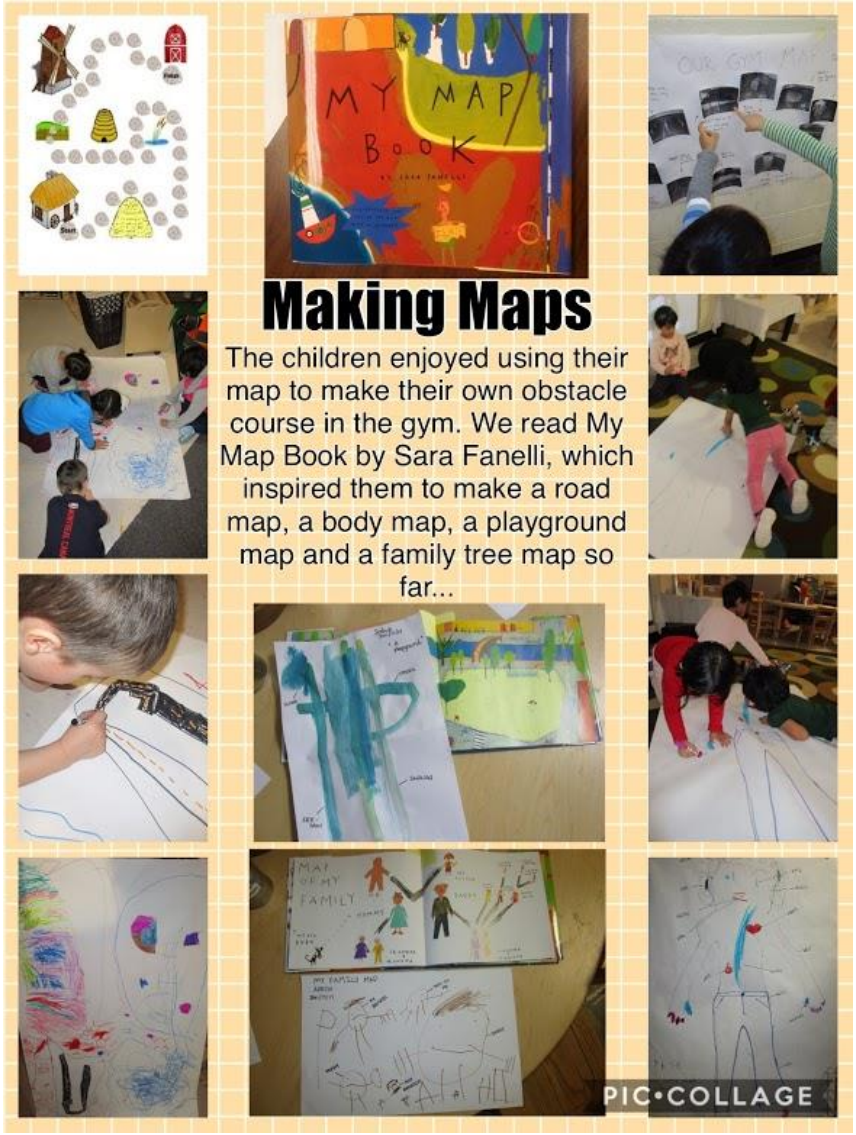
Introduction

Over the past week, we read the book Rosie's Walk by Pat Hutchins, watched the video, and discussed what happened to the hen Rosie and the fox in the story.

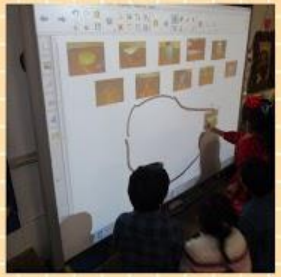
PIC•COLLAGE

CLASSROOM EXAMPLES

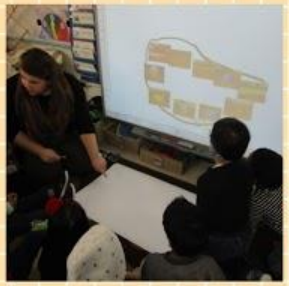
CLASSROOM EXAMPLES

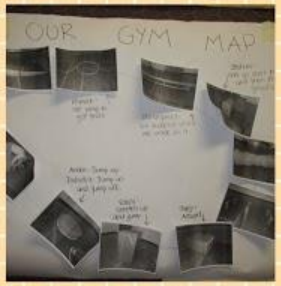


CLASSROOM EXAMPLES







On the Smartboard there were pictures of gym equipment, the children drew a shape and helped make an obstacle course in the order they wanted.
The next day, we transferred our map to paper to bring with us to the gym. We labeled what the children told us they could do at each spot...

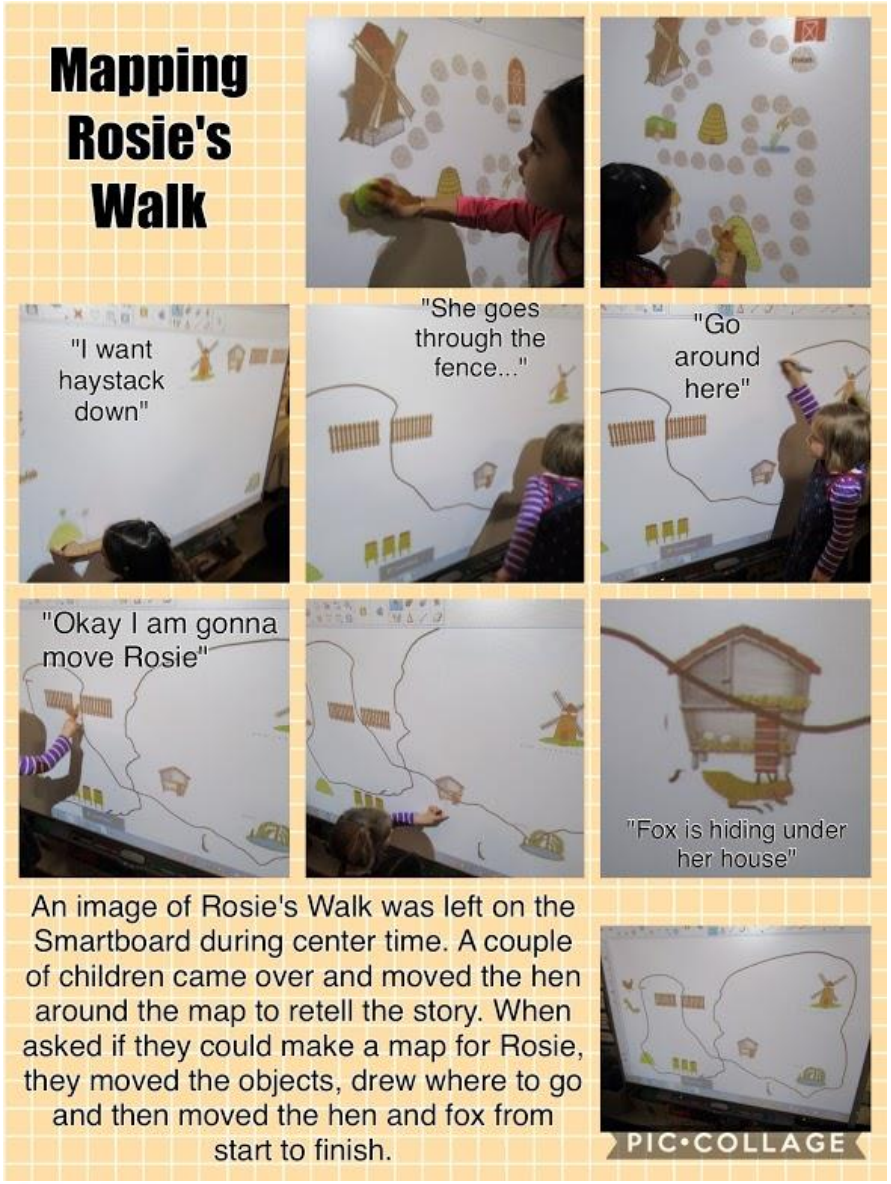
Making Our Obstacle Course Map

PIC•COLLAGE


Building Our Obstacle Course From Our Map

Our map was brought to the gym to assist us in building our obstacle course. The children set up and took down the equipment! they also used the map to tell us where they would like to start first.

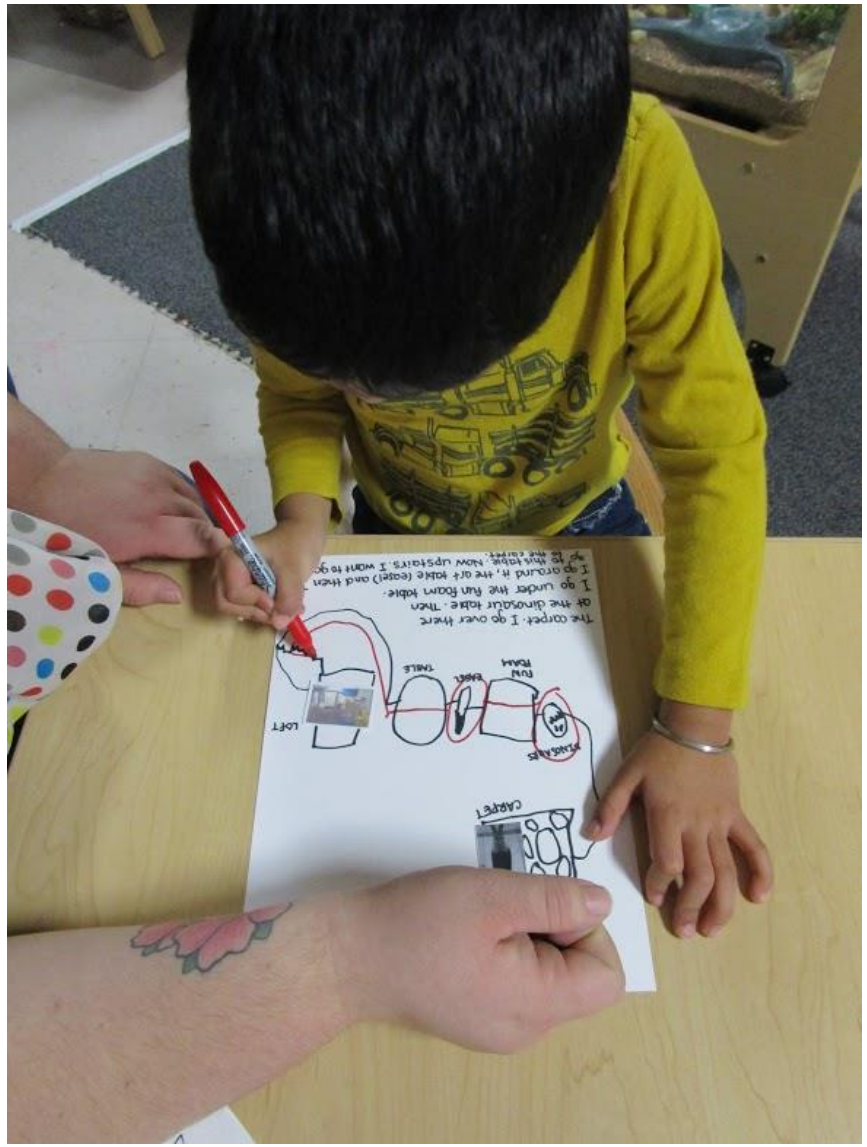

CLASSROOM EXAMPLES

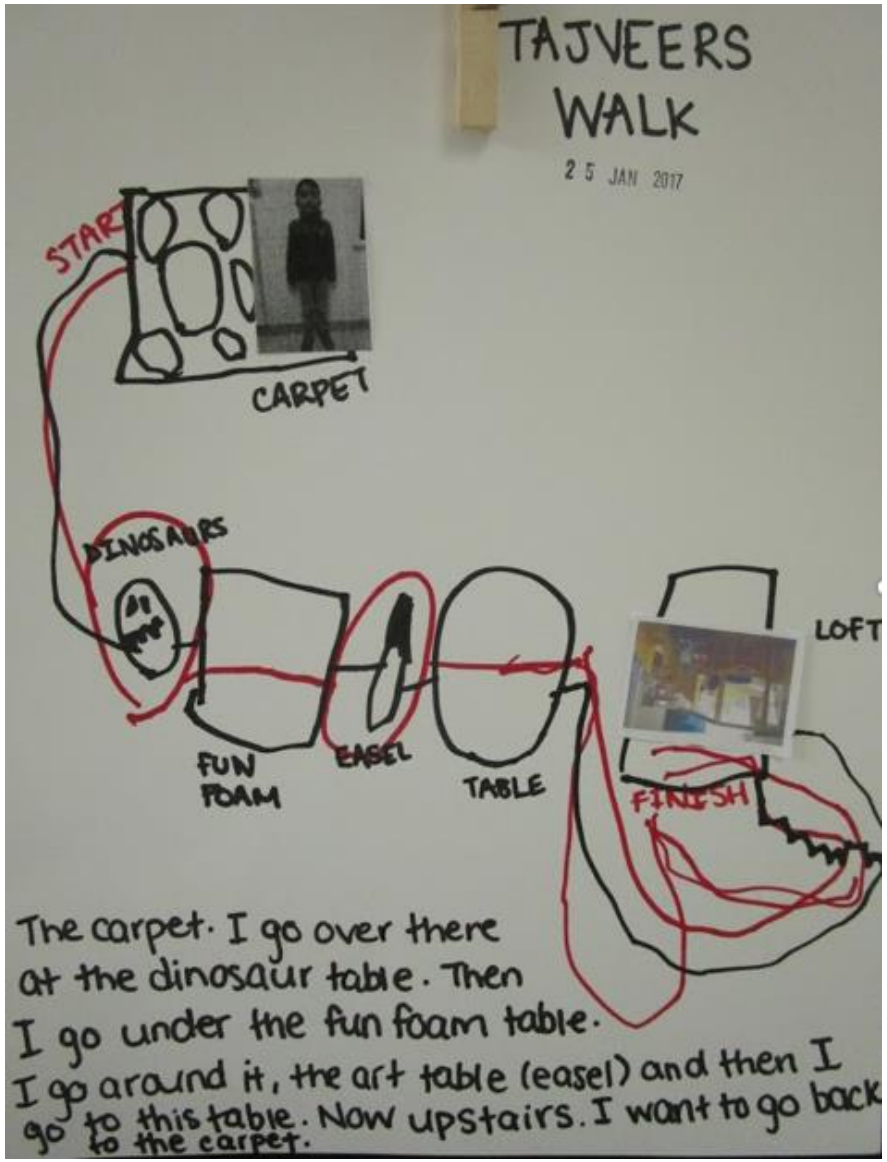


An image of Rosie's Walk was left on the Smartboard during center time. A couple of children came over and moved the hen around the map to retell the story. When asked if they could make a map for Rosie, they moved the objects, drew where to go and then moved the hen and fox from start to finish.

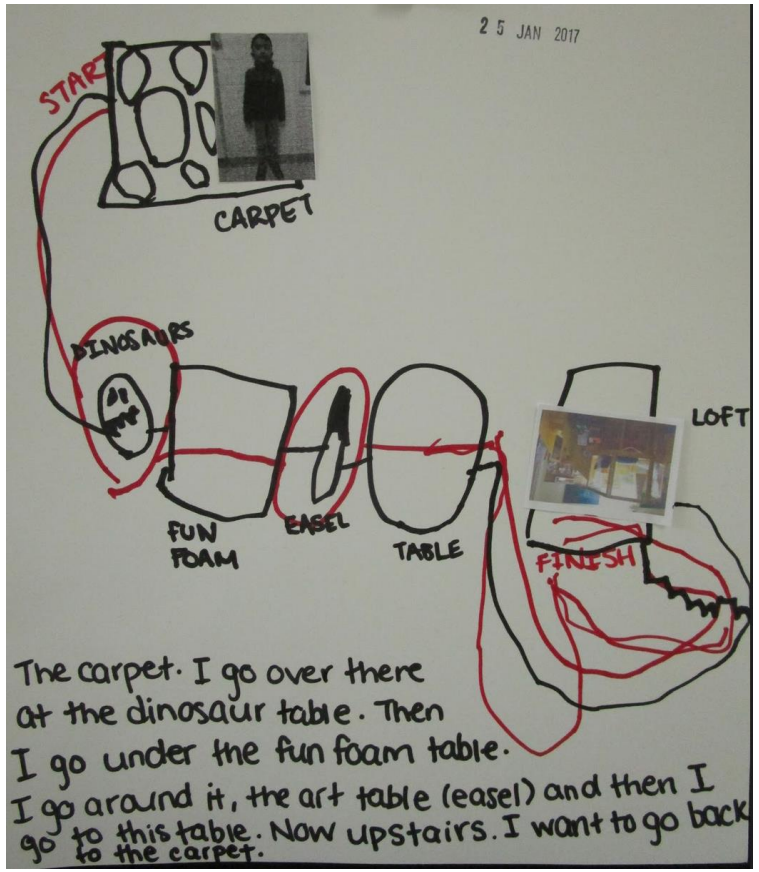
CLASSROOM EXAMPLES

CLASSROOM EXAMPLES





CLASSROOM EXAMPLES



New activities:

- Focus on spatial orientation for geometry
- Use more prepositions in a variety of activities

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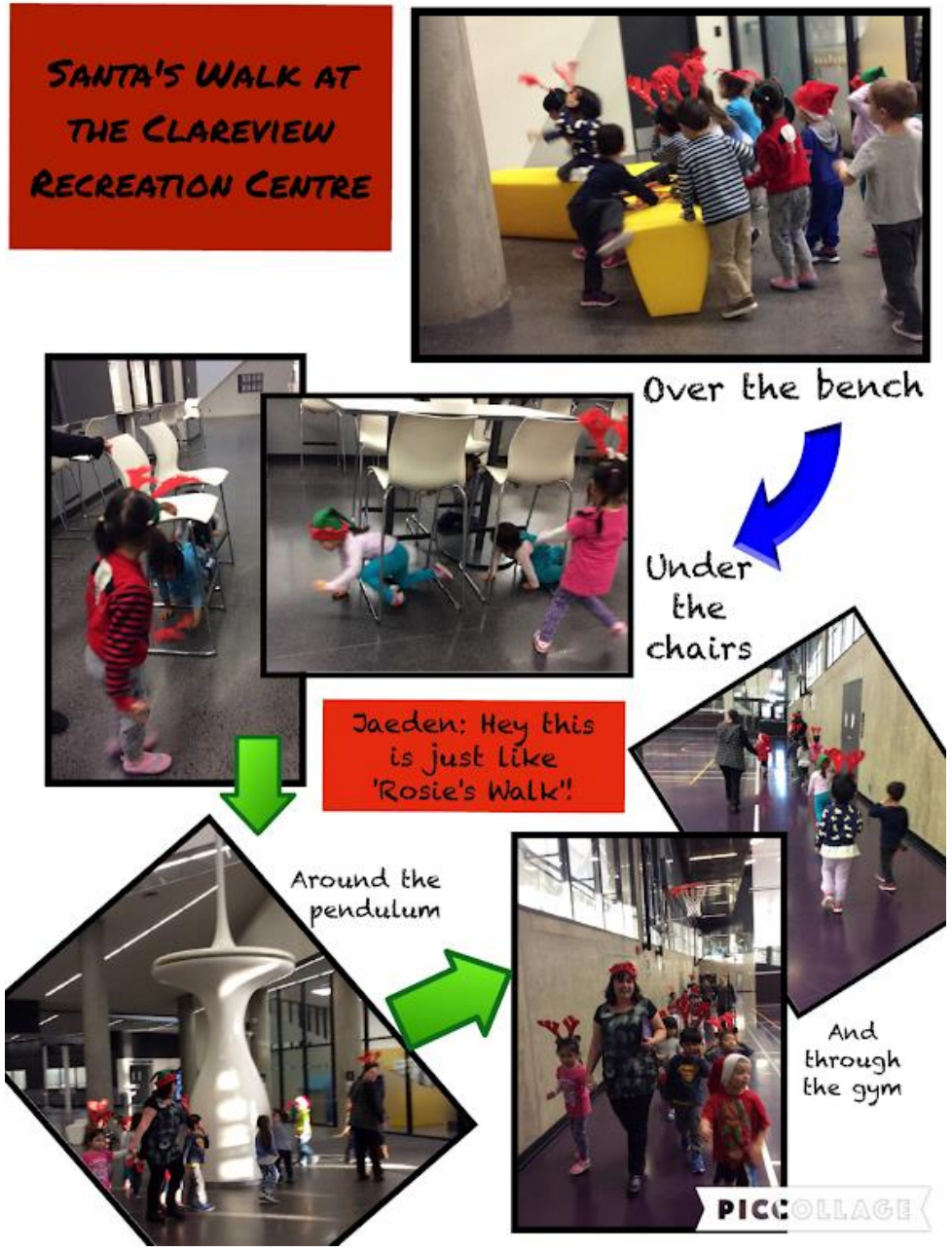
CLASSROOM EXAMPLES



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CLASSROOM EXAMPLES

MARY AND JOSEPH'S WALK

We read the Nativity Story many times. We asked the children: 'What do you think Mary and Joseph saw while they walked to Bethlehem?' The children thought Mary and Joseph walked through the desert. We researched photos of the desert and the children decided Mary and Joseph would see cactus plants, mountains, sand and rocks.

We brought in a cactus and used rocks to build mountains. The children added to the Nativity Story by describing Mary and Joseph's Walk. We created a map with string as the Mary and Joseph figures walked to Bethlehem.

Our Map
Mary and Joseph walked around the cactus, past the rocks and over the mountain.

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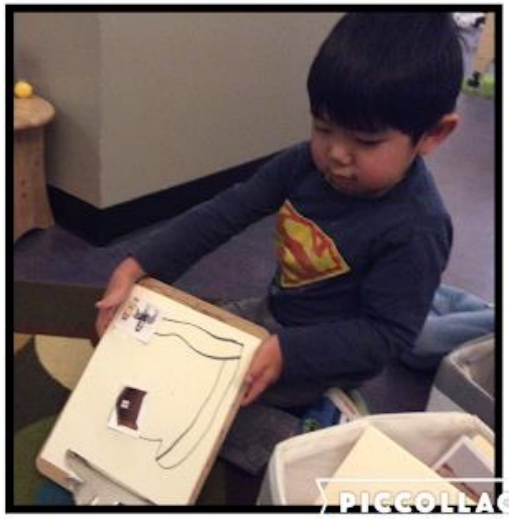
CLASSROOM EXAMPLES

The children looked at maps and then drew their own map describing how Mary and Joseph walked to Bethlehem.

DRAWING MAPS OF MARY AND JOSEPH'S WALK



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CLASSROOM EXAMPLES

Common Core Geometry Standards

CCSS.Math.Practice.MP1
Make sense of problems and persevere in solving them.

CCSS.Math.Practice.MP2
Reason abstractly and quantitatively.

WNCP

Problem Solving [PS]
Reasoning [R]
Technology [T]
Visualization [V]

PRELIMINARY FINDINGS

2. Change teaching practices so that educators purposefully plan for rich mathematical experiences and capitalize on mathematical opportunities that take place during common classroom routines and activities

FINAL SURVEY REFLECTIONS

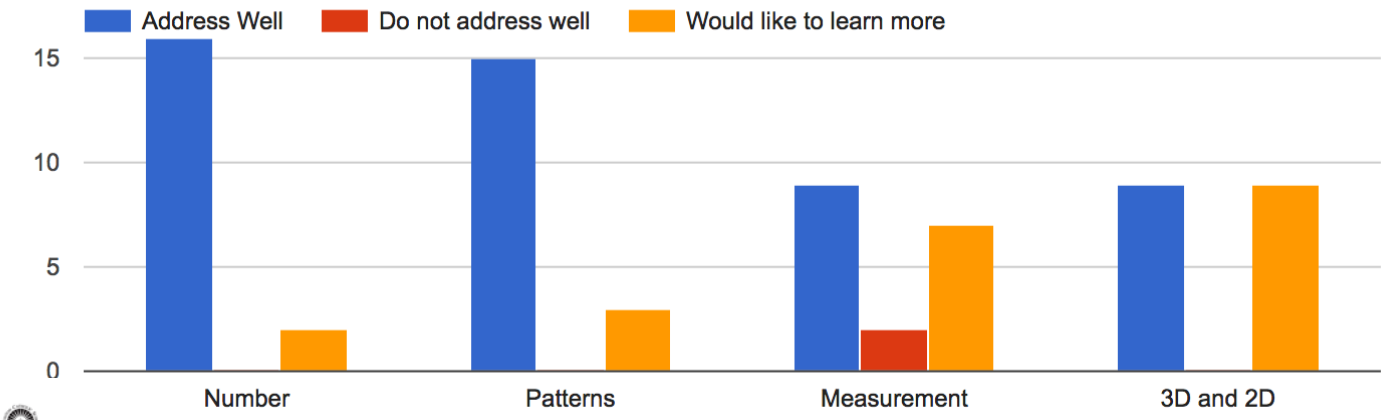
- "I have realized that mathematics is much more than just counting with children. Math is part of everyday in our classroom"
- "This cohort has reaffirmed the notion that children in early childhood classrooms know and understand more than we give them credit for"

PRELIMINARY FINDINGS

2. Change teaching practices so that educators purposefully plan for rich mathematical experiences and capitalize on mathematical opportunities that take place during common classroom routines and activities

REFLECTING ON CLASSROOM PRACTICES:

The Kindergarten Curriculum is based on the following four strands/substrands. Indicate how strongly you focused this year on these topics in your program.



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PROJECT EXPANSION FOR 2017-2018

- Continue to work with the current preschool numeracy cohort (15 educators)
- Expand to a second preschool cohort (20 educators)
- Expand to all kindergarten teachers (45 teachers)
- Develop an early learning mathematics resource for preschool and kindergarten

THANK YOU!

AMY SWINKELS & STEPHANIE POWER

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